

Buena Regional School District

Energy Savings Plan

Rev 2

June 4, 2019

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1.0 Executive Summary

In November, 2018, Schneider Electric was selected by the Buena Regional School District Board of Education as the District's Energy Services Company. Since that time, Schneider Electric has performed the Investment Grade Audit (IGA) to fully develop the District's Energy Savings Improvement Program (ESIP). We are pleased to provide the following Energy Savings Plan (ESP) as the result of the IGA process.

We have spent significant time visiting the schools, evaluating systems and procedures, speaking with staff, creating preliminary engineering drawings, analyzing utility information, and creating building energy models. We would like to thank the administration, faculty and staff, and the members of the Board of Education for providing their time, assistance, and input.

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Current State of the District

The following trends were taken into consideration to develop a successful ESIP program for Buena Regional School District.

Project Goals

Our proposed ESIP will allow the Buena Regional School District to:

- Replace the main boiler plant at the High School and Milanesi Schools.
- Provide enhanced classroom lighting with new LED lights
- Increase training of staff to allow facilities to be better maintained
- Reduce maintenance needs to make operations staff more effective
- Minimize risk and exposure to volatile energy prices by reducing the amount of energy needed each year.

Capital Needs & Savings Opportunities

The following Energy Savings Plan highlights over a dozen unique opportunities to reduce energy & operational costs. Some of the largest savings opportunities are from HVAC upgrades, lighting upgrades, and implementation of a solar Power Purchase Agreement (PPA).



High School Boiler Plant

The High School boilers are original to the oldest section of the building. These units are costly to maintain and require significant attention from staff/outside contractors.

Please see the following table listing the energy conservation measures included at each facility.

Opportunity Matrix	High School	Middle School	Cleary	Collins Lake	Milanesi
Learning Environment					
LED Lighting	○	○	○	○	○
Air Sealing Improvements	○	○	○	○	○
Building Automation System					
Building Automation System Improvements	○	○	○	○	○
Building Automation Training for Staff	○	○	○	○	○
Building Pressure Sensors	○	○	○	○	○
Humidity Sensors	○	○	○	○	○
Demand Controlled Ventilation		○			○
Replace Pneumatics					○
Humidity Control					
Reheat Coils			○		
Efficiency					
Water Fixture Improvements	○				
Pipe Insulation	○	○			○
Walk-in Refrigeration Controls	○	○	○	○	○
High Efficiency Transformers	○			○	
Kitchen Hood Blocking	○			○	
Verify ERV Operation				○	
Infrastructure					
Boiler Replacements	○				○
Hot Water VFDs	○				
Domestic Hot Water Heater	○				
Chiller Replacement	○				
Split System Replacement			○		
Combined Heat and Power	○				
Rooftop Unit Replacement	○				○
Unit Ventilator Replacement (Section A)	○				
Sustainability					
Solar Power Purchase Agreement	○	○	○	○	○
Community Engagement					
Conserve My Planet	○	○	○	○	○
Public Awareness Campaign	○	○	○	○	○
Financial					
Rebates	○	○	○	○	○

Critical Factors Affecting Timeline & Cost

There are various factors affecting the timing and cost of this ESIP project:

1. **Interest rates.** The Federal Reserve Bank has steadily been raising interest rates over the past 2 years. It is uncertain what future rates will be for tax-exempt debt, but many expect that rates will continue to rise. We advise that the District pursue ESIP financing quickly along a parallel path or shortly following approval of the ESIP.
2. **Direct Install.** The program requirements will change on July 1, 2019. This may alter the financial benefits of this program.
3. **Summer Construction.** The ESIP is on schedule to be approved on June 11th. Schneider Electric and the district have worked together to be ready to replace the boilers at HS and Milanesi over the summer of 2019.

Next Steps

Based upon the factors described above, we recommend that the District execute all associated ESIP contracts by June 11, 2019. The following are the recommended next steps in the ESIP process:

- SE to provide Energy Savings Plan to 3rd party reviewer; receive 3rd party approval
- SE to provide Energy Savings Plan to BPU for approval
- Buena Regional School District BOE to approve final ESIP project & authorize ESIP construction contract
- Buena Regional School District BOE & SE to secure financing for ESIP

We look forward to continuing to work together to deliver this Energy Savings Improvement Program for the benefit of Buena Regional School District.

2.0 Financial Analysis

2.1 Scope Summary

The intent of this project is to maximize energy savings opportunities, fund critical capital improvements, and achieve the strategic goals of the District. We believe that the following energy conservation measures are the best solution to maximizing savings and meeting the District's needs.

		Proposed Energy Savings Plan	Hard Costs ($)	Annual Energy Savings ($) (1)	Rebate Smart Start (2)	Rebate CHP (2)	Rebate PJM EE (2)
		Learning Environment					
1	HS	LED Lighting	$ 322,662	$ 29,467	$ 29,993		
1	MS	LED Lighting	$ 246,514	$ 23,411	$ 24,100		
1	CL	LED Lighting	$ 161,068	$ 10,964	$ 15,040		$ 14,087
1	CO	LED Lighting	$ 5,000	$ 299	$ 262		
2	HS	Air Sealing Improvements	$ 47,872	$ 9,239	$ -		
2	MS	Air Sealing Improvements	$ 14,293	$ 2,452	$ -		
2	CL	Air Sealing Improvements	$ 30,511	$ 2,676	$ -		
2	CO	Air Sealing Improvements	$ 20,695	$ 2,734	$ -		
2	ML	Air Sealing Improvements	$ 22,401	$ 2,603	$ -		
		Building Automation System					
3	HS	Building Management System Improvements	$ 43,347	$ 12,630	$ -		
3	MS	Building Management System Improvements	$ 102,457	$ 12,386	$ -		
3	CL	Building Management System Improvements	$ 24,958	$ 9,186	$ -		
3	CO	Building Management System Improvements	$ 25,447	$ 1,856	$ -		
3	ML	Building Management System Improvements	$ 65,678	$ 4,002	$ -		
4	All	Staff Training for Building Management Systems	$ 14,449	$ -	$ -		
5	All	Building Pressure Sensors	$ 62,394	$ -	$ -		
6	All	Humidity Sensors	$ 45,974	$ -	$ -		
7	MS	Demand Controlled Ventilation	$ 26,271	$ 7,803	$ -		
7	ML	Demand Controlled Ventilation	$ 9,195	$ 1,331	$ -		
8	ML	Replace Existing Pneumatics with DDC	$ 167,675	$ -	$ -		
		Humidity Control					
9	CL	Reheat Coils	$ 279,689	$ (1,247)	$ -		
		Efficiency					
10	HS	Water Fixture Improvements	$ 114,181	$ 9,803	$ -		
11	HS	Pipe Insulation	$ 16,270	$ 1,986	$ -		
11	MS	Pipe Insulation	$ 2,664	$ 552	$ -		
11	ML	Pipe Insulation	$ 8,578	$ 1,278	$ -		
12	ALL	Walk-in Refrigeration Controls	$ 30,409	$ 2,525	$ 1,125		
13	HS	High Efficiency Transformers	$ 82,971	$ 5,686	$ -		
13	CO	High Efficiency Transformers	$ 6,612	$ 565	$ -		
14	HS	Kitchen Hood Blocking	$ -	$ 456	$ -		
14	CO	Kitchen Hood Blocking	$ -	$ 680	$ -		
15	CL	Verify ERV Operation	$ -	$ 291	$ -		
		Infrastructure					
16	HS	Hot Water Boiler Replacements	$ 533,267	$ 16,077	$ 18,000		
16	ML	Hot Water Boiler Replacements	$ 363,070	$ 5,413	$ 3,998		
17	HS	Hot Water VFDs	$ 279,053	$ 5,521	$ -		
18	HS	Domestic Hot Water Heater Replacement	$ 162,001	$ 1,701	$ 3,150		
19	HS	Chiller Replacement	$ 344,135	$ 740	$ 1,300		
20	CL	Replace Split Systems	$ 188,743	$ 1,797	$ -		
19	HS	Combined Heat and Power	$ 440,822	$ 7,249	$ -	$ 70,000	
20	HS	Rooftop Unit Replacement	$ 227,331	$ 6,156	$ 1,780		
21	HS	Unit Ventilator Replacement (A Section Classrooms)	$ 346,384	$ 4,243	$ 2,576		
22	HS/MS	Roof Scans	$ 11,665	$ -	$ -		
		Sustainability					
23	ALL	Solar Power Purchase Agreement	$ -	$ 140,251	$ -		
		Community Engagement					
24	ALL	Sustainable Jersey for Schools	$ -	$ -	$ -		
25	ALL	Public Awareness Campaign	$ -	$ -	$ -		
		Financial					
26	ALL	Rebates	$ 5,395	$ -	$ -		
27	ML	Direct Install	$ 13,500	$ 19,682	$ -		
		Project Summary:	**$ 4,915,599**	**$ 364,441**	**$ 101,324**	**$ 70,000**	**$ 14,087**

Notes:
(1) Annual Energy Savings includes Electric, Water, Solar, and Gas Savings.
(2) More information on Rebates can be found in section 2.4.

2.2 Financial Summary

The following represents the total, turn-key cost of the Energy Savings Improvement Program based on the scope of work listed on the prior page and Form V from Schneider Electric's RFP Response. The ESIP program with Schneider Electric is a firm fixed price contract, without risk of change orders. Schneider Electric will serve as the primary contractor, responsible for the execution of all scopes of work under the ESIP program.

Category		Cost	Percent of Hard Cost
Estimated Value of Hard Costs [2]:	$	4,915,599	
Project Service Fees			
Investment Grade Energy Audit	$	98,312	2.00%
Design Engineering Fees	$	233,491	4.75%
Construction Management & Project Administration	$	270,358	5.50%
System Commissioning	$	49,156	1.00%
Equipment Initial Training Fees	$	24,578	0.50%
ESCO Overhead	$	344,092	7.00%
ESCO Profit	$	319,514	6.50%
ESCO Termination Fee	$	-	0.00%
Project Service Fees Sub Total	$	675,895	13.75%
TOTAL PROJECT COSTS:	$	6,255,099	27.25%

This program may be funded through a combination of ESIP financing (lease purchase or energy savings obligations) over 20 years, rebates and incentives. There are several remaining variables that may alter the scope of this project, including final scope selection, financing term, interest rate, and incentives and rebates.

2.3 Cash Flow Analysis

ESCO Name: Schneider Electric

Note: Respondents must use the following assumptions in all financial calculations:
(a) The cost of all types of energy should be assumed to inflate at **2.4% fuel oil, 2.2%** electric per year; and natrual gas 2.4%
1. Term of Agreement: **20 years**
2. Construction Period (2) (months): **18 months**
3. Cash Flow Analysis Format:

ESIP Financing
Total Amount $ 6,255,099
District Contributoins $ 50
Direct Instal Costs $ 24,023
Legal/Financing Fees $35,000
Total Amount to be Financed $ 6,314,122

Direct Install
Total Cost $ 80,076
State Clean Energy Share $ 56,053
District Share $ 24,023

Interest Rate to Be Used for Proposal Purposes: **3.45%**

Year	DI Electric Savings	DI Gas Savings	Annual Electric Savings	Annual Natural Gas Savings	Water Savings	Solar PPA Savings	Annual O&M Savings	Energy Rebates/ Incentives	Total Annual Savings	Annual ESIP Costs	Annual Service Costs (3)	Board Costs	Net Cash-Flow to Client	Cumulative Cash Flow
Installation												$ -	$ -	$ -
1	$ 16,053	$ 3,629	$ 32,951	$ 6,076	$ 1,875									
2	$ 16,406	$ 3,716	$ 164,755	$ 30,380	$ 9,373	$ 140,251	$ 45,150	$ 129,051	$ 599,666	$ 595,666		$ 595,666	$ 4,000	$ 4,000
3	$ 16,767	$ 3,805	$ 168,380	$ 31,110	$ 9,598	$ 140,531	$ 46,188	$ 27,210	$ 443,589	$ 439,589		$ 439,589	$ 4,000	$ 8,000
4	$ 17,136	$ 3,897	$ 172,084	$ 31,856	$ 9,828	$ 140,812	$ 47,250	$ 26,564	$ 449,428	$ 445,428		$ 445,428	$ 4,000	$ 12,000
5	$ 17,513	$ 3,990	$ 175,870	$ 32,621	$ 10,064	$ 141,094	$ 48,337	$ 2,585	$ 432,074	$ 428,074		$ 428,074	$ 4,000	$ 16,000
6	$ 17,898	$ 4,086	$ 179,739	$ 33,404	$ 10,306	$ 141,376	$ 49,449		$ 436,258	$ 432,258		$ 432,258	$ 4,000	$ 20,000
7	$ 18,292	$ 4,184	$ 183,694	$ 34,205	$ 10,553	$ 141,659			$ 392,587	$ 388,587		$ 388,587	$ 4,000	$ 24,000
8	$ 18,694	$ 4,285	$ 187,735	$ 35,026	$ 10,806	$ 141,942			$ 398,488	$ 394,488		$ 394,488	$ 4,000	$ 28,000
9	$ 19,105	$ 4,387	$ 191,865	$ 35,867	$ 11,066	$ 142,226			$ 404,516	$ 400,516		$ 400,516	$ 4,000	$ 32,000
10	$ 19,526	$ 4,493	$ 196,086	$ 36,728	$ 11,331	$ 142,511			$ 410,674	$ 406,674		$ 406,674	$ 4,000	$ 36,000
11	$ 19,955	$ 4,601	$ 200,400	$ 37,609	$ 11,603	$ 142,796			$ 416,964	$ 412,964		$ 412,964	$ 4,000	$ 40,000
12	$ 20,394	$ 4,711	$ 204,809	$ 38,512	$ 11,882	$ 143,081			$ 423,389	$ 419,389		$ 419,389	$ 4,000	$ 44,000
13	$ 20,843	$ 4,824	$ 209,315	$ 39,436	$ 12,167	$ 143,367			$ 429,952	$ 425,952		$ 425,952	$ 4,000	$ 48,000
14	$ 21,301	$ 4,940	$ 213,920	$ 40,383	$ 12,459	$ 143,654			$ 436,656	$ 432,656		$ 432,656	$ 4,000	$ 52,000
15	$ 21,770	$ 5,058	$ 218,626	$ 41,352	$ 12,758	$ 143,941			$ 443,505	$ 439,505		$ 439,505	$ 4,000	$ 56,000
16	$ 22,249	$ 5,180	$ 223,435	$ 42,344	$ 13,064	$ 144,229			$ 450,502	$ 446,502		$ 446,502	$ 4,000	$ 60,000
17	$ 23,239	$ 5,304	$ 228,351	$ 43,360	$ 13,378	$ 144,518			$ 457,649	$ 453,649		$ 453,649	$ 4,000	$ 64,000
18	$ 23,750	$ 5,431	$ 233,375	$ 44,401	$ 13,699	$ 144,807			$ 464,951	$ 460,951		$ 460,951	$ 4,000	$ 68,000
19	$ 24,273	$ 5,562	$ 238,509	$ 45,467	$ 14,027	$ 145,096			$ 472,411	$ 468,411		$ 468,411	$ 4,000	$ 72,000
20	$ 24,807	$ 5,695	$ 243,756	$ 46,558	$ 14,364	$ 145,387			$ 480,032	$ 476,032		$ 476,032	$ 4,000	$ 76,000
	$ 24,807	$ 5,832	$ 249,119	$ 47,675	$ 14,709	$ 145,677			$ 487,819	$ 472,730		$ 472,730	$ 15,088	$ 91,088
Totals	**$ 406,655**	**$ 93,981**	**$ 4,083,823**	**$ 768,294**	**$ 237,035**	**$ 2,858,955**	**$ 236,374**	**$ 185,411**	**$ 8,931,111**	**$ 8,840,023**	**$ -**	**$ 8,840,023**	**$ 91,088**	

2.4 Incentives, Rebates, and Curtailment Services

A variety of incentive and rebate programs were evaluated during the development of the Project. Based upon the scope of this project, the following rebates were calculated:

Rebate

Year	PJM EE	Smart Start	CHP	Total
1	$4,394	$101,324	$23,333	$129,051
2	$3,877		$23,333	$27,210
3	$3,231		$23,333	$26,564
4	$2,585			$2,585
Total	$14,087	$101,324	$70,000	$185,411

PJM Energy Efficiency Program (PJM EE):

The Energy Efficiency program is designed to provide financial benefit to the consumer for permanent reductions in electrical load. Examples of energy efficiency projects include upgrading to more efficient lighting, or replacing HVAC systems with more efficient ones, or other ECMs that reduce electrical load.

Buena Regional School District will see permanent reductions in peak kW, primarily from lighting upgrades. After the installation of this Project, Schneider Electric will work to ensure that these incentives are secured on behalf of the school district.

NJ Clean Energy Program – Smart Start

The Smart Start Program provides prescriptive rebates for specific equipment changes, such as lighting upgrades, new hot water heaters, or installation of variable frequency drives (VFDs). To learn more about the Smart Start Program, please visit:

http://www.njcleanenergy.com/ssb

NJ Clean Energy Program – Combined Heat and Power:

One of the goals of the State of New Jersey is to enhance energy efficiency through on-site power generation with recovery and productive use of waste heat, and to reduce existing and new demands to the electric power grid. The Board of Public Utilities seeks to accomplish this goal by providing generous financial incentives for Combined Heat & Power (CHP) installations.

NJ Clean Energy Program – Direct Install

Existing small to mid-sized commercial and industrial facilities with an average peak electric demand that did not exceed an average of 200 kW in the preceding 12 months are eligible to participate in Direct Install. Applicants submit the last 12 months of electric utility bills indicating that they are below the demand threshold and have occupied the building during that time. Buildings must be located in New Jersey and be served by one of the state's public, regulated electric or natural gas utility companies.

Schneider Electric has worked with Hutchinson Mechanical to create the direct install scope of work. This scope which is verified by the Board of Public Utilities will provide $19,682 in annual savings.

PJM Capacity Market Program (Demand Response):

The capacity market program stems from the need for utilities to balance electric supply with electric demand on the grid. Because there is a finite amount of generating capacity, demand response was created to allow consumers to shed demand when needed by PJM. Consumers must work with Curtailment Service Providers (CSPs) to shed electrical load when needed by PJM, in order to generate revenue. The load-shaving can be done through a variety of measures including energy efficiency, on-site generation, or manual shutdown.

Based upon review of historical demand, it has been deemed that demand response may not be a viable option for the District under the new rules. Through the implementation of the energy conservation measures (ECMs) and the solar Power Purchase Agreement included in this Project, the base electrical load will be drastically reduced, to the point where the District may not qualify for a Demand Response program.

3.0 Energy Conservation Measures

3.1 ECM Descriptions

Learning Environment

LED Lighting

Overview

A large amount of the existing lighting at Buena Regional School District campuses is inefficient, mostly consisting of interior T8 fluorescent and incandescent lighting and High Intensity Discharge (HID) fixtures on the exterior of the schools. Replacing less efficient lighting with high-efficiency fixtures will result in significant energy savings from the difference in fixture wattage as well as cooling savings from a reduced amount of heat released into the building from light fixtures.



Existing T8 Lighting

Existing lighting systems are inefficient.

Scope

Some campuses already have implemented high-efficiency LED lighting and occupancy sensors. Schneider Electric proposes expanding the retrofit of less efficient interior and exterior fixtures with high-efficiency LED tubes and fixtures at all campuses and implementing occupancy sensors where not already installed to control burn hours when spaces are not occupied.

Site	Interior Lighting Retrofit	Add Occupancy Sensors	Exterior Lighting Retrofit
Buena Regional HS	X		X
Buena Regional MS	X	X	X
Cleary ES	X	X	X
Collings Lakes ES	X		X

Please refer to 7.1 Savings Methodology for the lighting line by line.

Air Sealing Improvements

Overview

This ECM addresses the shell of the building and how well it is keeping conditioned air in and ambient air out. Our onsite testing and analysis of energy consumption indicate there is an opportunity to improve the indoor air quality, occupant comfort, and energy use by upgrading the existing air barrier systems. A tighter Building Envelope will provide the following advantages:

- Drafts will be reduced providing greater comfort for the building occupants. A tighter building envelope will lower the possibility of “hot” or “cold” spots brought on by unconditioned air infiltrating into conditioned spaces.
- Decreased Energy Consumption - Less conditioned air will be lost through the building envelope and the Heating and Cooling equipment will operate less to maintain the set point of the conditioned space. This will decrease the energy consumed and save on energy costs.
- Improved Air Quality – Decreasing infiltration of contaminated air promotes less humidity and greater air quality. This allows for the existing systems to run at peak performance and maintain the highest level of air quality for the occupants.
- Reduced Maintenance Costs – Reducing the “runtime” will increase the operating life of the heating and cooling equipment and increase the performance of new equipment.

Scope

The following is a breakout of the Building Envelope scope by facility:

Task	High School	Middle School	Collings Lakes ES	Milanesi ES	Cleary ES	Total Quantity
Buck Frame Air Sealing (LF)	432					432
Caulking (LF)			13	338		351
Door Weather Striping - Doubles (Units)	22	19	5	5	13	64
Door Weather Stripping - Singles (Units)	11	7	3	2	4	27
Overhang Air Sealing (LF)				8		8
Overhang Air Sealing (SF)			78		20	98
Roof-Wall Intersection Air Sealing (LF)	1841		700	516	1016	4073
Roof-Wall Intersection Air Sealing (SF)			112			112
Wall Air Sealing (SF)					189	189
Window Weatherization (LF)				460		460

Building Automation System

Building Automation System Improvements

Solution Overview

HVAC scheduling is currently done using a very primitive graphics front end package. Equipment scheduling is very difficult to setup and view. This lack of resolution control results in the entire building operating in occupied mode even if only a few spaces are being used.

Energy Conservation Opportunities

The existing workstation is outdated and needs to be upgraded in order to integrate into the central, remote access building automation system. The front end will be updated and will include all existing points. This scope will include all necessary components and generation of graphics. Expected control sequences and operations for applicable areas include but are not limited to:

- Enable/Disable Control
- Occupied/Unoccupied Mode of Operation
- Dynamic Temperature Reset
- Alarm Reporting
- System Monitoring (Set Point, Return/Supply Temperatures, Status, etc.)
- Morning Warm-up/Cool-down Mode of Operation
- Heating/Cooling Mode
- Outside Air Damper Modulation
- System Trending



Figure 1. Upgraded Workstations Provide Smart User Interfaces

Smart HVAC control is provided by upgraded workstations that enable you to monitor, measure, and optimize your building's performance – saving energy and money.

Impact

The following highlights the key benefits of this solution:

- *Reduce Energy Costs* – Control strategies use energy more effectively.
- *Better Visibility* – Graphics, remote monitoring, and alarms help identify and prevent issues.
- *Reduce Maintenance Calls* – Updated workstations allow users to identify temperature issues more quickly through interfacing with the Direct Digital Controls (DDC).
- *Extends Equipment Life* – With reduced run times, equipment wear and tear is lessened.

Staff Training for Building Management Systems

Solution Overview

Schneider Electric will provide training for systems and equipment installed as part of the energy performance project. Schneider Electric will provide scope specific training for the building automation scope due to staff lack of training. This training will occur in at least two separate occurrences. The first will be a detailed informational session. The second will occur after staff have had time to "get their feet wet". This training will cover more than the ECM scope but will cover more broad topics about building automation systems.

Energy Conservation Opportunities

For convenience, Schneider Electric intends that all training will be conducted at the facility where Schneider Electric personnel, in-house personnel and potential subcontractors can be involved with the actual equipment installed. Local training will minimize travel costs and time away from the facility by the operations staff. On-site training will be available for any building end users and not limited to only facility operators and technicians. There is no limit as to the number of participants for this training. The facilities' administration will be asked to provide a list of those individuals that should receive training and to assist in notifying these individuals. The client will also be requested to provide any required meeting space.

The goal of the training is to avoid maintenance staff or end user frustration in dealing with systems that may be unfamiliar. It is essential that the members of the maintenance staff who receive training perceive it as vital, providing the tools they need to understand the equipment and systems, and possibly broadening their skill sets. Should training lend itself to videography or mixed media for future use, Schneider Electric can provide that form of documentation of the training at the request of the client. Training updates and repeat courses will be available to address staff changes or additions. Training and operational advising is an integral part of our Measurement and Verification process to assure performance throughout the guarantee period. *Re-training and updates are included in Schneider Electric's standard Annual Services (PASS Program).*

Training will begin during the implementation phase of the project so that the technicians become familiar with the equipment and the methods and specifics of the individual installations. Larger, more formal sessions will occur as the individual ECMs are commissioned. Certain facilities staff members may be included in the training of others to provide valuable input on system experience. Lessons learned from past maintenance/operation and training tips in "preferred approaches" that have been effectively used to maintain system quality and efficiency will also be included.

Finally, Operation and Maintenance manuals for all installed ECMs will be assembled with input from the facilities staff to make these documents a useful part of the ongoing operation of the building systems. A manual will be prepared for each building and will include:

- A list of all installed equipment,
- Warranty start and end dates,
- Preventive maintenance (PM) task lists for each piece of installed equipment,
- PM parts information such as belt and filter sizes and quantities, and
- Manufacturer's equipment-specific maintenance and operation literature.

Information will be included in a format that provides the client with easy access to the instructions or parts data they may require.

Impact

The following highlights the key benefits of this solution:

- Staff training on new equipment and service support.
- Consistent training for all staff and employees.
- Standardized operating and maintenance manuals (O&M).
- Public visibility to energy efficiency project.
- Increased energy awareness by operations staff, building employees and visitors.

Building Pressure Sensors

Overview

The district currently does not have any building pressure sensors in the schools. Installing building pressure sensors in key areas will allow the district to ensure that the buildings stay positive to the outside which will help decrease the amount of unconditioned air entering the buildings.

Humidity Sensors

Overview

The district currently has very few humidity sensors that monitor the humidity levels inside the schools. This scope would install humidity sensors for the district to use in monitoring for future issues. These sensors will be integrated into the building automation system.

Demand Controlled Ventilation

Solution Overview

Building ventilation management is the most far reaching and cost effective opportunity presenting itself in energy management and comfort control. Any space that uses more ventilation than its occupancy levels require results in excess energy consumption from conditioning unnecessary outside air. Air distribution systems are designed to provide a specified quantity of ventilation air corresponding to the maximum occupancy conditions for the space served. However, there are periods throughout the day when individual spaces within the building may be partially occupied or even unoccupied, yet ventilation rates are maintained as if the space was fully occupied. Demand Controlled Ventilation (DCV) can greatly reduce the energy consumed by the HVAC system by providing the right level of ventilation.

Scope

The following spaces will receive demand controlled ventilation

Middle School

- Gym
- Cafeteria
- Auditorium

Milanesi

- Library

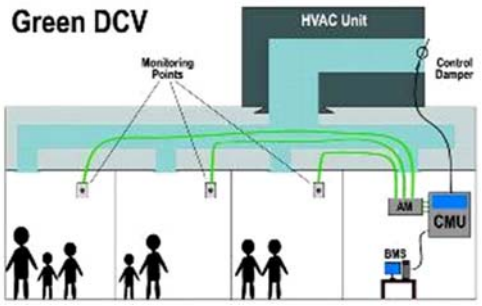


Figure 2. Example of Demand Controlled Ventilation

Demand controlled ventilation varies outside air rates based on building occupancy.

Impact

The following highlights the key benefits of this solution:

- *Reduce Energy Costs* – Less energy for heating and cooling is required by modulating outdoor air levels based on actual space occupancy.

- *Improve Ventilation Control* – Monitoring carbon dioxide levels will ensure the proper amount of outside air is introduced.

Replace Existing Pneumatics with DDC

Solution Overview

Pneumatics use compressed air to automate the building's HVAC operation. Clean, dry air is essential for proper operation of pneumatic systems. Pneumatic building controls also require extensive preventative maintenance including yearly calibration of pneumatic thermostats and receiver-controllers. The air compressors, filters, drains, receivers, and dryers must all be kept fully functional to prevent contamination of the pneumatic distribution lines with oil or water which can result in irreparable damage to the pneumatic thermostats, controllers, actuators, and other end-devices.

When not properly maintained, the pneumatic system's set points will drift significantly and cause severe comfort issues and dramatic increases in energy consumption. In addition, the pneumatic system provides little or no feedback to facilities staff indicating the condition and operating mode of the mechanical equipment resulting in less efficient equipment operation and more difficulty in troubleshooting problems. As such, pneumatic control strategies are often very basic and unsophisticated. Direct digital controls will provide opportunities for the implementation of new control strategies to improve both the energy efficiency of the systems and occupant comfort.

Scope

Milanesi Elementary School

For this ECM, all existing pneumatic controls shall be replaced with new field bus controllers. Run all new communication wiring between newly installed controllers. Replace all pneumatic damper actuators with new electronic actuators. Replace all existing pneumatic hot water control valves with new electric actuator/valve body assembly.

Impact

The following highlights the key benefits of this solution:

- *Reduce Energy Costs* – More versatile scheduling capabilities drive energy savings.
- *Improve Comfort* – Calibrated thermostats provide tighter space temperature control.
- *Better Visibility* – Identify temperature issues more quickly with DDC.
- *Reduce Maintenance* – Eliminate the work associated with maintaining pneumatic air system components.



Figure 3. Replacing Obsolete Pneumatic Controls Offers Energy and Maintenance Savings

Old or obsolete pneumatic controls provide little in the way of feedback or sophisticated strategies for HVAC control. Replacing pneumatics with integrated DDC reduces maintenance costs while improving energy management and space comfort.

Humidity Control

Reheat Coils

Overview

The existing water source heat pumps do not have reheat control. The humidity level inside the school can get high enough to cause occupant discomfort and allow for mold to grow. Schneider Electric proposes to install a reheat coil using the water source heat pump loop. This reheat coil will help the building achieve lower levels of humidity.

Scope

The heat/cooling water will be diverted into a new coil located after the water source heat pump loop to provide a level of reheat to the space. This measure will help remove moisture from the air.

Schneider Electric plans to install this scope on (19) heat pumps spaced throughout the school.

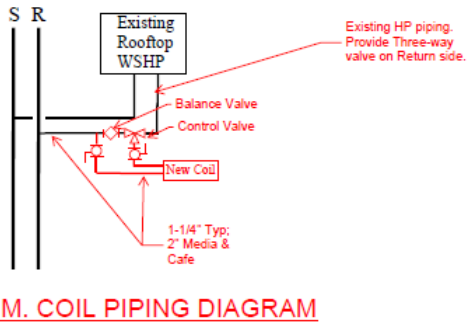


Figure 4. Dehumidification Coil Piping Diagram

By installing a new coil in the airstream, the building will be able to enter into dhimmification mode for longer periods of time.

Efficiency

Water Fixture Improvements

Overview

Upgrades to domestic water fixtures such as sink faucets, toilets and urinals, shower heads, and kitchen equipment produce water savings and energy savings associated with generation of hot water. This is achieved by replacing existing equipment with low-flow alternatives. In addition, by installing a refrigeration line heat exchanger in ice machines the efficiency is increased, resulting in energy savings from the smaller amount of work required to produce ice.

Scope

Although Buena Regional High School is served by well water, the district is billed for sewer usage based on the amount of water used on campus. Schneider Electric proposes a comprehensive water retrofit including restroom and kitchen fixtures as well as ice machines at the High School.

Retrofit	Quantity
Toilet Retrofit	56
Urinal Retrofit	26
Restroom Sink Aerator	79
Kitchen Hand Sink Retrofit	2
Kitchen Dish Sprayer Retrofit	2
Kitchen Prep Sink Retrofit	1
Ice Machine Heat Exchanger	3

Pipe Insulation

Overview

Better insulated distribution systems allow mechanical equipment to run less often and still maintain the desired interior environment. The results of a successful mechanical insulation project are reduced fuel consumption, reduced utility costs and improved occupant comfort.

Scope

The following is a breakout of the Building Envelope scope by facility:

Task	High School	Middle School	Milanesi ES	Total Quantity
Butterfly Valve Insulation (Units)	1		3	4
Check Valve Insulation (Units)	1			1
Control Valve Insulation (Units)	2		1	3
End Cap Insulation (Units)	1		3	4
Flange Insulation (Units)	40	10	26	76
Gate Valve Insulation (Units)	15		10	25
Pipe Fitting Insulation (Units)	6		10	16
Pump Insulation (Units)	1	5	4	10
Straight Pipe Insulation (LF)	26		26	52
Strainer Insulation (Units)	1		1	2
Suction Diffuser Insulation (Units)		2		2

Walk-in Refrigeration Controls

Overview

The walk-in coolers and freezers utilize an indoor evaporator, outdoor condensing unit, and electric door heaters to maintain the cooler and freezer temperatures and the door surface temperatures to avoid condensation and ice formation. This measure will install efficient Electronically Commutated Motors (ECM) on the indoor evaporator fans to replace the permanent split capacitor (PSC) motor. The ECM motor can maintain an efficiency of 65-75% versus a PSC motor of 12-45% efficiency. The electric door heaters currently are “on” all the time. This measure will also install a controller that measures the ambient temperature and relative humidity. It performs internal calculations to pulse the electrical power to the heaters such that the surfaces are kept above the temperature where moisture will form on the cooler and freezer door jambs and surrounding surfaces.

Scope

Buena Regional High School

2 Cooltrol® zones will provide savings by controlling the temperature, evaporator fans and door heaters on the entry door of a walk-in cooler and freezer. Door heaters on 1-door freezer will be controlled. In addition, the motors will also be replaced with our EC motors (4 motors total).

Buena Regional Middle School

2 Cooltrol® zones will provide savings by controlling the temperature, evaporator fans and door heaters on the entry door of a walk-in freezer. Door heaters on 1-door freezer and 1-door cooler will be controlled.

Collings Lake Elementary School

2 Cooltrol® zones will provide savings by controlling the temperature, evaporator fans and door heaters on the entry doors of walk-in coolers and freezers. Door heaters on 1-door freezer and 1-door cooler will be controlled. In addition, the motors will also be replaced with our EC motors (1 motor total).

Cleary Elementary School

2 Cooltrol® zones will provide savings by controlling the temperature, evaporator fans and door heaters on the entry doors of a walk-in cooler and freezer. Door heaters on 1-Door Freezer and 1 Door Cooler will be controlled.

Milanesi Elementary School

1 Cooltrol® zones will provide savings by controlling the temperature, evaporator fans and door heaters on the entry doors of a walk-in cooler and freezer. Door heaters on 1-Door Freezer will be controlled.

High Efficiency Transformers

Overview

This measure replaces existing secondary transformers with new high efficiency transformers. With the age and condition of many of the electrical transformers, replacement with new equipment is recommended for efficiency improvement as well as reliability and safety. New transformers have lower losses across the transformer core.

Secondary transformers reduce voltage from distribution level, to building level voltage (normally from 480V to 120/208V) to maintain power in the facility. These transformers operate continuously; therefore, utilizing new, high efficiency transformers results in long term, steady energy savings.



Figure 5. High Efficiency Transformer

Scope

A transformer survey was performed during the investment grade audit and an inventory of existing equipment was compiled. Savings were calculated based on replacing this equipment with higher efficiency transformers. The resulting scope provides energy savings sufficient to fit into the project:

Transformer Summary

Building Transformer Summary		
kVA	Total Quantity	Replacement Quantity
Buena Regional HS		
15	2	2
50	1	1
150	2	2
300	1	1
Collings Lakes ES		
30	1	1

Kitchen Hood Blocking

Overview

At Buena Regional High School and Collings Lakes Elementary School, there are kitchen exhaust hoods that are open directly to the exterior of the building. These hoods do not have powered vents and currently do not have cooking equipment below them that are in need of direct venting to the exterior. This opening allows conditioned air to leak out of the building due to positive building pressure, resulting in additional load on the HVAC system.

Scope

By blocking off the opening in the exhaust hood, the air leak will be stopped. This will eliminate the unnecessary heating/cooling load, resulting in additional occupant comfort and some energy savings.

Verify Energy Recovery Ventilator Operation

Overview

Collings Lakes Elementary School is conditioned by Water-Source Heat Pumps (WSHP) as well as four Energy Recovery Ventilator (ERV) units that provide a fixed amount of outside air to the building spaces. These ERV units are equipped with heat exchangers between the exhaust and outside air ducts to pre-condition the air being brought into the building.

Scope

Schneider Electric recommends investigating and re-commissioning the ERV units to verify they are operating properly and at maximum efficiency. This may include bringing any units online that have been turned off.



Figure 6. Energy Recovery Units

These units were observed to be turned off during the site visit.

Infrastructure

Hot Water Boiler Replacements

Overview

High School

The existing boiler system contains two 6,500 MBH cast iron sectional boilers, along with existing 6 and 8-inch piping, three-way control valves, rol-o-trol (air separator) and compression tanks. This ECM shall demolish the boiler plant. New boilers (3) will be condensing style with flues with wall penetrations and caps. Each boiler shall include isolation valves, strainer/suction diffuser, check valve as well as 2-way control valve. Install on existing boiler pad, patch as required from existing boiler. Provide new coalescing air-dirt separator, and expansion tank, and chemical feed tank (shot feeder) and connect to pumps. New boiler efficiency to be greater than 87% at full fire.



Buena Regional HS Boilers

The existing boilers are inefficient and would benefit from hot water plant optimization.

Milanesi

There is an original 1958 Boiler 3,100 MBH that contains asbestos insulation and is beyond its useful life. Currently there are 3 sets of pumps, in the mechanical rooms. Together they are approximately 200 GPM. This ECM will combine the pump systems into a single system and provide (3) pilot operated differential pressure balance valves for of the three loops. The existing 3,100 MBH will be replaced with (1) new 1,999MBH boiler. New flue will be installed. Boiler will be installed on existing boiler pad, patched as required from existing boiler. A new coalescing air-dirt separator, expansion tank, and chemical feed tank (shot feeder) will be provided. New boiler efficiency to be greater than 87% at full fire.

Note: This scope is in coordination with an asbestos abatement project. This measure assumes a certain level of demolition and complete asbestos abatement by the district. For more information please refer to the appendix.

Hot Water VFDs

Overview

Hydronic systems, and the motors that serve them, are sized to meet peak heating conditions which typically occur for only a few hours each year. Subsequently, the pumping systems will spend most hours of the year operating at part-load conditions. Fixed speed systems provide constant flow with the pump motor operating at full speed. Temperature setpoint control in fixed flow systems is achieved by varying the temperature of the fluid to meet changing heating or cooling loads. Energy used by the pump motor, however, may be reduced by varying the flow in response to varying heating and cooling loads in the space with the application of variable frequency drives (VFDs). The main selection criteria for VFD applications are the size of the motor, the annual run time, and the amount of mechanical work necessary to take advantage of the variable flow operation afforded by VFDs.



Figure 7. Typical Variable Speed Drives

VFDs or variable speed drives come in a variety of motor sizes and applications.

Scope

High School

The current hot water pumps are sized for 100% of the flow and do not have VFD rated motors. The current pumps are 750 GPM @ 82 FT head, using a 20 HP motor. The existing unit ventilators are 2-way valves, the heating and ventilator units have 3-way valves.

This scope would replace the pumps with (2) 675 GPM end suction pumps @ 80 FT HD with 20 HP like TACO FI3011D. New pump specialties (butterfly valves, check valve, & flow measuring device, flex connections, and suction diffuser) will be provided. Convert (10) HV units and allow (2) to remain 3-way.

Domestic Hot Water Heater Replacement

Overview

The existing High School domestic hot water heaters and storage tank (shown to the right) are inefficient with a tube bundle from the boiler plant that appears to no longer be used. This allows for a large amount of storage losses.



Figure 8. Domestic Hot Water Storage Tank

This tank will be removed and (3) new boilers with tanks will be installed.

Scope

High School

Schneider Electric proposes to demolish the water heaters and tank and replace them with (3) 120 gallon 300 MBH condensing water heaters manifolded together. New flues will be provided and installed.

This measure will generate hot water more efficiently and reduce the surface area of the system, reducing heat standby losses significantly. New minimum thermal efficiency to be 94% or greater.



Existing Hot Water Heaters

The existing hot water heater system is inefficient and has significant storage losses.

Chiller Replacement

Overview

At Buena Regional High School an existing 65-ton chiller serves the Auditorium air handlers. This chiller is very old and near the end of its useful life. In addition, it uses a single stage compressor and inefficient chilled water pump. The result is an inefficient system that short-cycles.



Figure 9. HS Chiller

The HS Auditorium Chiller is past its expected life.

Scope

The proposed scope includes replacing the existing system with a new, higher efficiency multistage scroll chiller and new chilled water pump, as well as a buffer tank to increase system volume and reduce short-cycling. The new, higher efficiency equipment will be able to operate in a more optimized manner than the existing system, resulting in energy savings.

Replace Split System

Overview

The existing (4) Split system located on the roof of and above the ceiling in Cleary Elementary are dated and past their expected operational life. This ECM will remove the dated split system and install new Water Source Heat Pumps that will connect with the existing water source heat pump loop.

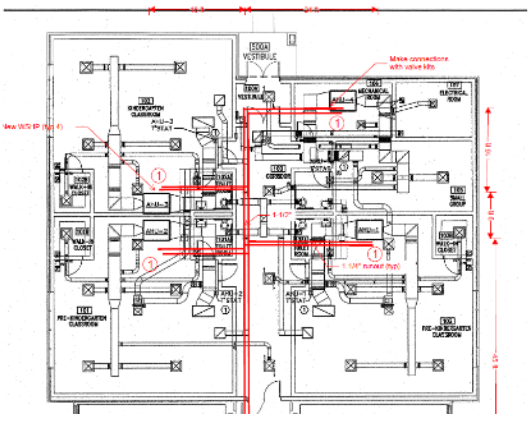


Figure 10. Water Source Heat Pump Loop Addition

Adding the new classrooms to the water source heat pump loop will save additional energy over straight air source heat pump replacement.

Scope

Demolish existing DX/electric heat split systems that serve the addition classrooms. Provide new WSHP's with humidity control (HGRH) and connect to the existing WSHP loop. Rework existing duct and ceiling to accommodate installation of new equipment. Demolish a portion of the heat pump loop and replace with larger piping. Provide new piping and coil connections to new WSHP's. Rebalance existing pump to accommodate additional flow.

Combined Heat and Power

Overview

The thermodynamic cycles of traditional fossil fuel burning power plants limit the thermal efficiency of electricity production to approximately 40%. The remainder of the thermal energy produced by burning fossil fuels are lost to internal process demands or rejected from the system through cooling towers.

Localized power generation provides the opportunity to recover useful waste heat that would otherwise be lost to the atmosphere. A combined heat and power (CHP) system generates electricity while providing heat to the building. The output of the microturbines would offset the amount and cost of purchased electricity. The overall system efficiency of microturbines operating in a combined heat and power mode can be very high.

Scope

We propose to provide a combined heat and power (CHP) system at Buena Regional High School to generate power and capture the byproduct heat to use in the domestic hot water and heating hot water system. A 35 kW natural gas engine generators will feed power back to the building.

This heat and power system is approximately 88% efficient based on the ratio of input energy to used output energy. The electricity generated at power plants is typically less than 40% efficient.

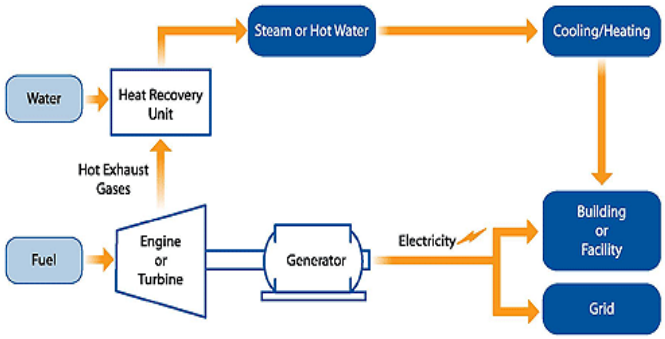


Figure 11. Combined Heat and Power Process Flow

CHP can use natural gas to efficiently and concurrently generate electricity and recover waste heat for HVAC uses.

Rooftop Unit Replacement

Overview

At Buena Regional High School, the library is served by an existing 30-ton Direct Expansion (DX) cooling rooftop unit. The heating for this unit is provided with a separate glycol pump and heat exchanger served from the school boiler plant. This unit is failing and needs to be replaced.



Figure 12. Rooftop unit for library

Scope

The proposed solution is to replace the existing system with a new higher efficiency DX-cooling and natural gas furnace rooftop unit with an energy recovery wheel. The unit will be a single-zone air handler with variable frequency drives on the supply and relief fans, so the unit can operate as a variable air volume system. The new system will have full economizer capability and the energy recovery wheel will allow outside air to be pre-conditioned. Replacing the existing hot water heating with a gas furnace will eliminate the need for the dedicated glycol loop pump. The result of all the listed changes is a significant amount of energy savings.

Unit Ventilator Replacement (Section A)

Overview

The spaces in area A at Buena Regional High School are currently served by Unit Ventilators (UV) with single-speed compressor standalone cooling that is inefficient and nearing the end of its useful life. The units should be replaced with a higher efficiency solution.

Scope

Replace 1970s vintage HW/DX Unit Ventilators with new HW/DX units. Office and practice rooms will get new VRF fan coils and cassettes. A new VRF Condensing unit will be located on the roof. Demolish existing DX (music only)/HW unit vents, condensing units and above ceiling fan coil unit in music and art rooms. Maintain existing HW piping for reconnection to UV's. Provide new unit vents, FCU and ceiling cassette. Provide new refrigerant piping and control wiring. Provide additional roof support for new condenser to be located on roof.

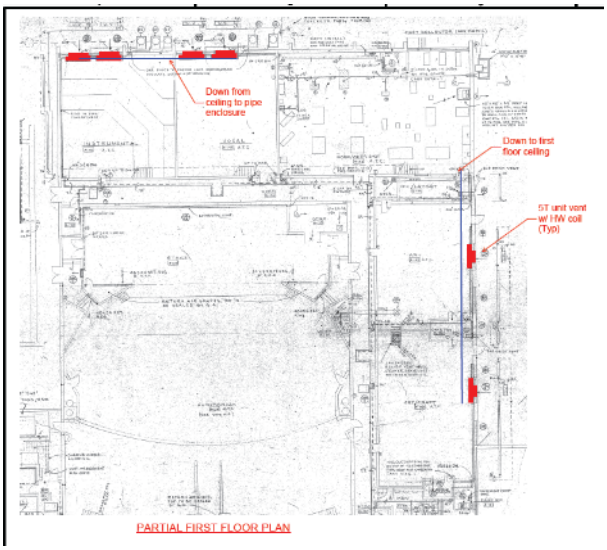


Figure 13. Classrooms near the auditorium being addressed as part of this scope of work.

Roof Scans

Overview

The development of this Energy Savings Plan included the evaluation of the High School and Middle School roof to aid in identifying a solution for solving the roofing issues at each building. The decision to invest in these evaluations was made with Buena Regional administration. After further development and discussion with Buena Regional administration, it was decided to move forward with more project scope related to the boilers at Milanesi and High School.

Sustainability

Solar Power Purchase Agreement

Overview

The district has entered into a contract with Synnergy LLC for solar. This solar is planned to capitalize on the remote net metering program to provide solar benefits to all the schools. Please see 7.1 for energy savings calculations.

Community Engagement

Sustainable Jersey for Schools

Overview

Our goal is to help Buena Regional School District achieve Sustainable Jersey for Schools certification in the most cost-effective manner possible. To that end, we are currently assisting the District through the application process, completing sustainability actions, and uploading write-ups and documentation to the Sustainable Jersey portal. The following actions can be completed immediately.

Action	Possible Points
Energy Tracking & Management	Variable: 10,20
Energy Audit - PRIORITY	Variable: 5,10,15,20
School Carbon Footprint - PRIORITY	10
Sustainable Energy Transition Plan	Variable: 10,20
TOTAL:	**40 - 70**

The following actions have been identified that we can assist the District with for future certification cycles. These actions require further analysis to be deemed economical.

Action	Possible Points	Required Actions
Buy Renewable Electricity	10	New energy sourcing contracts
Onsite Renewable Generation System - Solar	Variable: 5,10,15,20,30,40	Installation of solar PV
Building Efficiency Measures PRIORITY	Variable: 5,10,20,30	Installation of energy conservation measures through ESIP or capital projects
TOTAL:	**20 - 80**	

Public Awareness Campaign

Overview

Our goal is to provide Buena Regional School District with the tools and resources to communicate their achievements to their constituents. The following description highlights some public awareness strategies that could be utilized. During the installation, we would collaborate to create a plan based on the stakeholders and communication strategies are important to the District.





2015 & 2016 New Jersey Governors Environmental Excellence Award Winners

On behalf of our clients, we have submitted and won this prestigious award in the Clean Air category for the past two years. This has brought significant positive press and recognition to Delran Board of Education and Salem Community College.

Stakeholders

An effective communication plan depends on identifying which stakeholders are most important to engage with, such as:

- Students
- Teachers
- Staff
- Parents
- Board of Education
- Governing Officials
- Taxpayers and the community at large
- The state
- Other school districts

Potential Strategies

- Create a District Energy Policy and a culture change about how people view and use energy within the District.
- Create a website or dashboard that highlight's the District's achievements. For an example, please click here.
- Social Media – Facebook, Twitter, and blog campaigns to create public engagement.
- Media outreach – This could involve press releases, an e-blast to parents and the community, and pitch to media outlets and trade associations.
- Public launch event – This could involve local government stakeholders, a ribbon-cutting, a tree planting, or other activities.
- Energy University – A free, online, educational resource run by Schneider. We offer more than 200 courses to help you identify, implement, and monitor efficiency improvements within your organization. The program is self-paced and available on-demand.

Financial

Rebates

Overview

Schneider Electric will assist the district in getting all applicable rebates for the project. If desired by the district, Schneider Electric can host a public check presenting event similar to one shown to the right for Salem Community College.

Please see the section 2.4 of this report for rebates specific to this project.



Figure 14. Sample Large Check Event.

Schneider would recommend doing an event for Buena Regional School District that would showcase the District's efforts to maximize available grants.

Direct Install Scope

Overview

Please see the direct install energy assessment tool reports located in Appendix 7.4.

3.2 ECMs Evaluated but Not Included

The following ECMs were listed in the LGEA and were reviewed as part of the ESP and were not included for the project.

School	ECM #	ECM Name	Notes
High School	LGEA #6	Premium Efficiency Motors	ECM did not generate sufficient savings to justify cost.
High School	LGEA #7	Install VFD on VAV HVAC	Customer was interested in replacing RTUs instead
High School	LGEA #9	Implement Demand Control Ventilation	ECM did not generate sufficient savings to justify cost
High School	LGEA #10	Vending Machine Control	Owned by Food Service Company
Middle School	LGEA #6	Install VFD on CV HVAC	Installation of DCV controls was considered a higher priority.
Middle School	LGEA #7	Install Low-Flow Domestic HW Devices	Water is provided to the building through well and septic field.
Cleary ES	LGEA #6	Install VFD on CV HVAC	Replacement of Split System HVAC was considered higher priority
Cleary ES	LGEA #7	Install VFDs on HW Pumps	Insufficient Payback
Cleary ES	LGEA #9	Vending Machine Control	Owned by Food Service Company
Collins Lake ES	LGEA #4	Install Low-Flow Domestic HW Devices	Water is provided to the building through well and septic field.
Collins Lake ES	LGEA #6	Vending Machine Control	Customer did not have sufficient number of units to justify cost.
Milanesi	LGEA #5	Install VFD on CV HVAC	RTU replacement was considered a higher priority.
Milanesi	LGEA #6	Install VFD on CHW Pumps HVAC	Due to chiller not being replaced, this ECM was also removed.
Milanesi	LGEA #7	Install VFD on HW Pumps HVAC	Included in boiler scope.
Milanesi	LGEA #8	Install High Efficiency Chillers	Cost prohibitive.
Milanesi	LGEA #9	Vending Machine Control	Owned by Food Service Company

4.0 Energy Savings

4.1 Baseline Energy Use

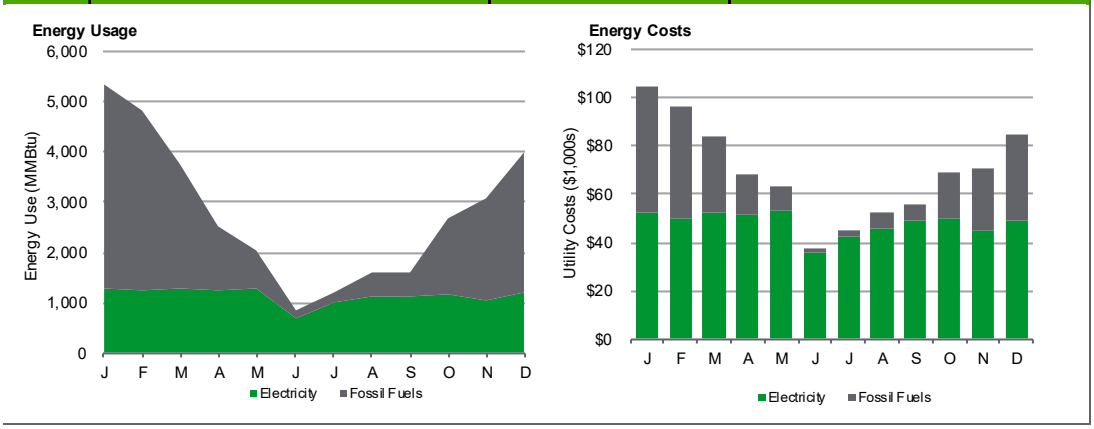
This baseline includes all schools in Buena Regional School District. This baseline was created by taking several years of utility data and utilizing the following:

- Prorating the usage into clean monthly bins
- Weather normalizing the baseline to represent a typical meteorological year

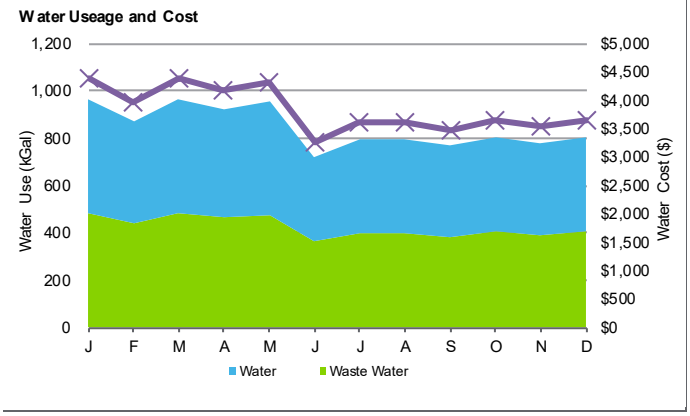
Some historical gas cost data was not available for analysis, resulting in a larger than actual cost/therm in the following tables.

Due to billing structure at Collings Lakes ES, some actual demand data was not available for analysis, resulting in lower than actual demand shown for the baseline period. Building models for Collings Lakes ES were tuned to the actual demand.

	Electricity			Fossil Fuels		Energy Total		
Month	Energy Use	Billed Demand	Cost	Energy Use	Cost	Energy Use	Billed Demand	Cost
mmm	*kWh*	*kW*	*$*	*MMBtu*	*$*	*MMBtu*	*kBtu/hr*	*$*
Jan	381,567	1,102	$52,347	4,052	$52,058	5,354	3,762	$104,405
Feb	362,113	1,126	$49,946	3,602	$46,258	4,838	3,844	$96,204
Mar	381,743	1,212	$52,214	2,447	$31,659	3,750	4,137	$83,873
Apr	366,568	1,292	$51,380	1,274	$16,688	2,525	4,409	$68,068
May	380,869	1,394	$53,630	723	$9,500	2,023	4,759	$63,131
Jun	202,142	1,270	$35,502	161	$2,233	851	4,334	$37,735
Jul	295,802	1,107	$42,223	207	$2,805	1,216	3,778	$45,028
Aug	327,450	1,167	$45,728	477	$6,278	1,595	3,985	$52,007
Sep	335,482	1,427	$49,501	453	$5,995	1,598	4,872	$55,496
Oct	341,487	1,405	$49,687	1,508	$19,424	2,673	4,795	$69,110
Nov	306,274	1,229	$44,703	2,021	$25,989	3,066	4,195	$70,692
Dec	349,808	1,067	$48,758	2,791	$35,911	3,985	3,641	$84,668
Year	4,031,307	14,800	$575,619	19,715	$254,799	33,474	50,511	$830,418



	Waste Water		Water
Month	Water Use	Cost	Water Use
mmm	*kGal*	*$*	*kGal*
Jan	483	$4,385	483
Feb	436	$3,961	436
Mar	483	$4,385	483
Apr	462	$4,188	462
May	477	$4,328	477
Jun	361	$3,273	361
Jul	396	$3,593	396
Aug	396	$3,593	396
Sep	383	$3,477	383
Oct	403	$3,657	403
Nov	390	$3,539	390
Dec	403	$3,657	403
Year	**5,073**	**$46,035**	**5,073**



Site Name	Buena Regional HS					
Project square footage	166,090					
Total building square footage	166,090				Total EUI	87.6
Percentage of Total site area	100%				Total Utility Cost Index	$2.11

Fuel Type *Fuel*	Utility Usage *Value*		Utility Demand *Value*		Utility Cost *$*	Percentage of Total *%*
Electricity	1,240,222	kWh	4,969	kW	$174,572	50%
Natural Gas	103,211	therm			$130,469	37%
Water	5,073	kGal			$46,035	13%
Total	**14,554**	**MMBtu**	**16,954**	**kBtu/hr**	**$351,076**	

Site Name	Buena Regional MS					
Project square footage	92,335					
Total building square footage	92,335				Total EUI	112.6
Percentage of Total site area	100%				Total Utility Cost Index	$2.93

Fuel Type *Fuel*	Utility Usage *Value*		Utility Demand *Value*		Utility Cost *$*	Percentage of Total *%*
Electricity	1,401,335	kWh	5,438	kW	$196,251	73%
Natural Gas	56,167	therm			$74,043	27%
Total	**10,399**	**MMBtu**	**18,555**	**kbtu/hr**	**$5,814**	

Site Name	Cleary ES					
Project square footage	56,700					
Total building square footage	56,700				Total EUI	66.9
Percentage of Total site area	100%				Total Utility Cost Index	$2.02

Fuel Type *Fuel*	Utility Usage *Value*		Utility Demand *Value*		Utility Cost *$*	Percentage of Total *%*
Electricity	692,444	kWh	2,489	kW	$95,517	83%
Natural Gas	14,272	therm			$19,081	17%
Total	**3,791**	**MMBtu**	**8,494**	**kbtu/hr**	**$114,598**	

Site Name	Collings Lakes ES					
Project square footage	32,766					
Total building square footage	32,766				Total EUI	38.6
Percentage of Total site area	100%				Total Utility Cost Index	$1.67

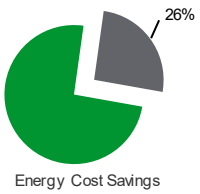
Fuel Type *Fuel*	Utility Usage *Value*		Utility Demand *Value*		Utility Cost *$*	Percentage of Total *%*
Electricity	370,499	kWh	302	kW	$54,634	100%
Total	**1,265**	**MMBtu**	**1,029**	**kbtu/hr**	**$54,634**	

Site Name	**Milanesi ES**					
Project square footage	39,817					
Total building square footage	39,817			Total EUI	87.0	
Percentage of Total site area	100%			Total Utility Cost Index	$2.16	

Fuel Type *Fuel*	**Utility Usage** *Value*		**Utility Demand** *Value*		**Utility Cost** *$*	**Percentage of Total** *%*
Electricity	326,666	kWh	1,601	kW	$54,623	64%
Natural Gas	23,504	therm			$31,206	36%
Total	**3,465**	**MMBtu**	**5,462**	**kbtu/hr**	**$85,829**	

4.2 Energy Savings

The following table highlights projected energy savings from implementing the recommended ECMs.



Energy Cost Savings

Energy and Water Indices			
	Energy	Water	Cost
	kBtu/ft2	*Gal/ft2*	*$/ft2*
Baseline	86.3	13.1	$2.26
Post Project	80.1	10.4	$1.68
% Savings	**7.3%**	**20.4%**	**25.6%**

Project Summary

	Electricity		Fossil Fuels	Water	Energy
Project	Energy Use	Actual Demand	Energy Use	Energy Use	Total Cost
Phase	*kWh*	*kW*	*MMBtu*	*kGal*	*$*
Baseline	4,031,307	14,800	19,715	5,073	$876,452
Post Project	3,916,181	11,600	17,680	4,040	$652,264
Projected Savings, Units	**1,468,679**	**3,478**	**2,035**	**1,033**	**$224,188**
Projected Savings, %	**36.4%**	**23.5%**	**10.3%**	**20.4%**	**25.6%**

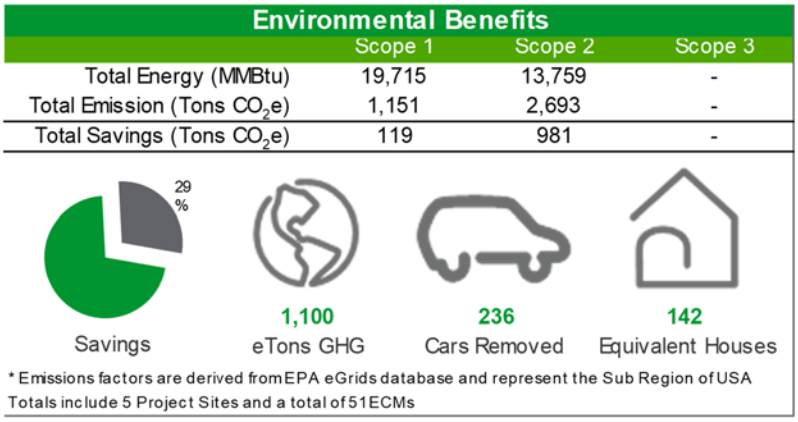
Notes: Excludes PPA Savings

Building/ECM	Total Savings	Electric Savings	Demand Savings	Electric Cost Savings	Natural Gas Savings	Natural Gas Savings	Water Savings	Water Savings
Site: Buena Regional HS	**$**	**kWh**	**kW**	**$**	**Therm**	**$**	**Kgal**	**$**
Building Automation System Improvements	$12,630	46,147	-	$4,152	6,725	$8,478	-	$0
LED Lighting	$29,467	270,419	1,006	$35,073	(5,406)	-$5,606	-	$0
Air Sealing Improvements	$9,239	5,414	29	$1,145	6,421	$8,094	-	$0
Pipe Insulation	$1,986	-	-	$0	1,575	$1,986	-	$0
Water Fixture Improvements	$9,802	3,285	-	$0	372	$430	1,033	$9,373
Walk-in Refrigeration Controls	$764	6,986	11	$764	-	$0	-	$0
High Efficiency Transformers	$5,686	53,439	73	$5,686	-	$0	-	$0
VFDs on Hot Water Pumps	$5,521	61,402	28	$5,521	-	$0	-	$0
Combined Heat and Pow er	$7,248	274,171	420	$29,647	(18,998)	-$22,398	-	$0
Hot Water Boiler Replacements	$16,077	-	-	$0	12,753	$16,077	-	$0
Chiller Replacement	$740	2,019	30	$740	-	$0	-	$0
Domestic Hot Water Heater Replacement	$1,701	-	-	$0	1,352	$1,701	-	$0
Unit Ventilator Replacement (Section A)	$4,243	(10,022)	92	$1,028	2,551	$3,215	-	$0
Rooftop Unit Replacement	$6,156	56,375	116	$6,337	(144)	-$182	-	$0
Kitchen Hood Blocking	$456	315	2	$71	305	$385	-	$0
Buena Regional MS	**$**	**kWh**	**kW**	**$**	**Therm**	**$**		
Building Automation System Improvements	$12,386	94,962	-	$8,546	2,927	$3,840	-	$0
Demand Controlled Ventilation	$7,803	28,278	29	$2,914	3,727	$4,889	-	$0
LED Lighting	$23,411	215,882	771	$27,332	(2,988)	-$3,920	-	$0
Air Sealing Improvements	$2,452	10,603	28	$1,354	836	$1,097	-	$0
Pipe Insulation	$552	-	-	$0	421	$552	-	$0
Walk-in Refrigeration Controls	$495	4,630	6	$495	-	$0	-	$0
Cleary ES	**$**	**kWh**	**kW**	**$**	**Therm**	**$**		
Building Automation System Improvements	$9,186	69,830	-	$6,283	2,213	$2,903	-	$0
LED Lighting	$10,964	86,562	298	$11,520	(424)	-$556	-	$0
Air Sealing Improvements	$2,676	12,062	40	$1,585	831	$1,091	-	$0
Walk-in Refrigeration Controls	$237	2,213	3	$237	-	$0	-	$0
Split System Replacement	$1,797	22,370	102	$3,293	(1,140)	-$1,496	-	$0
Reheat Coils	-$1,247	(9,387)	(32)	-$1,247	-	$0	-	$0
Collings Lake ES	**$**	**kWh**	**kW**	**$**	**Therm**	**$**		
Building Automation System Improvements	$1,856	13,310	-	$1,856	-	$0	-	$0
LED Lighting	$299	1,937	6	$299	-	$0	-	$0
Air Sealing Improvements	$2,734	17,913	49	$2,734	-	$0	-	$0
Walk-in Refrigeration Controls	$670	4,515	7	$670	-	$0	-	$0
High Efficiency Transformers	$565	3,835	5	$565	-	$0	-	$0
Verify ERV Operation	$291	1,334	19	$291	-	$0	-	$0
Kitchen Hood Blocking	$680	4,402	14	$680	-	$0	-	$0
Milanesi ES	**$**	**kWh**	**kW**	**$**	**Therm**	**$**		
Building Automation System Improvements	$4,002	29,860	-	$2,688	1,002	$1,314	-	$0
Demand Controlled Ventilation	$1,331	1,994	5	$251	823	$1,080	-	$0
Air Sealing Improvements	$2,603	4,458	27	$992	1,228	$1,612	-	$0
Pipe Insulation	$1,278	-	-	$0	974	$1,278	-	$0
Walk-in Refrigeration Controls	$359	3,314	5	$359	-	$0	-	$0
Hot Water Boiler Replacements	$5,413	9,941	7	$895	3,444	$4,518	-	$0
Direct Install Scope of Work	$19,681	115,126		$16,052	49,062	$3,629	-	$0
Total (all sites)	$224,188	1,519,895		$180,807	70,441	$34,009	1,033	$9,373

For detailed savings calculations for each ECM, please see the Appendix 7.1.

4.3 Environmental Impact

The following graphic shows the environmental impact of the project.



Note: Excludes Solar Offsets

5.0 Performance Assurance Support Services (PASS)

The purpose of the Performance Assurance Support Services is to measure, verify, and provide the necessary support services to sustain savings over time. Per NJ ESIP law, the PASS Agreement must be a separate contract from the ESIP Construction Contract. This section includes a description of the proposed M&V Methodology and PASS Agreement.

5.1 Description of Services

The following is a description of services and terms that are used within this section.

Measurement and Verification Services with Savings Reporting (Option A)

The IPMVP Option A, Partial Retrofit Isolation, involves a pre and post measurement of a single variable used to determine energy savings.

Commission and Verify (C&V)

This process is used to qualify and validate the installation, function, operation and performance of ECMs. The protocol consists of a planned process with a deliberate combination of steps which systematically identify, test and challenge various key aspects used to verify the performance objectives of an installed ECM against an established design criterion. Benefits include an improved controls interface, reduced energy demand and consumption, and improve occupancy comfort.

Remote System Monitoring and Reporting

Activities include monitoring live conditions, reviewing and analyzing trends, recording deficiencies, as well as tuning, adjusting, and optimizing parameters. This also includes reporting operational performance of specific systems and equipment necessary to sustain energy savings, comfort, and safety. This helps manage and ensure key variables for energy measures are maintained to allow for sustained savings, performance, and comfort.

Remote Energy Management, Training & Technical Support

This involves live remote telephone and internet support used to provide instruction, assisted troubleshooting, and system training. This on-call service provides technical support for all installed systems and measures and helps reduce system downtime.

On-site Visits

On-site visits include a review and reporting of changes to operations (past present and future), usage, status, and conditions of building systems and equipment relative to their impact on energy performance. ECM and systems training can be provided upon request. Benefits include:

- Expert advice to aid in energy planning based on operational and future commitments
- Identifying excess energy targets and recommendations for improvement
- An increase in overall energy awareness

Resource Advisor

Resource Advisor is Schneider Electric's enterprise-level application providing secure access to data reports and summaries to drive the District's energy and sustainability programs. Resource Advisor combines quality assurance and data capture capabilities of utility information into one energy management solution.

5.2 Measurement & Verification (M&V) Plan

Based upon the scope of this project, we recommend a measurement & verification (M&V) program based upon Option C and Option A methodology as defined by the International Performance Measurement & Verification Protocol (IPMVP).

The purpose of the Performance Assurance Support Services (PASS) program is to assist the District in sustaining savings over the long term. The following services are currently proposed. Each year after the initial term, the services can be eliminated or negotiated between SE & Buena Regional School District, to ensure the proper level of support and savings verification.

A more in-depth description of these services can be found in Section 5.1.

5.3 Ongoing Maintenance

Under the New Jersey ESIP legislation, all maintenance contracts are required to be procured separately from the ESIP. Schneider Electric will properly commission all equipment, provide training, review manufacturer maintenance requirements, and provide an owner's manual to ensure proper maintenance of the equipment.

5.4 Energy Star Certification

As the owner of community buildings, the Buena Regional School District has a significant opportunity to showcase its dedication to promoting sustainability and a focus on a greener environment through various nationally and globally recognized high performance building rating programs. Applying and obtaining the Energy Star certification can bring positive public attention to the District. Many of the solutions discussed in other sections of this report lend themselves to achieving these certifications.

Energy STAR is a national energy performance rating system that assesses how efficiently your building is operating relative to similar buildings nationwide. The rating is on a scale from 0 to 100. A rating of 75 or greater is needed to achieve an Energy STAR certification.

Schneider Electric will aid the District in process of applying for Energy Star. If the District achieves Energy Star, Schneider Electric will submit the application on Buena Regional School District's behalf.

6.0 Implementation

6.1 Design & Compliance Issues

This project was developed using the proper Building Codes, Energy Codes, and Electrical Codes. Safety is of the utmost important to Schneider Electric, not only for our customers, but also for our employees and subcontractors. SE will comply with all the required safety codes and protocols to ensure a successful implementation.

6.2 Assessment of Risks

This assessment of risks is meant to provide Buena Regional School District with an idea of the potential risks that lie within the ESIP project. By no means is this an effort to eliminate responsibility of the ESCO to provide an Energy Savings Plan that meets industry standards of engineering, energy analysis, and expertise. This is included to allow the customer to know where potential failure points could be that would result in savings not being achieved.

- If actual operation of the buildings deviates significantly from the parameters outlined in the Energy Savings Plan with respect to temperature set-points and occupied times, energy savings associated with the BMS, VFDs, and mechanical systems could be affected. The temperature set-points used to derive energy savings were within the parameters of the District's energy policy. Should that policy change, it could affect energy savings.
- Building Automation System sequences of operation must not be over-ridden or changed permanently. Overrides are permitted for maintenance or special occasions, but must be reset to maintain energy savings.
- The Walk-in Cooler and Freezer Controls must not be overridden or changed permanently to maintain energy savings.
- Lighting systems will require maintenance as they age. Replacement parts need to be of similar energy saving characteristics to maintain energy savings.

7.0 Appendices

7.1 Savings Calculations & Documentation

Below is a high-level summary of how savings were calculated for each measure included in this report. For further documentation of savings calculations, please see the following pages.

Energy Analysis Methodology

Many tools and approaches exist for effectively analyzing energy conservation measures. Some ECMs are best analyzed in an individual spreadsheet calculation while other more comprehensive ECMs require higher levels of computer modeling to capture the entirety of their impact on energy consumption and demand. In general, the complexity of analysis tools escalates from spreadsheet calculations to, to more sophisticated computer software-based building simulation tools such as eQuest. Aspects such as total savings potential, influence on other ECMs, influence from weather, and overall complexity are all considered when selecting the analysis approach or tool for an ECM.

Below is a table displaying the ECMs and the analysis tool used for calculating the savings. Following the table are descriptions for each of the analysis tools and approaches used for calculating savings.

ECM Name	Analysis Tool
Building Automation System (BAS) Improvements	Element
Air Sealing Improvements	Element
Pipe Insulation	Spreadsheet Calculations
Walk-in Refrigeration Controls	Spreadsheet Calculations
High Efficiency Transformers	Spreadsheet Calculations
Domestic Hot Water Heater Replacement	Element
Hot Water VFDs	Element
Hot Water Boiler Replacement	Element
Combined Heat and Power	Spreadsheet Calculations
LED Lighting	Spreadsheet Calculations and Element
Water Fixture Improvements	Spreadsheet Calculations
Solar PPA	Spreadsheet Calculations
Verify ERV Operation	Element
Chiller Replacement	Element
Split System Replacement	Element
Unit Ventilator Replacement (Section A)	Element
Rooftop Unit Replacement	Element
Kitchen Hood Blocking	Element
Reheat Coils	Element

Savings Methods – ELEMENT

The ELEMENT tool was developed to provide transparency into the end use breakdown of energy consumption for each fuel type. The simplified building inputs and schedules are used in a powerful hourly load analysis to provide quick building calibrations. Energy saving scenarios can be run quickly to see the financial impact to the overall project and generate useful graphs for visualization and reports.

Introduction

ELEMENT is Schneider Electric's proprietary Microsoft Excel based spreadsheet calculation tool used for simulating building energy consumption. Its purpose is to allow a user with prior knowledge of a facility and its energy using equipment to simulate energy consumption, compare the outputs to historical utility data of the facility, breakout the calibrated baseline into its end use components and determine the energy savings of Energy Conservation Measures (ECMs).

The tool uses a variety of Excel functions and custom generated algorithms written in Visual Basic for Applications (VBA) to quickly simulate the energy consumption of a simple to moderately complex building. Heating and cooling loads are determined on an hourly basis (8,760 hours per year) using TMY2 or TMY3 weather data and the building definitions specified by the user. Loads are generated by the user inputs and key building variables are defined and adjusted to calibrate and predict energy impacts.

On the following page is an example of an Element model for Cleary Elementary School. The element model below was used to predict savings for dynamic air filtration, high efficiency electric AC, modified BAS scheduling, and air sealing improvements.

ELEMENT
Cleary ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

Baseline Calculation Inputs

Building Envelope

56,700	Building Area, sqft
Medium	Building Weight
Exterior Walls	
15.00	R_wall, hr-sqft-oF/Btu
25,500	Total Exterior Wall Area, sqft
Medium	Outside Surface Color
Windows	
Alum w/ Thermal Breaks	Frame Type
1/4 in. Clear Double	Glass Type
0%	Exterior Shading Percentage
8,925	Window Area, sqft
22%	% North Facing
17%	% East Facing
38%	% South Facing
22%	% West Facing
Roof	
20.00	R-value, hr-sqft-oF/Btu
56,700	Roof Area, sqft
Light	Outside Surface Color
4.00	Plenum Height, ft

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	0.94	W / sqft	Lighting
Equipment	0.60	W / sqft	Equipment
People	284	People	People
People Activity Level			Seated at Rest

Outdoor Air

Infiltration	
0.180	CFM / sqft of Exterior Wall Area
8.0	Average Ceiling Height, ft
0.607	Air Change Per Hour, ACH
Ventilation	
17.0	OA Rate, CFM per person
0.17	OA Rate, CFM per sqft
14,468	OA CFM Total
OFF Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const kW	37.67	Variable kW	0.00
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	100%

Space Set Points

	Occupied	Unoccupied	
Heating	70.0	64.0	oF
Cooling	70.0	74.0	oF
	50.0	50.0	% RH

Heating Pu 15

Pump kW	11.19	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Cooling Pu 5

Pump kW	3.73	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	50%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

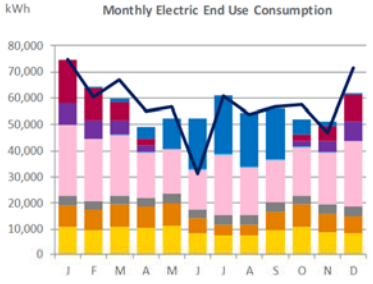
Heating and Cooling Systems

Heating	HW Blr - Condensing	System Type
	93%	Fuel Efficiency, %
	2.30	Oversize Factor
	45%	% Load Electric Heat
	457%	Electric Efficiency, %
Cooling	Grnd Srce HP / Wtr Loop HP	System Type
	0.90	Cooling Efficiency, kW/ton
	0.87	Oversize Factor
	100%	% Bldg Cooled
	No	Remote Chilled Water?

Miscellaneous Loads

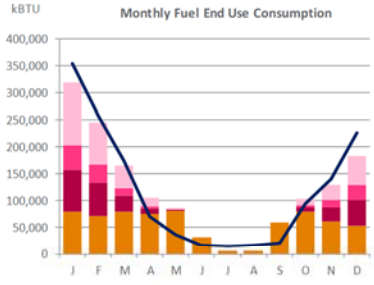
Electric	Peak kW	Schedule		
Ext Ltg	9.6	Ext Lighting		
N/A	0.0	Off		
N/A	0.0	Off		Stand-alone
Fuel	**Peak kBtu**	**Schedule**	**Plant?**	**Efficiency**
DHW	600.0	DHW	No	94%
N/A	0.0	Off	No	100%
N/A	0.0	Off	No	100%

Energy Modeling Calibration



Electric Calibration		
Modeled	Utility	Error
kWh	kWh	%
74,506	74,826	0%
63,952	60,240	6%
59,652	67,203	-11%
49,180	55,236	-11%
52,591	56,721	-7%
52,277	31,120	68%
60,930	60,668	0%
54,587	53,724	2%
55,943	56,906	-2%
52,030	57,486	-9%
51,352	46,956	9%
61,460	71,359	-14%
688,460	692,444	-0.6%

Fuel Calibration			
	Modeled	Utility	Error
	kBTU	kBTU	%
Jan	319,873	355,544	-10%
Feb	246,390	257,848	-4%
Mar	165,986	174,066	-5%
Apr	105,249	70,585	49%
May	84,724	37,468	126%
Jun	32,311	16,300	98%
Jul	5,738	14,812	-61%
Aug	5,738	17,505	-67%
Sep	59,068	20,327	191%
Oct	104,796	95,572	10%
Nov	129,066	140,012	-8%
Dec	183,596	227,151	-19%
	1,442,536	1,427,190	1.1%



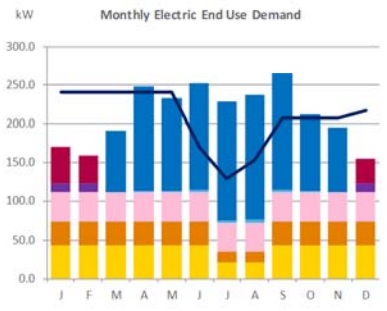
Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling				Miscellaneous Loads			Heating			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat	DHW	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	16.6%	12.5%	6.1%	0.0%	0.0%	35.5%	0.4%	5.4%	8.2%	15.4%	0.0%	0.0%	47.6%	0.0%	0.0%	18.3%	10.0%	24.1%	0.0%
Month	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	10,856	8,502	3,556	0	0	27,200	0	8,079	16,313	0	0	0	79,053	0	0	79,353	45,174	116,292	0
2	9,871	7,740	3,212	0	0	23,922	17	6,815	12,194	181	0	0	71,943	0	0	61,613	34,625	78,210	0
3	10,913	8,590	3,556	0	0	22,981	80	5,461	6,998	1,073	0	0	79,321	0	0	30,267	13,302	43,095	0
4	10,467	8,257	3,442	0	0	17,292	165	2,462	2,679	4,418	0	0	75,791	0	0	9,834	4,921	14,703	0
5	11,211	8,740	3,556	0	0	16,915	306	145	172	11,545	0	0	82,532	0	0	614	337	1,241	0
6	8,408	5,736	3,442	0	0	15,145	334	0	0	19,212	0	0	32,311	0	0	0	0	0	0
7	7,495	4,324	3,556	0	0	22,943	512	0	0	22,100	0	0	5,738	0	0	0	0	0	0
8	7,495	4,324	3,556	0	0	18,234	427	0	0	20,551	0	0	5,738	0	0	0	0	0	0
9	9,563	7,287	3,442	0	0	16,011	337	0	0	19,304	0	0	59,068	0	0	0	0	0	0
10	10,885	8,546	3,556	0	0	18,535	196	2,227	2,297	5,788	0	0	79,187	0	0	8,468	4,539	12,601	0
11	8,902	7,083	3,442	0	0	20,004	91	4,398	5,541	1,891	0	0	61,206	0	0	25,860	14,698	27,303	0
12	8,341	6,790	3,556	0	0	25,090	7	7,329	10,247	98	0	0	54,568	0	0	48,000	27,025	54,003	0
	114,407	85,918	41,873	0	0	244,272	2,473	36,916	56,442	106,161	0	0	686,457	0	0	264,010	144,621	347,447	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	18.4%	13.1%	0.0%	0.0%	0.0%	17.8%	0.8%	1.3%	4.6%	44.0%	0.0%	0.0%
Month	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	47.5	0.0	0.0	0.0
2	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	36.3	0.0	0.0	0.0
3	42.6	30.6	0.0	0.0	0.0	37.7	0.7	0.0	0.0	79.8	0.0	0.0
4	42.6	30.6	0.0	0.0	0.0	37.7	2.5	0.0	0.0	134.9	0.0	0.0
5	42.6	30.6	0.0	0.0	0.0	37.7	1.9	0.0	0.0	120.2	0.0	0.0
6	42.6	30.6	0.0	0.0	0.0	37.7	2.6	0.0	0.0	137.9	0.0	0.0
7	21.3	13.6	0.0	0.0	0.0	37.7	3.3	0.0	0.0	151.9	0.0	0.0
8	21.3	13.6	0.0	0.0	0.0	37.7	4.2	0.0	0.0	159.5	0.0	0.0
9	42.6	30.6	0.0	0.0	0.0	37.7	3.2	0.0	0.0	150.3	0.0	0.0
10	42.6	30.6	0.0	0.0	0.0	37.7	1.2	0.0	0.0	100.1	0.0	0.0
11	42.6	30.6	0.0	0.0	0.0	37.7	0.8	0.0	0.0	82.9	0.0	0.0
12	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	32.3	0.0	0.0	0.0
	469	333	0	0	0	452	20	34	116	1,118	0	0



Modeling the ECMs

After the model has been calibrated, changes are made to the model, which represent implementation of the proposed scope conditions of the energy and water conservation measure. ECMs are implemented and run individually to assess the energy savings of each ECM. All ECMs are modeled with consideration to potential overlap inflating modeled savings. ECMs are run sequentially, building upon each other. This results in more accurate estimate of savings than if each ECM were run in comparison to the baseline.

ECMs outside of Energy Model

Some ECMs because of their scope, impact, and nature do not fit well within the energy models. For example, savings from walk-in refrigerator units or transformer replacements cannot be calculated in the ELEMENT accurately. When this is the case, in-house built tools are used to accurately estimate savings.

Savings Methodology by ECM

Below are the Energy Conservation Measures that are being implemented at Buena Regional School District as part of this project.

Air Sealing Improvements

Schneider Electric used typical meteorological year (TMY) weather data, draft pressure, internal space temperatures (both occupied and unoccupied), and crack size to conduct savings calculations. Schneider Electric follows ASTM E1186-03 Standard Practices for air leakage in building envelope. ASHRAE Fundamentals 16.23-48 was used to calculate the flow rate and crack method for all envelope calculations.

Applicable To
Buena Regional HS
Buena Regional MS
Cleary ES
Collings Lakes ES
Milanesi ES

Pipe Insulation

Schneider Electric partnered with BE Retrofit to generate savings for the pipe insulation retrofit. Spreadsheet-based calculations were used by BER to generate Therm savings, which were reviewed by Schneider Electric.

Applicable To
Buena Regional HS
Buena Regional MS
Milanesi ES

Building Automation System (BAS) Improvements

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect new setback and setup temperature schedules. Setups and setbacks reflecting the School District's energy policy are proposed to reduce the energy used by empty spaces after normal school hours.

Applicable To
Buena Regional HS
Buena Regional MS
Cleary ES
Collings Lakes ES
Milanesi ES

Walk-In Refrigeration Controls

Schneider Electric partnered with National Resource Management, Inc to generate savings for the walk-in freezer and refrigerator retrofits. Spreadsheet-based calculations were used by NRM to generate kWh savings, which were reviewed by Schneider Electric.

Applicable To
Buena Regional HS
Buena Regional MS
Cleary ES
Collings Lakes ES
Milanesi ES

High Efficiency Transformers

Schneider Electric partnered with Powersmiths to determine savings for this measure. Spreadsheet-based calculations were used by Powersmiths to generate kWh savings, which were reviewed by Schneider Electric.

Applicable To
Buena Regional HS
Cleary ES
Collings Lakes ES

Hot Water Boiler Replacement/Hot Water VFDs

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect the new heating efficiency as well as changes in pumping energy and operation in the hot water system.

Applicable To
Buena Regional HS
Milanesi Elementary

Combined Heat and Power

Combined heat and power (CHP) systems can generate both heating energy as well as electrical power. Such systems can significantly reduce electric load of a building on the grid.

Applicable To
Buena Regional HS

The overall run hours will likely be close to 8760 with 60 hours removed for maintenance downtime which has been incorporated into the summer months.

*Please see Appendix 7.1 Combined Heat and Power Analysis for detailed calculations.

Domestic Hot Water Heater Replacement

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect the new heating efficiency of the domestic hot water system.

Applicable To
Buena Regional HS

LED Lighting

Schneider Electric partnered with Energyficient Lighting Systems to generate savings for the interior and exterior lighting retrofits. Spreadsheet-based calculations were used by Energyficient to generate kWh and kW savings, which were reviewed by Schneider Electric. Schneider Electric used the savings generated by Energyficient along with a parametric run in the Element model to determine cooling savings and heating penalty associated with these retrofits.

Applicable To
Buena Regional HS
Buena Regional MS
Cleary ES
Collings Lakes ES
Milanesi ES

Water Fixture Improvements

Schneider Electric partnered with AQUA Engineered Energy Solutions to generate savings for the water retrofits. Spreadsheet-based calculations were used by AQUA to generate kGal, kWh, and Therm savings, which were reviewed by Schneider Electric.

Applicable To
Buena Regional HS

Verify ERV Operation

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect an increase in cooling efficiency associated with re-commissioning of the ERV units.

Applicable To
Collings Lakes ES

Chiller Replacement

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect an increase in cooling efficiency associated with the installation of a new, higher-efficiency chiller.

Applicable To
Buena Regional HS

Split System Replacement

Schneider Electric estimated savings by utilizing Element. Using a parametric run, changes were made to the model to reflect increases in cooling and heating efficiency associated with the installation of new water-source heat pump units.

Applicable To
Cleary ES

Unit Ventilator Replacement (Section A)

Schneider Electric estimated savings by utilizing Element. Using a parametric run, changes were made to the model to reflect an increase in cooling efficiency associated with the installation of new variable refrigerant flow system and an increase in the amount of electric heating.

Applicable To
Buena Regional HS

Rooftop Unit Replacement

Schneider Electric estimated savings by utilizing Element. Using a parametric run, changes were made to the model to reflect an increase in cooling efficiency associated with the installation of a new VAV rooftop unit with energy recovery, as well as changes to the fan energy and operation and the elimination of a hot water pump.

Applicable To
Buena Regional HS

Kitchen Hood Blocking

Schneider Electric estimated savings by utilizing Element. Using a parametric run, a change was made to the model to reflect the decrease in infiltration associated with blocking the opening in the kitchen.

Applicable To
Buena Regional HS
Collings Lakes ES

Solar Power Purchase Agreement (PPA)

Energy savings for the solar PPA were calculated in Excel by comparing the current electric consumption charges with the targeted PPA rate and multiplying the difference by the anticipated production of the solar PV system.

Applicable To
All Schools and Board of Ed Building

Building	Post KWh	Post KW	80%	80%	Per KWH	Per kW	Savings at $.07	Demand Savings at 25%
High School	888,241	4,243	710,593	3,394	$ 0.1483	$ 1.69	$ 55,639	$ 1,434
Middle School	1,046,979	4,603	837,583	3,682	$ 0.0956	$ 12.59	$ 21,442	$ 11,593
Cleary	492,425	2,043	393,940	1,634	$ 0.0956	$ 12.52	$ 10,065	$ 5,116
CollinsLake	370,518	306	296,414	245	$ 0.1531	$ 1.69	$ 24,632	$ 103
Milanesi	161,978	1,270	129,582	1,016	$ 0.0955	$ 12.81	$ 3,308	$ 3,254
Admin	54,143	190	43,314	152	$ 0.1531	$ 1.69	$ 3,599	$ 64
Totals	**3,014,284**	**12,655**	**2,411,428**	**10,125**			**$ 118,686**	**$ 21,564**

Building	Report Group	Task	Location	Units	Crack Size	Units	LF/ Unit
Buena Regional High School	Door Weather Stripping	Single Door - Sides, Top, Sweep (UT)	See Floor Plan	11	1/10	11	20.0
Buena Regional High School	Door Weather Stripping	Double Door - Sweep, Center (UT)	See Floor Plan	5	1/10	5	13.0
Buena Regional High School	Door Weather Stripping	Double Door - Sides, Top, Sweep, Center (UT)	See Floor Plan	17	1/10	17	33.0
Buena Regional High School	Roof-Wall Intersection Air Sealing	Seal (LF)	See Floor Plan	1,047	1/12	1,047	1.0
Buena Regional High School	Buck Frame Air Sealing	Seal (LF)	See Floor Plan	432	1/8	432	1.0
Buena Regional High School	Roof-Wall Intersection Air Sealing	Seal Paint (LF)	See Floor Plan	255	1/12	255	1.0
Buena Regional High School	Roof-Wall Intersection Air Sealing	Block, Seal (LF)	See Floor Plan	157	1/8	157	1.0
Buena Regional High School	Roof-Wall Intersection Air Sealing	Seal (LF)	See Floor Plan	382	1/12	382	1.0
						0	
Buena Regional Middle School	Door Weather Stripping	Single Door - Sides, Top, Sweep (UT)	See Floor Plan	7	1/10	7	20.0
Buena Regional Middle School	Door Weather Stripping	Double Door - Sweep, Center (UT)	See Floor Plan	4	1/10	4	13.0
Buena Regional Middle School	Door Weather Stripping	Double Door - Sides, Top, Sweep, Center (UT)	See Floor Plan	15	1/10	15	33.0
			See Floor Plan			0	
Collins Lake Elementary School	Door Weather Stripping	Single Door - Sides, Top, Sweep (UT)	See Floor Plan	3	1/10	3	20.0
Collins Lake Elementary School	Door Weather Stripping	Double Door - Sides, Top, Sweep, Center (UT)	See Floor Plan	5	1/10	5	33.0
Collins Lake Elementary School	Caulking	Interior Seal (LF)	See Floor Plan	13	1/100	13	1.0
Collins Lake Elementary School	Roof-Wall Intersection Air Sealing	Seal (LF)	See Floor Plan	700	1/12	700	1.0
Collins Lake Elementary School	Roof-Wall Intersection Air Sealing	Block, Seal (SF)	See Floor Plan	112	1/8	112	0.5
Collins Lake Elementary School	Overhang Air Sealing	Block, Seal (SF)	See Floor Plan	78	1/8	78	0.5
						0	
John C. Milanesi Elementary School	Door Weather Stripping	Single Door - Sides, Top, Sweep (UT)	See Floor Plan	2	1/10	2	20.0
John C. Milanesi Elementary School	Door Weather Stripping	Double Door - Sides, Top, Sweep, Center (UT)	See Floor Plan	5	1/10	5	33.0
John C. Milanesi Elementary School	Window Weatherization	Repair Interior Glazing Gasket (LF)	See Floor Plan	460	1/64	460	1.0
John C. Milanesi Elementary School	Caulking	Interior Seal (LF)	See Floor Plan	338	1/100	338	1.0
John C. Milanesi Elementary School	Roof-Wall Intersection Air Sealing	Block, Seal (LF)	See Floor Plan	516	1/8	516	1.0
John C. Milanesi Elementary School	Overhang Air Sealing	Seal (LF)	See Floor Plan	8	1/8	8	1.0
						0	
JP Cleary Elementary School	Door Weather Stripping	Single Door - Sweep (UT)	See Floor Plan	3	1/10	3	3.0
JP Cleary Elementary School	Door Weather Stripping	Double Door - Sweep, Center (UT)	See Floor Plan	2	1/10	2	13.0
JP Cleary Elementary School	Door Weather Stripping	Single Door - Sides, Top, Sweep (UT)	See Floor Plan	1	1/10	1	20.0
JP Cleary Elementary School	Door Weather Stripping	Double Door - Sides, Top, Sweep, Center (UT)	See Floor Plan	11	1/10	11	33.0
JP Cleary Elementary School	Roof-Wall Intersection Air Sealing	Seal (LF)	See Floor Plan	369	1/18	369	1.0
JP Cleary Elementary School	Roof-Wall Intersection Air Sealing	Block, Seal (LF)	See Floor Plan	647	1/12	647	1.0
JP Cleary Elementary School	Wall Air Sealing	Block, Seal (SF)	See Floor Plan	189	1/24	189	1.0
JP Cleary Elementary School	Overhang Air Sealing	Block, Seal (SF)	See Floor Plan	20	1/12	20	1.0

Infiltration

Building Data

Building Name	Buena Regional HS
Weather City	PA, Philadelphia-International
Building Height, ft	25
Building Orientation, deg	40
Building L/W Ratio	1.3
Internal Draft Coefficient	0.7

Building Operating Conditions

Occupied Set Point Temp, oF	71.0
Cooling Setup Temp, oF	78.0
Percent of Building Cooled, %	100%
Cooling Seasonal Efficiency, %	239%
Heating Setback Temp, oF	60.0
Percent of Building Heated, %	100%
Heating Seasonal Efficiency, %	80%

Shelter Characteristics

Direction	Shelter Class	Terrain Category
See Reference Tables for Descriptions		
North	1	3
East	4	3
South	1	3
West	2	2

Building Crack Definitions

Penetration	Type	H	Qty	Length	Gap	% Open	Total Area	Wall Only
Name	*Select*	*ft*	*#*	*ft*	*inches*	*%*	*sqft*	*sqft*
Crack 1	Door	-9.5	11	20	1/10	100%	1.8	1.8
Crack 2	Door	-9.5	5	13	1/10	100%	0.5	0.5
Crack 3	Door	-9.5	17	33	1/10	100%	4.7	4.7
Crack 4	Roof-Wall	12.5	1,047	1	1/12	100%	7.3	7.3
Crack 5	Wall	0.0	432	1	1/8	100%	4.5	4.5
Crack 6	Roof-Wall	12.5	255	1	1/12	100%	1.8	1.8
Crack 7	Roof-Wall	12.5	157	1	1/8	100%	1.6	1.6
Crack 8	Roof-Wall	12.5	382	1	1/12	100%	2.7	2.7
Crack 9	Wall	0.0				100%	0.0	0.0
Crack 10	Wall	0.0				100%	0.0	0.0
Crack 11	Wall	0.0				100%	0.0	0.0
Crack 12	Wall	0.0				100%	0.0	0.0
Crack 13	Wall	0.0				100%	0.0	0.0
	Effective H (Wall Only)	**4.0**					**24.9**	**24.9**

Notes: H is the height difference between the crack and the neutral pressure level of the building.

Effective Building Coefficients

Shelter Coefficient	0.8
Wind Shear Exponent	0.17
Boundary Layer Thickness, ft	1005
Wall Pressure Coefficient	0.11
Roof Pressure Coefficient	-0.30

Site Parameters

Average Wind Speed, mph	9.4
Site Corrected Wind Speed, mph	8.0
Model Wind Coefficient	0.27
Draft Factor	0.13
Volume Factor, ft/min (in-wg)^0.5	2,603

Energy Engineering Calculations

	Temperature Bin Hours				Baseline		Calculated Infiltration Rates			
	Mid Pt Temp	MCWB	Density	Enthalpy	Occupied	Unocc	Occupied Rates Wall	Occupied Rates Roof	Unoccupied Rates Wall	Unoccupied Rates Roof
Ref	*oF*	*oF*	*lb/ft3*	*Btu/lb*	*hrs/yr*	*hrs/yr*	*cfm*	*cfm*	*cfm*	*cfm*
1	9	6.5	0.085	2.8	20	2	5,916	0	5,546	0
2	13	10.1	0.084	3.9	25	13	5,773	0	5,393	0
3	16	14.0	0.083	5.1	59	18	5,626	0	5,236	0
4	20	17.4	0.082	6.3	72	37	5,480	0	5,079	0
5	24	20.3	0.082	7.3	161	81	5,335	0	4,922	0
6	28	24.1	0.081	8.7	231	120	5,179	0	4,752	0
7	31	27.7	0.080	10.0	330	181	5,021	0	4,580	0
8	35	31.1	0.080	11.3	276	144	4,862	0	4,405	0
9	39	33.8	0.079	12.5	377	139	4,705	0	4,230	0
10	43	37.4	0.079	14.0	375	131	4,533	0	4,039	0
11	46	41.4	0.078	15.8	357	160	4,349	0	3,830	0
12	50	44.7	0.077	17.5	317	95	4,165	0	3,620	0
13	54	47.7	0.077	19.0	369	150	3,979	0	3,405	0
14	58	52.1	0.076	21.4	424	216	3,755	0	3,141	0
15	61	56.2	0.075	23.9	398	266	3,520	0	3,066	0
16	65	59.1	0.074	25.8	223	216	3,296	0	3,053	0
17	69	62.0	0.074	27.8	246	426	3,052	0	3,040	0
18	73	65.8	0.073	30.6	197	477	2,756	0	3,025	0
19	76	67.7	0.073	32.0	178	359	2,498	0	3,013	0
20	80	69.2	0.072	33.3	116	195	2,228	0	2,775	0
21	84	70.1	0.072	34.0	142	161	1,954	0	2,561	0
22	88	72.2	0.071	35.8	108	76	1,558	0	2,273	0
23	91	74.7	0.070	38.1	48	28	978	0	1,922	0
24	95	75.0	0.070	38.4	7	8	145	0	1,649	0
25	99	76.9	0.069	40.1	3	2	1,160	0	1,180	0
							3,673			

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Infiltration

Building Data

Building Name	Buena Regional MS
Weather City	PA, Philadelphia-International
Building Height, ft	14
Building Orientation, deg	-20
Building L/W Ratio	1.4
Internal Draft Coefficient	0.7

Building Operating Conditions

Occupied Set Point Temp, oF	71.0
Cooling Setup Temp, oF	76.0
Percent of Building Cooled, %	100%
Cooling Seasonal Efficiency, %	260%
Heating Setback Temp, oF	64.0
Percent of Building Heated, %	100%
Heating Seasonal Efficiency, %	85%

Shelter Characteristics

Direction	Shelter Class	Terrain Category
See Reference Tables for Descriptions		
North	2	2
East	2	2
South	2	2
West	4	3

Building Crack Definitions

Penetration	Type	H	Qty	Length	Gap	% Open	Total Area	Wall Only
Name	*Select*	*ft*	*#*	*ft*	*inches*	*%*	*sqft*	*sqft*
Crack 1	Door	-4.0	7	20	1/10	100%	1.2	1.2
Crack 2	Door	-4.0	4	13	1/10	100%	0.4	0.4
Crack 3	Door	-4.0	15	33	1/10	100%	4.1	4.1
Crack 4	Wall	0.0				100%	0.0	0.0
Crack 5	Wall	0.0				100%	0.0	0.0
Crack 6	Wall	0.0				100%	0.0	0.0
Crack 7	Wall	0.0				100%	0.0	0.0
Crack 8	Wall	0.0				100%	0.0	0.0
Crack 9	Wall	0.0				100%	0.0	0.0
Crack 10	Wall	0.0				100%	0.0	0.0
Crack 11	Wall	0.0				100%	0.0	0.0
Crack 12	Wall	0.0				100%	0.0	0.0
Crack 13	Wall	0.0				100%	0.0	0.0
	Effective H (Wall Only)	**-4.0**					**5.7**	**5.7**

Notes: H is the height difference between the crack and the neutral pressure level of the building.

Effective Building Coefficients

Shelter Coefficient	0.8
Wind Shear Exponent	0.19
Boundary Layer Thickness, ft	1091
Wall Pressure Coefficient	0.11
Roof Pressure Coefficient	-0.30

Site Parameters

Average Wind Speed, mph	9.4
Site Corrected Wind Speed, mph	6.5
Model Wind Coefficient	0.15
Draft Factor	0.13
Volume Factor, ft/min (in-wg)^0.5	2,603

Energy Engineering Calculations

	Temperature Bin Hours				Baseline		Calculated Infiltration Rates			
	Mid Pt Temp	MCWB	Density	Enthalpy	Occupied	Unocc	Occupied Rates Wall	Occupied Rates Roof	Unoccupied Rates Wall	Unoccupied Rates Roof
Ref	*oF*	*oF*	*lb/ft3*	*Btu/lb*	*hrs/yr*	*hrs/yr*	*cfm*	*cfm*	*cfm*	*cfm*
1	9	6.5	0.085	2.8	14	8	986	0	911	0
2	13	10.1	0.084	3.9	14	24	944	0	865	0
3	16	14.0	0.083	5.1	37	40	900	0	817	0
4	20	17.4	0.082	6.3	43	66	855	0	767	0
5	24	20.3	0.082	7.3	112	130	810	0	716	0
6	28	24.1	0.081	8.7	146	205	759	0	658	0
7	31	27.7	0.080	10.0	234	277	705	0	595	0
8	35	31.1	0.080	11.3	166	254	649	0	528	0
9	39	33.8	0.079	12.5	228	288	590	0	453	0
10	43	37.4	0.079	14.0	241	265	521	0	358	0
11	46	41.4	0.078	15.8	223	294	438	0	221	0
12	50	44.7	0.077	17.5	187	225	340	0	165	0
13	54	47.7	0.077	19.0	251	268	206	0	317	0
14	58	52.1	0.076	21.4	295	345	204	0	430	0
15	61	56.2	0.075	23.9	302	362	353	0	517	0
16	65	59.1	0.074	25.8	183	256	446	0	529	0
17	69	62.0	0.074	27.8	227	445	523	0	527	0
18	73	65.8	0.073	30.6	195	479	598	0	525	0
19	76	67.7	0.073	32.0	183	354	651	0	566	0
20	80	69.2	0.072	33.3	126	185	697	0	618	0
21	84	70.1	0.072	34.0	145	158	735	0	661	0
22	88	72.2	0.071	35.8	100	84	780	0	711	0
23	91	74.7	0.070	38.1	45	31	824	0	759	0
24	95	75.0	0.070	38.4	5	10	853	0	790	0
25	99	76.9	0.069	40.1	2	3	890	0	830	0
							650			

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Infiltration

Building Data

Building Name	Cleary ES
Weather City	PA, Philadelphia-International
Building Height, ft	15
Building Orientation, deg	2
Building L/W Ratio	1.4
Internal Draft Coefficient	0.7

Building Operating Conditions

Occupied Set Point Temp, oF	70.0
Cooling Setup Temp, oF	74.0
Percent of Building Cooled, %	100%
Cooling Seasonal Efficiency, %	391%
Heating Setback Temp, oF	64.0
Percent of Building Heated, %	100%
Heating Seasonal Efficiency, %	93%

3.91

Shelter Characteristics

Direction	Shelter Class	Terrain Category
See Reference Tables for Descriptions		
North	2	2
East	2	2
South	3	2
West	3	2

Building Crack Definitions

Penetration	Type	H	Qty	Length	Gap	% Open	Total Area	Wall Only
Name	*Select*	*ft*	*#*	*ft*	*inches*	*%*	*sqft*	*sqft*
Crack 1	Door	-4.5	3	3	1/10	100%	0.1	0.1
Crack 2	Door	-4.5	2	13	1/10	100%	0.2	0.2
Crack 3	Door	-4.5	1	20	1/10	100%	0.2	0.2
Crack 4	Door	-4.5	11	33	1/10	100%	3.0	3.0
Crack 5	Roof-Wall	7.5	369	1	1/18	100%	1.7	1.7
Crack 6	Roof-Wall	7.5	647	1	1/12	100%	4.5	4.5
Crack 7	Wall	0.0	189	1	1/24	100%	0.7	0.7
Crack 8	Roof-Wall	7.5	20	1	1/12	100%	0.1	0.1
Crack 9	Wall	0.0				100%	0.0	0.0
Crack 10	Wall	0.0				100%	0.0	0.0
Crack 11	Wall	0.0				100%	0.0	0.0
Crack 12	Wall	0.0				100%	0.0	0.0
Crack 13	Wall	0.0				100%	0.0	0.0
	Effective H (Wall Only)	**3.0**					**10.5**	**10.5**

Notes: H is the height difference between the crack and the neutral pressure level of the building.

Effective Building Coefficients

Shelter Coefficient	0.8
Wind Shear Exponent	0.22
Boundary Layer Thickness, ft	1200
Wall Pressure Coefficient	0.11
Roof Pressure Coefficient	-0.30

Site Parameters

Average Wind Speed, mph	9.4
Site Corrected Wind Speed, mph	5.7
Model Wind Coefficient	0.13
Draft Factor	0.13
Volume Factor, ft/min (in-wg)^0.5	2,603

Energy Engineering Calculations

	Temperature Bin Hours				Baseline		Calculated Infiltration Rates			
	Mid Pt Temp	MCWB	Density	Enthalpy	Occupied	Unocc	Occupied Rates Wall	Occupied Rates Roof	Unoccupied Rates Wall	Unoccupied Rates Roof
Ref	*oF*	*oF*	*lb/ft3*	*Btu/lb*	*hrs/yr*	*hrs/yr*	*cfm*	*cfm*	*cfm*	*cfm*
1	9	6.5	0.085	2.8	17	5	2,033	0	1,954	0
2	13	10.1	0.084	3.9	14	24	1,978	0	1,897	0
3	16	14.0	0.083	5.1	42	35	1,921	0	1,838	0
4	20	17.4	0.082	6.3	49	60	1,864	0	1,779	0
5	24	20.3	0.082	7.3	122	120	1,808	0	1,720	0
6	28	24.1	0.081	8.7	165	186	1,747	0	1,655	0
7	31	27.7	0.080	10.0	264	247	1,685	0	1,590	0
8	35	31.1	0.080	11.3	190	230	1,622	0	1,523	0
9	39	33.8	0.079	12.5	258	258	1,560	0	1,456	0
10	43	37.4	0.079	14.0	276	230	1,491	0	1,382	0
11	46	41.4	0.078	15.8	256	261	1,417	0	1,302	0
12	50	44.7	0.077	17.5	213	199	1,342	0	1,220	0
13	54	47.7	0.077	19.0	285	234	1,265	0	1,135	0
14	58	52.1	0.076	21.4	332	308	1,171	0	1,029	0
15	61	56.2	0.075	23.9	330	334	1,070	0	913	0
16	65	59.1	0.074	25.8	206	233	971	0	888	0
17	69	62.0	0.074	27.8	249	423	860	0	884	0
18	73	65.8	0.073	30.6	215	459	715	0	879	0
19	76	67.7	0.073	32.0	220	317	577	0	736	0
20	80	69.2	0.072	33.3	155	156	405	0	611	0
21	84	70.1	0.072	34.0	184	119	112	0	471	0
22	88	72.2	0.071	35.8	125	59	414	0	197	0
23	91	74.7	0.070	38.1	57	19	605	0	395	0
24	95	75.0	0.070	38.4	8	7	703	0	534	0
25	99	76.9	0.069	40.1	4	1	818	0	678	0
							1,206			

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Infiltration

Building Data

Building Name	Collings Lake ES
Weather City	PA, Philadelphia-International
Building Height, ft	13.5
Building Orientation, deg	5
Building L/W Ratio	1.2
Internal Draft Coefficient	0.7

Building Operating Conditions

Occupied Set Point Temp, oF	70.0
Cooling Setup Temp, oF	80.0
Percent of Building Cooled, %	100%
Cooling Seasonal Efficiency, %	296%
Heating Setback Temp, oF	60.0
Percent of Building Heated, %	100%
Heating Seasonal Efficiency, %	80%

Shelter Characteristics

Direction	Shelter Class	Terrain Category
See Reference Tables for Descriptions		
North	2	2
East	2	2
South	2	2
West	2	2

Building Crack Definitions

Penetration Name	Type Select	H ft	Qty #	Length ft	Gap inches	% Open %	Total Area sqft	Wall Only sqft
Crack 1	Door	-3.8	3	20	1/10	100%	0.5	0.5
Crack 2	Door	-3.8	5	33	1/10	100%	1.4	1.4
Crack 3	Wall	0.0	13	1	0	100%	0.0	0.0
Crack 4	Roof-Wall	6.8	700	1	1/12	100%	4.9	4.9
Crack 5	Roof-Wall	6.8	112	1	1/8	100%	0.6	0.6
Crack 6	Roof-Wall	6.8	78	1	1/8	100%	0.4	0.4
Crack 7	Wall	0.0				100%	0.0	0.0
Crack 8	Wall	0.0				100%	0.0	0.0
Crack 9	Wall	0.0				100%	0.0	0.0
Crack 10	Wall	0.0				100%	0.0	0.0
Crack 11	Wall	0.0				100%	0.0	0.0
Crack 12	Wall	0.0				100%	0.0	0.0
Crack 13	Wall	0.0				100%	0.0	0.0
	Effective H (Wall Only)	**4.2**					**7.7**	**7.7**

Notes: H is the height difference between the crack and the neutral pressure level of the building.

Effective Building Coefficients

Shelter Coefficient	0.9
Wind Shear Exponent	0.22
Boundary Layer Thickness, ft	1200
Wall Pressure Coefficient	0.11
Roof Pressure Coefficient	-0.30

Site Parameters

Average Wind Speed, mph	9.4
Site Corrected Wind Speed, mph	5.5
Model Wind Coefficient	0.16
Draft Factor	0.13
Volume Factor, ft/min (in-wg)^0.5	2,603

Energy Engineering Calculations

	Temperature Bin Hours				Baseline		Calculated Infiltration Rates			
	Mid Pt Temp	MCWB	Density	Enthalpy	Occupied	Unocc	Occupied Rates Wall	Occupied Rates Roof	Unoccupied Rates Wall	Unoccupied Rates Roof
Ref	oF	oF	lb/ft3	Btu/lb	hrs/yr	hrs/yr	cfm	cfm	cfm	cfm
1	9	6.5	0.085	2.8	14	8	1,743	0	1,627	0
2	13	10.1	0.084	3.9	12	26	1,695	0	1,575	0
3	16	14.0	0.083	5.1	32	45	1,645	0	1,522	0
4	20	17.4	0.082	6.3	38	71	1,595	0	1,468	0
5	24	20.3	0.082	7.3	97	145	1,546	0	1,414	0
6	28	24.1	0.081	8.7	132	219	1,493	0	1,356	0
7	31	27.7	0.080	10.0	216	295	1,438	0	1,295	0
8	35	31.1	0.080	11.3	154	266	1,383	0	1,234	0
9	39	33.8	0.079	12.5	193	323	1,328	0	1,172	0
10	43	37.4	0.079	14.0	214	292	1,268	0	1,103	0
11	46	41.4	0.078	15.8	206	311	1,202	0	1,027	0
12	50	44.7	0.077	17.5	162	250	1,136	0	948	0
13	54	47.7	0.077	19.0	216	303	1,068	0	866	0
14	58	52.1	0.076	21.4	270	370	984	0	761	0
15	61	56.2	0.075	23.9	272	392	894	0	732	0
16	65	59.1	0.074	25.8	163	276	805	0	729	0
17	69	62.0	0.074	27.8	201	471	704	0	726	0
18	73	65.8	0.073	30.6	171	503	570	0	722	0
19	76	67.7	0.073	32.0	181	356	436	0	719	0
20	80	69.2	0.072	33.3	113	198	253	0	679	0
21	84	70.1	0.072	34.0	138	165	222	0	590	0
22	88	72.2	0.071	35.8	90	94	432	0	458	0
23	91	74.7	0.070	38.1	30	46	577	0	254	0
24	95	75.0	0.070	38.4	4	11	655	0	179	0
25	99	76.9	0.069	40.1	1	4	749	0	404	0
							1,033			

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Infiltration

Building Data

Building Name	Milanesi ES
Weather City	PA, Philadelphia-International
Building Height, ft	11
Building Orientation, deg	-20
Building L/W Ratio	1.4
Internal Draft Coefficient	0.7

Building Operating Conditions

Occupied Set Point Temp, oF	69.0
Cooling Setup Temp, oF	76.0
Percent of Building Cooled, %	100%
Cooling Seasonal Efficiency, %	349%
Heating Setback Temp, oF	64.0
Percent of Building Heated, %	100%
Heating Seasonal Efficiency, %	78%

Shelter Characteristics

Direction	Shelter Class	Terrain Category
See Reference Tables for Descriptions		
North	4	2
East	4	2
South	2	2
West	2	2

Building Crack Definitions

Penetration	Type	H	Qty	Length	Gap	% Open	Total Area	Wall Only
Name	*Select*	*ft*	*#*	*ft*	*inches*	*%*	*sqft*	*sqft*
Crack 1	Door	-2.5	2	20	1/10	100%	0.3	0.3
Crack 2	Door	-2.5	5	33	1/10	100%	1.4	1.4
Crack 3	Wall	0.0	460	1	1/64	100%	0.6	0.6
Crack 4	Wall	0.0	338	1	0	100%	0.3	0.3
Crack 5	Roof-Wall	5.5	516	1	1/8	100%	5.4	5.4
Crack 6	Roof-Wall	5.5	8	1	1/8	100%	0.1	0.1
Crack 7	Wall	0.0				100%	0.0	0.0
Crack 8	Wall	0.0				100%	0.0	0.0
Crack 9	Wall	0.0				100%	0.0	0.0
Crack 10	Wall	0.0				100%	0.0	0.0
Crack 11	Wall	0.0				100%	0.0	0.0
Crack 12	Wall	0.0				100%	0.0	0.0
Crack 13	Wall	0.0				100%	0.0	0.0
	Effective H (Wall Only)	**3.2**					**8.0**	**8.0**

Notes: H is the height difference between the crack and the neutral pressure level of the building.

Effective Building Coefficients

Shelter Coefficient	0.7
Wind Shear Exponent	0.22
Boundary Layer Thickness, ft	1200
Wall Pressure Coefficient	0.11
Roof Pressure Coefficient	-0.30

Site Parameters

Average Wind Speed, mph	9.4
Site Corrected Wind Speed, mph	5.3
Model Wind Coefficient	0.09
Draft Factor	0.13
Volume Factor, ft/min (in-wg)^0.5	2,603

Energy Engineering Calculations

	Temperature Bin Hours				Baseline		Calculated Infiltration Rates			
	Mid Pt Temp	MCWB	Density	Enthalpy	Occupied	Unocc	Occupied Rates Wall	Occupied Rates Roof	Unoccupied Rates Wall	Unoccupied Rates Roof
Ref	*oF*	*oF*	*lb/ft3*	*Btu/lb*	*hrs/yr*	*hrs/yr*	*cfm*	*cfm*	*cfm*	*cfm*
1	9	6.5	0.085	2.8	8	14	1,534	0	1,481	0
2	13	10.1	0.084	3.9	9	29	1,490	0	1,435	0
3	16	14.0	0.083	5.1	25	52	1,443	0	1,386	0
4	20	17.4	0.082	6.3	30	79	1,397	0	1,338	0
5	24	20.3	0.082	7.3	77	165	1,351	0	1,290	0
6	28	24.1	0.081	8.7	98	253	1,301	0	1,237	0
7	31	27.7	0.080	10.0	186	325	1,249	0	1,183	0
8	35	31.1	0.080	11.3	126	294	1,197	0	1,128	0
9	39	33.8	0.079	12.5	159	357	1,145	0	1,073	0
10	43	37.4	0.079	14.0	193	313	1,088	0	1,011	0
11	46	41.4	0.078	15.8	174	343	1,025	0	943	0
12	50	44.7	0.077	17.5	130	282	961	0	873	0
13	54	47.7	0.077	19.0	182	337	895	0	800	0
14	58	52.1	0.076	21.4	237	403	813	0	706	0
15	61	56.2	0.075	23.9	243	421	722	0	600	0
16	65	59.1	0.074	25.8	166	273	630	0	577	0
17	69	62.0	0.074	27.8	230	442	522	0	575	0
18	73	65.8	0.073	30.6	283	391	364	0	572	0
19	76	67.7	0.073	32.0	304	233	151	0	501	0
20	80	69.2	0.072	33.3	221	90	284	0	384	0
21	84	70.1	0.072	34.0	263	40	417	0	233	0
22	88	72.2	0.071	35.8	173	11	535	0	242	0
23	91	74.7	0.070	38.1	75	1	637	0	422	0
24	95	75.0	0.070	38.4	15	0	696	0	507	0
25	99	76.9	0.069	40.1	5	0	770	0	604	0
							905			

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Name	Yanmar	Rated Heat Recovery	204.1 kBtu/hr	Aux Fan Energy Use	0.75 kW	Efficiency	
Model	CP35D1		59.8 kW			Overall	88%
Size	35 kW	Fuel Consumption	367.45 kBtu/hr	Circ Pump Energy Use	0.95 kW	Generation (LHV)	32.5%
Qty	1 Unit		107.7 kW			Exhaust Recovery (LHV)	55.0%

				A	B	C	D	E	F	G	H	I	J	K	L	M	N
				(FROM ELEMENT)	(FROM ELEMENT)	B/12	(FROM ELEMENT)	IF A> 35KW, A ELSE 35KW	E*3.412/(Gen Eff of 32.5%)	F*(Exhaust Eff of55%)	ess Heating Cap Avail						
				INPUT				Analysis							Savings		
Month	Day	Hour	Total Electric Load (kW)	Cooling Load (kbtu)	Cooling Load (tons)	Heating Load (kbtu)	Generator Electric Output (kW)	Natural Gas Input (kbtu)	Heat Recovery (kBtu)	kBtu	Therms	NG Use for Running Generator (Therms)	Heating Load that can be offset (Therms)	Net Heating Change (Therms)	Total Potential kW Savings	Post Peak kW
1	1	1	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	1	2	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	1	3	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	1	4	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	1	5	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	1	6	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
1	1	7	45.06	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.06
1	1	8	44.99	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.99
1	1	9	46.96	0	0	886	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.96
1	1	10	54.01	0	0	404	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.01
1	1	11	63.70	0	0	2372	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.70
1	1	12	55.17	0	0	2053	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.17
1	1	13	55.32	0	0	2088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.32
1	1	14	63.14	0	0	2123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.14
1	1	15	31.21	172	14	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
1	1	16	44.96	0	0	20	35.00	367.45	202.10	202.10	2.02	-3.67	0.20	-3.48	35.00	9.96
1	1	17	44.29	0	0	590	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.29
1	1	18	44.99	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.99
1	1	19	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
1	1	20	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	1	21	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	1	22	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	1	23	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	1	24	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	2	1	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	2	2	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	2	3	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	2	4	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	2	5	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	2	6	76.41	0	0	4512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.41
1	2	7	113.33	0	0	4550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.33
1	2	8	155.65	0	0	4698	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.65
1	2	9	185.79	0	0	4602	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.79
1	2	10	183.83	0	0	3761	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.83
1	2	11	182.84	0	0	3288	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.84
1	2	12	182.40	0	0	3069	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.40
1	2	13	182.25	0	0	2950	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.25
1	2	14	182.39	0	0	2954	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.39
1	2	15	182.78	0	0	3099	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.78
1	2	16	182.77	0	0	3077	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.77
1	2	17	133.77	0	0	3690	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.77
1	2	18	78.06	0	0	3741	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.06
1	2	19	57.13	0	0	3732	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.13
1	2	20	28.85	0	0	1047	28.85	302.88	166.58	166.58	1.67	-3.03	1.67	-1.36	28.85	0.00
1	2	21	29.03	0	0	1123	29.03	304.75	167.61	167.61	1.68	-3.05	1.68	-1.37	29.03	0.00
1	2	22	28.95	0	0	1089	28.95	303.90	167.15	167.15	1.67	-3.04	1.67	-1.37	28.95	0.00
1	2	23	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	2	24	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	3	1	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	3	2	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
1	3	3	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
1	3	4	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
1	3	5	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	3	6	74.43	0	0	3153	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.43
1	3	7	110.96	0	0	2958	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.96
1	3	8	152.89	0	0	2754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.89
1	3	9	183.17	0	0	2640	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.17
1	3	10	183.24	0	0	2687	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.24
1	3	11	183.21	0	0	2625	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.21
1	3	12	183.22	0	0	2628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.22
1	3	13	183.02	0	0	2496	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.02
1	3	14	183.03	0	0	2499	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.03
1	3	15	183.02	0	0	2444	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.02
1	3	16	182.99	0	0	2422	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.99
1	3	17	132.34	0	0	2422	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.34
1	3	18	76.72	0	0	2572	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.72
1	3	19	55.82	0	0	2654	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.82
1	3	20	28.15	0	0	745	28.15	295.55	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
1	3	21	28.32	0	0	817	28.32	297.30	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
1	3	22	28.40	0	0	851	28.40	298.13	163.97	163.97	1.64	-2.98	1.64	-1.34	28.40	0.00
1	3	23	28.40	0	0	851	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
1	3	24	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
1	4	1	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
1	4	2	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	4	3	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	4	4	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	4	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	4	6	75.57	0	0	4116	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.57
1	4	7	110.82	0	0	3415	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.82
1	4	8	154.88	0	0	4379	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.88
1	4	9	185.24	0	0	4366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.24
1	4	10	183.63	0	0	3751	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.63
1	4	11	182.90	0	0	3422	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.90
1	4	12	182.60	0	0	3275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.60
1	4	13	182.27	0	0	3108	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.27
1	4	14	182.83	0	0	3347	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.83
1	4	15	183.14	0	0	3503	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.14
1	4	16	183.31	0	0	3560	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.31
1	4	17	134.05	0	0	4058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.05
1	4	18	78.87	0	0	4303	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.87
1	4	19	58.10	0	0	4397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.10
1	4	20	29.38	0	0	1276	29.38	308.44	169.64	169.64	1.70	-3.08	1.70	-1.39	29.38	0.00
1	4	21	29.48	0	0	1318	29.48	309.48	170.22	170.22	1.70	-3.09	1.70	-1.39	29.48	0.00
1	4	22	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	4	23	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
1	4	24	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	5	1	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	5	2	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	5	3	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	5	4	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	5	5	51.71	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
1	5	6	77.07	0	0	4848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.07
1	5	7	113.85	0	0	4826	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.85
1	5	8	156.38	0	0	5075	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	121.38
1	5	9	186.40	0	0	4924	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.40
1	5	10	183.94	0	0	3873	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.94
1	5	11	183.20	0	0	3560	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.20
1	5	12	182.90	0	0	3412	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.90
1	5	13	183.19	0	0	3531	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.19
1	5	14	183.19	0	0	3544	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.19
1	5	15	183.16	0	0	3534	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.16
1	5	16	183.71	0	0	3755	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.71
1	5	17	134.37	0	0	4216	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.37
1	5	18	79.21	0	0	4456	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.21
1	5	19	58.43	0	0	4520	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.43
1	5	20	29.48	0	0	1318	29.48	309.48	170.21	170.21	1.70	-3.09	1.70	-1.39	29.48	0.00
1	5	21	29.66	0	0	1397	29.66	311.38	171.26	171.26	1.71	-3.11	1.71	-1.40	29.66	0.00
1	5	22	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	5	23	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	5	24	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	6	1	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	6	2	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	6	3	51.71	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
1	6	4	51.80	0	0	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	6	5	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	6	6	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	6	7	46.61	0	0	1593	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.61
1	6	8	46.33	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.33
1	6	9	48.12	0	0	1387	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.12
1	6	10	53.89	0	0	346	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.89
1	6	11	65.13	0	0	3344	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.13
1	6	12	56.84	0	0	3120	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.84
1	6	13	57.05	0	0	3239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.05
1	6	14	64.32	0	0	3010	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.32
1	6	15	31.50	0	0	123	31.50	330.71	181.89	181.89	1.82	-3.31	1.23	-2.08	31.50	0.00
1	6	16	23.97	0	0	397	23.97	251.60	138.38	138.38	1.38	-2.52	1.38	-1.13	23.97	0.00
1	6	17	44.80	0	0	812	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.80
1	6	18	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
1	6	19	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	6	20	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	6	21	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	6	22	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	6	23	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	6	24	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	7	1	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	7	2	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	7	3	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	7	4	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	7	5	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	7	6	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	7	7	45.61	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
1	7	8	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
1	7	9	47.14	0	0	960	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.14
1	7	10	54.98	0	0	820	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.98
1	7	11	65.59	0	0	3133	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.59
1	7	12	57.83	0	0	3074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.83

1	7	13	57.86	0	0	3025	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.86
1	7	14	65.60	0	0	3000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.60
1	7	15	54.96	0	0	811	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.96
1	7	16	46.87	0	0	843	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.87
1	7	17	44.90	0	0	856	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.90
1	7	18	44.89	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
1	7	19	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	7	20	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	7	21	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	7	22	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	7	23	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	7	24	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	8	1	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	8	2	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	8	3	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	8	4	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	8	5	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	8	6	74.42	0	0	3048	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.42
1	8	7	110.95	0	0	2889	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.95
1	8	8	153.23	0	0	2904	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.23
1	8	9	183.69	0	0	2994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.69
1	8	10	184.37	0	0	3523	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.37
1	8	11	184.75	0	0	3769	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.75
1	8	12	185.14	0	0	4079	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.14
1	8	13	185.34	0	0	4248	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.34
1	8	14	184.06	0	0	3695	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.06
1	8	15	183.47	0	0	3466	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.47
1	8	16	183.69	0	0	3660	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.69
1	8	17	134.29	0	0	4183	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.29
1	8	18	79.21	0	0	4456	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.21
1	8	19	58.43	0	0	4547	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.43
1	8	20	29.66	0	0	1397	29.66	311.39	171.26	171.26	1.71	-3.11	1.71	-1.40	29.66	0.00
1	8	21	51.71	0	0	1476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
1	8	22	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	8	23	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	8	24	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	9	1	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	9	2	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	9	3	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	9	4	51.99	0	0	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.99
1	9	5	52.07	0	0	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	9	6	77.75	0	0	5193	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.75
1	9	7	114.55	0	0	5181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	79.55
1	9	8	157.15	0	0	5489	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	122.15
1	9	9	187.16	0	0	5332	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	152.16
1	9	10	184.65	0	0	4287	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.65
1	9	11	184.23	0	0	4097	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.23
1	9	12	184.68	0	0	4289	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.68
1	9	13	184.12	0	0	4061	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.12
1	9	14	184.49	0	0	4219	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.49
1	9	15	184.05	0	0	4012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.05
1	9	16	184.60	0	0	4235	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.60
1	9	17	134.87	0	0	4514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.87
1	9	18	79.93	0	0	4845	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.93
1	9	19	59.11	0	0	4900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.11
1	9	20	29.93	0	0	1515	29.93	314.25	172.84	172.84	1.73	-3.14	1.73	-1.41	29.93	0.00
1	9	21	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	9	22	52.07	0	0	1630	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	9	23	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
1	9	24	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
1	10	1	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
1	10	2	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
1	10	3	52.07	0	0	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	10	4	52.07	0	0	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	10	5	52.27	0	0	1717	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.27
1	10	6	77.75	0	0	5193	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.75
1	10	7	114.55	0	0	5181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	79.55
1	10	8	156.93	0	0	5368	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	121.93
1	10	9	186.99	0	0	5237	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.99
1	10	10	184.42	0	0	4167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.42
1	10	11	183.64	0	0	3809	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.64
1	10	12	182.95	0	0	3465	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.95
1	10	13	183.14	0	0	3563	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.14
1	10	14	183.40	0	0	3655	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.40
1	10	15	183.59	0	0	3754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.59
1	10	16	184.99	0	0	4350	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.99
1	10	17	134.89	0	0	4480	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.89
1	10	18	79.58	0	0	4652	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.58
1	10	19	58.62	0	0	4644	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.62
1	10	20	29.66	0	0	1397	29.66	311.38	171.26	171.26	1.71	-3.11	1.71	-1.40	29.66	0.00
1	10	21	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	10	22	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
1	10	23	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	10	24	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	11	1	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	11	2	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	11	3	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	11	4	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	11	5	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	11	6	76.23	0	0	4413	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.23
1	11	7	112.99	0	0	4364	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.99
1	11	8	155.45	0	0	4507	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.45
1	11	9	186.00	0	0	4569	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.00
1	11	10	185.49	0	0	4320	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.49
1	11	11	184.15	0	0	3664	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.15
1	11	12	183.96	0	0	3514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.96
1	11	13	183.59	0	0	3285	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.59
1	11	14	183.41	0	0	3206	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.41
1	11	15	183.76	0	0	3136	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.76
1	11	16	184.11	0	0	3235	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.11
1	11	17	133.38	0	0	3161	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.38
1	11	18	77.69	0	0	3219	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.69
1	11	19	56.94	0	0	3329	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.94
1	11	20	28.67	0	0	969	28.67	300.99	165.54	165.54	1.66	-3.01	1.66	-1.35	28.67	0.00
1	11	21	28.67	0	0	969	28.67	300.99	165.54	165.54	1.66	-3.01	1.66	-1.35	28.67	0.00
1	11	22	28.67	0	0	969	28.67	300.99	165.54	165.54	1.66	-3.01	1.66	-1.35	28.67	0.00
1	11	23	28.67	0	0	969	28.67	300.99	165.54	165.54	1.66	-3.01	1.66	-1.35	28.67	0.00
1	11	24	28.67	0	0	969	28.67	300.99	165.54	165.54	1.66	-3.01	1.66	-1.35	28.67	0.00
1	12	1	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	12	2	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	12	3	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	12	4	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	12	5	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	12	6	75.08	0	0	3649	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.08
1	12	7	111.99	0	0	3701	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.99
1	12	8	154.36	0	0	3873	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.36
1	12	9	184.49	0	0	3726	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.49
1	12	10	183.42	0	0	3286	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.42
1	12	11	181.52	94	8	2463	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.52
1	12	12	181.93	0	0	2635	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.93
1	12	13	182.16	0	0	2735	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.16
1	12	14	182.55	0	0	2937	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.55
1	12	15	183.51	0	0	3346	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.51
1	12	16	183.40	0	0	3315	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.40
1	12	17	132.89	0	0	3304	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.89
1	12	18	78.39	0	0	3892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.39
1	12	19	57.60	0	0	3989	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.60
1	12	20	29.20	0	0	1197	29.20	306.53	168.59	168.59	1.69	-3.07	1.69	-1.38	29.20	0.00
1	12	21	29.12	0	0	1162	29.12	305.69	168.13	168.13	1.68	-3.06	1.68	-1.38	29.12	0.00
1	12	22	29.20	0	0	1197	29.20	306.53	168.59	168.59	1.69	-3.07	1.69	-1.38	29.20	0.00
1	12	23	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	12	24	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	13	1	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	13	2	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	13	3	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	13	4	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	13	5	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	13	6	51.63	0	0	1439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	13	7	45.87	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.87
1	13	8	45.87	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.87
1	13	9	47.58	0	0	1153	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.58
1	13	10	54.19	0	0	476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.19
1	13	11	64.16	0	0	2543	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.16
1	13	12	55.75	0	0	2100	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.75
1	13	13	55.86	0	0	2106	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.86
1	13	14	64.09	0	0	2294	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.09
1	13	15	31.99	0	0	336	31.99	335.89	184.74	184.74	1.85	-3.36	1.85	-1.51	31.99	0.00
1	13	16	24.00	0	0	411	24.00	251.95	138.57	138.57	1.39	-2.52	1.39	-1.13	24.00	0.00
1	13	17	44.11	0	0	514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.11
1	13	18	44.10	0	0	512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.10
1	13	19	49.48	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
1	13	20	49.48	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
1	13	21	49.40	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
1	13	22	49.24	0	0	407	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.24
1	13	23	48.98	0	0	293	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.98
1	13	24	48.88	0	0	252	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.88
1	14	1	48.88	0	0	252	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.88
1	14	2	48.98	0	0	292	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.98
1	14	3	49.15	0	0	366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.15
1	14	4	49.07	0	0	334	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.07
1	14	5	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
1	14	6	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
1	14	7	44.55	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.55
1	14	8	44.55	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.55
1	14	9	46.35	0	0	619	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.35
1	14	10	31.21	475	40	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
1	14	11	61.93	0	0	1739	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.93

1	14	12	53.98	0	0	1689	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.98
1	14	13	54.17	0	0	1749	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.17
1	14	14	62.36	0	0	1948	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.36
1	14	15	31.21	360	30	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
1	14	16	23.04	180	15	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
1	14	17	21.82	0	0	335	21.82	229.12	126.02	126.02	1.26	-2.29	1.26	-1.03	21.82	0.00
1	14	18	44.81	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
1	14	19	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
1	14	20	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	14	21	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	14	22	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	14	23	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	14	24	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	15	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	15	2	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	15	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	15	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	15	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	15	6	75.26	0	0	3909	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.26
1	15	7	111.81	0	0	3793	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.81
1	15	8	154.16	0	0	3947	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.16
1	15	9	184.49	0	0	3977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.49
1	15	10	181.70	0	0	2793	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.70
1	15	11	181.17	124	10	2580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.17
1	15	12	180.91	185	15	2482	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.91
1	15	13	181.13	84	7	2594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.13
1	15	14	181.58	0	0	2773	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.58
1	15	15	181.61	0	0	2801	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.61
1	15	16	182.83	0	0	3302	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.83
1	15	17	133.21	0	0	3646	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.21
1	15	18	78.06	0	0	3879	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.06
1	15	19	56.96	0	0	3824	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.96
1	15	20	28.67	0	0	971	28.67	301.03	165.57	165.57	1.66	-3.01	1.66	-1.35	28.67	0.00
1	15	21	28.85	0	0	1047	28.85	302.89	166.59	166.59	1.67	-3.03	1.67	-1.36	28.85	0.00
1	15	22	28.95	0	0	1089	28.95	303.91	167.15	167.15	1.67	-3.04	1.67	-1.37	28.95	0.00
1	15	23	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	15	24	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	16	1	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	16	2	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	16	3	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	16	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	16	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	16	6	75.26	0	0	3757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.26
1	16	7	111.14	0	0	3210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.14
1	16	8	153.43	0	0	3266	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.43
1	16	9	183.34	0	0	2965	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.34
1	16	10	182.99	0	0	2831	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.99
1	16	11	183.24	0	0	2901	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.24
1	16	12	183.23	0	0	2897	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.23
1	16	13	182.86	0	0	2733	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.86
1	16	14	182.66	0	0	2680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.66
1	16	15	182.45	0	0	2507	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.45
1	16	16	182.56	0	0	2545	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.56
1	16	17	132.64	0	0	2910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.64
1	16	18	77.05	0	0	3007	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.05
1	16	19	56.62	0	0	3319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.62
1	16	20	28.67	0	0	969	28.67	301.00	165.55	165.55	1.66	-3.01	1.66	-1.35	28.67	0.00
1	16	21	28.57	0	0	927	28.57	299.98	164.99	164.99	1.65	-3.00	1.65	-1.35	28.57	0.00
1	16	22	28.67	0	0	969	28.67	301.00	165.55	165.55	1.66	-3.01	1.66	-1.35	28.67	0.00
1	16	23	28.67	0	0	969	28.67	301.00	165.55	165.55	1.66	-3.01	1.66	-1.35	28.67	0.00
1	16	24	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	17	1	50.82	0	0	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	17	2	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	17	3	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
1	17	4	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	17	5	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	17	6	75.41	0	0	4098	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.41
1	17	7	112.32	0	0	4103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.32
1	17	8	155.25	0	0	4576	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.25
1	17	9	186.01	0	0	4778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.01
1	17	10	184.46	0	0	4193	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.46
1	17	11	184.27	0	0	4125	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.27
1	17	12	183.60	0	0	3825	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.60
1	17	13	184.02	0	0	4005	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.02
1	17	14	185.36	0	0	4592	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.36
1	17	15	185.44	0	0	4644	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.44
1	17	16	186.08	0	0	4915	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.08
1	17	17	135.51	0	0	4840	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	100.51
1	17	18	79.93	0	0	4910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.93
1	17	19	59.28	0	0	5041	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.28
1	17	20	30.02	0	0	1551	30.02	315.12	173.32	173.32	1.73	-3.15	1.73	-1.42	30.02	0.00
1	17	21	52.07	0	0	1630	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	17	22	52.27	0	0	1718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.27
1	17	23	52.36	0	0	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.36
1	17	24	52.36	0	0	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.36
1	18	1	52.46	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
1	18	2	52.46	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
1	18	3	52.54	0	0	1834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.54
1	18	4	52.54	0	0	1834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.54
1	18	5	52.63	0	0	1874	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.63
1	18	6	78.61	0	0	5667	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.61
1	18	7	115.60	0	0	5752	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	80.60
1	18	8	158.11	0	0	6009	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	123.11
1	18	9	188.59	0	0	6093	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	153.59
1	18	10	186.14	0	0	5076	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.14
1	18	11	185.33	0	0	4764	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.33
1	18	12	185.01	0	0	4604	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.01
1	18	13	184.79	0	0	4495	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.79
1	18	14	185.04	0	0	4580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.04
1	18	15	184.86	0	0	4496	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.86
1	18	16	185.29	0	0	4667	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.29
1	18	17	135.48	0	0	4886	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	100.48
1	18	18	80.61	0	0	5240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	45.61
1	18	19	59.96	0	0	5358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.96
1	18	20	30.30	0	0	1674	30.30	318.11	174.96	174.96	1.75	-3.18	1.75	-1.43	30.30	0.00
1	18	21	52.27	0	0	1718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.27
1	18	22	52.27	0	0	1718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.27
1	18	23	52.36	0	0	1754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.36
1	18	24	52.46	0	0	1798	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
1	19	1	52.46	0	0	1798	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
1	19	2	52.54	0	0	1834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.54
1	19	3	52.54	0	0	1834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.54
1	19	4	52.63	0	0	1874	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.63
1	19	5	52.72	0	0	1910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.72
1	19	6	78.77	0	0	5746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.77
1	19	7	115.60	0	0	5752	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	80.60
1	19	8	158.11	0	0	6000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	123.11
1	19	9	188.18	0	0	5893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	153.18
1	19	10	185.33	0	0	4676	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.33
1	19	11	184.75	0	0	4443	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.75
1	19	12	183.98	0	0	4092	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.98
1	19	13	184.06	0	0	4113	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.06
1	19	14	184.39	0	0	4236	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.39
1	19	15	183.96	0	0	4020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.96
1	19	16	184.00	0	0	4015	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.00
1	19	17	134.20	0	0	4244	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.20
1	19	18	79.59	0	0	4699	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.59
1	19	19	58.62	0	0	4701	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.62
1	19	20	29.66	0	0	1397	29.66	311.39	171.26	171.26	1.71	-3.11	1.71	-1.40	29.66	0.00
1	19	21	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	19	22	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	19	23	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	19	24	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	20	1	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	20	2	51.63	0	0	1439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
1	20	3	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	20	4	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	20	5	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	6	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	7	45.61	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
1	20	8	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
1	20	9	47.49	0	0	1115	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.49
1	20	10	55.56	0	0	1069	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.56
1	20	11	66.92	0	0	3933	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.92
1	20	12	59.18	0	0	3902	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.18
1	20	13	59.18	0	0	3872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.18
1	20	14	66.77	0	0	3779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.77
1	20	15	55.58	0	0	1077	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.58
1	20	16	47.50	0	0	1116	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.50
1	20	17	45.51	0	0	1121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.51
1	20	18	45.52	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
1	20	19	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	20	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	21	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	22	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	23	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	20	24	50.99	0	0	1161	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	21	1	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	2	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	3	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	4	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	5	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	6	51.07	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	21	7	45.69	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
1	21	8	45.69	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
1	21	9	47.49	0	0	1116	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.49
1	21	10	55.41	0	0	1009	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.41

1	21	11	66.42	0	0	3560	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.42
1	21	12	58.51	0	0	3480	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.51
1	21	13	58.33	0	0	3400	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.33
1	21	14	65.92	0	0	3242	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.92
1	21	15	54.62	0	0	666	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.62
1	21	16	47.16	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.16
1	21	17	45.16	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.16
1	21	18	45.26	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
1	21	19	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	21	20	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	21	21	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	21	22	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	21	23	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	21	24	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
1	22	1	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	22	2	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	22	3	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	22	4	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	22	5	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
1	22	6	76.23	0	0	4381	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.23
1	22	7	113.18	0	0	4481	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.18
1	22	8	155.24	0	0	4494	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.24
1	22	9	185.62	0	0	4485	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.62
1	22	10	183.96	0	0	3798	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.96
1	22	11	183.86	0	0	3748	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.86
1	22	12	184.25	0	0	3917	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.25
1	22	13	184.42	0	0	3988	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.42
1	22	14	184.31	0	0	3923	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.31
1	22	15	184.74	0	0	4173	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.74
1	22	16	185.69	0	0	4553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.69
1	22	17	134.85	0	0	4406	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.85
1	22	18	79.94	0	0	4838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.94
1	22	19	59.11	0	0	4921	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.11
1	22	20	29.93	0	0	1515	29.93	314.26	172.84	172.84	1.73	-3.14	1.73	-1.41	29.93	0.00
1	22	21	51.99	0	0	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.99
1	22	22	52.07	0	0	1630	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
1	22	23	52.17	0	0	1674	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
1	22	24	52.36	0	0	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.36
1	23	1	52.46	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
1	23	2	52.54	0	0	1834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.54
1	23	3	52.63	0	0	1874	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.63
1	23	4	52.63	0	0	1874	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.63
1	23	5	52.72	0	0	1910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.72
1	23	6	78.96	0	0	5840	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.96
1	23	7	115.80	0	0	5890	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	80.80
1	23	8	158.29	0	0	6125	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	123.29
1	23	9	188.59	0	0	6100	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	153.59
1	23	10	186.47	0	0	5193	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.47
1	23	11	185.54	0	0	4771	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.54
1	23	12	186.54	0	0	5177	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.54
1	23	13	186.09	0	0	4951	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.09
1	23	14	185.26	0	0	4582	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.26
1	23	15	185.26	0	0	4614	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.26
1	23	16	187.04	0	0	5371	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	152.04
1	23	17	136.06	0	0	5057	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	101.06
1	23	18	80.26	0	0	5034	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	45.26
1	23	19	59.28	0	0	5006	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.28
1	23	20	30.12	0	0	1594	30.12	316.18	173.90	173.90	1.74	-3.16	1.74	-1.42	30.12	0.00
1	23	21	51.99	0	0	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.99
1	23	22	51.89	0	0	1551	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	23	23	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	23	24	51.89	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
1	24	1	51.80	0	0	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
1	24	2	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	24	3	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	24	4	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
1	24	5	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
1	24	6	76.56	0	0	4512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.56
1	24	7	113.33	0	0	4462	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.33
1	24	8	155.44	0	0	4462	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.44
1	24	9	186.00	0	0	4547	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.00
1	24	10	185.89	0	0	4524	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.89
1	24	11	185.50	0	0	4320	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.50
1	24	12	185.14	0	0	4103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.14
1	24	13	184.97	0	0	4001	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.97
1	24	14	182.67	0	0	2968	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.67
1	24	15	183.50	0	0	3291	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.50
1	24	16	182.95	0	0	3008	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.95
1	24	17	133.10	0	0	3289	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.10
1	24	18	78.22	0	0	3711	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.22
1	24	19	57.27	0	0	3641	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.27
1	24	20	28.85	0	0	1046	28.85	302.86	166.57	166.57	1.67	-3.03	1.67	-1.36	28.85	0.00
1	24	21	28.95	0	0	1088	28.95	303.89	167.14	167.14	1.67	-3.04	1.67	-1.37	28.95	0.00
1	24	22	28.95	0	0	1088	28.95	303.89	167.14	167.14	1.67	-3.04	1.67	-1.37	28.95	0.00
1	24	23	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	24	24	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	25	1	51.17	0	0	1239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	25	2	51.17	0	0	1239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	25	3	51.35	0	0	1317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	25	4	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
1	25	5	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	25	6	76.23	0	0	4284	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.23
1	25	7	112.80	0	0	4160	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.80
1	25	8	155.07	0	0	4247	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.07
1	25	9	185.04	0	0	4032	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.04
1	25	10	183.92	0	0	3566	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.92
1	25	11	183.04	0	0	3158	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.04
1	25	12	183.40	0	0	3275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.40
1	25	13	183.33	0	0	3140	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.33
1	25	14	183.61	0	0	3184	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.61
1	25	15	183.38	0	0	2967	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.38
1	25	16	183.72	0	0	3108	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.72
1	25	17	133.22	0	0	3135	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.22
1	25	18	77.54	0	0	3262	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.54
1	25	19	56.77	0	0	3320	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.77
1	25	20	28.57	0	0	927	28.57	299.97	164.99	164.99	1.65	-3.00	1.65	-1.35	28.57	0.00
1	25	21	28.57	0	0	927	28.57	299.97	164.98	164.98	1.65	-3.00	1.65	-1.35	28.57	0.00
1	25	22	28.40	0	0	850	28.40	298.11	163.96	163.96	1.64	-2.98	1.64	-1.34	28.40	0.00
1	25	23	28.32	0	0	816	28.32	297.28	163.50	163.50	1.64	-2.97	1.64	-1.34	28.32	0.00
1	25	24	28.32	0	0	816	28.32	297.28	163.50	163.50	1.64	-2.97	1.64	-1.34	28.32	0.00
1	26	1	28.23	0	0	778	28.23	296.36	163.00	163.00	1.63	-2.96	1.63	-1.33	28.23	0.00
1	26	2	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	26	3	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
1	26	4	50.02	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
1	26	5	49.92	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.92
1	26	6	73.63	0	0	2508	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.63
1	26	7	110.17	0	0	2309	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.17
1	26	8	151.99	0	0	2031	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.99
1	26	9	182.23	0	0	1872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.23
1	26	10	181.73	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.73
1	26	11	179.59	474	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.59
1	26	12	179.43	482	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
1	26	13	179.43	558	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
1	26	14	179.43	698	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
1	26	15	179.43	720	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
1	26	16	179.43	676	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
1	26	17	129.04	170	14	51	35.00	367.45	202.10	202.10	2.02	-3.67	0.51	-3.17	35.00	94.04
1	26	18	73.73	0	0	353	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.73
1	26	19	53.20	0	0	588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.20
1	26	20	26.61	0	0	76	26.61	279.31	153.62	153.62	1.54	-2.79	0.76	-2.03	26.61	0.00
1	26	21	26.61	0	0	76	26.61	279.31	153.62	153.62	1.54	-2.79	0.76	-2.03	26.61	0.00
1	26	22	26.51	0	0	37	26.51	278.34	153.09	153.09	1.53	-2.78	0.37	-2.42	26.51	0.00
1	26	23	26.61	0	0	76	26.61	279.31	153.62	153.62	1.54	-2.79	0.76	-2.03	26.61	0.00
1	26	24	26.68	0	0	109	26.68	280.11	154.06	154.06	1.54	-2.80	1.09	-1.71	26.68	0.00
1	27	1	26.68	0	0	109	26.68	280.11	154.06	154.06	1.54	-2.80	1.09	-1.71	26.68	0.00
1	27	2	26.61	0	0	76	26.61	279.31	153.62	153.62	1.54	-2.79	0.76	-2.03	26.61	0.00
1	27	3	26.68	0	0	109	26.68	280.11	154.06	154.06	1.54	-2.80	1.09	-1.71	26.68	0.00
1	27	4	26.77	0	0	146	26.77	280.99	154.55	154.55	1.55	-2.81	1.46	-1.35	26.77	0.00
1	27	5	26.68	0	0	109	26.68	280.11	154.06	154.06	1.54	-2.80	1.09	-1.71	26.68	0.00
1	27	6	26.77	0	0	146	26.77	280.99	154.55	154.55	1.55	-2.81	1.46	-1.35	26.77	0.00
1	27	7	21.30	0	0	109	21.30	223.63	122.99	122.99	1.23	-2.24	1.09	-1.14	21.30	0.00
1	27	8	21.39	0	0	146	21.39	224.51	123.48	123.48	1.23	-2.25	1.23	-1.01	21.39	0.00
1	27	9	23.36	0	0	137	23.36	245.23	134.88	134.88	1.35	-2.45	1.35	-1.10	23.36	0.00
1	27	10	31.53	0	0	138	31.53	331.05	182.08	182.08	1.82	-3.31	1.38	-1.93	31.53	0.00
1	27	11	62.63	0	0	729	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.63
1	27	12	54.89	0	0	760	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.89
1	27	13	55.82	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.82
1	27	14	63.73	0	0	1618	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.73
1	27	15	32.15	0	0	402	32.15	337.50	185.62	185.62	1.86	-3.37	1.86	-1.52	32.15	0.00
1	27	16	24.29	0	0	539	24.29	255.04	140.27	140.27	1.40	-2.55	1.40	-1.15	24.29	0.00
1	27	17	22.42	0	0	592	22.42	235.36	129.45	129.45	1.29	-2.35	1.29	-1.06	22.42	0.00
1	27	18	22.50	0	0	627	22.50	236.21	129.92	129.92	1.30	-2.36	1.30	-1.06	22.50	0.00
1	27	19	27.98	0	0	669	27.98	293.70	161.53	161.53	1.62	-2.94	1.62	-1.32	27.98	0.00
1	27	20	27.88	0	0	627	27.88	292.69	160.98	160.98	1.61	-2.93	1.61	-1.32	27.88	0.00
1	27	21	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
1	27	22	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
1	27	23	50.02	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
1	27	24	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
1	28	1	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
1	28	2	50.27	0	0	851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
1	28	3	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	28	4	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
1	28	5	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
1	28	6	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	28	7	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
1	28	8	45.16	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.16
1	28	9	47.04	0	0	919	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.04

1	28	10	53.69	0	0	260	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.69
1	28	11	65.69	0	0	3358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.69
1	28	12	57.56	0	0	3238	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.56
1	28	13	56.35	0	0	2762	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.35
1	28	14	64.41	0	0	2922	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.41
1	28	15	31.50	0	0	123	31.50	330.72	181.90	181.90	1.82	-3.31	1.23	-2.08	31.50	0.00
1	28	16	23.89	0	0	366	23.89	250.85	137.97	137.97	1.38	-2.51	1.38	-1.13	23.89	0.00
1	28	17	44.74	0	0	785	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.74
1	28	18	45.53	0	0	1130	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.53
1	28	19	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	28	20	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
1	28	21	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	28	22	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	28	23	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	28	24	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	29	1	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	29	2	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	29	3	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	29	4	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
1	29	5	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
1	29	6	73.81	0	0	3029	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.81
1	29	7	111.29	0	0	3276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.29
1	29	8	153.60	0	0	3376	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.60
1	29	9	183.90	0	0	3258	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.90
1	29	10	182.39	0	0	2541	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.39
1	29	11	181.51	0	0	2191	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.51
1	29	12	181.96	0	0	2375	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.96
1	29	13	182.46	0	0	2557	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.46
1	29	14	182.45	0	0	2588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.45
1	29	15	182.29	0	0	2478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.29
1	29	16	182.27	0	0	2459	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.27
1	29	17	131.84	0	0	2477	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.84
1	29	18	76.40	0	0	2718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.40
1	29	19	56.00	0	0	2978	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.00
1	29	20	28.15	0	0	745	28.15	295.55	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
1	29	21	28.15	0	0	745	28.15	295.55	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
1	29	22	28.06	0	0	704	28.06	294.55	162.00	162.00	1.62	-2.95	1.62	-1.33	28.06	0.00
1	29	23	28.23	0	0	779	28.23	296.39	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
1	29	24	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
1	30	1	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
1	30	2	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
1	30	3	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
1	30	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	30	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
1	30	6	75.41	0	0	3991	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.41
1	30	7	112.14	0	0	3944	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.14
1	30	8	154.71	0	0	4216	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.71
1	30	9	184.87	0	0	4103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.87
1	30	10	184.92	0	0	4203	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.92
1	30	11	183.97	0	0	3742	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.97
1	30	12	183.55	0	0	3527	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.55
1	30	13	182.74	0	0	3156	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.74
1	30	14	182.47	0	0	3007	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.47
1	30	15	183.00	0	0	3237	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.00
1	30	16	184.12	0	0	3686	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.12
1	30	17	133.57	0	0	3597	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.57
1	30	18	78.22	0	0	3815	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.22
1	30	19	57.13	0	0	3757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.13
1	30	20	28.77	0	0	1012	28.77	302.04	166.12	166.12	1.66	-3.02	1.66	-1.36	28.77	0.00
1	30	21	28.77	0	0	1012	28.77	302.04	166.12	166.12	1.66	-3.02	1.66	-1.36	28.77	0.00
1	30	22	28.77	0	0	1012	28.77	302.04	166.12	166.12	1.66	-3.02	1.66	-1.36	28.77	0.00
1	30	23	28.85	0	0	1047	28.85	302.88	166.58	166.58	1.67	-3.03	1.67	-1.36	28.85	0.00
1	30	24	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	31	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	31	2	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	31	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
1	31	4	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
1	31	5	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
1	31	6	76.05	0	0	4317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.05
1	31	7	112.99	0	0	4364	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.99
1	31	8	155.24	0	0	4494	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.24
1	31	9	185.41	0	0	4368	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.41
1	31	10	183.30	0	0	3457	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.30
1	31	11	184.21	0	0	3871	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.21
1	31	12	181.99	0	0	2882	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.99
1	31	13	184.15	0	0	3765	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.15
1	31	14	184.15	0	0	3740	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.15
1	31	15	184.14	0	0	3655	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.14
1	31	16	184.13	0	0	3577	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.13
1	31	17	133.37	0	0	3456	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.37
1	31	18	77.54	0	0	3384	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.54
1	31	19	56.62	0	0	3378	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.62
1	31	20	28.67	0	0	970	28.67	301.01	165.55	165.55	1.66	-3.01	1.66	-1.35	28.67	0.00
1	31	21	28.77	0	0	1012	28.77	302.03	166.12	166.12	1.66	-3.02	1.66	-1.36	28.77	0.00
1	31	22	28.81	0	0	1031	28.81	302.50	166.37	166.37	1.66	-3.02	1.66	-1.36	28.81	0.00
1	31	23	28.88	0	0	1058	28.88	303.15	166.73	166.73	1.67	-3.03	1.67	-1.36	28.88	0.00
1	31	24	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	1	1	50.86	0	0	1108	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.86
2	1	2	50.93	0	0	1135	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.93
2	1	3	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	1	4	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
2	1	5	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	1	6	76.05	0	0	4243	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.05
2	1	7	112.46	0	0	4031	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.46
2	1	8	154.71	0	0	4104	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.71
2	1	9	185.04	0	0	4006	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.04
2	1	10	185.12	0	0	4071	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.12
2	1	11	184.74	0	0	3898	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.74
2	1	12	184.74	0	0	4029	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.74
2	1	13	184.74	0	0	4075	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.74
2	1	14	183.98	0	0	3827	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.98
2	1	15	183.43	0	0	3619	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.43
2	1	16	183.37	0	0	3621	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.37
2	1	17	133.32	0	0	3799	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.32
2	1	18	78.88	0	0	4379	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.88
2	1	19	58.10	0	0	4447	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.10
2	1	20	29.38	0	0	1276	29.38	308.45	169.65	169.65	1.70	-3.08	1.70	-1.39	29.38	0.00
2	1	21	29.38	0	0	1276	29.38	308.45	169.65	169.65	1.70	-3.08	1.70	-1.39	29.38	0.00
2	1	22	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	1	23	51.45	0	0	1362	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	1	24	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	2	1	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	2	2	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	2	3	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	2	4	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	2	5	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	2	6	76.75	0	0	4753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.75
2	2	7	113.34	0	0	4674	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.34
2	2	8	155.83	0	0	4912	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.83
2	2	9	186.40	0	0	4996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.40
2	2	10	184.47	0	0	4192	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.47
2	2	11	183.58	0	0	3785	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.58
2	2	12	182.93	0	0	3522	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.93
2	2	13	182.31	0	0	3212	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.31
2	2	14	182.69	0	0	3364	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.69
2	2	15	182.93	0	0	3484	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.93
2	2	16	182.95	0	0	3473	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.95
2	2	17	133.38	0	0	3818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.38
2	2	18	79.03	0	0	4426	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.03
2	2	19	58.44	0	0	4585	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.44
2	2	20	29.58	0	0	1362	29.58	310.53	170.79	170.79	1.71	-3.11	1.71	-1.40	29.58	0.00
2	2	21	29.58	0	0	1362	29.58	310.53	170.79	170.79	1.71	-3.11	1.71	-1.40	29.58	0.00
2	2	22	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	2	23	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	2	24	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	3	1	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	3	2	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	3	3	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	3	4	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	3	5	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	3	6	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	3	7	45.79	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.79
2	3	8	45.61	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
2	3	9	47.31	0	0	1037	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.31
2	3	10	55.06	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.06
2	3	11	64.96	0	0	3063	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.96
2	3	12	55.10	0	0	2127	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.10
2	3	13	55.59	0	0	2425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.59
2	3	14	65.46	0	0	3225	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.46
2	3	15	32.33	0	0	482	32.33	339.44	186.69	186.69	1.87	-3.39	1.87	-1.53	32.33	0.00
2	3	16	46.12	0	0	521	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.12
2	3	17	44.43	0	0	651	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.43
2	3	18	45.28	0	0	1019	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.28
2	3	19	50.72	0	0	1048	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	3	20	50.90	0	0	1125	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
2	3	21	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
2	3	22	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	3	23	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	3	24	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	4	1	51.35	0	0	1319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	4	2	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	4	3	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	4	4	51.35	0	0	1319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	4	5	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	4	6	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	4	7	45.79	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.79
2	4	8	45.69	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69

2	4	9	47.32	0	0	1038	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.32
2	4	10	54.88	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.88
2	4	11	64.45	0	0	2967	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.45
2	4	12	57.41	0	0	3287	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.41
2	4	13	57.09	0	0	3105	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.09
2	4	14	63.81	0	0	2573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.81
2	4	15	31.38	0	0	71	31.38	329.46	181.20	181.20	1.81	-3.29	0.71	-2.58	31.38	0.00
2	4	16	23.04	20	2	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
2	4	17	21.61	0	0	243	21.61	226.91	124.80	124.80	1.25	-2.27	1.25	-1.02	21.61	0.00
2	4	18	44.46	0	0	665	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.46
2	4	19	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
2	4	20	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	4	21	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	4	22	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	4	23	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	4	24	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	5	1	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	5	2	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	5	3	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	5	4	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	5	5	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	5	6	75.40	0	0	3849	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.40
2	5	7	111.65	0	0	3498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.65
2	5	8	154.15	0	0	3657	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.15
2	5	9	183.70	0	0	3241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.70
2	5	10	183.40	0	0	3132	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.40
2	5	11	182.86	0	0	2848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.86
2	5	12	182.45	0	0	2706	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.45
2	5	13	181.92	0	0	2498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.92
2	5	14	182.08	0	0	2609	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.08
2	5	15	182.08	0	0	2540	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.08
2	5	16	182.26	0	0	2571	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.26
2	5	17	131.65	0	0	2534	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.65
2	5	18	76.24	0	0	2711	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.24
2	5	19	55.68	0	0	2932	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.68
2	5	20	27.98	0	0	670	27.98	293.72	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
2	5	21	28.32	0	0	817	28.32	297.31	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
2	5	22	28.23	0	0	779	28.23	296.38	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
2	5	23	28.32	0	0	817	28.32	297.31	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
2	5	24	28.32	0	0	817	28.32	297.30	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
2	6	1	28.32	0	0	817	28.32	297.31	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
2	6	2	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	6	3	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	6	4	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	6	5	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	6	6	75.26	0	0	3925	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.26
2	6	7	111.66	0	0	3669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.66
2	6	8	153.80	0	0	3645	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.80
2	6	9	183.35	0	0	3246	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.35
2	6	10	181.30	0	0	2405	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.30
2	6	11	180.11	207	17	1931	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.11
2	6	12	179.43	396	33	1603	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	6	13	179.43	324	27	1705	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	6	14	179.76	178	15	1838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.76
2	6	15	179.85	169	14	1780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.85
2	6	16	180.49	0	0	1994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.49
2	6	17	131.18	0	0	2482	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.18
2	6	18	76.60	0	0	2984	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.60
2	6	19	56.00	0	0	3181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.00
2	6	20	28.32	0	0	818	28.32	297.31	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
2	6	21	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
2	6	22	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
2	6	23	28.50	0	0	893	28.50	299.15	164.53	164.53	1.65	-2.99	1.65	-1.35	28.50	0.00
2	6	24	28.57	0	0	928	28.57	299.99	164.99	164.99	1.65	-3.00	1.65	-1.35	28.57	0.00
2	7	1	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	7	2	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	7	3	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	7	4	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	7	5	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	7	6	75.08	0	0	3594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.08
2	7	7	111.65	0	0	3439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.65
2	7	8	153.79	0	0	3427	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.79
2	7	9	183.34	0	0	2928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.34
2	7	10	180.66	216	18	1781	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.66
2	7	11	179.43	529	44	1356	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	7	12	179.43	653	54	1174	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	7	13	179.43	621	52	1159	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	7	14	179.43	446	37	1309	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	7	15	179.43	353	29	1450	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	7	16	180.53	0	0	1942	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.53
2	7	17	131.17	0	0	2474	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.17
2	7	18	76.09	0	0	2809	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.09
2	7	19	55.69	0	0	3128	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.69
2	7	20	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
2	7	21	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
2	7	22	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
2	7	23	28.67	0	0	970	28.67	301.03	165.56	165.56	1.66	-3.01	1.66	-1.35	28.67	0.00
2	7	24	28.77	0	0	1013	28.77	302.05	166.13	166.13	1.66	-3.02	1.66	-1.36	28.77	0.00
2	8	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	8	2	50.82	0	0	1090	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	8	3	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	8	4	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	8	5	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	8	6	75.90	0	0	4334	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.90
2	8	7	112.65	0	0	4298	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.65
2	8	8	155.08	0	0	4513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.08
2	8	9	185.62	0	0	4573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.62
2	8	10	185.72	0	0	4615	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.72
2	8	11	185.71	0	0	4392	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.71
2	8	12	185.71	0	0	4361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.71
2	8	13	185.71	0	0	4392	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.71
2	8	14	186.10	0	0	4644	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.10
2	8	15	186.50	0	0	4771	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.50
2	8	16	186.66	0	0	4859	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.66
2	8	17	135.50	0	0	4542	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	100.50
2	8	18	79.73	0	0	4513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.73
2	8	19	58.61	0	0	4443	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.61
2	8	20	29.58	0	0	1361	29.58	310.50	170.78	170.78	1.71	-3.11	1.71	-1.40	29.58	0.00
2	8	21	29.58	0	0	1361	29.58	310.50	170.78	170.78	1.71	-3.11	1.71	-1.40	29.58	0.00
2	8	22	51.45	0	0	1360	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	8	23	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	8	24	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	9	1	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	2	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	3	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	4	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	5	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	6	76.56	0	0	4456	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.56
2	9	7	113.33	0	0	4440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.33
2	9	8	155.82	0	0	4675	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.82
2	9	9	186.21	0	0	4665	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.21
2	9	10	186.32	0	0	4720	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.32
2	9	11	186.10	0	0	4622	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.10
2	9	12	185.71	0	0	4416	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.71
2	9	13	185.89	0	0	4524	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.89
2	9	14	185.88	0	0	4440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.88
2	9	15	185.88	0	0	4440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.88
2	9	16	186.05	0	0	4556	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	151.05
2	9	17	134.95	0	0	4246	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.95
2	9	18	79.58	0	0	4444	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	44.58
2	9	19	58.61	0	0	4484	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.61
2	9	20	29.58	0	0	1361	29.58	310.51	170.78	170.78	1.71	-3.11	1.71	-1.40	29.58	0.00
2	9	21	29.58	0	0	1361	29.58	310.51	170.78	170.78	1.71	-3.11	1.71	-1.40	29.58	0.00
2	9	22	51.53	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	9	23	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	9	24	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	10	1	51.99	0	0	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.99
2	10	2	52.07	0	0	1630	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.07
2	10	3	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
2	10	4	52.17	0	0	1673	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.17
2	10	5	52.27	0	0	1717	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.27
2	10	6	52.46	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	17.46
2	10	7	47.08	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.08
2	10	8	46.98	0	0	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.98
2	10	9	48.87	0	0	1708	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.87
2	10	10	56.76	0	0	1588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.76
2	10	11	68.54	0	0	5033	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	33.54
2	10	12	60.50	0	0	4910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.50
2	10	13	60.02	0	0	4685	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.02
2	10	14	67.28	0	0	4462	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	32.28
2	10	15	55.86	0	0	1196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.86
2	10	16	47.59	0	0	1154	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.59
2	10	17	46.15	0	0	1395	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.15
2	10	18	46.15	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.15
2	10	19	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	10	20	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	10	21	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	10	22	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	10	23	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
2	10	24	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	11	1	51.80	0	0	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	11	2	51.80	0	0	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	11	3	51.88	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.88
2	11	4	51.88	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.88
2	11	5	51.88	0	0	1550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.88
2	11	6	51.80	0	0	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	11	7	46.33	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.33

2	11	8	46.25	0	0	1439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.25
2	11	9	48.12	0	0	1387	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	13.12
2	11	10	56.22	0	0	1354	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.22
2	11	11	67.59	0	0	4305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	32.59
2	11	12	59.65	0	0	4189	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.65
2	11	13	59.50	0	0	4122	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.50
2	11	14	67.07	0	0	4000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	32.07
2	11	15	55.67	0	0	1116	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.67
2	11	16	47.48	0	0	1110	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.48
2	11	17	45.51	0	0	1121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.51
2	11	18	45.61	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
2	11	19	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	11	20	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	11	21	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	11	22	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	11	23	51.25	0	0	1274	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	11	24	51.17	0	0	1239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	12	1	51.17	0	0	1239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	12	2	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
2	12	3	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
2	12	4	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	12	5	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
2	12	6	75.40	0	0	3849	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.40
2	12	7	112.14	0	0	3796	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.14
2	12	8	154.36	0	0	3873	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.36
2	12	9	184.87	0	0	3955	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.87
2	12	10	184.74	0	0	3898	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.74
2	12	11	184.35	0	0	3725	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.35
2	12	12	184.35	0	0	3692	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.35
2	12	13	184.14	0	0	3598	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.14
2	12	14	184.35	0	0	3627	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.35
2	12	15	184.14	0	0	3495	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.14
2	12	16	184.31	0	0	3488	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.31
2	12	17	133.74	0	0	3440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.74
2	12	18	78.05	0	0	3491	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.05
2	12	19	57.27	0	0	3579	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.27
2	12	20	28.85	0	0	1046	28.85	302.86	166.57	166.57	1.67	-3.03	1.67	-1.36	28.85	0.00
2	12	21	28.85	0	0	1046	28.85	302.86	166.57	166.57	1.67	-3.03	1.67	-1.36	28.85	0.00
2	12	22	28.77	0	0	1011	28.77	302.02	166.11	166.11	1.66	-3.02	1.66	-1.36	28.77	0.00
2	12	23	28.77	0	0	1011	28.77	302.02	166.11	166.11	1.66	-3.02	1.66	-1.36	28.77	0.00
2	12	24	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	13	1	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	13	2	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	13	3	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	13	4	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	13	5	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	13	6	74.93	0	0	3375	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.93
2	13	7	111.65	0	0	3306	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.65
2	13	8	153.99	0	0	3405	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.99
2	13	9	184.06	0	0	3204	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.06
2	13	10	183.75	0	0	3040	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.75
2	13	11	183.39	0	0	2881	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.39
2	13	12	183.39	0	0	2881	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.39
2	13	13	182.66	0	0	2558	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.66
2	13	14	180.84	107	9	1808	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.84
2	13	15	181.01	0	0	1831	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.01
2	13	16	181.19	0	0	1903	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.19
2	13	17	131.26	0	0	2227	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.26
2	13	18	76.50	0	0	2764	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.50
2	13	19	55.83	0	0	2935	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.83
2	13	20	28.23	0	0	779	28.23	296.39	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
2	13	21	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
2	13	22	28.50	0	0	894	28.50	299.16	164.54	164.54	1.65	-2.99	1.65	-1.35	28.50	0.00
2	13	23	28.67	0	0	970	28.67	301.02	165.56	165.56	1.66	-3.01	1.66	-1.35	28.67	0.00
2	13	24	28.77	0	0	1012	28.77	302.05	166.13	166.13	1.66	-3.02	1.66	-1.36	28.77	0.00
2	14	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	14	2	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	14	3	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
2	14	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	14	5	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	14	6	75.41	0	0	3914	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.41
2	14	7	112.31	0	0	3963	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.31
2	14	8	154.16	0	0	3928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.16
2	14	9	182.51	0	0	3091	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.51
2	14	10	181.94	0	0	2980	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.94
2	14	11	181.43	14	1	2822	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.43
2	14	12	181.36	53	4	2762	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.36
2	14	13	181.55	0	0	2902	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.55
2	14	14	181.60	0	0	2937	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.60
2	14	15	181.81	0	0	3042	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.81
2	14	16	182.29	0	0	3239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.29
2	14	17	132.35	0	0	3435	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.35
2	14	18	78.02	0	0	4064	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.02
2	14	19	57.46	0	0	4211	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.46
2	14	20	29.03	0	0	1125	29.03	304.78	167.63	167.63	1.68	-3.05	1.68	-1.37	29.03	0.00
2	14	21	29.03	0	0	1125	29.03	304.78	167.63	167.63	1.68	-3.05	1.68	-1.37	29.03	0.00
2	14	22	29.12	0	0	1163	29.12	305.72	168.15	168.15	1.68	-3.06	1.68	-1.38	29.12	0.00
2	14	23	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	14	24	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	15	1	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	15	2	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	15	3	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	15	4	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	15	5	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	15	6	76.23	0	0	4443	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.23
2	15	7	112.99	0	0	4396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.99
2	15	8	155.08	0	0	4360	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.08
2	15	9	183.74	0	0	3547	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.74
2	15	10	182.59	0	0	2926	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.59
2	15	11	182.93	0	0	2956	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.93
2	15	12	181.86	0	0	2451	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.86
2	15	13	180.83	0	0	1996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.83
2	15	14	181.20	0	0	2115	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
2	15	15	180.94	0	0	1966	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.94
2	15	16	181.12	0	0	2074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.12
2	15	17	131.10	0	0	2297	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.10
2	15	18	76.54	0	0	2845	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.54
2	15	19	55.83	0	0	2996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.83
2	15	20	28.15	0	0	745	28.15	295.56	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
2	15	21	28.23	0	0	779	28.23	296.38	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
2	15	22	28.40	0	0	851	28.40	298.13	163.97	163.97	1.64	-2.98	1.64	-1.34	28.40	0.00
2	15	23	28.23	0	0	779	28.23	296.39	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
2	15	24	27.98	0	0	670	27.98	293.73	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
2	16	1	27.98	0	0	670	27.98	293.73	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
2	16	2	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
2	16	3	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
2	16	4	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	16	5	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
2	16	6	73.64	0	0	3078	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.64
2	16	7	110.65	0	0	3150	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
2	16	8	152.91	0	0	3294	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.91
2	16	9	182.00	0	0	2760	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.00
2	16	10	181.00	0	0	2354	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.00
2	16	11	180.41	159	13	2067	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.41
2	16	12	180.13	252	21	1918	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.13
2	16	13	180.07	233	19	1888	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.07
2	16	14	180.08	150	13	1887	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.08
2	16	15	179.99	123	10	1941	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.99
2	16	16	180.22	19	2	1982	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.22
2	16	17	130.68	0	0	2358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.68
2	16	18	76.08	0	0	2873	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.08
2	16	19	55.69	0	0	3150	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.69
2	16	20	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
2	16	21	28.32	0	0	818	28.32	297.32	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
2	16	22	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
2	16	23	28.58	0	0	928	28.58	300.00	165.00	165.00	1.65	-3.00	1.65	-1.35	28.58	0.00
2	16	24	28.67	0	0	970	28.67	301.03	165.56	165.56	1.66	-3.01	1.66	-1.35	28.67	0.00
2	17	1	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	17	2	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	17	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	17	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	17	5	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
2	17	6	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
2	17	7	45.79	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.79
2	17	8	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
2	17	9	45.57	0	0	284	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.57
2	17	10	31.21	169	14	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
2	17	11	62.57	0	0	2096	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.57
2	17	12	54.28	0	0	1891	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.28
2	17	13	54.18	0	0	1796	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.18
2	17	14	62.22	0	0	1830	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.22
2	17	15	31.21	469	39	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
2	17	16	23.04	129	11	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
2	17	17	22.20	0	0	499	22.20	233.12	128.21	128.21	1.28	-2.33	1.28	-1.05	22.20	0.00
2	17	18	44.28	0	0	589	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.28
2	17	19	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
2	17	20	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
2	17	21	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	17	22	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
2	17	23	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	17	24	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
2	18	1	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
2	18	2	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	18	3	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	18	4	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	18	5	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	18	6	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90

2	18	7	45.44	0	0	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
2	18	8	45.26	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
2	18	9	44.94	61	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.94
2	18	10	31.21	549	46	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
2	18	11	60.91	246	21	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.91
2	18	12	53.10	366	31	762	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.10
2	18	13	53.10	351	29	707	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.10
2	18	14	60.91	303	25	681	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.91
2	18	15	34.33	131	11	0	34.33	360.38	198.21	198.21	1.98	-3.60	0.00	-3.60	34.33	0.00
2	18	16	25.04	105	9	0	25.04	262.85	144.57	144.57	1.45	-2.63	0.00	-2.63	25.04	0.00
2	18	17	21.05	0	0	160	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
2	18	18	21.05	0	0	910	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
2	18	19	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	18	20	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	18	21	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	18	22	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	18	23	26.43	0	0	1484	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	18	24	26.43	0	0	1592	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	1	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	2	26.43	0	0	1756	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	3	26.43	0	0	1791	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	4	26.43	0	0	1712	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	5	26.43	0	0	1791	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	19	6	75.07	0	0	3535	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.07
2	19	7	111.80	0	0	3506	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.80
2	19	8	153.59	0	0	3305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.59
2	19	9	181.77	0	0	2245	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.77
2	19	10	180.05	344	29	1414	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.05
2	19	11	179.43	621	52	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	12	179.43	659	55	838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	13	179.43	619	52	755	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	14	179.43	655	55	702	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	15	179.43	660	55	651	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	16	179.43	262	22	968	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	19	17	129.01	0	0	1186	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.01
2	19	18	74.28	0	0	1671	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.28
2	19	19	53.81	0	0	1970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.81
2	19	20	27.28	0	0	367	27.28	286.36	157.50	157.50	1.58	-2.86	1.58	-1.29	27.28	0.00
2	19	21	27.37	0	0	408	27.37	287.35	158.05	158.05	1.58	-2.87	1.58	-1.29	27.37	0.00
2	19	22	27.53	0	0	478	27.53	289.07	158.99	158.99	1.59	-2.89	1.59	-1.30	27.53	0.00
2	19	23	27.61	0	0	511	27.61	289.88	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
2	19	24	27.61	0	0	512	27.61	289.88	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
2	20	1	27.78	0	0	586	27.78	291.70	160.43	160.43	1.60	-2.92	1.60	-1.31	27.78	0.00
2	20	2	27.78	0	0	586	27.78	291.70	160.43	160.43	1.60	-2.92	1.60	-1.31	27.78	0.00
2	20	3	28.15	0	0	744	28.15	295.54	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
2	20	4	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
2	20	5	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
2	20	6	74.25	0	0	2970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.25
2	20	7	110.95	0	0	2889	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.95
2	20	8	152.54	0	0	2513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.54
2	20	9	180.70	185	15	1420	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.70
2	20	10	179.43	743	62	550	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
2	20	11	179.43	990	83	49	35.00	367.45	202.10	202.10	2.02	-3.67	0.49	-3.18	35.00	144.43
2	20	12	179.43	864	72	101	35.00	367.45	202.10	202.10	2.02	-3.67	1.01	-2.67	35.00	144.43
2	20	13	185.40	765	64	571	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	20	14	185.40	540	45	711	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	20	15	185.40	399	33	937	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	20	16	185.40	356	30	831	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	20	17	134.60	0	0	1074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
2	20	18	78.66	0	0	1786	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
2	20	19	57.61	0	0	2020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
2	20	20	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	20	21	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	20	22	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	20	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	20	24	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	1	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	2	26.43	0	0	1210	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	3	26.43	0	0	1286	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	4	26.43	0	0	1321	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	5	26.43	0	0	1321	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	6	75.58	0	0	3084	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
2	21	7	112.53	0	0	2877	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
2	21	8	154.86	0	0	2819	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
2	21	9	185.40	0	0	2670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	10	185.40	0	0	2431	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	11	185.40	0	0	2210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	12	185.40	0	0	1977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	13	185.40	0	0	1678	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	14	185.40	0	0	1678	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	15	185.40	0	0	1750	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	16	185.40	0	0	1739	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	21	17	134.60	0	0	1802	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
2	21	18	78.66	0	0	2077	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
2	21	19	57.61	0	0	2262	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
2	21	20	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	21	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	22	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	23	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	21	24	26.43	0	0	1210	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	1	26.43	0	0	1287	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	2	26.43	0	0	1405	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	3	26.43	0	0	1440	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	4	26.43	0	0	1321	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	5	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	6	75.58	0	0	3464	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
2	22	7	112.53	0	0	3624	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
2	22	8	154.86	0	0	3784	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
2	22	9	185.40	0	0	3101	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	10	185.40	0	0	2700	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	11	185.40	142	12	2420	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	12	185.40	67	6	2427	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	13	185.40	81	7	2329	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	14	185.40	65	5	2272	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	15	185.40	0	0	2356	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	16	185.40	0	0	2425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
2	22	17	134.60	0	0	2894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
2	22	18	78.66	0	0	3410	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
2	22	19	57.61	0	0	3492	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
2	22	20	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	21	26.43	0	0	1409	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	22	26.43	0	0	1409	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	23	26.43	0	0	1485	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	22	24	26.43	0	0	1485	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	1	26.43	0	0	1520	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	2	26.43	0	0	1520	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	3	26.43	0	0	1520	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	4	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	5	26.43	0	0	1670	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
2	23	6	74.75	0	0	3296	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.75
2	23	7	111.47	0	0	3225	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.47
2	23	8	153.59	0	0	3184	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.59
2	23	9	183.69	0	0	2994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.69
2	23	10	183.96	0	0	3177	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.96
2	23	11	183.96	0	0	3133	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.96
2	23	12	183.75	0	0	3002	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.75
2	23	13	183.58	0	0	2926	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.58
2	23	14	183.58	0	0	2926	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.58
2	23	15	183.39	0	0	2795	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.39
2	23	16	183.36	0	0	2774	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.36
2	23	17	132.69	0	0	2740	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.69
2	23	18	77.05	0	0	2867	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.05
2	23	19	56.30	0	0	2977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.30
2	23	20	28.40	0	0	850	28.40	298.11	163.96	163.96	1.64	-2.98	1.64	-1.34	28.40	0.00
2	23	21	28.40	0	0	851	28.40	298.12	163.96	163.96	1.64	-2.98	1.64	-1.34	28.40	0.00
2	23	22	28.49	0	0	892	28.49	299.13	164.52	164.52	1.65	-2.99	1.65	-1.35	28.49	0.00
2	23	23	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	23	24	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	1	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	2	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	3	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	4	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	5	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	6	50.36	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
2	24	7	44.98	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.98
2	24	8	44.98	0	0	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.98
2	24	9	46.78	0	0	807	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.78
2	24	10	54.88	0	0	775	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.88
2	24	11	65.45	0	0	2966	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.45
2	24	12	57.40	0	0	2819	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.40
2	24	13	55.33	0	0	1848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.33
2	24	14	62.39	0	0	1698	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.39
2	24	15	31.25	0	0	14	31.25	328.06	180.43	180.43	1.80	-3.28	0.14	-3.14	31.25	0.00
2	24	16	23.98	0	0	405	23.98	251.79	138.49	138.49	1.38	-2.52	1.38	-1.13	23.98	0.00
2	24	17	21.29	0	0	105	21.29	223.55	122.95	122.95	1.23	-2.24	1.05	-1.18	21.29	0.00
2	24	18	44.33	0	0	611	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.33
2	24	19	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
2	24	20	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
2	24	21	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
2	24	22	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	24	23	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	24	24	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
2	25	1	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
2	25	2	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	25	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
2	25	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	25	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82

2	25	6	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
2	25	7	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
2	25	8	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
2	25	9	46.01	0	0	475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.01
2	25	10	53.50	0	0	182	35.00	367.45	202.10	202.10	2.02	-3.67	1.82	-1.86	35.00	18.50
2	25	11	63.28	0	0	2469	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.28
2	25	12	55.13	0	0	2290	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.13
2	25	13	55.16	0	0	2298	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.16
2	25	14	63.00	0	0	2293	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.00
2	25	15	31.21	67	6	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
2	25	16	23.61	0	0	245	23.61	247.90	136.34	136.34	1.36	-2.48	1.36	-1.12	23.61	0.00
2	25	17	44.44	0	0	655	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.44
2	25	18	44.89	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
2	25	19	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
2	25	20	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	25	21	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	25	22	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	25	23	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	25	24	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	26	1	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	26	2	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	26	3	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
2	26	4	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
2	26	5	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
2	26	6	74.58	0	0	3425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.58
2	26	7	111.14	0	0	3349	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.14
2	26	8	153.60	0	0	3585	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.60
2	26	9	182.95	0	0	3253	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.95
2	26	10	181.45	15	1	2661	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.45
2	26	11	181.56	0	0	2732	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.56
2	26	12	181.63	0	0	2777	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.63
2	26	13	181.16	73	6	2605	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.16
2	26	14	181.64	0	0	2798	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.64
2	26	15	181.56	0	0	2815	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.56
2	26	16	181.73	0	0	2875	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.73
2	26	17	131.81	0	0	3141	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.81
2	26	18	77.69	0	0	3864	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.69
2	26	19	57.46	0	0	4176	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.46
2	26	20	29.03	0	0	1125	29.03	304.78	167.63	167.63	1.68	-3.05	1.68	-1.37	29.03	0.00
2	26	21	29.20	0	0	1198	29.20	306.56	168.61	168.61	1.69	-3.07	1.69	-1.38	29.20	0.00
2	26	22	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	26	23	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
2	26	24	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	27	1	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	27	2	51.71	0	0	1476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
2	27	3	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	27	4	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	27	5	51.99	0	0	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.99
2	27	6	77.56	0	0	5177	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.56
2	27	7	114.55	0	0	5260	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	79.55
2	27	8	156.94	0	0	5457	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	121.94
2	27	9	185.68	0	0	4769	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.68
2	27	10	184.77	0	0	4387	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.77
2	27	11	183.84	0	0	3982	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.84
2	27	12	183.33	0	0	3751	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.33
2	27	13	183.12	0	0	3642	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.12
2	27	14	183.36	0	0	3740	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.36
2	27	15	183.18	0	0	3656	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.18
2	27	16	183.12	0	0	3610	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.12
2	27	17	133.07	0	0	3748	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.07
2	27	18	78.71	0	0	4338	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.71
2	27	19	58.11	0	0	4476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.11
2	27	20	29.30	0	0	1241	29.30	307.60	169.18	169.18	1.69	-3.08	1.69	-1.38	29.30	0.00
2	27	21	29.30	0	0	1241	29.30	307.60	169.18	169.18	1.69	-3.08	1.69	-1.38	29.30	0.00
2	27	22	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
2	27	23	51.35	0	0	1319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
2	27	24	51.45	0	0	1362	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
2	28	1	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
2	28	2	51.71	0	0	1476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
2	28	3	51.71	0	0	1476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
2	28	4	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
2	28	5	51.89	0	0	1551	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.89
2	28	6	77.22	0	0	5014	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.22
2	28	7	114.20	0	0	5085	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	79.20
2	28	8	156.39	0	0	5167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	121.39
2	28	9	184.45	0	0	4166	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.45
2	28	10	183.62	0	0	3838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.62
2	28	11	182.74	0	0	3429	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.74
2	28	12	182.12	0	0	3162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.12
2	28	13	181.98	0	0	3083	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.98
2	28	14	182.19	0	0	3156	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.19
2	28	15	181.82	0	0	2958	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.82
2	28	16	182.24	0	0	3124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.24
2	28	17	133.11	0	0	3663	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.11
2	28	18	78.20	0	0	4000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.20
2	28	19	57.28	0	0	4014	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.28
2	28	20	28.95	0	0	1090	28.95	303.93	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
2	28	21	28.95	0	0	1090	28.95	303.93	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
2	28	22	28.80	0	0	1024	28.80	302.34	166.28	166.28	1.66	-3.02	1.66	-1.36	28.80	0.00
2	28	23	28.67	0	0	971	28.67	301.03	165.57	165.57	1.66	-3.01	1.66	-1.35	28.67	0.00
2	28	24	28.56	0	0	921	28.56	299.82	164.90	164.90	1.65	-3.00	1.65	-1.35	28.56	0.00
3	1	1	50.31	0	0	867	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.31
3	1	2	50.18	0	0	814	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.18
3	1	3	50.05	0	0	757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.05
3	1	4	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
3	1	5	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	1	6	74.11	0	0	3077	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.11
3	1	7	110.65	0	0	2928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
3	1	8	152.19	0	0	2520	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.19
3	1	9	179.92	169	14	1457	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.92
3	1	10	179.43	315	26	1249	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	1	11	185.40	613	51	1360	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	12	185.40	794	66	1056	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	13	185.40	551	46	1199	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	14	185.40	466	39	1258	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	15	185.40	0	0	1962	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	16	185.40	0	0	2076	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	1	17	134.60	0	0	2225	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	1	18	78.66	0	0	2671	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	1	19	57.61	0	0	2872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	1	20	26.43	0	0	1066	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	1	21	26.43	0	0	1066	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	1	22	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	1	23	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	1	24	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	1	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	2	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	3	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	4	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	5	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	6	75.58	0	0	2396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	2	7	112.53	0	0	2013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	2	8	154.86	0	0	1627	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	2	9	185.40	0	0	1280	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	10	185.40	566	47	378	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	11	185.40	258	22	646	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	12	185.40	577	48	248	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	13	185.40	299	25	547	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	14	185.40	551	46	254	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	15	185.40	292	24	422	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	16	185.40	228	19	531	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	2	17	134.60	0	0	602	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	2	18	78.66	0	0	942	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	2	19	57.61	0	0	1531	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	2	20	26.43	0	0	505	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	21	26.43	0	0	614	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	22	26.43	0	0	729	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	23	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	2	24	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	1	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	2	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	3	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	4	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	5	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	6	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	7	21.05	0	0	1322	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	3	8	21.05	0	0	1174	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	3	9	23.04	0	0	213	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	3	10	35.48	154	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	0.48
3	3	11	66.87	61	5	1205	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	3	12	59.07	205	17	1002	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	3	13	59.07	231	19	909	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	3	14	66.87	11	1	1139	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	3	15	31.54	42	4	0	31.54	331.07	182.09	182.09	1.82	-3.31	0.00	-3.31	31.54	0.00
3	3	16	23.04	0	0	542	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	3	17	21.05	0	0	578	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	3	18	21.05	0	0	600	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	3	19	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	20	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	21	26.43	0	0	837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	22	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	23	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	3	24	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	1	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	2	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	3	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	4	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

3	4	5	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	6	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	7	21.05	0	0	1172	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	4	8	21.05	0	0	1210	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	4	9	23.04	0	0	1129	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	4	10	31.21	0	0	1096	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
3	4	11	66.87	0	0	2385	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	4	12	59.07	0	0	2296	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	4	13	59.07	0	0	2269	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	4	14	66.87	0	0	2250	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	4	15	31.21	0	0	889	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
3	4	16	23.04	0	0	791	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	4	17	21.05	0	0	892	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	4	18	21.05	0	0	844	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	4	19	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	20	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	21	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	22	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	23	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	4	24	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	1	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	2	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	3	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	4	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	5	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	6	75.58	0	0	2533	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	5	7	112.53	0	0	2394	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	5	8	154.86	0	0	2345	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	5	9	185.40	0	0	2267	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	10	185.40	0	0	2210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	11	185.40	0	0	2138	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	12	185.40	0	0	2065	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	13	185.40	0	0	1914	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	14	185.40	0	0	1758	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	15	185.40	0	0	1508	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	16	185.40	0	0	1398	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	5	17	134.60	12	1	1040	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	5	18	78.66	0	0	1808	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	5	19	57.61	0	0	2002	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	5	20	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	21	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	22	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	23	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	5	24	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	1	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	2	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	3	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	4	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	5	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	6	75.58	0	0	1094	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	6	7	112.53	0	0	952	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	6	8	154.86	0	0	788	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	6	9	185.40	185	15	389	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	10	185.40	217	18	402	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	11	185.40	288	24	277	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	12	185.40	248	21	301	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	13	185.40	192	16	483	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	14	185.40	217	18	402	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	15	185.49	571	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.49
3	6	16	185.40	732	61	211	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	6	17	134.60	0	0	1161	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	6	18	78.66	0	0	1495	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	6	19	57.61	0	0	1990	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	6	20	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	21	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	22	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	23	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	6	24	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	1	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	2	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	3	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	4	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	5	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	6	75.58	0	0	3301	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	7	7	112.53	0	0	3202	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	7	8	154.86	0	0	3264	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	7	9	185.40	0	0	2358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	10	185.40	273	23	2048	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	11	185.40	400	33	1921	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	12	185.40	532	44	1652	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	13	185.40	448	37	1737	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	14	185.40	364	30	1680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	15	185.40	384	32	1634	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	16	185.40	340	28	1672	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	7	17	134.60	0	0	1792	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	7	18	78.66	0	0	2463	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	7	19	57.61	0	0	3076	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	7	20	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	21	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	22	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	23	26.43	0	0	1287	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	7	24	26.43	0	0	1287	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	1	26.43	0	0	1287	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	2	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	3	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	4	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	5	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	8	6	75.58	0	0	3208	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	8	7	112.53	0	0	3209	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	8	8	154.86	0	0	3308	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	8	9	185.40	0	0	3559	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	10	185.40	0	0	3222	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	11	185.40	0	0	3073	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	12	185.40	0	0	3339	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	13	185.40	0	0	3279	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	14	185.40	0	0	3317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	15	185.40	0	0	3490	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	16	185.40	0	0	3274	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	8	17	134.60	0	0	3409	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	8	18	78.66	0	0	3432	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	8	19	55.99	0	0	2772	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.99
3	8	20	50.27	0	0	850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
3	8	21	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	8	22	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
3	8	23	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	8	24	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	9	1	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
3	9	2	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	9	3	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	9	4	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	9	5	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	9	6	74.25	0	0	3001	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.25
3	9	7	110.95	0	0	2921	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.95
3	9	8	153.23	0	0	2948	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.23
3	9	9	183.69	0	0	2994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.69
3	9	10	183.58	0	0	2964	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.58
3	9	11	183.23	0	0	2806	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.23
3	9	12	183.19	0	0	2790	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.19
3	9	13	182.84	0	0	2677	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.84
3	9	14	182.64	0	0	2588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.64
3	9	15	180.86	61	5	1944	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.86
3	9	16	180.50	158	13	1777	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.50
3	9	17	130.74	0	0	1963	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.74
3	9	18	76.37	0	0	2599	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.37
3	9	19	55.82	0	0	2765	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.82
3	9	20	28.05	0	0	703	28.05	294.53	161.99	161.99	1.62	-2.95	1.62	-1.33	28.05	0.00
3	9	21	28.15	0	0	744	28.15	295.54	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
3	9	22	28.15	0	0	745	28.15	295.54	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
3	9	23	28.23	0	0	779	28.23	296.37	163.00	163.00	1.63	-2.96	1.63	-1.33	28.23	0.00
3	9	24	28.40	0	0	851	28.40	298.12	163.96	163.96	1.64	-2.98	1.64	-1.34	28.40	0.00
3	10	1	50.36	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.36
3	10	2	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	10	3	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	10	4	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	10	5	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	10	6	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	10	7	44.64	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
3	10	8	44.64	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
3	10	9	45.29	0	0	163	35.00	367.45	202.10	202.10	2.02	-3.67	1.63	-2.05	35.00	10.29
3	10	10	53.90	0	0	354	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.90
3	10	11	64.18	0	0	2437	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.18
3	10	12	55.73	0	0	2223	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.73
3	10	13	56.38	0	0	2533	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.38
3	10	14	63.99	0	0	2483	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.99
3	10	15	31.25	0	0	13	31.25	328.03	180.42	180.42	1.80	-3.28	0.13	-3.16	31.25	0.00
3	10	16	23.04	24	2	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
3	10	17	21.42	0	0	159	21.42	224.85	123.67	123.67	1.24	-2.25	1.24	-1.01	21.42	0.00
3	10	18	21.82	0	0	334	21.82	229.08	125.99	125.99	1.26	-2.29	1.26	-1.03	21.82	0.00
3	10	19	49.58	0	0	554	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
3	10	20	49.75	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
3	10	21	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
3	10	22	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
3	10	23	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
3	10	24	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
3	11	1	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
3	11	2	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	11	3	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19

3	11	4	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	11	5	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
3	11	6	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
3	11	7	44.89	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
3	11	8	44.64	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
3	11	9	44.94	147	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.94
3	11	10	31.21	504	42	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
3	11	11	61.24	0	0	1451	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.24
3	11	12	53.27	30	2	1348	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.27
3	11	13	53.10	129	11	1106	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.10
3	11	14	60.91	0	0	1296	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.91
3	11	15	31.21	777	65	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
3	11	16	23.04	763	64	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
3	11	17	21.05	547	46	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
3	11	18	21.05	85	7	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
3	11	19	27.11	0	0	294	27.11	284.59	156.52	156.52	1.57	-2.85	1.57	-1.28	27.11	0.00
3	11	20	27.11	0	0	294	27.11	284.59	156.52	156.52	1.57	-2.85	1.57	-1.28	27.11	0.00
3	11	21	27.28	0	0	368	27.28	286.38	157.51	157.51	1.58	-2.86	1.58	-1.29	27.28	0.00
3	11	22	49.32	0	0	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.32
3	11	23	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
3	11	24	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
3	12	1	49.58	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
3	12	2	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
3	12	3	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
3	12	4	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
3	12	5	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
3	12	6	73.01	0	0	2585	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.01
3	12	7	109.68	0	0	2495	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.68
3	12	8	151.85	0	0	2770	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.85
3	12	9	181.18	0	0	2428	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.18
3	12	10	180.72	108	9	2366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.72
3	12	11	180.22	279	23	2168	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.22
3	12	12	180.33	196	16	2188	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.33
3	12	13	182.06	0	0	2936	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.06
3	12	14	182.14	0	0	2924	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.14
3	12	15	180.39	50	4	2167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.39
3	12	16	179.98	210	17	1973	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.98
3	12	17	130.05	0	0	2175	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.05
3	12	18	75.49	0	0	2680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.49
3	12	19	55.69	0	0	3188	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.69
3	12	20	28.06	0	0	704	28.06	294.57	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
3	12	21	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
3	12	22	28.40	0	0	852	28.40	298.16	163.99	163.99	1.64	-2.98	1.64	-1.34	28.40	0.00
3	12	23	28.40	0	0	852	28.40	298.16	163.99	163.99	1.64	-2.98	1.64	-1.34	28.40	0.00
3	12	24	28.50	0	0	894	28.50	299.18	164.55	164.55	1.65	-2.99	1.65	-1.35	28.50	0.00
3	13	1	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
3	13	2	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	13	3	50.54	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	13	4	50.54	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	13	5	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	13	6	74.94	0	0	3846	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.94
3	13	7	111.48	0	0	3696	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.48
3	13	8	153.80	0	0	3785	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.80
3	13	9	183.97	0	0	3741	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.97
3	13	10	183.68	0	0	3679	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.68
3	13	11	181.64	0	0	2811	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.64
3	13	12	180.62	186	16	2363	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.62
3	13	13	180.13	268	22	2141	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.13
3	13	14	180.39	115	10	2233	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.39
3	13	15	179.79	265	22	1940	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.79
3	13	16	179.78	252	21	1906	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.78
3	13	17	129.67	0	0	2043	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.67
3	13	18	75.28	0	0	2653	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.28
3	13	19	55.35	0	0	3097	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.35
3	13	20	27.88	0	0	629	27.88	292.74	161.01	161.01	1.61	-2.93	1.61	-1.32	27.88	0.00
3	13	21	27.88	0	0	629	27.88	292.74	161.01	161.01	1.61	-2.93	1.61	-1.32	27.88	0.00
3	13	22	27.98	0	0	671	27.98	293.75	161.56	161.56	1.62	-2.94	1.62	-1.32	27.98	0.00
3	13	23	28.23	0	0	780	28.23	296.41	163.03	163.03	1.63	-2.96	1.63	-1.33	28.23	0.00
3	13	24	28.32	0	0	818	28.32	297.33	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
3	14	1	28.50	0	0	894	28.50	299.18	164.55	164.55	1.65	-2.99	1.65	-1.35	28.50	0.00
3	14	2	50.45	0	0	929	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
3	14	3	50.55	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.55
3	14	4	50.55	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.55
3	14	5	50.55	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.55
3	14	6	75.08	0	0	3924	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.08
3	14	7	111.66	0	0	3763	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.66
3	14	8	153.61	0	0	3805	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.61
3	14	9	183.59	0	0	3625	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.59
3	14	10	183.10	0	0	3465	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.10
3	14	11	181.30	0	0	2666	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.30
3	14	12	182.27	0	0	3023	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.27
3	14	13	182.09	0	0	2900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.09
3	14	14	181.88	0	0	2693	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.88
3	14	15	181.42	0	0	2413	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.42
3	14	16	181.68	0	0	2444	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.68
3	14	17	131.33	0	0	2429	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.33
3	14	18	75.85	0	0	2570	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.85
3	14	19	55.20	0	0	2654	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.20
3	14	20	27.79	0	0	587	27.79	291.71	160.44	160.44	1.60	-2.92	1.60	-1.31	27.79	0.00
3	14	21	27.79	0	0	587	27.79	291.71	160.44	160.44	1.60	-2.92	1.60	-1.31	27.79	0.00
3	14	22	27.71	0	0	553	27.71	290.89	159.99	159.99	1.60	-2.91	1.60	-1.31	27.71	0.00
3	14	23	27.61	0	0	512	27.61	289.89	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
3	14	24	27.53	0	0	478	27.53	289.07	158.99	158.99	1.59	-2.89	1.59	-1.30	27.53	0.00
3	15	1	27.45	0	0	441	27.45	288.17	158.49	158.49	1.58	-2.88	1.58	-1.30	27.45	0.00
3	15	2	27.53	0	0	478	27.53	289.07	158.99	158.99	1.59	-2.89	1.59	-1.30	27.53	0.00
3	15	3	27.61	0	0	512	27.61	289.88	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
3	15	4	27.53	0	0	478	27.53	289.07	158.99	158.99	1.59	-2.89	1.59	-1.30	27.53	0.00
3	15	5	27.61	0	0	512	27.61	289.89	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
3	15	6	73.00	0	0	2348	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.00
3	15	7	109.67	0	0	2249	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.67
3	15	8	150.83	0	0	2070	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	115.83
3	15	9	179.43	474	40	1166	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	15	10	179.43	736	61	1009	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	15	11	185.40	556	46	1691	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	12	185.40	613	51	1594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	13	185.40	570	47	1601	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	14	185.40	418	35	1718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	15	185.40	466	39	1640	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	16	185.40	384	32	1752	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	15	17	134.60	0	0	1926	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	15	18	78.66	0	0	2442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	15	19	57.61	0	0	2893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	15	20	26.43	0	0	838	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	15	21	26.43	0	0	951	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	15	22	26.43	0	0	1026	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	15	23	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	15	24	26.43	0	0	1101	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	1	26.43	0	0	1214	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	2	26.43	0	0	1325	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	3	26.43	0	0	1443	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	4	26.43	0	0	1486	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	5	26.43	0	0	1486	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	16	6	75.58	0	0	3962	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	16	7	112.53	0	0	3905	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	16	8	153.79	0	0	3345	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.79
3	16	9	184.27	0	0	3381	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.27
3	16	10	184.35	0	0	3479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.35
3	16	11	184.34	0	0	3427	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.34
3	16	12	184.34	0	0	3434	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.34
3	16	13	184.14	0	0	3341	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.14
3	16	14	184.14	0	0	3341	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.14
3	16	15	184.13	0	0	3302	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.13
3	16	16	183.93	0	0	3201	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.93
3	16	17	133.36	0	0	3196	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.36
3	16	18	77.54	0	0	3194	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.54
3	16	19	56.62	0	0	3224	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.62
3	16	20	28.49	0	0	893	28.49	299.14	164.53	164.53	1.65	-2.99	1.65	-1.35	28.49	0.00
3	16	21	28.49	0	0	893	28.49	299.14	164.53	164.53	1.65	-2.99	1.65	-1.35	28.49	0.00
3	16	22	28.49	0	0	893	28.49	299.14	164.53	164.53	1.65	-2.99	1.65	-1.35	28.49	0.00
3	16	23	28.57	0	0	927	28.57	299.98	164.99	164.99	1.65	-3.00	1.65	-1.35	28.57	0.00
3	16	24	28.57	0	0	927	28.57	299.98	164.99	164.99	1.65	-3.00	1.65	-1.35	28.57	0.00
3	17	1	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	17	2	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	17	3	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	17	4	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	17	5	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	17	6	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	17	7	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
3	17	8	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
3	17	9	47.23	0	0	1003	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.23
3	17	10	53.34	0	0	109	35.00	367.45	202.10	202.10	2.02	-3.67	1.09	-2.58	35.00	18.34
3	17	11	63.26	0	0	2279	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.26
3	17	12	56.17	0	0	2537	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.17
3	17	13	58.00	0	0	3316	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.00
3	17	14	64.52	0	0	2769	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.52
3	17	15	31.21	75	6	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
3	17	16	23.44	0	0	172	23.44	246.12	135.37	135.37	1.35	-2.46	1.35	-1.11	23.44	0.00
3	17	17	44.97	0	0	886	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.97
3	17	18	44.49	0	0	680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.49
3	17	19	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
3	17	20	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
3	17	21	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
3	17	22	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	17	23	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	17	24	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	18	1	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	18	2	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64

3	18	3	50.64	0	0	1011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	18	4	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	18	5	50.70	0	0	1038	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.70
3	18	6	50.54	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	18	7	45.16	0	0	969	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.16
3	18	8	45.06	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.06
3	18	9	44.97	0	0	26	35.00	367.45	202.10	202.10	2.02	-3.67	0.26	-3.41	35.00	9.97
3	18	10	53.10	115	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.10
3	18	11	64.64	0	0	2861	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.64
3	18	12	54.84	0	0	1994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.84
3	18	13	54.44	0	0	1781	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.44
3	18	14	63.88	0	0	2525	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.88
3	18	15	31.58	0	0	156	31.58	331.53	182.34	182.34	1.82	-3.32	1.56	-1.75	31.58	0.00
3	18	16	23.04	313	26	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
3	18	17	21.10	0	0	21	21.10	221.50	121.83	121.83	1.22	-2.22	0.21	-2.01	21.10	0.00
3	18	18	44.03	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.03
3	18	19	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
3	18	20	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
3	18	21	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
3	18	22	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
3	18	23	50.02	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
3	18	24	50.07	0	0	763	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.07
3	19	1	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
3	19	2	50.38	0	0	900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.38
3	19	3	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
3	19	4	50.38	0	0	900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.38
3	19	5	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
3	19	6	74.57	0	0	3217	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.57
3	19	7	111.28	0	0	3144	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.28
3	19	8	153.59	0	0	3228	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.59
3	19	9	183.53	0	0	3015	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.53
3	19	10	183.25	0	0	2913	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.25
3	19	11	182.92	0	0	2765	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.92
3	19	12	182.85	0	0	2683	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.85
3	19	13	180.67	145	12	1860	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.67
3	19	14	180.39	234	19	1846	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.39
3	19	15	180.12	320	27	1697	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.12
3	19	16	180.76	51	4	1995	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.76
3	19	17	131.62	0	0	2644	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.62
3	19	18	75.71	0	0	2621	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.71
3	19	19	55.69	0	0	3065	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.69
3	19	20	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
3	19	21	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
3	19	22	28.32	0	0	818	28.32	297.32	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
3	19	23	28.32	0	0	818	28.32	297.32	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
3	19	24	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
3	20	1	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	20	2	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
3	20	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
3	20	4	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
3	20	5	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
3	20	6	75.26	0	0	3783	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.26
3	20	7	111.47	0	0	3470	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.47
3	20	8	153.24	0	0	3396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.24
3	20	9	181.26	0	0	2342	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.26
3	20	10	180.02	401	33	1657	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.02
3	20	11	179.43	630	53	1299	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	12	179.43	773	64	974	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	13	179.43	748	62	905	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	14	179.43	647	54	879	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	15	179.43	784	65	603	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	16	179.43	649	54	770	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	20	17	129.28	0	0	1392	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.28
3	20	18	74.77	0	0	1920	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.77
3	20	19	54.11	0	0	2005	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.11
3	20	20	27.37	0	0	408	27.37	287.36	158.05	158.05	1.58	-2.87	1.58	-1.29	27.37	0.00
3	20	21	27.45	0	0	441	27.45	288.17	158.49	158.49	1.58	-2.88	1.58	-1.30	27.45	0.00
3	20	22	27.37	0	0	408	27.37	287.36	158.05	158.05	1.58	-2.87	1.58	-1.29	27.37	0.00
3	20	23	27.28	0	0	367	27.28	286.37	157.50	157.50	1.58	-2.86	1.58	-1.29	27.28	0.00
3	20	24	27.01	0	0	253	27.01	283.59	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
3	21	1	27.11	0	0	293	27.11	284.57	156.51	156.51	1.57	-2.85	1.57	-1.28	27.11	0.00
3	21	2	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
3	21	3	26.94	0	0	219	26.94	282.78	155.53	155.53	1.56	-2.83	1.56	-1.27	26.94	0.00
3	21	4	27.01	0	0	252	27.01	283.59	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
3	21	5	27.11	0	0	293	27.11	284.57	156.51	156.51	1.57	-2.85	1.57	-1.28	27.11	0.00
3	21	6	71.92	0	0	1719	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	36.92
3	21	7	108.56	0	0	1638	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	73.56
3	21	8	150.64	0	0	1670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	115.64
3	21	9	181.34	0	0	1948	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.34
3	21	10	179.64	359	30	1509	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.64
3	21	11	179.43	662	55	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	21	12	179.43	673	56	1264	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	21	13	179.43	579	48	1381	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	21	14	179.43	414	34	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	21	15	179.43	437	36	1512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	21	16	179.59	299	25	1683	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.59
3	21	17	130.39	0	0	2234	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.39
3	21	18	75.38	0	0	2629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.38
3	21	19	55.34	0	0	3032	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.34
3	21	20	27.98	0	0	671	27.98	293.74	161.56	161.56	1.62	-2.94	1.62	-1.32	27.98	0.00
3	21	21	28.06	0	0	704	28.06	294.57	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
3	21	22	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
3	21	23	28.40	0	0	852	28.40	298.16	163.99	163.99	1.64	-2.98	1.64	-1.34	28.40	0.00
3	21	24	28.50	0	0	894	28.50	299.17	164.54	164.54	1.65	-2.99	1.65	-1.35	28.50	0.00
3	22	1	28.58	0	0	928	28.58	300.01	165.00	165.00	1.65	-3.00	1.65	-1.35	28.58	0.00
3	22	2	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
3	22	3	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
3	22	4	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
3	22	5	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
3	22	6	75.41	0	0	4071	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.41
3	22	7	112.15	0	0	4080	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.15
3	22	8	154.53	0	0	4264	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.53
3	22	9	182.72	0	0	3343	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.72
3	22	10	182.13	0	0	3121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.13
3	22	11	181.44	5	0	2840	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.44
3	22	12	180.88	126	10	2575	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.88
3	22	13	181.08	33	3	2685	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.08
3	22	14	181.17	0	0	2703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.17
3	22	15	181.26	0	0	2759	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.26
3	22	16	181.25	0	0	2745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.25
3	22	17	130.94	0	0	2794	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.94
3	22	18	76.33	0	0	3291	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.33
3	22	19	56.46	0	0	3748	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.46
3	22	20	28.50	0	0	895	28.50	299.19	164.55	164.55	1.65	-2.99	1.65	-1.35	28.50	0.00
3	22	21	28.50	0	0	895	28.50	299.19	164.55	164.55	1.65	-2.99	1.65	-1.35	28.50	0.00
3	22	22	28.50	0	0	895	28.50	299.19	164.56	164.56	1.65	-2.99	1.65	-1.35	28.50	0.00
3	22	23	28.58	0	0	929	28.58	300.02	165.01	165.01	1.65	-3.00	1.65	-1.35	28.58	0.00
3	22	24	28.67	0	0	971	28.67	301.04	165.57	165.57	1.66	-3.01	1.66	-1.35	28.67	0.00
3	23	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
3	23	2	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
3	23	3	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
3	23	4	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
3	23	5	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
3	23	6	75.57	0	0	4160	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.57
3	23	7	112.00	0	0	3974	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.00
3	23	8	153.80	0	0	3843	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.80
3	23	9	181.76	0	0	2851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.76
3	23	10	180.95	81	7	2510	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.95
3	23	11	180.53	225	19	2324	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.53
3	23	12	179.93	351	29	2070	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.93
3	23	13	179.92	314	26	2045	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.92
3	23	14	180.05	194	16	2039	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.05
3	23	15	179.75	273	23	1945	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.75
3	23	16	179.62	279	23	1847	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.62
3	23	17	129.37	0	0	1889	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.37
3	23	18	74.96	0	0	2445	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.96
3	23	19	55.20	0	0	2968	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.20
3	23	20	27.79	0	0	588	27.79	291.73	160.45	160.45	1.60	-2.92	1.60	-1.31	27.79	0.00
3	23	21	27.88	0	0	629	27.88	292.74	161.01	161.01	1.61	-2.93	1.61	-1.32	27.88	0.00
3	23	22	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
3	23	23	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
3	23	24	28.23	0	0	779	28.23	296.39	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
3	24	1	28.50	0	0	893	28.50	299.15	164.53	164.53	1.65	-2.99	1.65	-1.35	28.50	0.00
3	24	2	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
3	24	3	50.45	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
3	24	4	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
3	24	5	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
3	24	6	50.44	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.44
3	24	7	44.89	0	0	851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
3	24	8	44.55	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.55
3	24	9	23.04	350	29	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
3	24	10	31.21	786	66	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
3	24	11	60.91	166	14	1020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.91
3	24	12	53.10	336	28	788	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.10
3	24	13	59.07	5	0	1445	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	24	14	66.87	0	0	1620	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	24	15	41.83	247	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	6.83
3	24	16	23.05	6	1	0	23.05	241.97	133.08	133.08	1.33	-2.42	0.00	-2.42	23.05	0.00
3	24	17	21.05	0	0	122	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	24	18	21.05	0	0	596	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	24	19	26.43	0	0	875	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	24	20	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	24	21	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	24	22	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	24	23	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	24	24	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	1	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

3	25	2	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	3	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	4	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	5	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	6	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	7	21.05	0	0	1139	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	25	8	21.05	0	0	1098	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	25	9	23.04	0	0	944	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	25	10	31.21	0	0	940	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
3	25	11	66.87	0	0	2393	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	25	12	59.07	0	0	2297	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	25	13	59.07	0	0	2292	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
3	25	14	66.87	0	0	2142	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
3	25	15	31.21	0	0	756	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
3	25	16	23.04	0	0	674	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
3	25	17	21.05	0	0	726	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	25	18	21.05	0	0	600	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
3	25	19	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	20	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	21	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	22	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	23	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	25	24	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	1	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	2	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	3	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	4	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	5	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	6	75.58	0	0	2321	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	26	7	112.53	0	0	2222	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	26	8	154.86	106	9	1191	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	26	9	185.40	558	47	653	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	26	10	185.40	12	1	1109	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	26	11	185.40	0	0	1179	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	26	12	185.40	453	38	546	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	26	13	208.56	1204	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	173.56
3	26	14	228.24	1247	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	193.24
3	26	15	281.93	1464	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	246.93
3	26	16	241.96	1313	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	206.96
3	26	17	136.09	744	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	101.09
3	26	18	78.66	68	6	565	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	26	19	57.61	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	26	20	26.43	0	0	504	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	21	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	22	26.43	0	0	646	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	23	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	26	24	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	1	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	2	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	3	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	4	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	5	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	6	75.58	0	0	1985	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	27	7	112.53	0	0	1617	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	27	8	154.86	0	0	1419	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	27	9	185.40	27	2	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	27	10	185.40	58	5	823	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	27	11	185.40	199	17	476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	27	12	185.40	390	32	76	35.00	367.45	202.10	202.10	2.02	-3.67	0.76	-2.92	35.00	150.40
3	27	13	185.40	407	34	37	35.00	367.45	202.10	202.10	2.02	-3.67	0.37	-3.30	35.00	150.40
3	27	14	185.40	411	34	63	35.00	367.45	202.10	202.10	2.02	-3.67	0.63	-3.05	35.00	150.40
3	27	15	185.40	425	35	58	35.00	367.45	202.10	202.10	2.02	-3.67	0.58	-3.10	35.00	150.40
3	27	16	186.05	482	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.05
3	27	17	134.60	307	26	230	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	27	18	78.66	0	0	983	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	27	19	57.61	0	0	1254	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	27	20	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	21	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	22	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	23	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	27	24	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	1	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	2	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	3	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	4	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	5	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	6	75.58	0	0	2504	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
3	28	7	112.53	0	0	2334	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
3	28	8	154.86	0	0	2301	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
3	28	9	185.40	0	0	2238	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	10	185.40	0	0	2396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	11	185.40	0	0	2086	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	12	185.40	0	0	1970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	13	185.40	49	4	1623	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	14	185.40	528	44	1023	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	15	185.40	824	69	640	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	16	185.40	699	58	828	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	28	17	134.60	0	0	1417	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	28	18	78.66	0	0	2000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	28	19	57.61	0	0	2763	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	28	20	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	21	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	22	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	23	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	28	24	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	1	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	2	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	3	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	4	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	5	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	6	73.95	0	0	2971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.95
3	29	7	110.32	0	0	2715	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.32
3	29	8	152.39	0	0	2647	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.39
3	29	9	182.60	0	0	2553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.60
3	29	10	181.99	0	0	2299	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.99
3	29	11	179.56	463	39	1243	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.56
3	29	12	179.43	840	70	766	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
3	29	13	185.40	511	43	1602	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	29	14	185.40	392	33	1608	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	29	15	185.40	421	35	1597	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	29	16	185.40	354	30	1670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
3	29	17	134.60	0	0	2018	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
3	29	18	78.66	0	0	2789	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
3	29	19	57.61	0	0	3571	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
3	29	20	26.43	0	0	1366	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	21	26.43	0	0	1485	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	22	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	23	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	29	24	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	1	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	2	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	3	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	4	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	5	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
3	30	6	74.11	0	0	3077	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.11
3	30	7	110.65	0	0	2891	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
3	30	8	152.89	0	0	2915	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.89
3	30	9	182.97	0	0	2716	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.97
3	30	10	183.02	0	0	2714	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.02
3	30	11	182.63	0	0	2503	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.63
3	30	12	182.44	0	0	2373	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.44
3	30	13	182.07	0	0	2209	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.07
3	30	14	181.90	0	0	2042	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.90
3	30	15	181.88	0	0	2034	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.88
3	30	16	182.24	0	0	2091	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.24
3	30	17	131.70	0	0	2131	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.70
3	30	18	76.34	0	0	2360	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.34
3	30	19	55.68	0	0	2556	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.68
3	30	20	27.98	0	0	669	27.98	293.70	161.54	161.54	1.62	-2.94	1.62	-1.32	27.98	0.00
3	30	21	27.98	0	0	669	27.98	293.70	161.54	161.54	1.62	-2.94	1.62	-1.32	27.98	0.00
3	30	22	28.05	0	0	703	28.05	294.52	161.99	161.99	1.62	-2.95	1.62	-1.33	28.05	0.00
3	30	23	27.98	0	0	669	27.98	293.70	161.53	161.53	1.62	-2.94	1.62	-1.32	27.98	0.00
3	30	24	27.98	0	0	669	27.98	293.70	161.53	161.53	1.62	-2.94	1.62	-1.32	27.98	0.00
3	31	1	27.98	0	0	669	27.98	293.70	161.53	161.53	1.62	-2.94	1.62	-1.32	27.98	0.00
3	31	2	27.88	0	0	627	27.88	292.70	160.98	160.98	1.61	-2.93	1.61	-1.32	27.88	0.00
3	31	3	27.88	0	0	628	27.88	292.70	160.98	160.98	1.61	-2.93	1.61	-1.32	27.88	0.00
3	31	4	27.88	0	0	627	27.88	292.70	160.98	160.98	1.61	-2.93	1.61	-1.32	27.88	0.00
3	31	5	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
3	31	6	49.75	0	0	627	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
3	31	7	44.28	0	0	586	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.28
3	31	8	44.20	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.20
3	31	9	46.08	0	0	502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.08
3	31	10	54.09	0	0	436	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.09
3	31	11	63.87	0	0	1917	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.87
3	31	12	55.98	0	0	1878	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.98
3	31	13	55.80	0	0	1757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.80
3	31	14	63.42	0	0	1678	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.42
3	31	15	31.88	0	0	287	31.88	334.71	184.09	184.09	1.84	-3.35	1.84	-1.51	31.88	0.00
3	31	16	23.79	0	0	320	23.79	249.72	137.35	137.35	1.37	-2.50	1.37	-1.12	23.79	0.00
3	31	17	21.82	0	0	331	21.82	229.04	125.97	125.97	1.26	-2.29	1.26	-1.03	21.82	0.00
3	31	18	21.88	0	0	359	21.88	229.70	126.33	126.33	1.26	-2.30	1.26	-1.03	21.88	0.00
3	31	19	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
3	31	20	49.07	0	0	333	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.07
3	31	21	49.15	0	0	367	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.15
3	31	22	49.27	0	0	419	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.27
3	31	23	49.40	0	0	474	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
3	31	24	49.52	0	0	527	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.52

4	1	1	49.64	0	0	579	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.64
4	1	2	49.77	0	0	636	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.77
4	1	3	49.89	0	0	689	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.89
4	1	4	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
4	1	5	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
4	1	6	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
4	1	7	44.64	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
4	1	8	42.95	116	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.95
4	1	9	44.94	311	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.94
4	1	10	31.21	481	40	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
4	1	11	61.35	0	0	1446	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.35
4	1	12	53.76	0	0	1498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.76
4	1	13	54.26	0	0	1715	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.26
4	1	14	61.73	0	0	1572	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.73
4	1	15	31.21	273	23	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
4	1	16	23.04	282	24	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
4	1	17	21.64	0	0	257	21.64	227.23	124.98	124.98	1.25	-2.27	1.25	-1.02	21.64	0.00
4	1	18	21.42	0	0	160	21.42	224.87	123.68	123.68	1.24	-2.25	1.24	-1.01	21.42	0.00
4	1	19	27.29	0	0	370	27.29	286.45	157.55	157.55	1.58	-2.86	1.58	-1.29	27.29	0.00
4	1	20	49.24	0	0	409	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.24
4	1	21	49.24	0	0	409	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.24
4	1	22	49.32	0	0	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.32
4	1	23	49.49	0	0	513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.49
4	1	24	49.49	0	0	513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.49
4	2	1	49.58	0	0	554	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
4	2	2	49.62	0	0	569	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.62
4	2	3	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
4	2	4	49.75	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
4	2	5	49.66	0	0	588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
4	2	6	73.50	0	0	3038	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.50
4	2	7	109.83	0	0	2804	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.83
4	2	8	151.29	0	0	2592	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.29
4	2	9	180.43	0	0	2068	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.43
4	2	10	181.57	0	0	2600	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.57
4	2	11	181.92	0	0	2498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.92
4	2	12	181.20	0	0	2030	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
4	2	13	181.36	0	0	2019	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.36
4	2	14	181.20	0	0	1866	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
4	2	15	180.92	0	0	1696	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.92
4	2	16	181.19	0	0	1932	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.19
4	2	17	130.54	0	0	1902	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.54
4	2	18	74.93	0	0	2065	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.93
4	2	19	54.60	0	0	2389	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.60
4	2	20	27.54	0	0	479	27.54	289.09	159.00	159.00	1.59	-2.89	1.59	-1.30	27.54	0.00
4	2	21	27.71	0	0	553	27.71	290.90	159.99	159.99	1.60	-2.91	1.60	-1.31	27.71	0.00
4	2	22	27.79	0	0	587	27.79	291.72	160.44	160.44	1.60	-2.92	1.60	-1.31	27.79	0.00
4	2	23	27.98	0	0	670	27.98	293.72	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
4	2	24	28.06	0	0	704	28.06	294.55	162.00	162.00	1.62	-2.95	1.62	-1.33	28.06	0.00
4	3	1	28.06	0	0	704	28.06	294.55	162.00	162.00	1.62	-2.95	1.62	-1.33	28.06	0.00
4	3	2	28.06	0	0	704	28.06	294.55	162.00	162.00	1.62	-2.95	1.62	-1.33	28.06	0.00
4	3	3	28.15	0	0	745	28.15	295.56	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
4	3	4	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
4	3	5	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
4	3	6	74.11	0	0	3245	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.11
4	3	7	110.00	0	0	2810	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.00
4	3	8	149.75	24	2	1609	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	114.75
4	3	9	179.43	536	45	1210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
4	3	10	185.40	418	35	1994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	11	185.40	642	53	1573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	12	185.40	689	57	1273	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	13	185.40	664	55	1226	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	14	185.40	257	21	1545	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	15	185.40	204	17	1501	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	16	185.40	147	12	1499	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	3	17	134.60	0	0	1736	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	3	18	78.66	0	0	2226	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	3	19	57.61	0	0	2536	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	3	20	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	3	21	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	3	22	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	3	23	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	3	24	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	1	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	2	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	3	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	4	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	5	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	6	75.58	0	0	2073	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	4	7	112.53	0	0	1925	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	4	8	154.86	0	0	1776	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	4	9	185.40	0	0	1524	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	10	185.40	84	7	1161	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	11	185.49	978	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.49
4	4	12	185.40	81	7	1052	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	13	185.40	117	10	934	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	14	185.40	53	4	1189	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	15	185.40	702	58	502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	16	185.40	619	52	741	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	4	17	134.60	105	9	1209	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	4	18	78.66	0	0	2348	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	4	19	57.61	0	0	3200	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	4	20	26.43	0	0	1249	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	21	26.43	0	0	1325	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	22	26.43	0	0	1487	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	23	26.43	0	0	1560	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	4	24	26.43	0	0	1673	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	1	26.43	0	0	1716	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	2	26.43	0	0	1759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	3	26.43	0	0	1837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	4	26.43	0	0	1872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	5	26.43	0	0	1872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	5	6	75.58	0	0	4197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	5	7	112.15	0	0	4069	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.15
4	5	8	153.68	0	0	3840	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.68
4	5	9	181.77	0	0	2900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.77
4	5	10	182.00	0	0	3008	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.00
4	5	11	181.20	0	0	2649	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
4	5	12	180.40	220	18	2313	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.40
4	5	13	179.85	330	28	2062	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.85
4	5	14	180.54	75	6	2377	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.54
4	5	15	180.12	212	18	2181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.12
4	5	16	179.96	227	19	2088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.96
4	5	17	129.75	0	0	2184	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.75
4	5	18	75.17	0	0	2688	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.17
4	5	19	55.58	0	0	3262	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.58
4	5	20	28.23	0	0	780	28.23	296.41	163.03	163.03	1.63	-2.96	1.63	-1.33	28.23	0.00
4	5	21	28.23	0	0	780	28.23	296.41	163.03	163.03	1.63	-2.96	1.63	-1.33	28.23	0.00
4	5	22	28.23	0	0	780	28.23	296.41	163.03	163.03	1.63	-2.96	1.63	-1.33	28.23	0.00
4	5	23	28.40	0	0	852	28.40	298.16	163.99	163.99	1.64	-2.98	1.64	-1.34	28.40	0.00
4	5	24	28.40	0	0	852	28.40	298.16	163.99	163.99	1.64	-2.98	1.64	-1.34	28.40	0.00
4	6	1	28.32	0	0	818	28.32	297.33	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
4	6	2	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
4	6	3	50.27	0	0	853	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
4	6	4	50.27	0	0	853	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
4	6	5	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
4	6	6	74.58	0	0	3699	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.58
4	6	7	111.15	0	0	3577	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.15
4	6	8	152.44	0	0	3256	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.44
4	6	9	181.49	0	0	2682	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.49
4	6	10	180.30	134	11	2133	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.30
4	6	11	179.44	361	30	1703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.44
4	6	12	179.43	507	42	1419	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
4	6	13	179.43	470	39	1307	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
4	6	14	179.48	254	21	1322	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.48
4	6	15	179.43	527	44	947	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
4	6	16	179.55	194	16	1257	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.55
4	6	17	128.72	59	5	1103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	93.72
4	6	18	74.08	0	0	1555	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.08
4	6	19	54.13	0	0	1943	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.13
4	6	20	27.20	0	0	334	27.20	285.56	157.06	157.06	1.57	-2.86	1.57	-1.29	27.20	0.00
4	6	21	27.20	0	0	334	27.20	285.56	157.06	157.06	1.57	-2.86	1.57	-1.29	27.20	0.00
4	6	22	27.28	0	0	367	27.28	286.37	157.50	157.50	1.58	-2.86	1.58	-1.29	27.28	0.00
4	6	23	27.20	0	0	333	27.20	285.56	157.06	157.06	1.57	-2.86	1.57	-1.29	27.20	0.00
4	6	24	27.28	0	0	367	27.28	286.36	157.50	157.50	1.57	-2.86	1.57	-1.29	27.28	0.00
4	7	1	27.37	0	0	407	27.37	287.35	158.04	158.04	1.58	-2.87	1.58	-1.29	27.37	0.00
4	7	2	27.37	0	0	407	27.37	287.35	158.04	158.04	1.58	-2.87	1.58	-1.29	27.37	0.00
4	7	3	27.45	0	0	441	27.45	288.16	158.49	158.49	1.58	-2.88	1.58	-1.30	27.45	0.00
4	7	4	27.53	0	0	478	27.53	289.06	158.98	158.98	1.59	-2.89	1.59	-1.30	27.53	0.00
4	7	5	27.61	0	0	511	27.61	289.88	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
4	7	6	27.71	0	0	552	27.71	290.87	159.98	159.98	1.60	-2.91	1.60	-1.31	27.71	0.00
4	7	7	21.99	0	0	407	21.99	230.86	126.98	126.98	1.27	-2.31	1.27	-1.04	21.99	0.00
4	7	8	21.05	471	39	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
4	7	9	30.97	212	18	0	30.97	325.12	178.82	178.82	1.79	-3.25	0.00	-3.25	30.97	0.00
4	7	10	71.89	522	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.89
4	7	11	66.87	512	43	470	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	7	12	59.07	380	32	590	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	7	13	59.07	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	7	14	66.87	110	9	961	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	7	15	66.99	483	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.99
4	7	16	49.69	407	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.69
4	7	17	32.32	254	21	0	32.32	339.28	186.60	186.60	1.87	-3.39	0.00	-3.39	32.32	0.00
4	7	18	21.05	0	0	141	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	7	19	26.43	0	0	756	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	7	20	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	7	21	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	7	22	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	7	23	26.43	0	0	1100	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

4	7	24	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	1	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	2	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	3	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	4	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	5	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	6	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	7	21.05	0	0	1247	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	8	8	21.05	0	0	1139	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	8	9	23.04	0	0	1056	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	8	10	31.21	0	0	225	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	8	11	66.87	0	0	1996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	8	12	59.07	0	0	1773	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	8	13	59.07	0	0	1384	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	8	14	66.87	0	0	1205	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	8	15	39.41	215	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	4.41
4	8	16	27.65	160	13	0	27.65	290.27	159.65	159.65	1.60	-2.90	0.00	-2.90	27.65	0.00
4	8	17	21.05	0	0	445	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	8	18	21.05	0	0	632	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	8	19	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	20	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	21	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	22	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	23	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	8	24	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	1	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	2	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	3	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	4	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	5	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	6	75.58	0	0	2145	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	9	7	112.53	0	0	1898	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	9	8	154.86	0	0	1510	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	9	9	185.40	9	1	1210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	9	10	185.40	685	57	403	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	9	11	236.93	1294	108	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	201.93
4	9	12	295.19	1554	130	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.19
4	9	13	230.26	897	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	195.26
4	9	14	305.99	1329	111	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	270.99
4	9	15	366.37	1691	141	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	331.37
4	9	16	266.18	861	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	231.18
4	9	17	207.51	811	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	172.51
4	9	18	85.53	283	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.53
4	9	19	57.61	25	2	75	35.00	367.45	202.10	202.10	2.02	-3.67	0.75	-2.92	35.00	22.61
4	9	20	26.43	0	0	177	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	21	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	22	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	23	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	9	24	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	1	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	2	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	3	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	4	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	5	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	6	75.58	0	0	3691	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	10	7	112.53	0	0	3446	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	10	8	154.86	0	0	3547	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	10	9	185.40	0	0	3304	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	10	185.40	0	0	3284	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	11	185.40	0	0	3329	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	12	185.40	0	0	3237	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	13	185.40	0	0	2721	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	14	185.40	0	0	2985	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	15	185.40	0	0	2861	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	16	185.40	0	0	2899	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	10	17	134.60	0	0	2900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	10	18	78.66	0	0	3071	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	10	19	57.61	0	0	3229	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	10	20	26.43	0	0	1100	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	21	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	22	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	23	26.43	0	0	1176	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	10	24	26.43	0	0	1176	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	1	26.43	0	0	1176	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	2	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	3	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	4	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	5	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	6	75.58	0	0	3003	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	11	7	112.53	0	0	2893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	11	8	154.86	0	0	2803	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	11	9	185.40	0	0	2694	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	10	185.40	0	0	2399	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	11	185.40	0	0	2029	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	12	185.40	0	0	1993	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	13	185.40	0	0	1876	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	14	185.40	0	0	2046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	15	185.40	0	0	2159	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	16	185.40	0	0	2072	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	11	17	134.60	0	0	2040	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	11	18	78.66	0	0	2215	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	11	19	57.61	0	0	2167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	11	20	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	21	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	22	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	23	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	11	24	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	1	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	2	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	3	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	4	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	5	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	6	75.58	0	0	2149	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	12	7	112.53	0	0	1996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	12	8	154.86	0	0	1848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	12	9	185.40	0	0	1728	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	12	10	185.40	0	0	1512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	12	11	185.40	0	0	1370	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	12	12	185.40	246	20	433	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	12	13	185.40	389	32	7	35.00	367.45	202.10	202.10	2.02	-3.67	0.07	-3.60	35.00	150.40
4	12	14	247.02	665	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	212.02
4	12	15	286.46	796	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	251.46
4	12	16	312.54	939	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	277.54
4	12	17	200.01	604	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	165.01
4	12	18	91.33	230	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.33
4	12	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
4	12	20	26.43	0	0	397	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	21	26.43	0	0	397	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	22	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	23	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	12	24	26.43	0	0	833	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	1	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	2	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	3	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	4	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	5	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	6	75.58	0	0	2009	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	13	7	112.53	0	0	1756	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	13	8	154.86	0	0	1573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	13	9	185.40	0	0	1345	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	10	185.40	0	0	1138	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	11	185.40	0	0	982	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	12	185.40	31	3	912	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	13	185.40	72	6	827	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	14	185.40	24	2	983	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	15	185.40	0	0	1204	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	16	185.40	0	0	1535	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	13	17	134.60	0	0	1817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	13	18	78.66	0	0	2020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	13	19	57.61	0	0	2336	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	13	20	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	21	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	22	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	23	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	13	24	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	1	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	2	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	3	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	4	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	5	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	6	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	7	21.05	0	0	1140	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	14	8	21.05	0	0	560	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	14	9	23.04	0	0	663	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	14	10	31.21	0	0	685	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	14	11	66.87	0	0	2263	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	14	12	59.07	0	0	1828	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	14	13	59.07	0	0	1558	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	14	14	66.87	0	0	1961	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	14	15	31.21	0	0	791	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	14	16	23.04	0	0	823	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	14	17	21.05	0	0	675	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	14	18	21.05	0	0	982	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	14	19	26.43	0	0	989	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	20	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	21	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	22	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

4	14	23	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	14	24	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	1	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	2	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	3	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	4	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	5	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	6	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	7	21.05	0	0	1247	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	15	8	21.05	0	0	747	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	15	9	23.04	0	0	468	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	15	10	31.21	0	0	96	31.21	327.63	180.20	180.20	1.80	-3.28	0.96	-2.31	31.21	0.00
4	15	11	66.87	0	0	1848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	15	12	59.07	0	0	1994	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	15	13	59.07	0	0	1813	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	15	14	66.87	0	0	1787	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	15	15	31.47	38	3	0	31.47	330.40	181.72	181.72	1.82	-3.30	0.00	-3.30	31.47	0.00
4	15	16	23.04	0	0	32	23.04	241.90	133.04	133.04	1.33	-2.42	0.32	-2.10	23.04	0.00
4	15	17	21.05	0	0	245	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	15	18	21.05	0	0	511	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	15	19	26.43	0	0	770	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	20	26.43	0	0	876	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	21	26.43	0	0	950	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	22	26.43	0	0	951	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	23	26.43	0	0	1025	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	15	24	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	1	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	2	26.43	0	0	1176	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	3	26.43	0	0	1214	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	4	26.43	0	0	1409	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	5	26.43	0	0	1485	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	6	75.58	0	0	3796	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	16	7	112.53	0	0	3344	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	16	8	154.86	0	0	2571	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	16	9	185.40	89	7	2075	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	10	185.40	423	35	1658	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	11	185.40	650	54	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	12	185.40	685	57	1099	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	13	185.40	739	62	1039	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	14	185.40	609	51	1111	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	15	185.40	745	62	958	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	16	185.40	756	63	819	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	16	17	134.60	158	13	1157	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	16	18	78.66	0	0	1641	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	16	19	57.61	0	0	2341	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	16	20	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	21	26.43	0	0	730	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	22	26.43	0	0	690	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	23	26.43	0	0	764	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	16	24	26.43	0	0	876	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	1	26.43	0	0	950	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	2	26.43	0	0	1067	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	3	26.43	0	0	1067	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	4	26.43	0	0	1214	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	5	26.43	0	0	1142	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	6	75.58	0	0	3326	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	17	7	112.53	0	0	2980	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	17	8	154.86	0	0	2305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	17	9	185.40	27	2	1962	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	10	185.40	276	23	1739	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	11	185.40	433	36	1450	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	12	185.40	494	41	1342	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	13	185.40	145	12	1575	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	14	185.40	61	5	1613	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	15	185.40	74	6	1502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	16	185.40	352	29	1199	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	17	17	134.60	0	0	1861	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	17	18	78.66	0	0	2039	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	17	19	57.61	0	0	2309	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	17	20	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	21	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	22	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	23	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	17	24	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	1	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	2	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	3	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	4	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	5	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	6	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	7	21.05	0	0	1063	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	18	8	21.05	0	0	297	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	18	9	23.30	37	3	0	23.30	244.57	134.51	134.51	1.35	-2.45	0.00	-2.45	23.30	0.00
4	18	10	34.79	141	12	0	34.79	365.27	200.90	200.90	2.01	-3.65	0.00	-3.65	34.79	0.00
4	18	11	66.87	320	27	451	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	18	12	59.07	0	0	825	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	18	13	59.07	0	0	1069	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	18	14	66.87	0	0	1070	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	18	15	31.21	0	0	361	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	18	16	23.04	0	0	48	23.04	241.90	133.04	133.04	1.33	-2.42	0.48	-1.94	23.04	0.00
4	18	17	21.05	0	0	471	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	18	18	21.05	0	0	504	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	18	19	26.43	0	0	614	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	20	26.43	0	0	688	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	21	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	22	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	23	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	18	24	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	1	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	2	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	3	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	4	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	6	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	7	21.05	0	0	502	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	19	8	21.05	0	0	469	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	19	9	23.04	0	0	422	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	19	10	31.21	0	0	247	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	19	11	87.51	182	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.51
4	19	12	106.25	282	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.25
4	19	13	218.21	1167	97	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.21
4	19	14	263.36	1340	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	228.36
4	19	15	143.18	1075	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	108.18
4	19	16	137.68	1097	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	102.68
4	19	17	118.15	954	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.15
4	19	18	71.26	596	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.26
4	19	19	27.84	88	7	0	27.84	292.26	160.74	160.74	1.61	-2.92	0.00	-2.92	27.84	0.00
4	19	20	26.43	0	0	73	26.43	277.46	152.60	152.60	1.53	-2.77	0.73	-2.04	26.43	0.00
4	19	21	26.43	0	0	106	26.43	277.46	152.60	152.60	1.53	-2.77	1.06	-1.72	26.43	0.00
4	19	22	26.43	0	0	106	26.43	277.46	152.60	152.60	1.53	-2.77	1.06	-1.71	26.43	0.00
4	19	23	26.43	0	0	214	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	19	24	26.43	0	0	286	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	1	26.43	0	0	398	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	2	26.43	0	0	471	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	3	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	4	26.43	0	0	647	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	5	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	6	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	7	21.05	0	0	688	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	20	8	22.89	101	8	0	22.89	240.34	132.19	132.19	1.32	-2.40	0.00	-2.40	22.89	0.00
4	20	9	45.05	365	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.05
4	20	10	86.66	635	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	51.66
4	20	11	66.87	657	55	119	35.00	367.45	202.10	202.10	2.02	-3.67	1.19	-2.48	35.00	31.87
4	20	12	60.05	719	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.05
4	20	13	59.07	566	47	1	35.00	367.45	202.10	202.10	2.02	-3.67	0.01	-3.67	35.00	24.07
4	20	14	66.87	116	10	453	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	20	15	63.49	455	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.49
4	20	16	51.28	421	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	16.28
4	20	17	21.05	0	0	108	21.05	220.97	121.54	121.54	1.22	-2.21	1.08	-1.13	21.05	0.00
4	20	18	21.05	0	0	352	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	20	19	26.43	0	0	358	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	20	26.43	0	0	471	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	21	26.43	0	0	540	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	22	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	23	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	20	24	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	1	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	2	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	3	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	4	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	5	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	6	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	7	21.05	0	0	727	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	21	8	21.05	0	0	646	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	21	9	23.04	0	0	720	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	21	10	31.21	0	0	690	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	21	11	66.87	0	0	1111	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	21	12	59.07	0	0	1194	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	21	13	59.07	0	0	948	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	21	14	66.87	0	0	717	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	21	15	31.21	0	0	502	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
4	21	16	23.04	0	0	495	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	21	17	21.05	0	0	429	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	21	18	21.05	0	0	150	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	21	19	26.43	0	0	519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	20	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	21	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

4	21	22	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	23	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	21	24	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	1	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	2	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	3	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	4	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	5	26.43	0	0	833	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	6	26.43	0	0	833	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	7	21.05	0	0	800	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	22	8	21.05	0	0	303	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	22	9	42.11	337	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.11
4	22	10	102.59	756	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	67.59
4	22	11	183.13	1171	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	148.13
4	22	12	59.07	6	1	187	35.00	367.45	202.10	202.10	2.02	-3.67	1.87	-1.80	35.00	24.07
4	22	13	59.07	57	5	117	35.00	367.45	202.10	202.10	2.02	-3.67	1.17	-2.50	35.00	24.07
4	22	14	66.87	207	17	143	35.00	367.45	202.10	202.10	2.02	-3.67	1.43	-2.25	35.00	31.87
4	22	15	32.34	79	7	0	32.34	339.55	186.75	186.75	1.87	-3.40	0.00	-3.40	32.34	0.00
4	22	16	36.34	278	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.34
4	22	17	40.22	339	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	5.22
4	22	18	21.05	0	0	209	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	22	19	26.43	0	0	530	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	20	26.43	0	0	615	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	21	26.43	0	0	688	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	22	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	23	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	22	24	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	1	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	2	26.43	0	0	983	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	3	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	4	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	5	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	6	75.58	0	0	3068	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	23	7	112.53	0	0	2750	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	23	8	154.86	0	0	2335	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	23	9	185.40	0	0	2036	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	10	185.40	261	22	1626	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	11	185.40	561	47	1289	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	12	185.40	369	31	1349	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	13	185.40	247	21	1366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	14	185.40	0	0	1658	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	15	185.40	0	0	1725	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	16	185.40	204	17	1348	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	23	17	134.60	0	0	1774	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	23	18	78.66	0	0	2126	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	23	19	57.61	0	0	2185	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	23	20	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	21	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	22	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	23	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	23	24	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	1	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	2	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	3	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	4	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	5	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	6	75.58	0	0	2533	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	24	7	112.53	0	0	2362	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	24	8	154.86	0	0	2305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	24	9	185.40	0	0	2197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	10	185.40	0	0	2204	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	11	185.40	0	0	2131	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	12	185.40	0	0	2182	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	13	185.40	277	23	1142	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	14	185.40	0	0	1558	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	15	185.40	0	0	1732	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	16	185.40	0	0	1649	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	24	17	134.60	0	0	1797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	24	18	78.66	0	0	2058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	24	19	57.61	0	0	2073	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	24	20	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	21	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	22	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	23	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	24	24	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	1	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	2	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	3	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	4	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	5	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	6	75.58	0	0	2903	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	25	7	112.53	0	0	2566	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	25	8	154.86	0	0	1850	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	25	9	185.40	347	29	1342	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	10	185.40	706	59	907	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	11	185.40	716	60	897	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	12	185.40	866	72	653	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	13	185.40	830	69	584	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	14	185.40	823	69	484	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	15	185.40	666	56	634	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	16	185.40	498	41	862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	25	17	134.60	244	20	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	25	18	78.66	0	0	1502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	25	19	57.61	0	0	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	25	20	26.43	0	0	615	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	21	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	22	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	23	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	25	24	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	1	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	2	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	3	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	4	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	5	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	6	75.58	0	0	2718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	26	7	112.53	0	0	2309	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	26	8	154.86	156	13	1442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	26	9	185.40	465	39	1237	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	10	185.40	733	61	1000	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	11	185.40	921	77	692	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	12	185.40	972	81	520	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	13	185.40	829	69	643	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	14	185.40	516	43	880	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	15	185.40	954	79	301	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	16	185.40	707	59	742	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	26	17	134.60	486	41	638	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	26	18	78.66	0	0	1085	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	26	19	57.61	0	0	1904	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	26	20	26.43	0	0	729	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	21	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	22	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	23	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	26	24	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	1	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	2	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	3	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	4	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	5	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	6	75.58	0	0	2142	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	27	7	112.53	0	0	1531	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	27	8	154.86	502	42	444	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	27	9	193.09	1023	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	158.09
4	27	10	244.31	1285	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	209.31
4	27	11	288.28	1503	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	253.28
4	27	12	308.21	1610	134	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	273.21
4	27	13	308.67	1503	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	273.67
4	27	14	280.08	1372	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	245.08
4	27	15	211.10	966	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.10
4	27	16	278.95	1397	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	243.95
4	27	17	152.63	756	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	117.63
4	27	18	78.66	174	14	214	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	27	19	57.61	0	0	793	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	27	20	26.43	0	0	398	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	21	26.43	0	0	431	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	22	26.43	0	0	471	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	23	26.43	0	0	503	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	27	24	26.43	0	0	503	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	1	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	2	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	3	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	4	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	5	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	6	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	7	21.05	0	0	646	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	28	8	21.05	0	0	360	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	28	9	23.04	0	0	152	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
4	28	10	40.66	232	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	5.66
4	28	11	66.87	253	21	614	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	28	12	59.07	278	23	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	28	13	59.07	191	16	611	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	28	14	66.87	52	4	781	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	28	15	41.93	248	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	6.93
4	28	16	31.55	220	18	0	31.55	331.26	182.19	182.19	1.82	-3.31	0.00	-3.31	31.55	0.00
4	28	17	21.06	7	1	0	21.06	221.06	121.59	121.59	1.22	-2.21	0.00	-2.21	21.06	0.00
4	28	18	21.05	0	0	267	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	28	19	26.43	0	0	512	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	20	26.43	0	0	574	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

4	28	21	26.43	0	0	688	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	22	26.43	0	0	729	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	23	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	28	24	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	1	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	2	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	3	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	4	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	5	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	6	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	7	21.05	0	0	836	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
4	29	8	21.05	0	0	115	21.05	220.97	121.54	121.54	1.22	-2.21	1.15	-1.06	21.05	0.00
4	29	9	23.04	0	0	62	23.04	241.90	133.04	133.04	1.33	-2.42	0.62	-1.80	23.04	0.00
4	29	10	69.48	503	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.48
4	29	11	66.87	418	35	367	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	29	12	59.07	453	38	317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	29	13	59.07	371	31	369	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
4	29	14	66.87	112	9	690	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
4	29	15	66.59	480	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.59
4	29	16	61.08	501	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.08
4	29	17	32.19	253	21	0	32.19	337.90	185.85	185.85	1.86	-3.38	0.00	-3.38	32.19	0.00
4	29	18	22.51	89	7	0	22.51	236.27	129.95	129.95	1.30	-2.36	0.00	-2.36	22.51	0.00
4	29	19	26.43	0	0	434	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	20	26.43	0	0	574	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	21	26.43	0	0	647	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	22	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	23	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	29	24	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	1	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	2	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	3	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	4	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	5	26.43	0	0	803	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	6	75.58	0	0	2058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
4	30	7	112.53	0	0	1905	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
4	30	8	154.86	0	0	1880	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
4	30	9	185.40	0	0	1638	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	10	185.40	0	0	1787	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	11	185.40	0	0	1668	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	12	185.40	0	0	1591	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	13	185.40	0	0	1591	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	14	185.40	0	0	1977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	15	185.40	0	0	1914	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	16	185.40	0	0	1826	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
4	30	17	134.60	0	0	1881	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
4	30	18	78.66	0	0	2013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
4	30	19	57.61	0	0	2137	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
4	30	20	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	21	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	22	26.43	0	0	972	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	23	26.43	0	0	972	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
4	30	24	26.43	0	0	969	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	1	26.43	0	0	961	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	2	26.43	0	0	954	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	3	26.43	0	0	954	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	4	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	5	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	6	75.58	0	0	1801	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	1	7	112.53	0	0	1297	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	1	8	154.86	416	35	408	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	1	9	201.64	1002	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.64
5	1	10	262.86	1329	111	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	227.86
5	1	11	306.32	1546	129	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	271.32
5	1	12	288.40	1566	131	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	253.40
5	1	13	295.53	1551	129	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.53
5	1	14	294.41	1433	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	259.41
5	1	15	278.50	1381	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	243.50
5	1	16	284.51	1421	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	249.51
5	1	17	211.27	1033	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.27
5	1	18	89.01	511	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.01
5	1	19	57.61	0	0	361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	1	20	26.43	0	0	246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	21	26.43	0	0	398	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	22	26.43	0	0	470	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	23	26.43	0	0	503	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	1	24	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	1	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	2	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	3	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	4	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	5	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	6	75.58	0	0	1172	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	2	7	112.53	0	0	614	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	2	8	190.57	835	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	155.57
5	2	9	314.70	1333	111	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.70
5	2	10	388.35	1770	148	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	353.35
5	2	11	448.03	2014	168	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	413.03
5	2	12	441.28	2078	173	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	406.28
5	2	13	407.16	1942	162	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	372.16
5	2	14	396.44	1745	145	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	361.44
5	2	15	370.33	1674	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	335.33
5	2	16	393.90	1725	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	358.90
5	2	17	279.06	1320	110	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	244.06
5	2	18	182.55	816	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	147.55
5	2	19	95.92	332	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.92
5	2	20	26.43	0	0	177	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	21	26.43	0	0	317	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	22	26.43	0	0	429	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	23	26.43	0	0	397	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	2	24	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	1	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	2	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	3	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	4	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	5	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	6	75.58	0	0	690	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	3	7	112.53	22	2	196	35.00	367.45	202.10	202.10	2.02	-3.67	1.96	-1.71	35.00	77.53
5	3	8	243.86	911	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	208.86
5	3	9	369.88	1524	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	334.88
5	3	10	423.72	1829	152	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	388.72
5	3	11	473.89	2041	170	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	438.89
5	3	12	465.15	1999	167	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	430.15
5	3	13	469.90	2095	175	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	434.90
5	3	14	426.94	1890	158	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	391.94
5	3	15	421.36	1845	154	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	386.36
5	3	16	416.56	1866	156	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	381.56
5	3	17	313.27	1418	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	278.27
5	3	18	196.82	853	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	161.82
5	3	19	132.07	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	97.07
5	3	20	26.43	0	0	35	26.43	277.46	152.60	152.60	1.53	-2.77	0.35	-2.43	26.43	0.00
5	3	21	26.43	0	0	213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	22	26.43	0	0	213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	23	26.43	0	0	213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	3	24	26.43	0	0	285	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	1	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	2	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	3	26.43	0	0	430	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	4	26.43	0	0	470	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	5	26.43	0	0	470	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	6	75.58	0	0	642	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	4	7	112.53	32	3	233	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	4	8	178.64	456	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	143.64
5	4	9	265.40	771	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	230.40
5	4	10	379.20	1527	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	344.20
5	4	11	428.98	1841	153	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	393.98
5	4	12	452.77	2041	170	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	417.77
5	4	13	456.45	2050	171	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	421.45
5	4	14	448.60	1919	160	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	413.60
5	4	15	465.31	1991	166	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	430.31
5	4	16	457.44	1941	162	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	422.44
5	4	17	353.37	1539	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	318.37
5	4	18	215.45	991	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	180.45
5	4	19	150.38	568	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	115.38
5	4	20	26.67	36	3	0	26.67	280.00	154.00	154.00	1.54	-2.80	0.00	-2.80	26.67	0.00
5	4	21	26.43	0	0	34	26.43	277.46	152.60	152.60	1.53	-2.77	0.34	-2.43	26.43	0.00
5	4	22	26.43	0	0	106	26.43	277.46	152.60	152.60	1.53	-2.77	1.06	-1.72	26.43	0.00
5	4	23	26.43	0	0	177	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	4	24	26.43	0	0	213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	1	26.43	0	0	245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	2	26.43	0	0	245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	3	26.43	0	0	213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	4	26.43	0	0	317	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	5	26.43	0	0	317	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	6	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	7	21.05	0	0	285	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	5	8	24.48	138	11	0	24.48	257.01	141.36	141.36	1.41	-2.57	0.00	-2.57	24.48	0.00
5	5	9	23.04	0	0	10	23.04	241.90	133.04	133.04	1.33	-2.42	0.10	-2.32	23.04	0.00
5	5	10	31.58	45	4	0	31.58	331.54	182.35	182.35	1.82	-3.32	0.00	-3.32	31.58	0.00
5	5	11	74.03	283	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.03
5	5	12	113.91	719	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	78.91
5	5	13	90.45	611	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.45
5	5	14	66.87	107	9	418	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	5	15	31.21	0	0	104	31.21	327.63	180.20	180.20	1.80	-3.28	1.04	-2.23	31.21	0.00
5	5	16	23.04	0	0	281	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	5	17	30.51	232	19	0	30.51	320.28	176.15	176.15	1.76	-3.20	0.00	-3.20	30.51	0.00
5	5	18	29.95	225	19	0	29.95	314.39	172.92	172.92	1.73	-3.14	0.00	-3.14	29.95	0.00
5	5	19	26.43	0	0	175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

5	5	20	26.43	0	0	319	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	21	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	22	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	23	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	5	24	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	1	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	2	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	3	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	4	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	5	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	6	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	7	21.05	0	0	516	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	6	8	21.05	0	0	108	21.05	220.97	121.54	121.54	1.22	-2.21	1.08	-1.13	21.05	0.00
5	6	9	24.45	88	7	0	24.45	256.64	141.15	141.15	1.41	-2.57	0.00	-2.57	24.45	0.00
5	6	10	33.23	106	9	0	33.23	348.86	191.88	191.88	1.92	-3.49	0.00	-3.49	33.23	0.00
5	6	11	66.87	264	22	659	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	6	12	59.07	87	7	773	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	6	13	59.07	203	17	680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	6	14	66.87	106	9	785	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	6	15	55.25	384	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.25
5	6	16	32.91	237	20	0	32.91	345.46	190.00	190.00	1.90	-3.45	0.00	-3.45	32.91	0.00
5	6	17	22.10	76	6	0	22.10	232.01	127.61	127.61	1.28	-2.32	0.00	-2.32	22.10	0.00
5	6	18	21.05	0	0	216	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	6	19	26.43	0	0	650	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	20	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	21	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	22	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	6	24	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	1	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	2	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	3	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	4	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	5	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	6	75.58	0	0	2718	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	7	7	112.53	0	0	2214	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	7	8	154.86	0	0	1846	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	7	9	185.40	351	29	1333	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	10	185.40	639	53	936	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	11	185.40	829	69	662	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	12	185.40	953	79	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	13	185.40	913	76	404	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	14	185.40	853	71	338	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	15	185.40	897	75	330	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	16	185.40	853	71	383	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	7	17	134.60	419	35	609	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	7	18	78.66	0	0	1085	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	7	19	57.61	0	0	1667	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	7	20	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	21	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	22	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	7	24	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	1	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	2	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	3	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	4	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	5	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	6	75.58	0	0	2497	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	8	7	112.53	0	0	2263	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	8	8	154.86	0	0	2280	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	8	9	185.40	0	0	1878	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	8	10	185.40	471	39	862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	8	11	185.40	722	60	435	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	8	12	185.40	965	80	111	35.00	367.45	202.10	202.10	2.02	-3.67	1.11	-2.57	35.00	150.40
5	8	13	188.08	1029	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	153.08
5	8	14	186.31	947	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.31
5	8	15	199.03	1067	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.03
5	8	16	200.31	1080	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	165.31
5	8	17	134.73	649	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.73
5	8	18	78.66	176	15	430	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	8	19	57.61	0	0	811	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	8	20	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	21	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	22	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	23	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	8	24	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	1	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	2	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	3	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	4	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	5	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	6	75.58	0	0	1612	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	9	7	112.53	0	0	1297	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	9	8	154.86	0	0	1180	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	9	9	185.40	0	0	1106	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	9	10	185.40	94	8	888	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	9	11	185.40	206	17	600	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	9	12	200.35	870	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	165.35
5	9	13	228.98	973	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	193.98
5	9	14	251.54	1128	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	216.54
5	9	15	264.39	1191	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	229.39
5	9	16	274.41	1238	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	239.41
5	9	17	177.79	843	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	142.79
5	9	18	84.06	435	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.06
5	9	19	57.61	0	0	395	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	9	20	26.43	0	0	397	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	21	26.43	0	0	430	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	22	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	23	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	9	24	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	1	26.43	0	0	646	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	2	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	3	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	4	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	5	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	6	75.58	0	0	1510	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	10	7	112.53	45	4	743	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	10	8	155.71	741	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	120.71
5	10	9	220.00	1137	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	185.00
5	10	10	256.89	1364	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	221.89
5	10	11	255.65	1354	113	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	220.65
5	10	12	292.41	1524	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	257.41
5	10	13	201.19	943	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.19
5	10	14	259.15	1266	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	224.15
5	10	15	269.78	1347	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	234.78
5	10	16	191.74	779	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.74
5	10	17	148.25	776	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.25
5	10	18	78.66	416	35	43	35.00	367.45	202.10	202.10	2.02	-3.67	0.43	-3.24	35.00	43.66
5	10	19	57.61	74	6	337	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	10	20	26.43	0	0	106	26.43	277.46	152.60	152.60	1.53	-2.77	1.06	-1.71	26.43	0.00
5	10	21	26.43	0	0	214	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	22	26.43	0	0	286	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	23	26.43	0	0	398	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	10	24	26.43	0	0	430	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	1	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	2	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	3	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	4	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	5	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	6	75.58	0	0	910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	11	7	112.53	214	18	205	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	11	8	170.32	798	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	135.32
5	11	9	260.58	1223	102	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	225.58
5	11	10	356.35	1706	142	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	321.35
5	11	11	408.97	1915	160	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	373.97
5	11	12	357.46	1784	149	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	322.46
5	11	13	383.05	1786	149	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	348.05
5	11	14	372.00	1634	136	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	337.00
5	11	15	384.34	1679	140	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	349.34
5	11	16	316.89	1504	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	281.89
5	11	17	230.95	1090	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	195.95
5	11	18	130.66	659	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	95.66
5	11	19	58.94	235	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.94
5	11	20	26.43	0	0	74	26.43	277.46	152.60	152.60	1.53	-2.77	0.74	-2.04	26.43	0.00
5	11	21	26.43	0	0	178	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	22	26.43	0	0	285	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	23	26.43	0	0	246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	11	24	26.43	0	0	285	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	1	26.43	0	0	318	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	2	26.43	0	0	430	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	3	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	4	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	5	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	6	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	7	21.05	0	0	41	21.05	220.97	121.54	121.54	1.22	-2.21	0.41	-1.79	21.05	0.00
5	12	8	32.09	252	21	0	32.09	336.89	185.29	185.29	1.85	-3.37	0.00	-3.37	32.09	0.00
5	12	9	73.80	600	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	38.80
5	12	10	117.88	872	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	82.88
5	12	11	208.38	1199	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	173.38
5	12	12	167.19	940	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.19
5	12	13	95.20	383	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.20
5	12	14	76.65	235	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.65
5	12	15	93.80	689	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	58.80
5	12	16	86.63	697	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	51.63
5	12	17	26.74	178	15	0	26.74	280.69	154.38	154.38	1.54	-2.81	0.00	-2.81	26.74	0.00
5	12	18	21.05	0	0	35	21.05	220.97	121.54	121.54	1.22	-2.21	0.35	-1.86	21.05	0.00

5	12	19	26.43	0	0	74	26.43	277.46	152.60	152.60	1.53	-2.77	0.74	-2.04	26.43	0.00
5	12	20	26.43	0	0	285	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	21	26.43	0	0	471	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	22	26.43	0	0	540	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	23	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	12	24	26.43	0	0	647	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	1	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	2	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	3	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	4	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	5	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	6	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	7	21.05	0	0	458	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	13	8	21.05	0	0	128	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	13	9	24.04	74	6	0	24.04	252.42	138.83	138.83	1.39	-2.52	0.00	-2.52	24.04	0.00
5	13	10	50.26	337	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.26
5	13	11	66.87	109	9	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	13	12	59.07	247	21	846	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	13	13	59.07	162	13	910	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	13	14	66.87	7	1	1097	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	13	15	73.48	534	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	38.48
5	13	16	57.83	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.83
5	13	17	41.10	347	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	6.10
5	13	18	24.09	130	11	0	24.09	252.94	139.12	139.12	1.39	-2.53	0.00	-2.53	24.09	0.00
5	13	19	26.43	0	0	255	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	20	26.43	0	0	505	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	21	26.43	0	0	575	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	22	26.43	0	0	615	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	23	26.43	0	0	689	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	13	24	26.43	0	0	763	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	1	26.43	0	0	804	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	2	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	3	26.43	0	0	908	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	4	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	5	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	6	75.58	0	0	2679	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	14	7	112.53	0	0	1951	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	14	8	154.86	189	16	1322	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	14	9	185.40	496	41	1066	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	10	185.40	724	60	802	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	11	185.40	631	53	980	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	12	185.40	466	39	1034	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	13	185.40	389	32	1190	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	14	185.40	482	40	1027	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	15	185.40	458	38	1095	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	16	185.40	121	10	1433	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	14	17	134.60	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	14	18	78.66	0	0	1421	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	14	19	57.61	0	0	1678	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	14	20	26.43	0	0	574	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	21	26.43	0	0	648	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	22	26.43	0	0	688	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	23	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	14	24	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	1	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	2	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	3	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	4	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	5	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	6	75.58	0	0	2404	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	15	7	112.53	0	0	1724	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	15	8	154.86	206	17	1230	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	15	9	185.40	510	43	922	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	10	185.40	740	62	826	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	11	185.40	750	63	725	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	12	185.40	589	49	810	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	13	185.40	857	71	460	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	14	185.40	796	66	477	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	15	185.40	797	66	476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	16	185.40	888	74	321	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	15	17	134.60	581	48	425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	15	18	78.66	21	2	975	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	15	19	57.61	0	0	1500	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	15	20	26.43	0	0	320	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	21	26.43	0	0	400	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	22	26.43	0	0	648	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	23	26.43	0	0	648	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	15	24	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	1	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	2	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	3	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	4	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	5	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	6	75.58	0	0	2032	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	16	7	112.53	0	0	1563	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	16	8	154.86	0	0	1395	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	16	9	185.40	8	1	1322	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	10	185.40	114	10	1177	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	11	185.40	123	10	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	12	185.40	680	57	448	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	13	185.40	966	81	150	35.00	367.45	202.10	202.10	2.02	-3.67	1.50	-2.17	35.00	150.40
5	16	14	185.40	635	53	512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	15	185.40	815	68	302	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	16	185.40	734	61	371	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	16	17	134.60	406	34	529	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	16	18	78.66	0	0	1027	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	16	19	57.61	0	0	1539	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	16	20	26.43	0	0	728	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	21	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	22	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	23	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	16	24	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	1	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	2	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	3	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	4	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	5	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	6	75.58	0	0	1908	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	17	7	112.53	0	0	1843	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	17	8	154.86	0	0	1754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	17	9	185.40	0	0	1706	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	10	185.40	0	0	1473	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	11	185.40	0	0	1386	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	12	185.40	0	0	1394	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	13	185.40	0	0	1306	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	14	185.40	0	0	1179	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	15	185.40	0	0	1249	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	16	185.40	0	0	1103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	17	17	134.60	0	0	1281	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	17	18	78.66	0	0	1436	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	17	19	57.61	0	0	1529	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	17	20	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	21	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	22	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	23	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	17	24	26.43	0	0	819	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	1	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	2	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	3	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	4	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	5	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	6	75.58	0	0	1431	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	18	7	112.53	0	0	1228	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	18	8	154.86	0	0	1060	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	18	9	185.40	27	2	892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	10	185.40	72	6	827	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	11	185.40	112	9	743	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	12	185.40	112	9	743	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	13	185.40	170	14	588	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	14	185.40	172	14	585	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	15	185.40	172	14	585	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	16	185.40	252	21	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	18	17	134.60	0	0	640	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	18	18	78.66	0	0	845	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	18	19	57.61	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	18	20	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	21	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	22	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	23	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	18	24	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	1	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	2	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	3	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	4	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	6	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	7	21.05	0	0	563	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	19	8	21.05	0	0	509	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	19	9	23.04	0	0	421	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	19	10	31.21	0	0	206	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	19	11	91.82	419	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.82
5	19	12	85.62	433	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.62
5	19	13	92.71	439	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.71
5	19	14	89.28	318	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.28
5	19	15	31.22	6	1	0	31.22	327.71	180.24	180.24	1.80	-3.28	0.00	-3.28	31.22	0.00
5	19	16	23.04	0	0	30	23.04	241.90	133.04	133.04	1.33	-2.42	0.30	-2.12	23.04	0.00
5	19	17	25.48	157	13	0	25.48	267.53	147.14	147.14	1.47	-2.68	0.00	-2.68	25.48	0.00

5	19	18	21.05	0	0	35	21.05	220.97	121.54	121.54	1.22	-2.21	0.35	-1.86	21.05	0.00
5	19	19	26.43	0	0	145	26.43	277.46	152.60	152.60	1.53	-2.77	1.45	-1.32	26.43	0.00
5	19	20	26.43	0	0	285	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	21	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	22	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	23	26.43	0	0	358	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	19	24	26.43	0	0	318	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	1	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	2	26.43	0	0	540	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	3	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	4	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	6	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	7	21.05	0	0	727	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	20	8	21.05	0	0	686	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	20	9	23.04	0	0	637	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	20	10	31.21	0	0	571	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	20	11	66.87	0	0	1177	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	20	12	59.07	0	0	1002	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	20	13	59.07	0	0	1004	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	20	14	66.87	0	0	916	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	20	15	31.21	0	0	296	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	20	16	23.04	0	0	417	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	20	17	21.05	0	0	501	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	20	18	21.05	0	0	573	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	20	19	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	20	26.43	0	0	820	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	21	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	22	26.43	0	0	886	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	23	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	20	24	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	1	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	2	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	3	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	4	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	5	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	6	75.58	0	0	1557	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	21	7	112.53	0	0	1363	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	21	8	154.86	0	0	1139	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	21	9	185.40	2	0	887	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	10	185.40	25	2	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	11	185.40	25	2	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	12	185.40	25	2	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	13	185.40	79	7	749	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	14	185.40	82	7	747	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	15	185.40	82	7	747	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	16	185.40	71	6	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	21	17	134.60	0	0	966	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	21	18	78.66	0	0	1146	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	21	19	57.61	0	0	1173	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	21	20	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	21	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	22	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	23	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	21	24	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	1	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	2	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	3	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	4	26.43	0	0	611	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	5	26.43	0	0	611	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	6	75.58	0	0	537	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	22	7	112.53	0	0	305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	22	8	154.86	195	16	105	35.00	367.45	202.10	202.10	2.02	-3.67	1.05	-2.63	35.00	119.86
5	22	9	199.46	457	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.46
5	22	10	211.10	541	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.10
5	22	11	226.55	592	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	191.55
5	22	12	270.46	745	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	235.46
5	22	13	268.43	752	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	233.43
5	22	14	293.85	856	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	258.85
5	22	15	334.28	1236	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	299.28
5	22	16	283.24	836	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	248.24
5	22	17	144.18	314	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	109.18
5	22	18	78.66	18	1	111	35.00	367.45	202.10	202.10	2.02	-3.67	1.11	-2.56	35.00	43.66
5	22	19	57.61	0	0	260	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	22	20	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	21	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	22	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	23	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	22	24	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	1	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	2	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	3	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	4	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	6	75.58	0	0	828	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	23	7	112.53	0	0	464	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	23	8	154.86	174	15	307	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	23	9	243.63	995	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	208.63
5	23	10	286.14	1215	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	251.14
5	23	11	263.44	1064	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	228.44
5	23	12	195.24	537	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	160.24
5	23	13	225.44	775	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.44
5	23	14	232.26	683	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	197.26
5	23	15	300.51	1181	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	265.51
5	23	16	340.14	1400	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	305.14
5	23	17	216.38	931	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	181.38
5	23	18	89.41	419	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.41
5	23	19	57.61	30	2	173	35.00	367.45	202.10	202.10	2.02	-3.67	1.73	-1.95	35.00	22.61
5	23	20	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	21	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	22	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	23	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	23	24	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	1	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	2	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	3	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	4	26.43	0	0	619	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	5	26.43	0	0	611	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	6	75.58	0	0	537	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	24	7	112.53	0	0	317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	24	8	154.86	267	22	55	35.00	367.45	202.10	202.10	2.02	-3.67	0.55	-3.13	35.00	119.86
5	24	9	201.46	638	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.46
5	24	10	223.15	722	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	188.15
5	24	11	311.67	1206	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	276.67
5	24	12	301.80	1315	110	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	266.80
5	24	13	268.23	1196	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	233.23
5	24	14	210.63	685	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	175.63
5	24	15	229.91	739	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.91
5	24	16	276.69	1109	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	241.69
5	24	17	163.70	524	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	128.70
5	24	18	133.06	578	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	98.06
5	24	19	57.61	88	7	88	35.00	367.45	202.10	202.10	2.02	-3.67	0.88	-2.79	35.00	22.61
5	24	20	26.43	0	0	357	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	21	26.43	0	0	429	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	22	26.43	0	0	553	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	23	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	24	24	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	1	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	2	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	3	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	4	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	6	75.58	0	0	1039	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
5	25	7	112.53	0	0	887	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
5	25	8	154.86	0	0	831	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
5	25	9	185.40	138	11	580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	25	10	185.40	409	34	332	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
5	25	11	185.40	516	43	70	35.00	367.45	202.10	202.10	2.02	-3.67	0.70	-2.97	35.00	150.40
5	25	12	185.40	557	46	4	35.00	367.45	202.10	202.10	2.02	-3.67	0.04	-3.64	35.00	150.40
5	25	13	191.06	555	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.06
5	25	14	225.52	860	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.52
5	25	15	193.97	563	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	158.97
5	25	16	185.91	423	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.91
5	25	17	134.60	155	13	277	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
5	25	18	78.66	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
5	25	19	57.61	0	0	754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
5	25	20	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	21	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	22	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	23	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	25	24	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	1	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	2	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	3	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	4	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	5	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	6	26.43	0	0	751	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	7	21.05	0	0	685	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	26	8	21.05	0	0	688	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	26	9	23.04	0	0	638	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	26	10	31.21	0	0	582	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	26	11	66.87	0	0	701	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	26	12	59.07	0	0	873	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	26	13	59.07	0	0	866	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	26	14	66.87	0	0	630	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	26	15	31.21	0	0	575	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	26	16	23.04	0	0	564	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00

5	26	17	21.05	0	0	611	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	26	18	21.05	0	0	611	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	26	19	26.43	0	0	560	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	20	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	21	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	22	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	23	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	26	24	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	1	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	2	26.43	0	0	619	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	3	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	4	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	5	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	6	26.43	0	0	619	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	7	21.05	0	0	611	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	27	8	21.05	0	0	611	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	27	9	23.04	0	0	497	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	27	10	31.21	0	0	420	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	27	11	66.87	0	0	84	35.00	367.45	202.10	202.10	2.02	-3.67	0.84	-2.83	35.00	31.87
5	27	12	69.73	407	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.73
5	27	13	69.64	302	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.64
5	27	14	94.42	442	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	59.42
5	27	15	34.37	132	11	0	34.37	360.82	198.45	198.45	1.98	-3.61	0.00	-3.61	34.37	0.00
5	27	16	23.04	0	0	206	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	27	17	21.05	0	0	213	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	27	18	21.05	0	0	397	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	27	19	26.43	0	0	397	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	20	26.43	0	0	470	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	21	26.43	0	0	470	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	22	26.43	0	0	619	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	23	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	27	24	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	1	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	2	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	3	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	4	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	5	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	6	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	7	21.05	0	0	612	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	28	8	21.05	0	0	288	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	28	9	23.04	0	0	122	23.04	241.90	133.04	133.04	1.33	-2.42	1.22	-1.20	23.04	0.00
5	28	10	31.21	0	0	367	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	28	11	66.87	0	0	575	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	28	12	59.07	282	24	46	35.00	367.45	202.10	202.10	2.02	-3.67	0.46	-3.21	35.00	24.07
5	28	13	59.07	0	0	333	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	28	14	66.87	322	27	109	35.00	367.45	202.10	202.10	2.02	-3.67	1.09	-2.58	35.00	31.87
5	28	15	70.78	513	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.78
5	28	16	23.36	42	4	0	23.36	245.29	134.91	134.91	1.35	-2.45	0.00	-2.45	23.36	0.00
5	28	17	21.05	0	0	50	21.05	220.97	121.54	121.54	1.22	-2.21	0.50	-1.70	21.05	0.00
5	28	18	21.05	0	0	177	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	28	19	26.43	0	0	82	26.43	277.46	152.60	152.60	1.53	-2.77	0.82	-1.95	26.43	0.00
5	28	20	26.43	0	0	286	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	21	26.43	0	0	318	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	22	26.43	0	0	398	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	23	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	28	24	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	1	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	2	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	3	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	4	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	5	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	6	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	7	21.05	0	0	181	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	29	8	21.05	0	0	193	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	29	9	23.04	0	0	333	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
5	29	10	31.21	0	0	281	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
5	29	11	66.87	0	0	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	29	12	66.30	476	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.30
5	29	13	64.42	367	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.42
5	29	14	66.87	2	0	204	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	29	15	34.31	131	11	0	34.31	360.22	198.12	198.12	1.98	-3.60	0.00	-3.60	34.31	0.00
5	29	16	59.19	486	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.19
5	29	17	46.63	398	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.63
5	29	18	21.21	30	2	0	21.21	222.68	122.47	122.47	1.22	-2.23	0.00	-2.23	21.21	0.00
5	29	19	26.43	0	0	33	26.43	277.46	152.60	152.60	1.53	-2.77	0.33	-2.45	26.43	0.00
5	29	20	26.43	0	0	286	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	21	26.43	0	0	358	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	22	26.43	0	0	430	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	23	26.43	0	0	503	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	29	24	26.43	0	0	503	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	1	26.43	0	0	540	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	2	26.43	0	0	613	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	3	26.43	0	0	646	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	4	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	5	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	6	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	7	21.05	0	0	687	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	30	8	21.05	0	0	164	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	30	9	23.29	37	3	0	23.29	244.56	134.51	134.51	1.35	-2.45	0.00	-2.45	23.29	0.00
5	30	10	34.50	135	11	0	34.50	362.23	199.23	199.23	1.99	-3.62	0.00	-3.62	34.50	0.00
5	30	11	66.87	3	0	1081	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	30	12	59.07	0	0	1446	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	30	13	59.07	86	7	920	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	30	14	66.87	9	1	1062	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	30	15	54.09	373	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.09
5	30	16	47.82	390	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	12.82
5	30	17	33.79	272	23	0	33.79	354.74	195.11	195.11	1.95	-3.55	0.00	-3.55	33.79	0.00
5	30	18	21.90	68	6	0	21.90	229.90	126.45	126.45	1.26	-2.30	0.00	-2.30	21.90	0.00
5	30	19	26.43	0	0	198	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	20	26.43	0	0	505	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	21	26.43	0	0	575	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	22	26.43	0	0	648	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	23	26.43	0	0	729	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	30	24	26.43	0	0	763	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	1	26.43	0	0	804	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	2	26.43	0	0	837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	3	26.43	0	0	908	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	4	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	5	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	6	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	7	21.05	0	0	485	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	31	8	21.05	0	0	372	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
5	31	9	23.04	0	0	85	23.04	241.90	133.04	133.04	1.33	-2.42	0.85	-1.57	23.04	0.00
5	31	10	34.23	129	11	0	34.23	359.37	197.66	197.66	1.98	-3.59	0.00	-3.59	34.23	0.00
5	31	11	66.87	59	5	1025	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	31	12	59.07	130	11	912	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	31	13	59.07	123	10	843	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
5	31	14	66.87	47	4	874	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
5	31	15	60.58	430	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.58
5	31	16	49.59	406	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.59
5	31	17	33.58	269	22	0	33.58	352.59	193.92	193.92	1.94	-3.53	0.00	-3.53	33.58	0.00
5	31	18	22.65	94	8	0	22.65	237.76	130.77	130.77	1.31	-2.38	0.00	-2.38	22.65	0.00
5	31	19	26.43	0	0	215	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	20	26.43	0	0	399	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	21	26.43	0	0	541	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	22	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	23	26.43	0	0	603	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
5	31	24	26.43	0	0	636	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
6	1	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	1	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	1	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	1	10	32.33	78	7	0	32.33	339.37	186.65	186.65	1.87	-3.39	0.00	-3.39	32.33	0.00
6	1	11	66.87	124	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	1	12	66.29	620	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.29
6	1	13	59.07	217	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	1	14	66.87	100	8	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	1	15	49.55	330	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.55
6	1	16	23.08	15	1	0	23.08	242.33	133.28	133.28	1.33	-2.42	0.00	-2.42	23.08	0.00
6	1	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	1	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	1	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	1	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	2	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	2	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	2	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	2	11	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	2	12	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	2	13	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	2	14	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	2	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00

6	2	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	2	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	2	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	2	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	2	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	3	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	3	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	3	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	3	11	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	3	12	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	3	13	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	3	14	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	3	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	3	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	3	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	3	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	3	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	3	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	4	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	4	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	4	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	4	11	226.94	715	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	191.94
6	4	12	269.63	1071	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	234.63
6	4	13	319.83	1505	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	284.83
6	4	14	262.42	1080	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	227.42
6	4	15	34.64	138	11	0	34.64	363.66	200.01	200.01	2.00	-3.64	0.00	-3.64	34.64	0.00
6	4	16	25.24	110	9	0	25.24	264.95	145.72	145.72	1.46	-2.65	0.00	-2.65	25.24	0.00
6	4	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	4	18	28.56	206	17	0	28.56	299.87	164.93	164.93	1.65	-3.00	0.00	-3.00	28.56	0.00
6	4	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	4	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	7	32.12	252	21	0	32.12	337.25	185.49	185.49	1.85	-3.37	0.00	-3.37	32.12	0.00
6	5	8	69.51	582	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.51
6	5	9	98.12	783	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	63.12
6	5	10	131.13	977	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.13
6	5	11	230.53	1255	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	195.53
6	5	12	192.51	1061	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	157.51
6	5	13	183.28	906	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	148.28
6	5	14	187.34	896	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	152.34
6	5	15	67.09	484	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.09
6	5	16	102.71	818	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	67.71
6	5	17	92.91	759	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.91
6	5	18	75.57	628	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.57
6	5	19	26.43	2	0	0	26.43	277.46	152.61	152.61	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	5	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	6	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	6	9	23.21	30	3	0	23.21	243.63	134.00	134.00	1.34	-2.44	0.00	-2.44	23.21	0.00
6	6	10	50.20	337	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.20
6	6	11	217.95	711	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.95
6	6	12	248.59	1029	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	213.59
6	6	13	242.22	918	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	207.22
6	6	14	238.02	841	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	203.02
6	6	15	36.81	177	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.81
6	6	16	25.32	112	9	0	25.32	265.81	146.20	146.20	1.46	-2.66	0.00	-2.66	25.32	0.00
6	6	17	21.24	33	3	0	21.24	223.01	122.65	122.65	1.23	-2.23	0.00	-2.23	21.24	0.00
6	6	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	6	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	6	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	7	24.15	131	11	0	24.15	253.54	139.45	139.45	1.39	-2.54	0.00	-2.54	24.15	0.00
6	7	8	46.35	395	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.35
6	7	9	64.33	527	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.33
6	7	10	97.48	717	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.48
6	7	11	104.78	732	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	69.78
6	7	12	106.91	809	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.91
6	7	13	125.27	918	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.27
6	7	14	115.46	788	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	80.46
6	7	15	101.52	747	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	66.52
6	7	16	136.14	850	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	101.14
6	7	17	71.48	597	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.48
6	7	18	89.02	506	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.02
6	7	19	31.43	167	14	0	31.43	329.96	181.48	181.48	1.81	-3.30	0.00	-3.30	31.43	0.00
6	7	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	7	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	8	8	36.19	298	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.19
6	8	9	54.88	451	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.88
6	8	10	123.27	690	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.27
6	8	11	156.93	1058	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.93
6	8	12	167.84	1071	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.84
6	8	13	199.84	1190	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.84
6	8	14	217.44	1115	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.44
6	8	15	148.21	880	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.21
6	8	16	116.01	697	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	81.01
6	8	17	46.78	399	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.78
6	8	18	52.04	444	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	17.04
6	8	19	28.28	101	8	0	28.28	296.94	163.32	163.32	1.63	-2.97	0.00	-2.97	28.28	0.00
6	8	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	8	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	9	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	9	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	9	10	122.48	684	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	87.48
6	9	11	323.14	1515	126	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	288.14
6	9	12	280.16	1103	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	245.16
6	9	13	328.60	1599	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.60
6	9	14	260.93	1249	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	225.93

6	9	15	167.73	1037	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.73
6	9	16	128.86	794	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	93.86
6	9	17	113.58	694	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	78.58
6	9	18	87.25	492	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.25
6	9	19	59.13	153	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.13
6	9	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	9	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	10	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	10	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	10	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	10	11	71.21	67	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.21
6	10	12	61.84	35	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.84
6	10	13	74.43	103	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.43
6	10	14	76.30	94	8	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.30
6	10	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	10	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	10	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	10	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	10	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	10	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	11	8	39.05	327	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	4.05
6	11	9	63.87	523	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.87
6	11	10	87.78	644	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.78
6	11	11	119.16	824	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.16
6	11	12	110.29	795	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.29
6	11	13	114.20	835	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	79.20
6	11	14	111.34	725	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	76.34
6	11	15	112.03	827	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.03
6	11	16	79.00	639	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	44.00
6	11	17	59.06	501	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.06
6	11	18	45.97	392	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.97
6	11	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	11	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	7	21.22	30	3	0	21.22	222.75	122.51	122.51	1.23	-2.23	0.00	-2.23	21.22	0.00
6	12	8	43.74	372	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	8.74
6	12	9	127.06	780	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	92.06
6	12	10	163.04	998	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	128.04
6	12	11	178.30	1077	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	143.30
6	12	12	197.83	1184	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	162.83
6	12	13	195.06	1108	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	160.06
6	12	14	211.87	1104	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.87
6	12	15	142.45	836	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	107.45
6	12	16	137.99	864	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	102.99
6	12	17	105.69	634	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	70.69
6	12	18	89.94	514	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.94
6	12	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	12	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	13	8	28.16	200	17	0	28.16	295.66	162.61	162.61	1.63	-2.96	0.00	-2.96	28.16	0.00
6	13	9	99.65	573	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	64.65
6	13	10	106.31	562	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.31
6	13	11	229.00	1145	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.00
6	13	12	220.47	1159	97	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	185.47
6	13	13	199.22	947	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.22
6	13	14	227.10	1097	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	192.10
6	13	15	68.01	491	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.01
6	13	16	33.10	240	20	0	33.10	347.54	191.15	191.15	1.91	-3.48	0.00	-3.48	33.10	0.00
6	13	17	28.86	210	18	0	28.86	302.95	166.62	166.62	1.67	-3.03	0.00	-3.03	28.86	0.00
6	13	18	22.11	76	6	0	22.11	232.15	127.68	127.68	1.28	-2.32	0.00	-2.32	22.11	0.00
6	13	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	13	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	14	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	14	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	14	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	14	11	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	14	12	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	14	13	59.80	4	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.80
6	14	14	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	14	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	14	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	14	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	14	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	14	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	14	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	15	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	15	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	15	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	15	11	131.89	314	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.89
6	15	12	156.87	432	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.87
6	15	13	217.71	728	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.71
6	15	14	298.06	1180	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	263.06
6	15	15	90.37	663	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.37
6	15	16	86.77	698	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	51.77
6	15	17	70.80	592	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.80
6	15	18	42.14	357	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.14
6	15	19	35.02	221	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	0.02
6	15	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	21	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
6	15	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	15	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	16	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	16	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	16	9	88.27	709	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.27
6	16	10	158.07	958	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	123.07
6	16	11	453.67	2181	182	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	418.67
6	16	12	444.22	2163	180	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	409.22
6	16	13	442.98	2073	173	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	407.98

6	16	14	444.87	1907	159	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	409.87
6	16	15	185.73	1189	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.73
6	16	16	168.76	1113	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	133.76
6	16	17	153.23	1001	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.23
6	16	18	116.54	716	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	81.54
6	16	19	76.57	357	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.57
6	16	20	29.72	135	11	0	29.72	312.03	171.62	171.62	1.72	-3.12	0.00	-3.12	29.72	0.00
6	16	21	28.51	107	9	0	28.51	299.28	164.60	164.60	1.65	-2.99	0.00	-2.99	28.51	0.00
6	16	22	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
6	16	23	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
6	16	24	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
6	17	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	7	62.81	273	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.81
6	17	8	80.47	437	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	45.47
6	17	9	83.62	447	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	48.62
6	17	10	97.97	497	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.97
6	17	11	245.48	1236	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	210.48
6	17	12	235.97	1223	102	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	200.97
6	17	13	180.28	945	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	145.28
6	17	14	144.15	617	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	109.15
6	17	15	109.12	583	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.12
6	17	16	30.26	202	17	0	30.26	317.66	174.71	174.71	1.75	-3.18	0.00	-3.18	30.26	0.00
6	17	17	87.29	493	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.29
6	17	18	64.32	289	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.32
6	17	19	56.85	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.85
6	17	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	17	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	7	25.43	156	13	0	25.43	266.95	146.82	146.82	1.47	-2.67	0.00	-2.67	25.43	0.00
6	18	8	91.15	523	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.15
6	18	9	121.09	735	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.09
6	18	10	151.74	908	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	116.74
6	18	11	182.38	1127	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	147.38
6	18	12	191.24	1174	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.24
6	18	13	199.16	1184	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.16
6	18	14	194.08	1022	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	159.08
6	18	15	152.74	916	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	117.74
6	18	16	139.91	879	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.91
6	18	17	96.10	561	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	61.10
6	18	18	84.17	468	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.17
6	18	19	57.08	113	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.08
6	18	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	18	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	7	21.10	16	1	0	21.10	221.49	121.82	121.82	1.22	-2.21	0.00	-2.21	21.10	0.00
6	19	8	66.85	315	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.85
6	19	9	23.67	59	5	0	23.67	248.50	136.67	136.67	1.37	-2.48	0.00	-2.48	23.67	0.00
6	19	10	139.99	817	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.99
6	19	11	225.61	1027	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.61
6	19	12	140.19	738	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	105.19
6	19	13	130.92	566	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	95.92
6	19	14	74.10	155	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.10
6	19	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	19	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	19	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	19	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	19	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	19	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	20	8	38.63	323	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	3.63
6	20	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	20	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	20	11	220.25	678	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	185.25
6	20	12	225.88	720	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.88
6	20	13	233.42	760	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.42
6	20	14	284.06	994	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	249.06
6	20	15	48.39	319	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.39
6	20	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
6	20	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	20	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	20	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	20	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	7	24.68	142	12	0	24.68	259.10	142.51	142.51	1.43	-2.59	0.00	-2.59	24.68	0.00
6	21	8	60.02	509	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.02
6	21	9	125.80	771	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.80
6	21	10	156.02	942	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.02
6	21	11	358.04	1751	146	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	323.04
6	21	12	320.37	1612	134	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	285.37
6	21	13	321.91	1597	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	286.91
6	21	14	320.21	1497	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	285.21
6	21	15	158.97	966	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	123.97
6	21	16	141.80	894	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	106.80
6	21	17	135.06	857	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	100.06
6	21	18	99.67	589	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	64.67
6	21	19	29.79	136	11	0	29.79	312.70	171.98	171.98	1.72	-3.13	0.00	-3.13	29.79	0.00
6	21	20	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
6	21	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	21	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	22	8	55.09	175	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.09
6	22	9	78.41	403	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.41
6	22	10	96.31	484	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	61.31
6	22	11	404.65	1665	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	369.65
6	22	12	349.75	1501	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	314.75
6	22	13	378.77	1650	137	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	343.77
6	22	14	348.51	1444	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	313.51
6	22	15	138.82	808	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	103.82
6	22	16	28.24	170	14	0	28.24	296.50	163.07	163.07	1.63	-2.96	0.00	-2.96	28.24	0.00
6	22	17	27.64	192	16	0	27.64	290.13	159.57	159.57	1.60	-2.90	0.00	-2.90	27.64	0.00
6	22	18	67.52	322	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.52
6	22	19	28.12	97	8	0	28.12	295.26	162.39	162.39	1.62	-2.95	0.00	-2.95	28.12	0.00
6	22	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	22	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	23	8	28.58	206	17	0	28.58	300.01	165.00	165.00	1.65	-3.00	0.00	-3.00	28.58	0.00
6	23	9	82.52	438	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	47.52
6	23	10	118.48	654	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.48
6	23	11	125.53	818	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.53
6	23	12	121.79	748	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.79

6	23	13	112.24	573	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.24
6	23	14	136.11	709	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	101.11
6	23	15	48.02	315	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.02
6	23	16	87.25	476	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.25
6	23	17	83.10	459	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	48.10
6	23	18	65.44	301	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.44
6	23	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	23	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	24	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	24	9	97.42	556	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.42
6	24	10	134.34	774	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.34
6	24	11	251.39	1206	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	216.39
6	24	12	233.97	1100	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.97
6	24	13	280.99	1416	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	245.99
6	24	14	242.38	1111	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	207.38
6	24	15	67.90	490	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.90
6	24	16	61.73	506	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.73
6	24	17	33.80	272	23	0	33.80	354.87	195.18	195.18	1.95	-3.55	0.00	-3.55	33.80	0.00
6	24	18	22.95	102	9	0	22.95	240.98	132.54	132.54	1.33	-2.41	0.00	-2.41	22.95	0.00
6	24	19	27.10	61	5	0	27.10	284.53	156.49	156.49	1.56	-2.85	0.00	-2.85	27.10	0.00
6	24	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	24	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	25	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	25	9	29.08	184	15	0	29.08	305.25	167.89	167.89	1.68	-3.05	0.00	-3.05	29.08	0.00
6	25	10	70.55	246	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.55
6	25	11	314.04	1080	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.04
6	25	12	298.29	1136	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	263.29
6	25	13	356.74	1525	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	321.74
6	25	14	351.76	1606	134	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	316.76
6	25	15	154.16	927	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.16
6	25	16	145.75	925	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	110.75
6	25	17	113.83	695	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	78.83
6	25	18	60.24	244	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.24
6	25	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	25	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	26	8	24.94	147	12	0	24.94	261.80	143.99	143.99	1.44	-2.62	0.00	-2.62	24.94	0.00
6	26	9	42.80	344	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.80
6	26	10	45.56	289	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.56
6	26	11	66.87	207	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	26	12	59.07	423	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	26	13	59.07	205	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
6	26	14	66.87	207	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	26	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
6	26	16	36.63	281	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.63
6	26	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	26	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	26	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	26	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	27	8	35.92	295	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	0.92
6	27	9	69.78	569	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.78
6	27	10	100.23	738	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	65.23
6	27	11	112.09	883	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.09
6	27	12	62.59	464	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.59
6	27	13	63.76	497	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.76
6	27	14	66.87	280	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
6	27	15	53.99	372	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.99
6	27	16	31.71	222	18	0	31.71	332.92	183.10	183.10	1.83	-3.33	0.00	-3.33	31.71	0.00
6	27	17	46.73	398	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.73
6	27	18	49.31	421	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.31
6	27	19	31.03	160	13	0	31.03	325.82	179.20	179.20	1.79	-3.26	0.00	-3.26	31.03	0.00
6	27	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	27	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	7	21.19	28	2	0	21.19	222.48	122.36	122.36	1.22	-2.22	0.00	-2.22	21.19	0.00
6	28	8	47.26	403	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	12.26
6	28	9	88.44	710	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.44
6	28	10	149.04	887	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.04
6	28	11	169.40	1108	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.40
6	28	12	147.83	1008	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	112.83
6	28	13	147.32	1012	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	112.32
6	28	14	139.31	865	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.31
6	28	15	125.33	931	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.33
6	28	16	142.20	897	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	107.20
6	28	17	122.91	764	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	87.91
6	28	18	94.60	550	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	59.60
6	28	19	31.49	168	14	0	31.49	330.64	181.85	181.85	1.82	-3.31	0.00	-3.31	31.49	0.00
6	28	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	28	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	29	8	59.82	507	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.82
6	29	9	120.41	730	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	85.41
6	29	10	169.72	1053	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.72
6	29	11	186.93	1245	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.93
6	29	12	166.78	1188	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	131.78
6	29	13	154.80	1063	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.80
6	29	14	157.31	987	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.31
6	29	15	164.50	1010	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	129.50
6	29	16	148.29	945	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.29
6	29	17	130.17	820	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	95.17
6	29	18	71.11	356	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.11
6	29	19	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	29	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
6	30	8	31.11	240	20	0	31.11	326.64	179.65	179.65	1.80	-3.27	0.00	-3.27	31.11	0.00
6	30	9	88.38	485	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.38
6	30	10	109.72	588	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.72
6	30	11	165.17	986	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	130.17

6	30	12	185.93	1128	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.93
6	30	13	167.24	1023	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.24
6	30	14	105.46	529	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	70.46
6	30	15	45.55	289	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.55
6	30	16	37.89	295	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	2.89
6	30	17	29.58	220	18	0	29.58	310.51	170.78	170.78	1.71	-3.11	0.00	-3.11	29.58	0.00
6	30	18	24.65	141	12	0	24.65	258.74	142.31	142.31	1.42	-2.59	0.00	-2.59	24.65	0.00
6	30	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
6	30	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	1	8	26.89	181	15	0	26.89	282.30	155.26	155.26	1.55	-2.82	0.00	-2.82	26.89	0.00
7	1	9	63.31	519	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.31
7	1	10	69.15	500	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.15
7	1	11	94.03	639	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	59.03
7	1	12	96.96	699	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	61.96
7	1	13	59.07	198	16	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
7	1	14	67.28	157	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.28
7	1	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	1	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	1	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	1	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	1	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	1	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	2	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	2	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	2	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	2	11	185.72	500	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.72
7	2	12	213.52	787	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	178.52
7	2	13	172.42	558	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	137.42
7	2	14	196.62	718	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	161.62
7	2	15	56.71	397	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.71
7	2	16	51.89	426	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	16.89
7	2	17	44.61	380	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.61
7	2	18	28.85	210	17	0	28.85	302.86	166.57	166.57	1.67	-3.03	0.00	-3.03	28.85	0.00
7	2	19	31.90	175	15	0	31.90	334.91	184.20	184.20	1.84	-3.35	0.00	-3.35	31.90	0.00
7	2	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	2	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	7	21.35	43	3	0	21.35	224.18	123.30	123.30	1.23	-2.24	0.00	-2.24	21.35	0.00
7	3	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	3	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	3	10	76.77	560	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.77
7	3	11	157.09	878	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.09
7	3	12	129.36	847	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	94.36
7	3	13	140.32	911	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	105.32
7	3	14	127.41	801	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	92.41
7	3	15	105.72	779	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	70.72
7	3	16	92.21	739	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.21
7	3	17	72.10	602	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	37.10
7	3	18	53.78	458	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.78
7	3	19	31.12	162	13	0	31.12	326.75	179.71	179.71	1.80	-3.27	0.00	-3.27	31.12	0.00
7	3	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	3	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	4	8	35.45	290	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	0.45
7	4	9	46.10	375	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.10
7	4	10	132.31	758	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	97.31
7	4	11	77.79	539	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.79
7	4	12	129.94	953	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	94.94
7	4	13	146.46	954	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	111.46
7	4	14	131.85	784	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.85
7	4	15	109.23	806	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.23
7	4	16	119.92	726	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.92
7	4	17	108.74	657	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	73.74
7	4	18	42.66	362	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.66
7	4	19	26.80	45	4	0	26.80	281.31	154.72	154.72	1.55	-2.81	0.00	-2.81	26.80	0.00
7	4	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	4	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	7	23.82	124	10	0	23.82	250.05	137.53	137.53	1.38	-2.50	0.00	-2.50	23.82	0.00
7	5	8	53.55	456	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.55
7	5	9	95.12	538	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.12
7	5	10	145.61	860	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	110.61
7	5	11	328.31	1659	138	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.31
7	5	12	278.86	1400	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	243.86
7	5	13	280.18	1462	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	245.18
7	5	14	330.66	1534	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	295.66
7	5	15	173.49	1084	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	138.49
7	5	16	136.77	855	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	101.77
7	5	17	115.81	710	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	80.81
7	5	18	94.51	549	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	59.51
7	5	19	68.79	280	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.79
7	5	20	56.66	103	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.66
7	5	21	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	5	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	6	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	6	8	77.17	410	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.17
7	6	9	119.60	724	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.60
7	6	10	163.79	1004	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	128.79
7	6	11	336.55	1601	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	301.55
7	6	12	369.15	1718	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	334.15
7	6	13	307.55	1522	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.55
7	6	14	352.53	1622	135	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	317.53
7	6	15	181.19	1150	96	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	146.19
7	6	16	178.57	1198	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	143.57
7	6	17	158.18	1042	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	123.18
7	6	18	125.27	782	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.27
7	6	19	90.78	478	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.78
7	6	20	64.93	236	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.93
7	6	21	58.53	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.53
7	6	22	56.83	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.83
7	6	23	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
7	6	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	7	6	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	7	7	63.58	281	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.58
7	7	8	96.44	564	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	61.44
7	7	9	139.26	874	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.26
7	7	10	176.96	1114	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	141.96

7	7	11	445.06	2068	172	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	410.06
7	7	12	433.52	1927	161	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	398.52
7	7	13	424.88	1902	158	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	389.88
7	7	14	410.20	1772	148	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	375.20
7	7	15	176.65	1111	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	141.65
7	7	16	188.12	1282	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	153.12
7	7	17	175.12	1185	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	140.12
7	7	18	144.02	927	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	109.02
7	7	19	110.55	630	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.55
7	7	20	68.56	277	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.56
7	7	21	65.61	244	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.61
7	7	22	60.40	174	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.40
7	7	23	58.53	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.53
7	7	24	58.53	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.53
7	8	1	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
7	8	2	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
7	8	3	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	8	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	8	5	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	8	6	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
7	8	7	60.16	243	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.16
7	8	8	88.72	504	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.72
7	8	9	121.25	736	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.25
7	8	10	154.89	933	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.89
7	8	11	216.94	1211	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	181.94
7	8	12	213.57	1240	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	178.57
7	8	13	232.92	1288	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	197.92
7	8	14	230.95	1208	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	195.95
7	8	15	179.34	1134	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.34
7	8	16	159.21	1034	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	124.21
7	8	17	126.99	795	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.99
7	8	18	69.92	345	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.92
7	8	19	68.53	277	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.53
7	8	20	60.41	174	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.41
7	8	21	56.83	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.83
7	8	22	58.53	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.53
7	8	23	56.83	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.83
7	8	24	56.83	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.83
7	9	1	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	9	2	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	9	3	56.83	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.83
7	9	4	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	9	5	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	9	6	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	9	7	49.24	31	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.24
7	9	8	55.90	187	16	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.90
7	9	9	53.83	116	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.83
7	9	10	63.28	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.28
7	9	11	244.90	789	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	209.90
7	9	12	245.79	798	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	210.79
7	9	13	293.19	1116	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	258.19
7	9	14	293.38	1097	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	258.38
7	9	15	46.46	299	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.46
7	9	16	62.19	243	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.19
7	9	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	9	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	9	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	9	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	9	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	9	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	9	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	9	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	7	25.94	165	14	0	25.94	272.37	149.80	149.80	1.50	-2.72	0.00	-2.72	25.94	0.00
7	10	8	93.12	538	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	58.12
7	10	9	121.44	738	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.44
7	10	10	157.61	955	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.61
7	10	11	191.11	1203	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.11
7	10	12	158.82	1071	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	123.82
7	10	13	165.77	1109	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	130.77
7	10	14	169.57	1017	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.57
7	10	15	165.35	1017	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	130.35
7	10	16	153.36	986	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.36
7	10	17	129.82	817	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	94.82
7	10	18	100.29	593	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	65.29
7	10	19	72.99	323	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	37.99
7	10	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	10	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	7	21.67	58	5	0	21.67	227.52	125.13	125.13	1.25	-2.28	0.00	-2.28	21.67	0.00
7	11	8	66.32	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.32
7	11	9	83.23	444	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	48.23
7	11	10	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
7	11	11	66.87	84	7	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
7	11	12	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
7	11	13	59.07	57	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
7	11	14	66.87	42	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
7	11	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	11	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	11	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	11	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	11	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	11	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	12	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	12	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	12	10	31.42	34	3	0	31.42	329.82	181.40	181.40	1.81	-3.30	0.00	-3.30	31.42	0.00
7	12	11	269.81	892	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	234.81
7	12	12	330.58	1338	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	295.58
7	12	13	320.93	1265	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	285.93
7	12	14	313.21	1128	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	278.21
7	12	15	50.05	335	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.05
7	12	16	100.33	800	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	65.33
7	12	17	76.37	634	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.37
7	12	18	46.34	395	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.34
7	12	19	40.26	284	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	5.26
7	12	20	27.46	75	6	0	27.46	288.32	158.58	158.58	1.59	-2.88	0.00	-2.88	27.46	0.00
7	12	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	12	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	13	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	13	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	13	10	137.28	796	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	102.28
7	13	11	386.61	1718	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	351.61
7	13	12	404.57	1816	151	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	369.57
7	13	13	328.43	1520	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.43
7	13	14	317.52	1276	106	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	282.52
7	13	15	51.89	353	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	16.89
7	13	16	135.89	848	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	100.89
7	13	17	126.26	790	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.26
7	13	18	21.99	72	6	0	21.99	230.88	126.98	126.98	1.27	-2.31	0.00	-2.31	21.99	0.00
7	13	19	27.60	80	7	0	27.60	289.74	159.36	159.36	1.59	-2.90	0.00	-2.90	27.60	0.00
7	13	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	13	21	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
7	13	22	26.67	37	3	0	26.67	280.03	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
7	13	23	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
7	13	24	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
7	14	1	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	7	66.77	314	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.77
7	14	8	108.34	654	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	73.34
7	14	9	114.36	684	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	79.36

7	14	10	110.19	591	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.19
7	14	11	213.22	952	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	178.22
7	14	12	202.35	990	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	167.35
7	14	13	240.26	1297	108	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	205.26
7	14	14	229.30	1175	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.30
7	14	15	107.93	574	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	72.93
7	14	16	86.89	474	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	51.89
7	14	17	94.44	548	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	59.44
7	14	18	89.38	509	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.38
7	14	19	67.47	265	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.47
7	14	20	55.50	70	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.50
7	14	21	54.34	4	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	14	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	14	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	7	21.06	8	1	0	21.06	221.11	121.61	121.61	1.22	-2.21	0.00	-2.21	21.06	0.00
7	15	8	62.39	269	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.39
7	15	9	112.82	673	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.82
7	15	10	150.56	899	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	115.56
7	15	11	198.34	1139	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	163.34
7	15	12	196.03	1195	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	161.03
7	15	13	127.74	700	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	92.74
7	15	14	155.70	868	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	120.70
7	15	15	156.34	945	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.34
7	15	16	130.81	809	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	95.81
7	15	17	131.94	833	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.94
7	15	18	98.88	583	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	63.88
7	15	19	65.76	246	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.76
7	15	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	15	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	16	8	56.81	200	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.81
7	16	9	74.36	367	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.36
7	16	10	65.34	176	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.34
7	16	11	201.62	665	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.62
7	16	12	203.11	702	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	168.11
7	16	13	162.91	565	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	127.91
7	16	14	191.02	622	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.02
7	16	15	33.25	106	9	0	33.25	349.11	192.01	192.01	1.92	-3.49	0.00	-3.49	33.25	0.00
7	16	16	24.13	77	6	0	24.13	253.32	139.33	139.33	1.39	-2.53	0.00	-2.53	24.13	0.00
7	16	17	21.05	1	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	16	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	16	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	16	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	17	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	17	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	17	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	17	11	210.00	725	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	175.00
7	17	12	253.08	1047	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	218.08
7	17	13	182.54	594	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	147.54
7	17	14	217.54	724	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.54
7	17	15	47.47	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	12.47
7	17	16	55.19	453	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.19
7	17	17	41.27	349	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	6.27
7	17	18	41.02	346	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	6.02
7	17	19	28.42	105	9	0	28.42	298.41	164.13	164.13	1.64	-2.98	0.00	-2.98	28.42	0.00
7	17	20	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
7	17	21	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
7	17	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	17	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	18	7	21.17	25	2	0	21.17	222.21	122.21	122.21	1.22	-2.22	0.00	-2.22	21.17	0.00
7	18	8	78.28	419	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.28
7	18	9	84.12	451	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.12
7	18	10	77.80	323	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.80
7	18	11	334.53	1304	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	299.53
7	18	12	349.14	1391	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	314.14
7	18	13	316.11	1206	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	281.11
7	18	14	402.28	1671	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	367.28
7	18	15	125.34	706	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.34
7	18	16	122.38	745	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	87.38
7	18	17	89.69	512	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.69
7	18	18	67.93	326	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.93
7	18	19	63.06	212	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.06
7	18	20	56.82	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.82
7	18	21	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
7	18	22	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	18	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	18	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	19	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	19	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	19	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	19	9	50.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.91
7	19	10	59.07	1	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
7	19	11	237.34	724	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	202.34
7	19	12	238.60	760	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	203.60
7	19	13	229.86	695	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.86
7	19	14	307.18	1095	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.18
7	19	15	33.18	104	9	0	33.18	348.34	191.59	191.59	1.92	-3.48	0.00	-3.48	33.18	0.00
7	19	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	19	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	19	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	19	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	19	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	20	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	20	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
7	20	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	20	11	256.40	891	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	221.40
7	20	12	222.03	717	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	187.03
7	20	13	223.47	730	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	188.47
7	20	14	226.92	715	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	191.92
7	20	15	33.25	106	9	0	33.25	349.12	192.02	192.02	1.92	-3.49	0.00	-3.49	33.25	0.00
7	20	16	54.03	444	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.03
7	20	17	23.02	104	9	0	23.02	241.69	132.93	132.93	1.33	-2.42	0.00	-2.42	23.02	0.00
7	20	18	21.90	68	6	0	21.90	229.87	126.43	126.43	1.26	-2.30	0.00	-2.30	21.90	0.00
7	20	19	26.59	29	2	0	26.59	279.11	153.51	153.51	1.54	-2.79	0.00	-2.79	26.59	0.00
7	20	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	20	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	21	8	21.05	1	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00

7	21	9	27.45	157	13	0	27.45	288.21	158.51	158.51	1.59	-2.88	0.00	-2.88	27.45	0.00
7	21	10	84.63	386	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.63
7	21	11	290.37	1200	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	255.37
7	21	12	292.98	1263	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	257.98
7	21	13	304.07	1381	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	269.07
7	21	14	307.67	1398	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.67
7	21	15	147.50	875	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	112.50
7	21	16	117.51	708	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	82.51
7	21	17	117.66	724	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	82.66
7	21	18	84.03	467	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.03
7	21	19	65.92	248	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.92
7	21	20	28.51	107	9	0	28.51	299.33	164.63	164.63	1.65	-2.99	0.00	-2.99	28.51	0.00
7	21	21	26.67	36	3	0	26.67	280.01	154.00	154.00	1.54	-2.80	0.00	-2.80	26.67	0.00
7	21	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	21	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	7	21.07	10	1	0	21.07	221.18	121.65	121.65	1.22	-2.21	0.00	-2.21	21.07	0.00
7	22	8	76.57	404	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.57
7	22	9	115.19	691	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	80.19
7	22	10	153.04	918	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.04
7	22	11	281.94	1436	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	246.94
7	22	12	306.94	1578	131	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	271.94
7	22	13	243.75	1168	97	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	208.75
7	22	14	252.56	1174	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	217.56
7	22	15	49.19	327	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.19
7	22	16	92.15	515	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.15
7	22	17	92.56	534	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.56
7	22	18	76.87	407	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.87
7	22	19	57.65	125	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.65
7	22	20	26.43	5	0	0	26.43	277.50	152.62	152.63	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	22	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	23	8	50.47	81	7	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.47
7	23	9	53.22	102	8	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.22
7	23	10	91.11	441	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.11
7	23	11	296.22	1247	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	261.22
7	23	12	297.15	1378	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	262.15
7	23	13	280.74	1133	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	245.74
7	23	14	268.99	1104	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	233.99
7	23	15	145.84	862	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	110.84
7	23	16	133.13	827	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	98.13
7	23	17	57.35	208	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.35
7	23	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	23	19	26.94	53	4	0	26.94	282.79	155.53	155.53	1.56	-2.83	0.00	-2.83	26.94	0.00
7	23	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	23	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	7	21.61	55	5	0	21.61	226.87	124.78	124.78	1.25	-2.27	0.00	-2.27	21.61	0.00
7	24	8	66.33	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.33
7	24	9	119.98	727	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.98
7	24	10	148.81	885	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.81
7	24	11	334.45	1581	132	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	299.45
7	24	12	306.49	1379	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	271.49
7	24	13	295.32	1412	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.32
7	24	14	323.57	1464	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	288.57
7	24	15	129.74	739	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	94.74
7	24	16	148.18	945	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.18
7	24	17	131.04	826	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.04
7	24	18	91.88	529	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.88
7	24	19	59.35	157	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.35
7	24	20	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	24	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	24	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	25	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	25	8	89.22	508	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	54.22
7	25	9	100.10	577	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	65.10
7	25	10	105.08	552	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	70.08
7	25	11	339.44	1496	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	304.44
7	25	12	367.79	1681	140	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	332.79
7	25	13	305.11	1390	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	270.11
7	25	14	357.31	1531	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	322.31
7	25	15	99.99	513	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	64.99
7	25	16	93.81	528	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	58.81
7	25	17	111.49	678	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	76.49
7	25	18	91.29	524	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.29
7	25	19	58.87	148	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.87
7	25	20	54.58	28	2	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.58
7	25	21	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	25	22	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	25	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	25	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	5	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	26	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	26	7	49.23	30	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.23
7	26	8	53.55	150	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.55
7	26	9	60.43	222	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.43
7	26	10	76.36	309	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.36
7	26	11	413.86	1768	147	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	378.86
7	26	12	297.03	1039	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	262.03
7	26	13	199.38	582	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.38
7	26	14	205.77	603	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	170.77
7	26	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
7	26	16	23.28	36	3	0	23.28	244.44	134.44	134.44	1.34	-2.44	0.00	-2.44	23.28	0.00
7	26	17	25.77	162	14	0	25.77	270.51	148.78	148.78	1.49	-2.71	0.00	-2.71	25.77	0.00
7	26	18	73.48	377	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	38.48
7	26	19	28.80	114	10	0	28.80	302.32	166.28	166.28	1.66	-3.02	0.00	-3.02	28.80	0.00
7	26	20	26.67	37	3	0	26.67	280.03	154.02	154.02	1.54	-2.80	0.00	-2.80	26.67	0.00
7	26	21	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
7	26	22	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
7	26	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	26	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	27	8	63.31	279	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.31
7	27	9	108.98	644	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	73.98
7	27	10	63.55	147	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.55
7	27	11	276.34	927	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	241.34
7	27	12	272.96	944	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	237.96
7	27	13	271.54	932	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	236.54
7	27	14	282.94	982	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	247.94
7	27	15	70.33	510	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.33
7	27	16	124.17	759	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	89.17
7	27	17	125.68	785	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.68
7	27	18	82.21	452	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	47.21
7	27	19	68.23	274	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.23
7	27	20	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
7	27	21	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	27	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	27	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	27	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	28	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	28	7	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91

7	28	8	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91
7	28	9	56.27	162	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.27
7	28	10	93.91	464	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	58.91
7	28	11	381.53	1733	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	346.53
7	28	12	367.25	1777	148	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	332.25
7	28	13	374.84	1793	149	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	339.84
7	28	14	387.76	1733	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	352.76
7	28	15	159.72	972	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	124.72
7	28	16	149.72	957	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.72
7	28	17	148.78	965	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	113.78
7	28	18	109.64	664	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.64
7	28	19	61.07	184	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.07
7	28	20	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
7	28	21	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
7	28	22	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
7	28	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	28	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	7	61.68	261	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.68
7	29	8	58.73	225	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.73
7	29	9	61.96	241	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.96
7	29	10	192.63	1249	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	157.63
7	29	11	445.76	2120	177	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	410.76
7	29	12	433.13	2086	174	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	398.13
7	29	13	423.77	1969	164	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	388.77
7	29	14	406.40	1823	152	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	371.40
7	29	15	185.77	1189	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.77
7	29	16	103.94	606	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	68.94
7	29	17	128.99	810	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	93.99
7	29	18	57.06	204	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.06
7	29	19	58.78	147	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.78
7	29	20	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	21	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	22	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	29	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	30	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	30	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	30	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	30	7	56.03	189	16	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.03
7	30	8	104.71	627	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	69.71
7	30	9	139.28	874	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.28
7	30	10	170.04	1056	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	135.04
7	30	11	249.83	1228	102	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	214.83
7	30	12	242.89	1213	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	207.89
7	30	13	273.99	1483	124	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	238.99
7	30	14	286.72	1400	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	251.72
7	30	15	169.46	1051	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.46
7	30	16	164.34	1076	90	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	129.34
7	30	17	154.16	1009	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.16
7	30	18	116.29	714	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	81.29
7	30	19	71.00	303	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.00
7	30	20	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	21	54.71	36	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
7	30	22	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
7	30	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
7	31	8	69.88	344	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.88
7	31	9	54.08	121	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.08
7	31	10	140.60	822	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	105.60
7	31	11	217.02	980	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.02
7	31	12	151.16	596	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	116.16
7	31	13	151.99	524	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	116.99
7	31	14	201.16	845	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.16
7	31	15	56.71	397	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.71
7	31	16	76.81	389	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.81
7	31	17	91.71	527	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.71
7	31	18	68.22	329	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.22
7	31	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
7	31	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	1	8	25.32	72	6	0	25.32	265.83	146.20	146.20	1.46	-2.66	0.00	-2.66	25.32	0.00
8	1	9	123.71	609	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.71
8	1	10	186.16	959	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.16
8	1	11	287.20	1238	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	252.20
8	1	12	272.26	1240	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	237.26
8	1	13	263.95	1039	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	228.95
8	1	14	302.15	1265	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	267.15
8	1	15	164.16	723	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	129.16
8	1	16	153.03	832	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.03
8	1	17	131.26	802	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.26
8	1	18	95.71	558	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.71
8	1	19	61.48	190	16	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.48
8	1	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	1	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	2	8	61.00	212	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.00
8	2	9	115.91	550	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	80.91
8	2	10	199.80	1070	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.80
8	2	11	259.31	1043	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	224.31
8	2	12	290.31	1270	106	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	255.31
8	2	13	311.07	1478	123	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	276.07
8	2	14	256.76	1020	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	221.76
8	2	15	170.20	769	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	135.20
8	2	16	58.03	304	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.03
8	2	17	71.36	327	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.36
8	2	18	25.06	149	12	0	25.06	263.09	144.70	144.70	1.45	-2.63	0.00	-2.63	25.06	0.00
8	2	19	28.06	95	8	0	28.06	294.59	162.02	162.02	1.62	-2.95	0.00	-2.95	28.06	0.00
8	2	20	26.67	37	3	0	26.67	280.02	154.01	154.01	1.54	-2.80	0.00	-2.80	26.67	0.00
8	2	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	2	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	3	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	3	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	3	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	3	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	3	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	3	6	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	3	7	48.96	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.96
8	3	8	53.22	62	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.22
8	3	9	104.46	460	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	69.46
8	3	10	143.93	634	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	108.93
8	3	11	445.52	1736	145	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	410.52
8	3	12	446.09	1751	146	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	411.09
8	3	13	457.95	1768	147	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	422.95
8	3	14	472.27	1926	161	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	437.27
8	3	15	218.39	1155	96	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.39
8	3	16	169.05	957	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.05
8	3	17	141.29	880	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	106.29
8	3	18	107.21	646	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	72.21
8	3	19	74.46	337	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.46
8	3	20	58.52	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.52
8	3	21	65.60	244	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	30.60
8	3	22	58.52	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.52
8	3	23	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	3	24	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	4	1	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	4	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	4	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	4	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	4	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	4	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29

8	4	7	50.28	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.28
8	4	8	88.96	506	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.96
8	4	9	145.18	921	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	110.18
8	4	10	176.56	1110	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	141.56
8	4	11	393.97	1856	155	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	358.97
8	4	12	386.17	1763	147	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	351.17
8	4	13	383.71	1755	146	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	348.71
8	4	14	322.21	1370	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	287.21
8	4	15	184.84	1181	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	149.84
8	4	16	173.91	1157	96	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	138.91
8	4	17	153.40	1003	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.40
8	4	18	124.27	774	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	89.27
8	4	19	79.48	383	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	44.48
8	4	20	72.79	321	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	37.79
8	4	21	63.08	212	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	28.08
8	4	22	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	4	23	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	4	24	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	5	1	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	5	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	5	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	5	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	5	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	5	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	5	7	48.96	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.96
8	5	8	134.70	829	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.70
8	5	9	186.04	1096	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.04
8	5	10	247.65	1490	124	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	212.65
8	5	11	489.52	2513	209	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	454.52
8	5	12	462.00	1863	155	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	427.00
8	5	13	427.29	1506	126	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	392.29
8	5	14	254.45	750	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	219.45
8	5	15	71.83	151	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.83
8	5	16	74.23	138	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.23
8	5	17	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	5	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	5	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	5	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	5	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	5	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	5	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	5	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	6	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	6	9	42.33	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.33
8	6	10	59.26	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.26
8	6	11	128.29	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	93.29
8	6	12	152.80	423	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	117.80
8	6	13	178.65	515	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	143.65
8	6	14	204.68	588	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	169.68
8	6	15	70.35	120	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.35
8	6	16	43.02	61	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	8.02
8	6	17	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	6	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	6	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	6	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	7	8	40.23	305	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	5.23
8	7	9	126.20	628	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.20
8	7	10	180.49	914	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	145.49
8	7	11	297.35	1433	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	262.35
8	7	12	272.26	1217	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	237.26
8	7	13	235.94	895	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	200.94
8	7	14	310.37	1303	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	275.37
8	7	15	172.57	787	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	137.57
8	7	16	118.03	566	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.03
8	7	17	56.85	456	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.85
8	7	18	28.31	202	17	0	28.31	297.23	163.48	163.48	1.63	-2.97	0.00	-2.97	28.31	0.00
8	7	19	26.45	10	1	0	26.45	277.66	152.71	152.71	1.53	-2.78	0.00	-2.78	26.45	0.00
8	7	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	7	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	8	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	8	8	25.38	74	6	0	25.38	266.44	146.54	146.54	1.47	-2.66	0.00	-2.66	25.38	0.00
8	8	9	116.59	555	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	81.59
8	8	10	191.42	1001	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.42
8	8	11	433.74	1770	148	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	398.74
8	8	12	462.98	2081	173	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	427.98
8	8	13	461.89	2004	167	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	426.89
8	8	14	419.75	1683	140	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	384.75
8	8	15	233.05	1284	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.05
8	8	16	167.22	943	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.22
8	8	17	114.29	674	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	79.29
8	8	18	90.41	517	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.41
8	8	19	64.23	227	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.23
8	8	20	58.52	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.52
8	8	21	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	8	22	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	8	23	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	8	24	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	9	1	54.71	36	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	9	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	9	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	9	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	9	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	9	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	9	7	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91
8	9	8	58.73	180	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.73
8	9	9	109.98	504	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.98
8	9	10	193.76	1020	85	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	158.76
8	9	11	285.55	949	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	250.55
8	9	12	387.29	1597	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	352.29
8	9	13	364.00	1300	108	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	329.00
8	9	14	469.72	1720	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	434.72
8	9	15	154.25	648	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.25
8	9	16	126.14	628	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.14
8	9	17	90.27	490	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.27
8	9	18	55.68	184	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.68
8	9	19	55.44	68	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.44
8	9	20	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	9	21	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	9	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	9	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	9	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	10	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	10	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	10	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	10	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	10	7	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91
8	10	8	57.05	153	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.05
8	10	9	77.32	189	16	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.32
8	10	10	140.71	610	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	105.71
8	10	11	416.36	1626	135	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	381.36
8	10	12	375.74	1550	129	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	340.74
8	10	13	344.02	1358	113	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	309.02
8	10	14	299.27	1110	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	264.27
8	10	15	141.19	549	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	106.19
8	10	16	168.21	950	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	133.21
8	10	17	107.82	625	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	72.82
8	10	18	52.22	124	10	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	17.22
8	10	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	10	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

8	11	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	11	8	39.23	329	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	4.23
8	11	9	105.93	621	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	70.93
8	11	10	152.00	910	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	117.00
8	11	11	208.37	1256	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	173.37
8	11	12	215.00	1313	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	180.00
8	11	13	227.18	1307	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	192.18
8	11	14	241.11	1217	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	206.11
8	11	15	149.55	891	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.55
8	11	16	110.75	657	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.75
8	11	17	97.50	572	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.50
8	11	18	64.57	292	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.57
8	11	19	26.86	49	4	0	26.86	281.97	155.09	155.09	1.55	-2.82	0.00	-2.82	26.86	0.00
8	11	20	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	11	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	12	8	27.09	123	10	0	27.09	284.43	156.43	156.43	1.56	-2.84	0.00	-2.84	27.09	0.00
8	12	9	101.49	435	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	66.49
8	12	10	157.97	740	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.97
8	12	11	256.63	1292	108	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	221.63
8	12	12	233.78	1167	97	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.78
8	12	13	250.42	1204	100	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	215.42
8	12	14	268.96	1182	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	233.96
8	12	15	177.04	821	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	142.04
8	12	16	135.62	699	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	100.62
8	12	17	107.79	625	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	72.79
8	12	18	59.97	241	20	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.97
8	12	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	12	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	13	8	38.40	286	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	3.40
8	13	9	117.40	561	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	82.40
8	13	10	168.64	821	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	133.64
8	13	11	275.27	1376	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	240.27
8	13	12	245.30	1289	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	210.30
8	13	13	229.54	1049	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.54
8	13	14	254.36	1191	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	219.36
8	13	15	174.71	803	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	139.71
8	13	16	134.91	694	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.91
8	13	17	92.62	508	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.62
8	13	18	27.80	195	16	0	27.80	291.91	160.55	160.55	1.61	-2.92	0.00	-2.92	27.80	0.00
8	13	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	13	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	14	8	47.52	376	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	12.52
8	14	9	130.52	661	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	95.52
8	14	10	182.44	929	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	147.44
8	14	11	296.09	1422	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	261.09
8	14	12	293.90	1458	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	258.90
8	14	13	206.49	768	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	171.49
8	14	14	262.75	1126	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	227.75
8	14	15	114.53	570	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	79.53
8	14	16	90.47	580	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.47
8	14	17	44.21	345	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.21
8	14	18	26.56	175	15	0	26.56	278.80	153.34	153.34	1.53	-2.79	0.00	-2.79	26.56	0.00
8	14	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	14	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	15	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	15	9	54.07	260	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.07
8	15	10	162.36	773	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	127.36
8	15	11	368.76	1663	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	333.76
8	15	12	353.64	1667	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	318.64
8	15	13	369.33	1768	147	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	334.33
8	15	14	394.22	1710	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	359.22
8	15	15	228.96	1248	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	193.96
8	15	16	179.70	1044	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.70
8	15	17	147.78	931	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	112.78
8	15	18	106.39	639	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.39
8	15	19	60.19	170	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.19
8	15	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	15	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	16	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	16	8	73.53	347	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	38.53
8	16	9	119.32	576	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.32
8	16	10	176.48	882	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	141.48
8	16	11	407.91	1830	153	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	372.91
8	16	12	369.80	1610	134	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	334.80
8	16	13	401.85	1747	146	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	366.85
8	16	14	439.83	1730	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	404.83
8	16	15	173.17	791	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	138.17
8	16	16	115.20	544	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	80.20
8	16	17	99.78	564	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	64.78
8	16	18	85.03	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.03
8	16	19	60.55	176	15	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.55
8	16	20	58.52	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.52
8	16	21	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	16	22	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	16	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	16	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	17	7	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91
8	17	8	83.58	436	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	48.58
8	17	9	175.42	1009	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	140.42
8	17	10	218.52	1230	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.52
8	17	11	484.14	2188	182	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	449.14
8	17	12	481.24	2436	203	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	446.24
8	17	13	478.22	2313	193	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	443.22
8	17	14	485.69	2232	186	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	450.69
8	17	15	246.53	1406	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	211.53
8	17	16	221.61	1410	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	186.61
8	17	17	155.16	990	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	120.16
8	17	18	146.76	949	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	111.76
8	17	19	85.98	438	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.98
8	17	20	68.99	282	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.99
8	17	21	60.38	174	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	25.38
8	17	22	56.82	107	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	21.82
8	17	23	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	17	24	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	18	1	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	18	2	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	18	3	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	18	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29

8	18	5	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	18	6	54.71	37	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.71
8	18	7	50.28	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	15.28
8	18	8	124.08	773	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	89.08
8	18	9	169.26	1118	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.26
8	18	10	205.13	1362	113	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	170.13
8	18	11	403.45	2050	171	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	368.45
8	18	12	332.95	1883	157	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	297.95
8	18	13	338.00	1843	154	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	303.00
8	18	14	319.56	1668	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	284.56
8	18	15	214.30	1443	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	179.30
8	18	16	194.98	1344	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	159.98
8	18	17	170.20	1142	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	135.20
8	18	18	138.77	886	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	103.77
8	18	19	70.26	295	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.26
8	18	20	58.54	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.54
8	18	21	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	18	22	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	18	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	18	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	2	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	3	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	4	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	5	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	6	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	7	48.91	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.91
8	19	8	52.23	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	17.23
8	19	9	121.25	591	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.25
8	19	10	184.83	948	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	149.83
8	19	11	326.55	1554	130	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	291.55
8	19	12	323.78	1527	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	288.78
8	19	13	281.40	1194	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	246.40
8	19	14	299.65	1044	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	264.65
8	19	15	175.77	811	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	140.77
8	19	16	168.07	949	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	133.07
8	19	17	106.43	615	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.43
8	19	18	82.11	451	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	47.11
8	19	19	58.35	139	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	23.35
8	19	20	55.66	75	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.66
8	19	21	54.34	5	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.34
8	19	22	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	23	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	19	24	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	20	1	54.29	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.29
8	20	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	20	8	67.05	283	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.05
8	20	9	116.63	555	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	81.63
8	20	10	172.76	853	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	137.76
8	20	11	282.45	1388	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	247.45
8	20	12	241.03	1232	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	206.03
8	20	13	213.16	970	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	178.16
8	20	14	189.78	773	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	154.78
8	20	15	170.62	772	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	135.62
8	20	16	136.22	704	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	101.22
8	20	17	103.38	591	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	68.38
8	20	18	67.03	317	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.03
8	20	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	20	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	21	8	96.69	540	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	61.69
8	21	9	165.91	932	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	130.91
8	21	10	217.10	1218	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.10
8	21	11	232.68	1442	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	197.68
8	21	12	251.97	1534	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	216.97
8	21	13	234.03	1409	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	199.03
8	21	14	231.93	1280	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	196.93
8	21	15	241.70	1362	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	206.70
8	21	16	199.48	1212	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	164.48
8	21	17	137.75	852	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	102.75
8	21	18	95.76	559	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.76
8	21	19	55.02	52	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	20.02
8	21	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	21	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	22	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	22	9	42.33	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.33
8	22	10	87.13	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.13
8	22	11	237.03	648	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	202.03
8	22	12	254.51	722	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	219.51
8	22	13	301.56	1004	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	266.56
8	22	14	354.74	1387	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	319.74
8	22	15	90.78	375	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.78
8	22	16	45.44	131	11	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.44
8	22	17	30.89	191	16	0	30.89	324.30	178.37	178.37	1.78	-3.24	0.00	-3.24	30.89	0.00
8	22	18	21.17	26	2	0	21.17	222.27	122.25	122.25	1.22	-2.22	0.00	-2.22	21.17	0.00
8	22	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	20	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	21	26.43	5	0	0	26.43	277.50	152.63	152.63	1.53	-2.78	0.00	-2.78	26.43	0.00
8	22	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	22	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	23	8	71.12	324	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.12
8	23	9	120.16	583	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	85.16
8	23	10	142.18	621	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	107.18
8	23	11	149.39	1073	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.39
8	23	12	144.01	1032	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	109.01
8	23	13	97.48	634	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.48
8	23	14	119.21	771	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.21
8	23	15	164.92	729	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	129.92
8	23	16	46.12	145	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.12
8	23	17	73.67	349	29	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	38.67
8	23	18	29.10	213	18	0	29.10	305.50	168.02	168.02	1.68	-3.05	0.00	-3.05	29.10	0.00
8	23	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	23	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	24	8	35.32	251	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	0.32
8	24	9	90.89	583	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.89
8	24	10	179.23	904	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.23
8	24	11	112.76	956	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.76
8	24	12	101.51	830	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	66.51
8	24	13	87.13	330	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.13
8	24	14	95.60	566	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	60.60
8	24	15	143.03	785	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	108.03
8	24	16	131.94	672	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.94
8	24	17	48.12	381	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	13.12
8	24	18	21.38	43	4	0	21.38	224.48	123.47	123.47	1.23	-2.24	0.00	-2.24	21.38	0.00
8	24	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	24	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

8	25	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	25	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	25	9	31.27	216	18	0	31.27	328.30	180.57	180.57	1.81	-3.28	0.00	-3.28	31.27	0.00
8	25	10	80.38	588	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	45.38
8	25	11	71.24	582	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	36.24
8	25	12	75.16	646	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.16
8	25	13	59.07	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
8	25	14	66.87	155	13	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
8	25	15	39.24	213	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	4.24
8	25	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
8	25	17	21.57	54	4	0	21.57	226.49	124.57	124.57	1.25	-2.26	0.00	-2.26	21.57	0.00
8	25	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	25	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	25	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	26	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	26	9	64.33	365	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.33
8	26	10	122.74	696	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	87.74
8	26	11	173.55	1091	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	138.55
8	26	12	106.54	599	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.54
8	26	13	90.21	363	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	55.21
8	26	14	104.68	532	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	69.68
8	26	15	84.88	319	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.88
8	26	16	45.98	142	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	10.98
8	26	17	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	26	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	26	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	26	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	27	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	27	9	42.33	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.33
8	27	10	59.26	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.26
8	27	11	123.06	233	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.06
8	27	12	138.32	307	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	103.32
8	27	13	154.97	378	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.97
8	27	14	218.03	592	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.03
8	27	15	67.78	17	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.78
8	27	16	69.58	412	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.58
8	27	17	24.37	3	0	0	24.37	255.86	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	27	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	27	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	27	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	28	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	28	9	42.33	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.33
8	28	10	59.26	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.26
8	28	11	158.01	388	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	123.01
8	28	12	162.61	411	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	127.61
8	28	13	176.53	450	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	141.53
8	28	14	211.43	560	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.43
8	28	15	67.78	17	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.78
8	28	16	42.33	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.33
8	28	17	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	28	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	28	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	28	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	29	8	26.70	113	9	0	26.70	280.33	154.18	154.18	1.54	-2.80	0.00	-2.80	26.70	0.00
8	29	9	118.48	792	66	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.48
8	29	10	125.54	717	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	90.54
8	29	11	244.14	1244	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	209.14
8	29	12	246.77	1357	113	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	211.77
8	29	13	151.11	616	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	116.11
8	29	14	207.92	937	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	172.92
8	29	15	109.52	531	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	74.52
8	29	16	123.58	831	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.58
8	29	17	74.87	598	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	39.87
8	29	18	26.06	167	14	0	26.06	273.62	150.49	150.49	1.50	-2.74	0.00	-2.74	26.06	0.00
8	29	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	29	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	30	8	37.88	280	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	2.88
8	30	9	106.68	702	59	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.68
8	30	10	172.98	1090	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	137.98
8	30	11	225.66	1402	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.66
8	30	12	221.15	1408	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	186.15
8	30	13	200.53	1281	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	165.53
8	30	14	205.15	1186	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	170.15
8	30	15	222.66	1192	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	187.66
8	30	16	186.59	1101	92	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.59
8	30	17	135.00	831	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	100.00
8	30	18	37.39	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	2.39
8	30	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	30	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	31	8	27.59	133	11	0	27.59	289.66	159.32	159.32	1.59	-2.90	0.00	-2.90	27.59	0.00
8	31	9	92.55	596	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.55
8	31	10	189.86	988	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	154.86
8	31	11	233.11	1158	97	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.11
8	31	12	169.80	809	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.80
8	31	13	169.59	670	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	134.59
8	31	14	157.53	636	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.53
8	31	15	81.95	288	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	46.95
8	31	16	42.89	55	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.89
8	31	17	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
8	31	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
8	31	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
8	31	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

9	1	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	7	21.05	5	0	0	21.05	221.02	121.56	121.56	1.22	-2.21	0.00	-2.21	21.05	0.00
9	1	8	70.37	589	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	35.37
9	1	9	126.76	778	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.76
9	1	10	174.06	1089	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	139.06
9	1	11	255.94	1391	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	220.94
9	1	12	218.19	1364	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.19
9	1	13	224.21	1355	113	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	189.21
9	1	14	172.52	897	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	137.52
9	1	15	81.44	596	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	46.44
9	1	16	124.22	759	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	89.22
9	1	17	80.36	436	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	45.36
9	1	18	24.72	143	12	0	24.72	259.50	142.72	142.72	1.43	-2.59	0.00	-2.59	24.72	0.00
9	1	19	27.46	75	6	0	27.46	288.33	158.58	158.58	1.59	-2.88	0.00	-2.88	27.46	0.00
9	1	20	26.67	36	3	0	26.67	279.99	153.99	153.99	1.54	-2.80	0.00	-2.80	26.67	0.00
9	1	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	1	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	2	8	24.37	0	0	0	24.37	255.85	140.72	140.72	1.41	-2.56	0.00	-2.56	24.37	0.00
9	2	9	44.60	112	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.60
9	2	10	171.49	843	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	136.49
9	2	11	203.29	1186	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	168.29
9	2	12	197.37	1123	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	162.37
9	2	13	191.38	1121	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.38
9	2	14	156.80	818	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.80
9	2	15	183.88	874	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	148.88
9	2	16	157.56	867	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.56
9	2	17	82.32	425	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	47.32
9	2	18	59.03	229	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.03
9	2	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	2	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	3	8	25.23	69	6	0	25.23	264.91	145.70	145.70	1.46	-2.65	0.00	-2.65	25.23	0.00
9	3	9	121.58	593	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.58
9	3	10	187.53	970	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	152.53
9	3	11	167.11	1029	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	132.11
9	3	12	145.24	841	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	110.24
9	3	13	139.84	774	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	104.84
9	3	14	121.89	534	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.89
9	3	15	187.61	903	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	152.61
9	3	16	154.76	845	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.76
9	3	17	98.31	553	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	63.31
9	3	18	27.68	193	16	0	27.68	290.61	159.84	159.84	1.60	-2.91	0.00	-2.91	27.68	0.00
9	3	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	3	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	4	8	46.03	362	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	11.03
9	4	9	150.25	810	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	115.25
9	4	10	216.63	1214	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	181.63
9	4	11	303.81	1647	137	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	268.81
9	4	12	293.60	1536	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	258.60
9	4	13	282.56	1414	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	247.56
9	4	14	252.48	1185	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	217.48
9	4	15	221.28	1180	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	186.28
9	4	16	131.48	668	56	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.48
9	4	17	103.29	591	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	68.29
9	4	18	26.39	173	14	0	26.39	277.08	152.39	152.39	1.52	-2.77	0.00	-2.77	26.39	0.00
9	4	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	4	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	5	8	77.83	386	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.83
9	5	9	153.68	837	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.68
9	5	10	218.83	1233	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	183.83
9	5	11	385.21	1918	160	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	350.21
9	5	12	360.47	1847	154	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	325.47
9	5	13	355.31	1779	148	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	320.31
9	5	14	338.63	1571	131	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	303.63
9	5	15	180.94	851	71	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	145.94
9	5	16	171.22	975	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	136.22
9	5	17	147.79	931	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	112.79
9	5	18	62.05	265	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.05
9	5	19	26.77	44	4	0	26.77	281.09	154.60	154.60	1.55	-2.81	0.00	-2.81	26.77	0.00
9	5	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	5	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	6	8	110.96	649	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.96
9	6	9	191.03	1139	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.03
9	6	10	236.63	1393	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	201.63
9	6	11	346.18	1862	155	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	311.18
9	6	12	312.84	1685	140	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	277.84
9	6	13	314.43	1688	141	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.43
9	6	14	286.92	1479	123	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	251.92
9	6	15	246.81	1408	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	211.81
9	6	16	121.85	595	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.85
9	6	17	111.43	652	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	76.43
9	6	18	84.40	470	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	49.40
9	6	19	54.36	8	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	19.36
9	6	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	6	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	7	8	66.11	273	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.11
9	7	9	146.54	782	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	111.54
9	7	10	208.11	1140	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	173.11
9	7	11	345.42	1733	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	310.42
9	7	12	314.92	1665	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.92
9	7	13	303.67	1540	128	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	268.67
9	7	14	295.73	1382	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.73
9	7	15	215.32	1129	94	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	180.32
9	7	16	165.50	929	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	130.50
9	7	17	97.49	546	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	62.49
9	7	18	57.65	211	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.65
9	7	19	26.43	5	0	0	26.43	277.50	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	7	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

9	8	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	8	8	83.02	458	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	48.02
9	8	9	113.78	680	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	78.78
9	8	10	179.79	1138	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.79
9	8	11	330.32	1693	141	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	295.32
9	8	12	343.87	1852	154	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	308.87
9	8	13	313.19	1704	142	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	278.19
9	8	14	301.14	1561	130	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	266.14
9	8	15	153.67	923	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.67
9	8	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	8	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	8	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	8	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	8	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	9	8	34.08	235	20	0	34.08	357.74	196.76	196.76	1.97	-3.58	0.00	-3.58	34.08	0.00
9	9	9	126.53	631	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	91.53
9	9	10	175.72	876	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	140.72
9	9	11	242.33	886	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	207.33
9	9	12	226.57	825	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	191.57
9	9	13	207.03	630	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	172.03
9	9	14	296.72	1301	108	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	261.72
9	9	15	184.42	878	73	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	149.42
9	9	16	121.63	594	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	86.63
9	9	17	77.85	387	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.85
9	9	18	21.61	55	5	0	21.61	226.85	124.77	124.77	1.25	-2.27	0.00	-2.27	21.61	0.00
9	9	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	9	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	10	8	26.32	104	9	0	26.32	276.31	151.97	151.97	1.52	-2.76	0.00	-2.76	26.32	0.00
9	10	9	110.81	510	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.81
9	10	10	166.87	808	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	131.87
9	10	11	131.27	962	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	96.27
9	10	12	120.65	909	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	85.65
9	10	13	123.18	902	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.18
9	10	14	110.33	748	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	75.33
9	10	15	193.82	952	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	158.82
9	10	16	149.68	806	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.68
9	10	17	92.19	505	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	57.19
9	10	18	21.49	49	4	0	21.49	225.58	124.07	124.07	1.24	-2.26	0.00	-2.26	21.49	0.00
9	10	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	10	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	11	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	11	8	154.86	329	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	11	9	185.40	916	76	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	11	10	212.68	1241	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	177.68
9	11	11	242.09	1394	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	207.09
9	11	12	274.88	1527	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	239.88
9	11	13	247.87	1406	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	212.87
9	11	14	205.70	1188	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	170.70
9	11	15	216.98	1283	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	181.98
9	11	16	225.12	1262	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.12
9	11	17	140.62	812	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	105.62
9	11	18	78.66	81	7	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	11	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	11	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	11	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	12	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	12	8	174.45	522	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	139.45
9	12	9	239.58	957	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	204.58
9	12	10	271.06	1217	101	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	236.06
9	12	11	272.44	1263	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	237.44
9	12	12	273.55	1333	111	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	238.55
9	12	13	306.89	1392	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	271.89
9	12	14	354.07	1459	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	319.07
9	12	15	292.22	1303	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	257.22
9	12	16	252.72	1011	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	217.72
9	12	17	138.70	477	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	103.70
9	12	18	91.08	266	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	56.08
9	12	19	57.61	50	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	12	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	12	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	6	142.62	331	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	107.62
9	13	7	212.71	539	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	177.71
9	13	8	325.39	1008	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	290.39
9	13	9	439.54	1637	136	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	404.54
9	13	10	458.33	1649	137	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	423.33
9	13	11	472.76	1704	142	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	437.76
9	13	12	504.61	1918	160	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	469.61
9	13	13	503.46	1723	144	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	468.46
9	13	14	556.22	1938	161	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	521.22
9	13	15	487.95	1583	132	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	452.95
9	13	16	447.40	1376	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	412.40
9	13	17	348.10	1090	91	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	313.10
9	13	18	254.74	842	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	219.74
9	13	19	215.95	724	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	180.95
9	13	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	13	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	6	220.52	600	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	185.52
9	14	7	282.68	777	65	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	247.68
9	14	8	376.96	1055	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	341.96
9	14	9	561.51	1867	156	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	526.51
9	14	10	562.37	2209	184	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	527.37
9	14	11	567.90	2372	198	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	532.90
9	14	12	570.55	2407	201	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	535.55
9	14	13	561.64	2222	185	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	526.64
9	14	14	494.59	1897	158	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	459.59
9	14	15	438.90	1460	122	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	403.90
9	14	16	396.61	1231	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	361.61
9	14	17	360.09	1341	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	325.09
9	14	18	239.81	801	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	204.81
9	14	19	191.67	619	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.67
9	14	20	27.46	75	6	0	27.46	288.33	158.58	158.58	1.59	-2.88	0.00	-2.88	27.46	0.00
9	14	21	26.43	5	0	0	26.43	277.49	152.62	152.62	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	14	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

9	15	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	15	8	21.10	17	1	0	21.10	221.56	121.86	121.86	1.22	-2.22	0.00	-2.22	21.10	0.00
9	15	9	66.49	544	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.49
9	15	10	101.84	750	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	66.84
9	15	11	118.52	967	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.52
9	15	12	119.18	904	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	84.18
9	15	13	120.54	845	70	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	85.54
9	15	14	87.70	520	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	52.70
9	15	15	93.19	685	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	58.19
9	15	16	67.46	551	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.46
9	15	17	26.62	177	15	0	26.62	279.51	153.73	153.73	1.54	-2.80	0.00	-2.80	26.62	0.00
9	15	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	15	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	15	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	16	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	16	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	16	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	16	11	66.87	128	11	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
9	16	12	59.07	11	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
9	16	13	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
9	16	14	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
9	16	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	16	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	16	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	16	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	16	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	16	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	6	76.15	1	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.15
9	17	7	112.53	43	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	17	8	159.39	291	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	124.39
9	17	9	201.49	452	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.49
9	17	10	203.25	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	168.25
9	17	11	247.15	610	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	212.15
9	17	12	219.13	543	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	184.13
9	17	13	253.38	650	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	218.38
9	17	14	274.38	729	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	239.38
9	17	15	292.56	800	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	257.56
9	17	16	307.53	929	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.53
9	17	17	210.45	592	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	175.45
9	17	18	114.19	302	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	79.19
9	17	19	69.44	94	8	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	34.44
9	17	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	17	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	18	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	18	8	166.21	697	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	131.21
9	18	9	272.62	1242	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	237.62
9	18	10	325.04	1581	132	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	290.04
9	18	11	326.49	1556	130	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	291.49
9	18	12	347.37	1632	136	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	312.37
9	18	13	321.77	1404	117	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	286.77
9	18	14	308.61	1289	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	273.61
9	18	15	262.97	931	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	227.97
9	18	16	225.75	745	62	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	190.75
9	18	17	141.44	451	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	106.44
9	18	18	78.66	47	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	18	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	18	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	18	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	19	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	19	8	154.86	534	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	19	9	185.40	833	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	19	10	206.85	1147	96	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	171.85
9	19	11	295.40	1586	132	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.40
9	19	12	338.19	1744	145	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	303.19
9	19	13	314.52	1450	121	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.52
9	19	14	298.06	1233	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	263.06
9	19	15	259.93	889	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	224.93
9	19	16	264.99	768	64	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	229.99
9	19	17	155.05	397	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	120.05
9	19	18	78.66	18	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	19	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	19	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	19	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	20	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	20	8	154.86	150	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	20	9	185.40	384	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	20	10	334.26	1580	132	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	299.26
9	20	11	330.32	1510	126	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	295.32
9	20	12	264.75	947	79	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	229.75
9	20	13	319.57	1233	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	284.57
9	20	14	326.61	1364	114	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	291.61
9	20	15	328.30	1312	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.30
9	20	16	291.12	991	83	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	256.12
9	20	17	149.42	383	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	114.42
9	20	18	82.02	165	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	47.02
9	20	19	57.90	43	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.90
9	20	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	20	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	6	77.44	42	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	42.44
9	21	7	142.20	288	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	107.20
9	21	8	229.60	575	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.60
9	21	9	305.48	806	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	270.48
9	21	10	391.87	1378	115	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	356.87
9	21	11	368.63	1068	89	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	333.63
9	21	12	400.22	1307	109	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	365.22
9	21	13	464.07	1660	138	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	429.07
9	21	14	452.78	1446	121	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	417.78
9	21	15	486.59	1713	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	451.59
9	21	16	437.58	1433	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	402.58
9	21	17	312.23	961	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	277.23
9	21	18	214.49	638	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	179.49
9	21	19	153.63	413	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	118.63
9	21	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	21	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

9	21	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	22	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	22	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	22	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	22	11	132.61	300	25	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	97.61
9	22	12	187.62	521	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	152.62
9	22	13	201.08	567	47	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.08
9	22	14	192.80	517	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	157.80
9	22	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	22	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	22	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	22	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	22	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	22	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	23	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	23	9	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	23	10	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	23	11	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
9	23	12	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
9	23	13	59.07	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.07
9	23	14	66.87	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.87
9	23	15	31.21	0	0	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
9	23	16	23.04	0	0	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
9	23	17	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	23	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	23	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	23	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	24	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	24	8	154.86	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	24	9	185.40	77	6	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	10	185.40	485	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	11	185.40	255	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	12	185.40	454	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	13	185.40	370	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	14	185.40	620	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	15	185.40	281	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	16	185.40	209	17	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	24	17	134.60	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.60
9	24	18	78.66	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	24	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	24	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	24	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	25	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	25	8	154.86	40	3	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	25	9	185.40	267	22	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	25	10	187.49	421	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	152.49
9	25	11	196.82	493	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	161.82
9	25	12	196.82	493	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	161.82
9	25	13	201.28	482	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	166.28
9	25	14	203.25	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	168.25
9	25	15	203.25	475	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	168.25
9	25	16	194.17	434	36	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	159.17
9	25	17	134.60	147	12	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	99.60
9	25	18	78.66	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	25	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	25	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	25	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	26	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	26	8	154.86	168	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	26	9	191.26	425	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.26
9	26	10	192.22	448	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	157.22
9	26	11	192.22	448	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	157.22
9	26	12	194.78	446	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	159.78
9	26	13	211.24	511	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.24
9	26	14	211.24	511	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.24
9	26	15	219.13	543	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	184.13
9	26	16	210.16	499	42	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	175.16
9	26	17	137.28	212	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	102.28
9	26	18	78.66	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	26	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	26	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	26	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	27	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	27	8	154.86	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.86
9	27	9	185.40	385	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.40
9	27	10	311.82	1340	112	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	276.82
9	27	11	332.33	1571	131	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	297.33
9	27	12	317.35	1547	129	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	282.35
9	27	13	319.68	1512	126	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	284.68
9	27	14	314.34	1423	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.34
9	27	15	318.39	1425	119	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	283.39
9	27	16	303.43	1276	106	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	268.43
9	27	17	185.22	757	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.22
9	27	18	78.66	58	5	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	27	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	27	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	27	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	6	75.58	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	40.58
9	28	7	112.53	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	77.53
9	28	8	156.85	690	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.85
9	28	9	245.45	1245	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	210.45
9	28	10	290.38	1520	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	255.38
9	28	11	324.76	1721	143	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	289.76
9	28	12	284.95	1614	135	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	249.95
9	28	13	299.85	1576	131	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	264.85
9	28	14	310.71	1524	127	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	275.71
9	28	15	332.68	1600	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	297.68
9	28	16	307.82	1436	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.82
9	28	17	154.48	682	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	119.48
9	28	18	78.66	22	2	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.66
9	28	19	57.61	0	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	22.61
9	28	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00

9	28	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	28	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	29	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	29	9	34.15	253	21	0	34.15	358.56	197.21	197.21	1.97	-3.59	0.00	-3.59	34.15	0.00
9	29	10	78.67	575	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	43.67
9	29	11	67.95	460	38	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.95
9	29	12	68.79	555	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.79
9	29	13	64.83	576	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.83
9	29	14	67.66	408	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.66
9	29	15	68.13	492	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	33.13
9	29	16	49.17	402	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	14.17
9	29	17	21.86	67	6	0	21.86	229.47	126.21	126.21	1.26	-2.29	0.00	-2.29	21.86	0.00
9	29	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	29	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	29	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	1	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	2	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	3	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	4	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	5	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	6	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	7	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	30	8	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	30	9	44.84	363	30	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.84
9	30	10	36.54	173	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.54
9	30	11	79.83	687	57	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	44.83
9	30	12	85.69	826	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.69
9	30	13	85.41	759	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	50.41
9	30	14	106.04	812	68	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	71.04
9	30	15	102.38	754	63	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	67.38
9	30	16	80.82	653	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	45.82
9	30	17	38.95	326	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	3.95
9	30	18	21.05	0	0	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
9	30	19	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	20	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	21	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	22	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	23	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
9	30	24	26.43	0	0	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
10	1	1	26.43	0	0	693	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	2	26.43	0	0	667	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	3	26.43	0	0	638	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	4	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	5	26.43	0	0	572	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	6	75.58	0	0	1029	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	1	7	112.53	0	0	694	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	1	8	154.86	463	39	4	35.00	367.45	202.10	202.10	2.02	-3.67	0.04	-3.63	35.00	119.86
10	1	9	232.13	984	82	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	197.13
10	1	10	337.30	1505	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	302.30
10	1	11	360.07	1505	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	325.07
10	1	12	401.99	1663	139	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	366.99
10	1	13	367.08	1316	110	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	332.08
10	1	14	374.28	1443	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	339.28
10	1	15	350.73	1441	120	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	315.73
10	1	16	328.55	1187	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.55
10	1	17	156.18	395	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	121.18
10	1	18	78.66	0	0	439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	1	19	57.61	0	0	719	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	1	20	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	21	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	22	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	23	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	1	24	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	1	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	2	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	3	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	4	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	5	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	6	75.58	0	0	409	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	2	7	112.53	0	0	246	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	2	8	155.62	254	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	120.62
10	2	9	205.78	487	41	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	170.78
10	2	10	235.86	622	52	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	200.86
10	2	11	259.82	697	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	224.82
10	2	12	259.57	695	58	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	224.57
10	2	13	315.91	1007	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	280.91
10	2	14	343.82	1149	96	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	308.82
10	2	15	352.64	1187	99	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	317.64
10	2	16	370.49	1391	116	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	335.49
10	2	17	258.85	929	77	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	223.85
10	2	18	118.92	339	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	83.92
10	2	19	57.61	0	0	900	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	2	20	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	21	26.43	0	0	645	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	22	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	23	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	2	24	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	1	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	2	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	3	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	4	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	5	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	6	75.58	0	0	1374	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	3	7	112.53	0	0	1242	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	3	8	154.86	0	0	1042	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	3	9	185.40	290	24	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	10	185.40	293	24	606	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	11	185.40	147	12	672	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	12	185.40	137	11	681	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	13	185.40	144	12	674	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	14	185.40	147	12	672	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	15	185.40	147	12	672	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	16	185.40	71	6	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	3	17	134.60	0	0	903	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	3	18	78.66	0	0	1284	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	3	19	57.61	0	0	1437	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	3	20	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	21	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	22	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	23	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	3	24	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	1	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	2	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	3	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	4	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	5	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	6	75.58	0	0	1875	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	4	7	112.53	0	0	1756	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	4	8	154.86	17	1	940	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	4	9	185.40	294	25	805	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	10	185.40	584	49	573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	11	185.40	684	57	562	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	12	185.40	108	9	1181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	13	185.40	625	52	620	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	14	185.40	426	35	743	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	15	185.40	76	6	1247	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	16	185.40	98	8	1204	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	4	17	134.60	0	0	1580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	4	18	78.66	0	0	2039	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	4	19	57.61	0	0	2207	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	4	20	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	21	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	22	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	4	24	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	1	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	2	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	3	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	4	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	5	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	6	75.58	0	0	2617	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	5	7	112.53	0	0	2450	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	5	8	154.86	0	0	2250	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	5	9	185.40	0	0	2137	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	10	185.40	0	0	1852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	11	185.40	0	0	1545	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	12	185.40	266	22	1284	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	13	185.40	0	0	1583	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	14	185.40	202	17	1328	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	15	185.40	833	69	626	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	16	185.40	701	58	707	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	5	17	134.60	77	6	1176	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	5	18	78.66	0	0	2045	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	5	19	57.61	0	0	2254	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	5	20	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	21	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

10	5	22	26.43	0	0	837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	23	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	5	24	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	1	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	2	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	3	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	4	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	5	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	6	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	7	21.05	0	0	1099	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	6	8	21.05	0	0	982	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	6	9	23.04	0	0	113	23.04	241.90	133.04	133.04	1.33	-2.42	1.13	-1.29	23.04	0.00
10	6	10	42.05	249	21	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	7.05
10	6	11	66.87	358	30	748	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	6	12	59.07	369	31	713	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	6	13	59.07	233	19	848	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	6	14	66.87	181	15	880	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	6	15	59.24	419	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	24.24
10	6	16	37.42	290	24	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	2.42
10	6	17	21.05	0	0	125	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	6	18	21.05	0	0	753	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	6	19	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	20	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	21	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	22	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	23	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	6	24	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	1	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	2	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	3	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	4	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	5	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	6	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	7	21.05	0	0	1064	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	7	8	21.05	0	0	1022	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	7	9	23.22	31	3	0	23.22	243.73	134.05	134.05	1.34	-2.44	0.00	-2.44	23.22	0.00
10	7	10	80.47	588	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	45.47
10	7	11	66.87	492	41	536	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	7	12	59.07	399	33	544	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	7	13	59.07	164	14	805	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	7	14	66.87	187	16	736	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	7	15	44.72	280	23	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	9.72
10	7	16	25.14	107	9	0	25.14	263.93	145.16	145.16	1.45	-2.64	0.00	-2.64	25.14	0.00
10	7	17	21.05	0	0	65	21.05	220.97	121.54	121.54	1.22	-2.21	0.65	-1.56	21.05	0.00
10	7	18	21.05	0	0	710	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	7	19	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	20	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	21	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	22	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	23	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	7	24	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	1	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	2	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	3	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	4	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	5	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	6	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	7	21.05	0	0	1097	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	8	8	21.05	0	0	905	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	8	9	23.92	69	6	0	23.92	251.12	138.12	138.12	1.38	-2.51	0.00	-2.51	23.92	0.00
10	8	10	64.51	463	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	29.51
10	8	11	66.87	680	57	5	35.00	367.45	202.10	202.10	2.02	-3.67	0.05	-3.62	35.00	31.87
10	8	12	61.43	725	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.43
10	8	13	59.07	585	49	38	35.00	367.45	202.10	202.10	2.02	-3.67	0.38	-3.29	35.00	24.07
10	8	14	66.87	403	34	166	35.00	367.45	202.10	202.10	2.02	-3.67	1.66	-2.01	35.00	31.87
10	8	15	72.84	529	44	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	37.84
10	8	16	51.47	422	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	16.47
10	8	17	23.13	107	9	0	23.13	242.88	133.58	133.58	1.34	-2.43	0.00	-2.43	23.13	0.00
10	8	18	21.05	0	0	476	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	8	19	26.43	0	0	540	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	20	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	21	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	22	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	23	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	8	24	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	1	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	2	26.43	0	0	801	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	3	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	4	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	5	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	6	75.58	0	0	1491	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	9	7	112.53	0	0	1242	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	9	8	154.86	0	0	911	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	9	9	191.24	826	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	156.24
10	9	10	208.00	1054	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	173.00
10	9	11	204.51	1054	88	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	169.51
10	9	12	235.89	1255	105	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	200.89
10	9	13	246.55	1240	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	211.55
10	9	14	239.53	1142	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	204.53
10	9	15	229.61	1111	93	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	194.61
10	9	16	211.15	969	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	176.15
10	9	17	134.60	204	17	457	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	9	18	78.66	0	0	1338	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	9	19	57.61	0	0	1564	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	9	20	26.43	0	0	615	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	21	26.43	0	0	689	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	22	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	23	26.43	0	0	837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	9	24	26.43	0	0	874	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	1	26.43	0	0	949	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	2	26.43	0	0	908	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	3	26.43	0	0	983	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	4	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	5	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	6	75.58	0	0	2864	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	10	7	112.53	0	0	2712	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	10	8	154.86	0	0	2525	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	10	9	185.40	0	0	1736	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	10	185.40	343	29	1076	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	11	185.40	1012	84	108	35.00	367.45	202.10	202.10	2.02	-3.67	1.08	-2.60	35.00	150.40
10	10	12	185.40	68	6	965	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	13	185.40	25	2	1054	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	14	185.40	0	0	1121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	15	185.40	0	0	1125	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	16	185.40	0	0	1213	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	10	17	134.60	0	0	1317	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	10	18	78.66	0	0	1468	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	10	19	57.61	0	0	1543	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	10	20	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	21	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	22	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	23	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	10	24	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	1	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	2	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	3	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	4	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	5	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	6	75.58	0	0	770	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	11	7	112.53	0	0	536	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	11	8	154.86	63	5	425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	11	9	185.40	290	24	166	35.00	367.45	202.10	202.10	2.02	-3.67	1.66	-2.01	35.00	150.40
10	11	10	185.93	380	32	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.93
10	11	11	185.79	372	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.79
10	11	12	185.40	346	29	53	35.00	367.45	202.10	202.10	2.02	-3.67	0.53	-3.14	35.00	150.40
10	11	13	188.06	412	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	153.06
10	11	14	186.33	422	35	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.33
10	11	15	185.40	346	29	573	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	11	16	185.40	48	4	1022	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	11	17	134.60	0	0	1057	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	11	18	78.66	0	0	1341	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	11	19	57.61	0	0	1562	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	11	20	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	21	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	22	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	23	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	11	24	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	1	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	2	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	3	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	4	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	5	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	6	75.58	0	0	2992	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	12	7	112.53	0	0	2631	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	12	8	154.86	0	0	2434	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	12	9	185.40	559	47	1126	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	10	185.40	611	51	1034	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	11	185.40	144	12	1432	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	12	185.40	10	1	1633	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	13	185.40	423	35	1128	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	14	185.40	0	0	1840	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	15	185.40	0	0	1858	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	16	185.40	0	0	2002	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	12	17	134.60	0	0	2161	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	12	18	78.66	0	0	2404	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	12	19	57.61	0	0	2549	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	12	20	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00

10	12	21	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	22	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	23	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	12	24	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	1	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	2	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	3	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	4	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	5	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	6	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	7	21.05	0	0	1288	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	13	8	21.05	0	0	1064	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	13	9	23.04	0	0	310	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	13	10	31.33	26	2	0	31.33	328.94	180.92	180.92	1.81	-3.29	0.00	-3.29	31.33	0.00
10	13	11	66.87	0	0	2206	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	13	12	59.07	0	0	2440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	13	13	59.07	0	0	2554	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	13	14	66.87	0	0	1872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	13	15	31.21	0	0	714	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	13	16	23.04	0	0	504	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	13	17	21.05	0	0	631	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	13	18	21.05	0	0	1082	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	13	19	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	20	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	21	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	22	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	23	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	13	24	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	1	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	2	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	3	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	4	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	5	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	6	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	7	21.05	0	0	1519	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	14	8	21.05	0	0	1247	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	14	9	23.04	0	0	214	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	14	10	36.32	169	14	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	1.32
10	14	11	66.87	0	0	1605	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	14	12	59.07	58	5	1418	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	14	13	59.07	0	0	1506	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	14	14	66.87	0	0	1472	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	14	15	47.25	307	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	12.25
10	14	16	29.43	189	16	0	29.43	308.93	169.91	169.91	1.70	-3.09	0.00	-3.09	29.43	0.00
10	14	17	21.05	0	0	232	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	14	18	21.05	0	0	1089	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	14	19	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	20	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	21	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	22	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	23	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	14	24	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	1	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	2	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	3	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	4	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	5	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	6	75.58	0	0	2596	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	15	7	112.53	0	0	2506	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	15	8	154.86	0	0	2297	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	15	9	185.40	0	0	1781	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	10	185.40	37	3	1493	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	11	185.40	24	2	1381	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	12	185.40	0	0	1359	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	13	185.40	149	12	1014	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	14	185.40	76	6	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	15	185.40	9	1	1279	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	16	185.40	0	0	1423	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	15	17	134.60	0	0	1661	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	15	18	78.66	0	0	1847	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	15	19	57.61	0	0	2038	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	15	20	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	21	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	22	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	23	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	15	24	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	1	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	2	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	3	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	4	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	5	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	6	75.58	0	0	2595	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	16	7	112.53	0	0	2362	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	16	8	154.86	0	0	1972	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	16	9	185.40	643	54	645	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	16	10	185.40	608	51	499	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	16	11	186.88	885	74	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	151.88
10	16	12	190.70	809	67	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	155.70
10	16	13	220.17	978	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	185.17
10	16	14	295.40	1446	121	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	260.40
10	16	15	284.46	1413	118	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	249.46
10	16	16	276.04	1284	107	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	241.04
10	16	17	134.60	389	32	61	35.00	367.45	202.10	202.10	2.02	-3.67	0.61	-3.07	35.00	99.60
10	16	18	78.66	0	0	876	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	16	19	57.61	0	0	908	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	16	20	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	21	26.43	0	0	686	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	22	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	23	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	16	24	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	1	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	2	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	3	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	4	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	5	26.43	0	0	946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	6	75.58	0	0	1872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	17	7	112.53	0	0	1371	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	17	8	154.86	0	0	760	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	17	9	214.11	936	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	179.11
10	17	10	315.11	1500	125	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	280.11
10	17	11	376.76	1758	146	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	341.76
10	17	12	360.04	1593	133	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	325.04
10	17	13	299.85	1224	102	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	264.85
10	17	14	265.38	1008	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	230.38
10	17	15	264.82	935	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	229.82
10	17	16	298.51	1235	103	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	263.51
10	17	17	152.07	515	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	117.07
10	17	18	78.66	0	0	348	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	17	19	57.61	0	0	431	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	17	20	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	21	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	22	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	23	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	17	24	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	1	26.43	0	0	429	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	2	26.43	0	0	396	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	3	26.43	0	0	396	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	4	26.43	0	0	356	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	5	26.43	0	0	356	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	6	76.67	46	4	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	41.67
10	18	7	123.86	222	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	88.86
10	18	8	217.49	544	45	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	182.49
10	18	9	278.22	731	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	243.22
10	18	10	309.45	829	69	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	274.45
10	18	11	312.03	862	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	277.03
10	18	12	329.99	898	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	294.99
10	18	13	316.13	897	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	281.13
10	18	14	344.86	1045	87	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	309.86
10	18	15	316.14	897	75	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	281.14
10	18	16	254.97	725	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	219.97
10	18	17	134.60	0	0	596	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	18	18	78.66	0	0	794	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	18	19	57.61	0	0	960	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	18	20	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	21	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	22	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	23	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	18	24	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	1	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	2	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	3	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	4	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	5	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	6	75.58	0	0	1172	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	19	7	112.53	0	0	1228	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	19	8	154.86	0	0	993	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	19	9	185.40	0	0	981	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	10	185.40	136	11	872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	11	185.40	161	13	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	12	185.40	710	59	422	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	13	185.88	1007	84	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.88
10	19	14	185.40	804	67	127	35.00	367.45	202.10	202.10	2.02	-3.67	1.27	-2.40	35.00	150.40
10	19	15	185.40	895	75	222	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	16	185.40	892	74	218	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	19	17	134.60	173	14	687	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	19	18	78.66	0	0	1384	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	19	19	57.61	0	0	1474	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61

10	19	20	26.43	0	0	727	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	21	26.43	0	0	646	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	22	26.43	0	0	760	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	23	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	19	24	26.43	0	0	761	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	1	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	2	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	3	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	4	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	5	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	6	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	7	21.05	0	0	1174	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	20	8	21.05	0	0	1064	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	20	9	23.04	0	0	122	23.04	241.90	133.04	133.04	1.33	-2.42	1.22	-1.20	23.04	0.00
10	20	10	32.57	86	7	0	32.57	341.90	188.04	188.04	1.88	-3.42	0.00	-3.42	32.57	0.00
10	20	11	66.87	0	0	1256	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	20	12	59.07	0	0	1645	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	20	13	59.07	0	0	1221	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	20	14	66.87	0	0	1827	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	20	15	31.21	0	0	518	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	20	16	23.04	0	0	655	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	20	17	21.05	0	0	637	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	20	18	21.05	0	0	914	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	20	19	26.43	0	0	908	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	20	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	21	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	22	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	23	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	20	24	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	1	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	2	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	3	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	4	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	5	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	6	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	7	21.05	0	0	1097	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	21	8	21.05	0	0	1022	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	21	9	25.06	105	9	0	25.06	263.12	144.72	144.72	1.45	-2.63	0.00	-2.63	25.06	0.00
10	21	10	62.33	445	37	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	27.33
10	21	11	66.87	603	50	210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	21	12	59.07	647	54	101	35.00	367.45	202.10	202.10	2.02	-3.67	1.01	-2.66	35.00	24.07
10	21	13	59.07	494	41	192	35.00	367.45	202.10	202.10	2.02	-3.67	1.92	-1.76	35.00	24.07
10	21	14	66.87	335	28	357	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	21	15	66.95	483	40	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	31.95
10	21	16	23.05	5	0	0	133.07	241.95	133.07	133.07	1.33	-2.42	0.00	-2.42	23.05	0.00
10	21	17	21.05	0	0	323	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	21	18	21.05	0	0	578	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	21	19	26.43	0	0	573	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	20	26.43	0	0	687	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	21	26.43	0	0	647	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	22	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	23	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	21	24	26.43	0	0	762	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	1	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	2	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	3	26.43	0	0	907	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	4	26.43	0	0	948	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	5	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	6	75.58	0	0	2733	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	22	7	112.53	0	0	2603	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	22	8	154.86	0	0	2563	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	22	9	185.40	147	12	1682	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	10	185.40	591	49	1259	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	11	185.40	856	71	934	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	12	185.40	832	69	886	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	13	185.40	753	63	823	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	14	185.40	337	28	1238	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	15	185.40	486	41	1056	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	16	185.40	547	46	1031	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	22	17	134.60	0	0	1609	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	22	18	78.66	0	0	2354	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	22	19	57.61	0	0	2620	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	22	20	26.43	0	0	982	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	21	26.43	0	0	1065	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	22	26.43	0	0	1141	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	23	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	22	24	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	1	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	2	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	3	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	4	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	5	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	6	75.58	0	0	3427	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	23	7	112.53	0	0	3543	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	23	8	154.86	0	0	3356	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	23	9	185.40	64	5	2336	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	10	185.40	248	21	2211	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	11	185.40	181	15	2189	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	12	185.40	0	0	2392	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	13	185.40	0	0	2393	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	14	185.40	0	0	2517	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	15	185.40	0	0	2417	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	16	185.40	0	0	2678	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	23	17	134.60	0	0	3020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	23	18	78.66	0	0	3367	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	23	19	57.61	0	0	3239	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	23	20	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	21	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	22	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	23	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	23	24	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	1	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	2	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	3	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	4	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	5	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	6	75.58	0	0	3489	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	24	7	112.53	0	0	3428	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	24	8	154.86	0	0	3312	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	24	9	185.40	0	0	2587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	10	185.40	269	22	1741	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	11	185.40	574	48	1349	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	12	185.40	233	19	1643	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	13	185.40	605	50	1040	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	14	185.40	476	40	1167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	15	185.40	247	21	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	16	185.40	0	0	2017	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	24	17	134.60	0	0	2184	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	24	18	78.66	0	0	2424	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	24	19	57.61	0	0	2534	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	24	20	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	21	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	22	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	24	24	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	1	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	2	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	3	26.43	0	0	905	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	4	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	5	26.43	0	0	871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	6	75.58	0	0	1491	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	25	7	112.53	0	0	1242	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	25	8	154.86	0	0	1139	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	25	9	185.40	21	2	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	25	10	185.40	78	7	750	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	25	11	185.40	283	24	231	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	25	12	246.47	605	50	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	211.47
10	25	13	252.95	647	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	217.95
10	25	14	185.51	377	31	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	150.51
10	25	15	185.40	242	20	342	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	25	16	185.40	165	14	487	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	25	17	134.60	0	0	1463	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	25	18	78.66	0	0	2001	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	25	19	57.61	0	0	2366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	25	20	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	21	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	22	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	23	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	25	24	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	1	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	2	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	3	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	4	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	5	26.43	0	0	1408	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	6	75.58	0	0	3664	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
10	26	7	112.53	0	0	3545	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
10	26	8	154.86	0	0	3503	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
10	26	9	185.40	0	0	3247	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	10	185.40	0	0	3282	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	11	185.40	0	0	2937	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	12	185.40	0	0	3273	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	13	185.40	0	0	3065	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	14	185.40	0	0	3231	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	15	185.40	0	0	3138	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	16	185.40	0	0	3219	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	26	17	134.60	0	0	3153	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	26	18	78.66	0	0	3351	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66

10	26	19	57.61	0	0	3405	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	26	20	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	21	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	22	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	23	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	26	24	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	1	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	2	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	3	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	4	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	5	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	6	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	7	21.05	0	0	1408	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	27	8	21.05	0	0	1289	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	27	9	23.04	0	0	683	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	27	10	31.21	0	0	326	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	27	11	66.87	0	0	2168	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	27	12	59.07	0	0	2406	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	27	13	59.07	0	0	2466	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	27	14	66.87	0	0	2096	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	27	15	31.21	0	0	291	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	27	16	23.04	0	0	574	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	27	17	21.05	0	0	1125	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	27	18	21.05	0	0	1175	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	27	19	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	20	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	21	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	22	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	23	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	27	24	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	1	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	2	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	3	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	4	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	5	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	6	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	7	21.05	0	0	1062	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	28	8	21.05	0	0	980	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	28	9	23.04	0	0	935	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	28	10	31.21	0	0	870	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	28	11	66.87	0	0	1757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	28	12	59.07	0	0	1669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	28	13	59.07	0	0	1723	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
10	28	14	66.87	0	0	1768	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
10	28	15	31.21	0	0	796	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
10	28	16	23.04	0	0	829	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
10	28	17	21.05	0	0	903	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	28	18	21.05	0	0	905	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
10	28	19	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	20	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	21	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	22	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	23	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	28	24	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	1	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	2	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	3	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	4	26.43	0	0	1408	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	5	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	29	6	74.11	0	0	3138	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.11
10	29	7	110.65	0	0	2991	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
10	29	8	152.90	0	0	3066	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.90
10	29	9	180.12	251	21	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.12
10	29	10	179.80	387	32	1514	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.80
10	29	11	179.86	324	27	1534	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.86
10	29	12	179.74	349	29	1445	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.74
10	29	13	179.43	516	43	1043	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	29	14	179.77	209	17	1453	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.77
10	29	15	179.59	345	29	1334	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.59
10	29	16	180.47	52	4	1753	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.47
10	29	17	131.31	0	0	2353	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.31
10	29	18	75.90	0	0	2532	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.90
10	29	19	55.34	0	0	2717	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.34
10	29	20	27.79	0	0	587	27.79	291.72	160.44	160.44	1.60	-2.92	1.60	-1.31	27.79	0.00
10	29	21	28.23	0	0	779	28.23	296.38	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
10	29	22	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
10	29	23	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
10	29	24	49.93	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
10	30	1	49.93	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
10	30	2	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
10	30	3	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
10	30	4	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
10	30	5	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
10	30	6	73.95	0	0	2971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.95
10	30	7	110.81	0	0	2964	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.81
10	30	8	152.54	0	0	2761	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.54
10	30	9	180.29	136	11	1586	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.29
10	30	10	179.43	519	43	1228	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	11	179.43	592	49	1179	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	12	179.43	720	60	865	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	13	179.43	604	50	972	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	14	179.43	438	37	1108	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	15	179.43	417	35	1083	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	30	16	179.67	194	16	1395	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.67
10	30	17	130.57	0	0	1954	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.57
10	30	18	75.90	0	0	2426	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.90
10	30	19	55.20	0	0	2619	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.20
10	30	20	27.88	0	0	628	27.88	292.72	160.99	160.99	1.61	-2.93	1.61	-1.32	27.88	0.00
10	30	21	27.98	0	0	670	27.98	293.72	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
10	30	22	28.05	0	0	703	28.05	294.53	161.99	161.99	1.62	-2.95	1.62	-1.33	28.05	0.00
10	30	23	28.15	0	0	745	28.15	295.54	162.55	162.55	1.63	-2.96	1.63	-1.33	28.15	0.00
10	30	24	28.32	0	0	817	28.32	297.30	163.51	163.51	1.64	-2.97	1.64	-1.34	28.32	0.00
10	31	1	28.40	0	0	851	28.40	298.12	163.97	163.97	1.64	-2.98	1.64	-1.34	28.40	0.00
10	31	2	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
10	31	3	50.19	0	0	816	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
10	31	4	50.02	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
10	31	5	50.10	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
10	31	6	74.10	0	0	2869	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.10
10	31	7	110.50	0	0	2647	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.50
10	31	8	152.38	0	0	2443	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.38
10	31	9	179.71	489	41	1130	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.71
10	31	10	179.43	853	71	680	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
10	31	11	185.40	723	60	1295	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	12	185.40	738	61	1254	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	13	185.40	699	58	1121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	14	185.40	655	55	1071	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	15	185.40	762	64	814	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	16	185.40	387	32	1312	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
10	31	17	134.60	0	0	2172	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
10	31	18	78.66	0	0	2604	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
10	31	19	57.61	0	0	2687	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
10	31	20	26.43	0	0	1064	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	31	21	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	31	22	26.43	0	0	1056	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	31	23	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
10	31	24	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	1	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	2	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	3	26.43	0	0	872	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	4	26.43	0	0	835	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	5	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	6	75.58	0	0	2100	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	1	7	112.53	0	0	2271	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	1	8	154.86	0	0	2323	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	1	9	185.40	465	39	1352	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	10	185.40	746	62	1049	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	11	185.40	798	66	862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	12	185.40	545	45	1099	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	13	185.40	473	39	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	14	185.40	547	46	1159	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	15	185.40	555	46	1178	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	16	185.40	285	24	1504	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	1	17	134.60	0	0	2231	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	1	18	78.66	0	0	2757	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	1	19	57.61	0	0	2835	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	1	20	26.43	0	0	1023	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	21	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	22	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	23	26.43	0	0	1174	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	1	24	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	1	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	2	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	3	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	4	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	5	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	6	75.58	0	0	3099	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	2	7	112.53	0	0	2888	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	2	8	154.86	0	0	2765	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	2	9	185.40	0	0	2051	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	10	185.40	544	45	1302	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	11	185.40	551	46	1146	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	12	185.40	0	0	1693	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	13	185.40	0	0	1653	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	14	185.40	26	2	1510	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	15	185.40	0	0	1775	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	16	185.40	0	0	1915	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	2	17	134.60	0	0	2005	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60

11	2	18	78.66	0	0	1989	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	2	19	57.61	0	0	2209	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	2	20	26.43	0	0	981	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	21	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	22	26.43	0	0	1022	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	23	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	2	24	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	1	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	2	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	3	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	4	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	5	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	6	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	7	21.05	0	0	1096	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	3	8	21.05	0	0	1096	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	3	9	23.04	0	0	1056	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	3	10	31.21	0	0	986	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	3	11	66.87	0	0	2094	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	3	12	59.07	0	0	2120	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	3	13	59.07	0	0	2268	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	3	14	66.87	0	0	2619	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	3	15	31.21	0	0	848	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	3	16	23.04	0	0	744	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	3	17	21.05	0	0	1172	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	3	18	21.05	0	0	1323	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	3	19	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	20	26.43	0	0	1484	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	21	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	22	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	23	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	3	24	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	1	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	2	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	3	26.43	0	0	1670	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	4	26.43	0	0	1670	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	5	26.43	0	0	1756	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	6	26.43	0	0	1756	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	7	21.05	0	0	1756	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	4	8	21.05	0	0	1593	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	4	9	23.04	0	0	788	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	4	10	31.21	0	0	436	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	4	11	66.87	0	0	2527	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	4	12	59.07	0	0	2439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	4	13	59.07	0	0	2465	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	4	14	66.87	0	0	2625	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	4	15	31.21	0	0	396	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	4	16	23.04	0	0	876	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	4	17	21.05	0	0	1219	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	4	18	21.05	0	0	1289	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	4	19	26.43	0	0	1408	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	20	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	21	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	22	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	23	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	4	24	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	1	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	2	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	3	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	4	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	5	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	6	75.58	0	0	3427	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	5	7	112.53	0	0	3296	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	5	8	154.86	0	0	2983	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	5	9	185.40	0	0	2477	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	10	185.40	0	0	2246	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	11	185.40	508	42	911	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	12	185.40	33	3	1257	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	13	185.40	0	0	1343	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	14	185.40	107	9	1228	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	15	185.40	0	0	1477	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	16	185.40	276	23	1121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	5	17	134.60	0	0	1751	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	5	18	78.66	0	0	2153	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	5	19	57.61	0	0	2270	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	5	20	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	21	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	22	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	23	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	5	24	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	1	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	2	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	3	26.43	0	0	1210	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	4	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	5	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	6	75.58	0	0	1684	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	6	7	112.53	0	0	1489	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	6	8	154.86	0	0	1346	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	6	9	185.40	0	0	1201	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	10	185.40	92	8	961	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	11	185.40	53	4	956	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	12	185.40	31	3	1032	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	13	185.40	20	2	987	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	14	185.40	46	4	963	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	15	185.40	41	3	968	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	16	185.40	26	2	967	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	6	17	134.60	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	6	18	78.66	0	0	1670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	6	19	57.61	0	0	1806	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	6	20	26.43	0	0	834	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	21	26.43	0	0	980	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	22	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	23	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	6	24	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	1	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	2	26.43	0	0	1210	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	3	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	4	26.43	0	0	1244	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	5	26.43	0	0	1172	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	6	75.58	0	0	2621	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	7	7	112.53	0	0	2574	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	7	8	154.86	0	0	1988	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	7	9	185.40	43	4	1358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	10	185.40	463	39	904	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	11	185.40	535	45	737	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	12	185.40	842	70	256	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	13	185.40	543	45	406	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	14	185.40	285	24	663	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	15	185.40	103	9	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	16	185.40	0	0	1137	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	7	17	134.60	0	0	1254	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	7	18	78.66	0	0	1345	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	7	19	57.61	0	0	1425	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	7	20	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	21	26.43	0	0	800	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	22	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	23	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	7	24	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	1	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	2	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	3	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	4	26.43	0	0	904	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	5	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	6	26.43	0	0	945	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	7	21.05	0	0	979	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	8	8	21.05	0	0	834	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	8	9	23.04	0	0	753	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	8	10	31.21	0	0	693	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	8	11	66.87	0	0	1190	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	8	12	59.07	0	0	857	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	8	13	59.07	0	0	541	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	8	14	66.87	85	7	305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	8	15	31.21	0	0	574	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	8	16	23.04	0	0	550	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	8	17	21.05	0	0	804	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	8	18	21.05	0	0	800	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	8	19	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	20	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	21	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	22	26.43	0	0	759	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	23	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	8	24	26.43	0	0	726	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	1	26.43	0	0	685	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	2	26.43	0	0	644	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	3	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	4	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	5	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	6	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	7	21.05	0	0	501	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	9	8	21.05	0	0	501	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	9	9	23.04	0	0	500	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	9	10	31.21	0	0	428	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	9	11	67.14	3	0	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	32.14
11	9	12	59.07	0	0	1081	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	9	13	59.07	0	0	1339	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	9	14	66.87	0	0	1502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	9	15	31.21	0	0	731	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	9	16	23.04	0	0	562	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00

11	9	17	21.05	0	0	632	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	9	18	21.05	0	0	981	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	9	19	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	20	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	21	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	22	26.43	0	0	1098	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	23	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	9	24	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	1	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	2	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	3	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	4	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	5	26.43	0	0	1246	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	6	26.43	0	0	1406	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	7	21.05	0	0	1364	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	10	8	21.05	0	0	1212	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	10	9	23.04	0	0	177	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	10	10	31.21	0	0	160	31.21	327.63	180.20	180.20	1.80	-3.28	1.60	-1.67	31.21	0.00
11	10	11	66.87	0	0	1999	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	10	12	59.07	0	0	2345	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	10	13	59.07	0	0	2505	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	10	14	66.87	0	0	1771	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	10	15	31.21	0	0	506	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	10	16	23.04	0	0	325	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	10	17	21.05	0	0	762	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	10	18	21.05	0	0	1140	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	10	19	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	20	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	21	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	22	26.43	0	0	1212	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	23	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	10	24	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	1	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	2	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	3	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	4	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	5	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	6	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	7	21.05	0	0	1518	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	11	8	21.05	0	0	1322	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	11	9	23.04	0	0	357	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	11	10	31.21	0	0	12	31.21	327.63	180.20	180.20	1.80	-3.28	0.12	-3.15	31.21	0.00
11	11	11	66.87	0	0	1450	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	11	12	59.07	0	0	1591	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	11	13	59.07	0	0	1568	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	11	14	66.87	0	0	1618	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	11	15	31.21	0	0	371	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	11	16	23.04	0	0	603	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	11	17	21.05	0	0	821	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	11	18	21.05	0	0	873	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	11	19	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	20	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	21	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	22	26.43	0	0	836	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	23	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	11	24	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	1	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	2	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	3	26.43	0	0	947	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	4	26.43	0	0	1097	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	5	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	6	26.43	0	0	1173	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	7	21.05	0	0	1287	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	12	8	21.05	0	0	1064	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	12	9	23.04	0	0	236	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	12	10	40.60	231	19	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	5.60
11	12	11	66.87	252	21	808	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	12	12	59.07	173	14	825	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	12	13	59.07	0	0	1147	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	12	14	66.87	0	0	1366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	12	15	31.21	0	0	164	31.21	327.63	180.20	180.20	1.80	-3.28	1.64	-1.63	31.21	0.00
11	12	16	23.04	0	0	594	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	12	17	21.05	0	0	838	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	12	18	21.05	0	0	1024	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	12	19	26.43	0	0	1175	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	20	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	21	26.43	0	0	1099	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	22	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	23	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	12	24	26.43	0	0	1289	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	1	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	2	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	3	26.43	0	0	1484	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	4	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	5	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	6	73.95	0	0	2971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.95
11	13	7	110.65	0	0	2928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
11	13	8	151.84	0	0	2405	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.84
11	13	9	180.20	121	10	1457	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.20
11	13	10	179.43	481	40	978	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	13	11	179.43	557	46	671	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	13	12	179.43	830	69	50	35.00	367.45	202.10	202.10	2.02	-3.67	0.50	-3.17	35.00	144.43
11	13	13	185.40	646	54	600	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	13	14	185.40	594	50	612	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	13	15	185.40	487	41	803	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	13	16	185.40	237	20	1033	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	13	17	134.60	0	0	1592	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	13	18	78.66	0	0	1959	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	13	19	57.61	0	0	2081	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	13	20	26.43	0	0	906	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	21	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	22	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	23	26.43	0	0	1063	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	13	24	26.43	0	0	1096	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	1	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	2	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	3	26.43	0	0	1062	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	4	26.43	0	0	1021	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	5	26.43	0	0	1138	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	6	75.58	0	0	2389	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	14	7	112.53	0	0	1492	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	14	8	154.86	0	0	985	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
11	14	9	185.40	231	19	343	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	14	10	189.79	406	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	154.79
11	14	11	204.05	586	49	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	169.05
11	14	12	292.08	1173	98	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	257.08
11	14	13	319.15	1320	110	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	284.15
11	14	14	308.39	1253	104	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	273.39
11	14	15	303.75	1138	95	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	268.75
11	14	16	271.24	978	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	236.24
11	14	17	134.60	155	13	166	35.00	367.45	202.10	202.10	2.02	-3.67	1.66	-2.02	35.00	99.60
11	14	18	78.66	0	0	407	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	14	19	57.61	0	0	638	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	14	20	26.43	0	0	539	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	21	26.43	0	0	612	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	22	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	23	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	14	24	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	1	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	2	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	3	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	4	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	5	26.43	0	0	571	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	6	75.58	0	0	665	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
11	15	7	112.53	0	0	377	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
11	15	8	154.86	229	19	3	35.00	367.45	202.10	202.10	2.02	-3.67	0.03	-3.64	35.00	119.86
11	15	9	221.81	517	43	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	186.81
11	15	10	233.98	579	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	198.98
11	15	11	243.59	611	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	208.59
11	15	12	252.87	647	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	217.87
11	15	13	273.97	726	60	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	238.97
11	15	14	307.24	963	80	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	272.24
11	15	15	314.78	1029	86	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	279.78
11	15	16	248.70	655	55	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	213.70
11	15	17	151.02	310	26	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	116.02
11	15	18	78.66	0	0	148	35.00	367.45	202.10	202.10	2.02	-3.67	1.48	-2.19	35.00	43.66
11	15	19	57.61	0	0	380	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	15	20	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	21	26.43	0	0	538	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	22	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	23	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	15	24	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	1	26.43	0	0	502	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	2	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	3	26.43	0	0	501	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	4	26.43	0	0	469	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	5	26.43	0	0	428	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	6	88.92	110	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	53.92
11	16	7	157.05	319	27	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	122.05
11	16	8	244.32	612	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	209.32
11	16	9	291.92	733	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	256.92
11	16	10	328.65	869	72	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	293.65
11	16	11	344.93	941	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	309.93
11	16	12	185.40	0	0	1681	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	16	13	185.40	0	0	1685	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	16	14	185.40	0	0	2036	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	16	15	185.40	0	0	2030	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40

11	16	16	185.40	0	0	2097	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	16	17	134.60	0	0	2729	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	16	18	78.66	0	0	3042	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	16	19	57.61	0	0	2804	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	16	20	26.43	0	0	1213	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	21	26.43	0	0	1290	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	22	26.43	0	0	1290	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	23	26.43	0	0	1324	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	16	24	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	1	26.43	0	0	1443	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	2	26.43	0	0	1443	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	3	26.43	0	0	1520	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	4	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	5	26.43	0	0	1636	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	6	26.43	0	0	1594	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	7	21.05	0	0	1594	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	17	8	21.05	0	0	1559	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	17	9	23.04	0	0	596	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	17	10	31.21	0	0	252	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	17	11	66.87	0	0	2367	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	17	12	59.07	0	0	2553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	17	13	59.07	0	0	2517	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	17	14	66.87	0	0	2668	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	17	15	31.21	0	0	242	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	17	16	23.04	0	0	465	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	17	17	21.05	0	0	938	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	17	18	21.05	0	0	1408	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	17	19	26.43	0	0	1443	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	20	26.43	0	0	1443	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	21	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	22	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	23	26.43	0	0	1670	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	17	24	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	1	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	2	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	3	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	4	26.43	0	0	1592	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	5	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	6	26.43	0	0	1635	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	7	21.05	0	0	1635	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	18	8	21.05	0	0	1484	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	18	9	23.04	0	0	1315	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	18	10	31.21	0	0	1255	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	18	11	66.87	0	0	3121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	18	12	59.07	0	0	2841	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	18	13	59.07	0	0	2391	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	24.07
11	18	14	66.87	0	0	2732	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	31.87
11	18	15	31.21	0	0	815	31.21	327.63	180.20	180.20	1.80	-3.28	1.80	-1.47	31.21	0.00
11	18	16	23.04	0	0	952	23.04	241.90	133.04	133.04	1.33	-2.42	1.33	-1.09	23.04	0.00
11	18	17	21.05	0	0	1277	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	18	18	21.05	0	0	1484	21.05	220.97	121.54	121.54	1.22	-2.21	1.22	-0.99	21.05	0.00
11	18	19	26.43	0	0	1484	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	20	26.43	0	0	1558	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	21	26.43	0	0	1593	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	22	26.43	0	0	1671	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	23	26.43	0	0	1757	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	18	24	26.43	0	0	1792	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	1	26.43	0	0	1792	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	2	26.43	0	0	1910	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	3	26.43	0	0	1946	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	4	26.43	0	0	1870	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	5	26.43	0	0	1871	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	19	6	75.57	0	0	3968	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.57
11	19	7	112.14	0	0	3844	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.14
11	19	8	154.36	0	0	3897	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.36
11	19	9	183.56	0	0	3360	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.56
11	19	10	181.86	0	0	2570	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.86
11	19	11	181.27	54	4	2280	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.27
11	19	12	180.74	218	18	1977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.74
11	19	13	181.15	39	3	2033	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.15
11	19	14	181.65	0	0	2209	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.65
11	19	15	181.64	0	0	2203	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.64
11	19	16	182.87	0	0	2728	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.87
11	19	17	132.67	0	0	2959	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.67
11	19	18	77.05	0	0	3217	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.05
11	19	19	56.15	0	0	3271	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.15
11	19	20	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
11	19	21	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
11	19	22	27.98	0	0	670	27.98	293.73	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
11	19	23	49.75	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	19	24	49.75	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	20	1	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
11	20	2	49.58	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
11	20	3	49.48	0	0	512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
11	20	4	49.48	0	0	512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
11	20	5	49.58	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
11	20	6	72.83	0	0	2372	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	37.83
11	20	7	109.50	0	0	2243	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.50
11	20	8	151.32	0	0	2020	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.32
11	20	9	181.21	0	0	1723	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.21
11	20	10	179.90	207	17	1067	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.90
11	20	11	179.43	611	51	507	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	20	12	179.43	234	20	802	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	20	13	185.40	421	35	947	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	20	14	185.40	487	41	802	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	20	15	185.40	182	15	1151	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	20	16	185.40	0	0	1414	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
11	20	17	134.60	0	0	1648	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
11	20	18	78.66	0	0	1979	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
11	20	19	57.61	0	0	2167	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
11	20	20	26.43	0	0	873	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	20	21	26.43	0	0	802	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	20	22	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	20	23	26.43	0	0	1140	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	20	24	26.43	0	0	1247	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	1	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	2	26.43	0	0	1323	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	3	26.43	0	0	1365	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	4	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	5	26.43	0	0	1519	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
11	21	6	73.95	0	0	3067	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.95
11	21	7	110.65	0	0	2891	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.65
11	21	8	153.08	0	0	3107	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.08
11	21	9	182.84	0	0	2794	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.84
11	21	10	182.21	0	0	2499	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.21
11	21	11	182.12	0	0	2499	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.12
11	21	12	181.69	0	0	2844	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.69
11	21	13	182.38	0	0	3028	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.38
11	21	14	181.95	0	0	2819	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.95
11	21	15	181.98	0	0	2835	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.98
11	21	16	182.68	0	0	3052	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.68
11	21	17	133.12	0	0	3696	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.12
11	21	18	77.70	0	0	3812	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.70
11	21	19	57.14	0	0	3974	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.14
11	21	20	28.85	0	0	1048	28.85	302.90	166.60	166.60	1.67	-3.03	1.67	-1.36	28.85	0.00
11	21	21	28.95	0	0	1089	28.95	303.92	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
11	21	22	29.12	0	0	1162	29.12	305.69	168.13	168.13	1.68	-3.06	1.68	-1.38	29.12	0.00
11	21	23	29.03	0	0	1124	29.03	304.75	167.61	167.61	1.68	-3.05	1.68	-1.37	29.03	0.00
11	21	24	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
11	22	1	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	22	2	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	22	3	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
11	22	4	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
11	22	5	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
11	22	6	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	22	7	45.69	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
11	22	8	45.69	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
11	22	9	46.85	0	0	838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.85
11	22	10	53.74	0	0	286	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.74
11	22	11	64.56	0	0	2975	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.56
11	22	12	56.88	0	0	2978	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.88
11	22	13	57.63	0	0	3368	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.63
11	22	14	65.87	0	0	3564	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.87
11	22	15	55.06	0	0	855	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.06
11	22	16	47.16	0	0	971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.16
11	22	17	45.07	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.07
11	22	18	45.07	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.07
11	22	19	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
11	22	20	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
11	22	21	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
11	22	22	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
11	22	23	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
11	22	24	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
11	23	1	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	2	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	3	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	4	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	5	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	6	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	23	7	45.61	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
11	23	8	45.69	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
11	23	9	47.67	0	0	1190	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.67
11	23	10	54.57	0	0	645	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.57
11	23	11	65.82	0	0	3531	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.82
11	23	12	58.43	0	0	3705	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	23.43
11	23	13	57.44	0	0	3276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.44
11	23	14	65.03	0	0	3210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.03

11	23	15	31.86	0	0	279	31.86	334.43	183.94	183.94	1.84	-3.34	1.84	-1.50	31.86	0.00
11	23	16	47.22	0	0	996	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.22
11	23	17	45.23	0	0	999	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.23
11	23	18	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
11	23	19	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
11	23	20	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
11	23	21	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
11	23	22	51.63	0	0	1439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
11	23	23	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
11	23	24	51.63	0	0	1439	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
11	24	1	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
11	24	2	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
11	24	3	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
11	24	4	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
11	24	5	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
11	24	6	51.71	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.71
11	24	7	46.15	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.15
11	24	8	46.15	0	0	1396	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.15
11	24	9	47.77	0	0	1233	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.77
11	24	10	53.10	109	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.10
11	24	11	63.34	0	0	2511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.34
11	24	12	55.31	0	0	2384	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.31
11	24	13	55.43	0	0	2415	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.43
11	24	14	63.37	0	0	2477	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.37
11	24	15	31.21	124	10	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
11	24	16	23.32	0	0	122	23.32	244.85	134.67	134.67	1.35	-2.45	1.22	-1.23	23.32	0.00
11	24	17	44.84	0	0	828	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.84
11	24	18	45.34	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.34
11	24	19	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
11	24	20	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
11	24	21	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
11	24	22	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	24	23	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
11	24	24	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	1	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	2	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	3	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	5	50.82	0	0	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	25	6	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
11	25	7	45.34	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.34
11	25	8	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
11	25	9	46.79	0	0	810	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.79
11	25	10	53.56	0	0	206	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.56
11	25	11	64.77	0	0	2857	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.77
11	25	12	55.62	0	0	2238	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.62
11	25	13	55.76	0	0	2294	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.76
11	25	14	63.13	0	0	2105	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.13
11	25	15	31.21	87	7	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
11	25	16	46.18	0	0	548	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.18
11	25	17	44.38	0	0	633	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.38
11	25	18	44.47	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.47
11	25	19	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
11	25	20	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
11	25	21	49.93	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
11	25	22	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
11	25	23	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
11	25	24	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
11	26	1	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	26	2	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	26	3	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	26	4	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	26	5	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	26	6	73.14	0	0	2336	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.14
11	26	7	109.82	0	0	2236	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.82
11	26	8	151.99	0	0	2183	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	116.99
11	26	9	182.23	0	0	1980	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.23
11	26	10	182.07	0	0	1920	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.07
11	26	11	181.91	0	0	1791	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.91
11	26	12	180.92	32	3	1309	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.92
11	26	13	180.01	291	24	793	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.01
11	26	14	180.04	191	16	972	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.04
11	26	15	179.43	463	39	655	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	26	16	179.43	542	45	682	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	26	17	130.32	0	0	1616	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.32
11	26	18	75.76	0	0	2223	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.76
11	26	19	55.68	0	0	2664	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.68
11	26	20	27.71	0	0	553	27.71	290.88	159.99	159.99	1.60	-2.91	1.60	-1.31	27.71	0.00
11	26	21	27.98	0	0	669	27.98	293.71	161.54	161.54	1.62	-2.94	1.62	-1.32	27.98	0.00
11	26	22	27.98	0	0	669	27.98	293.71	161.54	161.54	1.62	-2.94	1.62	-1.32	27.98	0.00
11	26	23	27.61	0	0	512	27.61	289.89	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
11	26	24	27.61	0	0	512	27.61	289.89	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
11	27	1	27.54	0	0	479	27.54	289.08	159.00	159.00	1.59	-2.89	1.59	-1.30	27.54	0.00
11	27	2	27.61	0	0	512	27.61	289.90	159.44	159.44	1.59	-2.90	1.59	-1.30	27.61	0.00
11	27	3	27.79	0	0	587	27.79	291.71	160.44	160.44	1.60	-2.92	1.60	-1.31	27.79	0.00
11	27	4	27.71	0	0	553	27.71	290.90	159.99	159.99	1.60	-2.91	1.60	-1.31	27.71	0.00
11	27	5	49.75	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
11	27	6	73.49	0	0	2862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.49
11	27	7	110.32	0	0	2845	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.32
11	27	8	152.20	0	0	2750	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.20
11	27	9	181.88	0	0	2356	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.88
11	27	10	180.50	68	6	1736	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.50
11	27	11	179.90	246	20	1472	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.90
11	27	12	181.04	0	0	2008	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.04
11	27	13	180.64	0	0	1865	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.64
11	27	14	180.25	46	4	1663	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.25
11	27	15	180.81	0	0	1931	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.81
11	27	16	181.20	0	0	2293	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
11	27	17	131.04	0	0	2194	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.04
11	27	18	75.46	0	0	2267	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.46
11	27	19	54.88	0	0	2278	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.88
11	27	20	27.53	0	0	478	27.53	289.07	158.99	158.99	1.59	-2.89	1.59	-1.30	27.53	0.00
11	27	21	27.71	0	0	553	27.71	290.88	159.98	159.98	1.60	-2.91	1.60	-1.31	27.71	0.00
11	27	22	27.71	0	0	552	27.71	290.87	159.98	159.98	1.60	-2.91	1.60	-1.31	27.71	0.00
11	27	23	27.61	0	0	511	27.61	289.88	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
11	27	24	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
11	28	1	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
11	28	2	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
11	28	3	27.45	0	0	440	27.45	288.15	158.48	158.48	1.58	-2.88	1.58	-1.30	27.45	0.00
11	28	4	27.37	0	0	407	27.37	287.35	158.04	158.04	1.58	-2.87	1.58	-1.29	27.37	0.00
11	28	5	27.10	0	0	292	27.10	284.56	156.51	156.51	1.57	-2.85	1.57	-1.28	27.10	0.00
11	28	6	71.45	0	0	1022	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	36.45
11	28	7	107.93	0	0	754	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	72.93
11	28	8	149.78	61	5	467	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	114.78
11	28	9	179.93	281	23	203	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.93
11	28	10	179.76	358	30	48	35.00	367.45	202.10	202.10	2.02	-3.67	0.48	-3.20	35.00	144.76
11	28	11	179.59	395	33	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.59
11	28	12	179.75	338	28	118	35.00	367.45	202.10	202.10	2.02	-3.67	1.18	-2.49	35.00	144.75
11	28	13	179.59	371	31	49	35.00	367.45	202.10	202.10	2.02	-3.67	0.49	-3.19	35.00	144.59
11	28	14	179.43	548	46	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
11	28	15	179.43	634	53	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
11	28	16	179.43	376	31	614	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
11	28	17	129.36	0	0	1303	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.36
11	28	18	74.34	0	0	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.34
11	28	19	53.80	0	0	1869	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.80
11	28	20	27.11	0	0	293	27.11	284.58	156.52	156.52	1.57	-2.85	1.57	-1.28	27.11	0.00
11	28	21	27.28	0	0	367	27.28	286.38	157.51	157.51	1.58	-2.86	1.58	-1.29	27.28	0.00
11	28	22	27.37	0	0	408	27.37	287.37	158.05	158.05	1.58	-2.87	1.58	-1.29	27.37	0.00
11	28	23	27.45	0	0	442	27.45	288.18	158.50	158.50	1.59	-2.88	1.59	-1.30	27.45	0.00
11	28	24	27.61	0	0	512	27.61	289.90	159.45	159.45	1.59	-2.90	1.59	-1.30	27.61	0.00
11	29	1	27.71	0	0	554	27.71	290.91	160.00	160.00	1.60	-2.91	1.60	-1.31	27.71	0.00
11	29	2	27.88	0	0	629	27.88	292.73	161.00	161.00	1.61	-2.93	1.61	-1.32	27.88	0.00
11	29	3	27.98	0	0	670	27.98	293.73	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
11	29	4	28.23	0	0	779	28.23	296.39	163.01	163.01	1.63	-2.96	1.63	-1.33	28.23	0.00
11	29	5	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
11	29	6	73.96	0	0	3199	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.96
11	29	7	110.81	0	0	3146	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.81
11	29	8	153.08	0	0	3324	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.08
11	29	9	183.54	0	0	3408	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.54
11	29	10	182.92	0	0	3143	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.92
11	29	11	182.47	0	0	3043	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.47
11	29	12	182.61	0	0	3127	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.61
11	29	13	181.42	0	0	2655	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.42
11	29	14	181.74	0	0	2772	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.74
11	29	15	182.73	0	0	3210	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.73
11	29	16	183.58	0	0	3623	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.58
11	29	17	133.30	0	0	3698	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.30
11	29	18	78.22	0	0	4007	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.22
11	29	19	57.46	0	0	4051	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.46
11	29	20	29.03	0	0	1124	29.03	304.76	167.62	167.62	1.68	-3.05	1.68	-1.37	29.03	0.00
11	29	21	29.03	0	0	1124	29.03	304.76	167.62	167.62	1.68	-3.05	1.68	-1.37	29.03	0.00
11	29	22	29.20	0	0	1197	29.20	306.54	168.60	168.60	1.69	-3.07	1.69	-1.38	29.20	0.00
11	29	23	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
11	29	24	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
11	30	1	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
11	30	2	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
11	30	3	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
11	30	4	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
11	30	5	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
11	30	6	75.57	0	0	3988	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.57
11	30	7	111.81	0	0	3693	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.81
11	30	8	154.00	0	0	3734	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.00
11	30	9	184.08	0	0	3599	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.08
11	30	10	181.30	32	3	2470	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.30
11	30	11	180.76	184	15	2231	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.76
11	30	12	180.48	222	18	2103	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.48
11	30	13	180.50	183	15	2055	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.50

11	30	14	180.93	0	0	2294	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.93
11	30	15	180.90	0	0	2252	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.90
11	30	16	182.41	0	0	2919	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.41
11	30	17	132.32	0	0	3084	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.32
11	30	18	77.06	0	0	3290	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.06
11	30	19	56.15	0	0	3316	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.15
11	30	20	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
11	30	21	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
11	30	22	28.37	0	0	840	28.37	297.87	163.83	163.83	1.64	-2.98	1.64	-1.34	28.37	0.00
11	30	23	28.36	0	0	833	28.36	297.69	163.73	163.73	1.64	-2.98	1.64	-1.34	28.36	0.00
11	30	24	28.32	0	0	818	28.32	297.32	163.52	163.52	1.64	-2.97	1.64	-1.34	28.32	0.00
12	1	1	28.31	0	0	814	28.31	297.22	163.47	163.47	1.63	-2.97	1.63	-1.34	28.31	0.00
12	1	2	50.15	0	0	799	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.15
12	1	3	50.13	0	0	791	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.13
12	1	4	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	1	5	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	1	6	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	1	7	44.89	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
12	1	8	44.89	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
12	1	9	46.62	0	0	737	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.62
12	1	10	31.21	132	11	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	1	11	62.69	0	0	2037	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.69
12	1	12	55.00	0	0	2075	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.00
12	1	13	54.79	0	0	2036	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.79
12	1	14	62.67	0	0	2074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.67
12	1	15	31.21	92	8	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	1	16	23.37	0	0	141	23.37	245.37	134.95	134.95	1.35	-2.45	1.35	-1.10	23.37	0.00
12	1	17	22.33	0	0	552	22.33	234.39	128.92	128.92	1.29	-2.34	1.29	-1.05	22.33	0.00
12	1	18	44.37	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.37
12	1	19	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	1	20	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	1	21	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	1	22	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	1	23	50.27	0	0	851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	1	24	50.45	0	0	927	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	2	1	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	2	2	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	2	3	50.27	0	0	851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	2	4	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	2	5	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	2	6	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	2	7	44.72	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.72
12	2	8	44.72	0	0	778	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.72
12	2	9	46.44	0	0	660	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.44
12	2	10	53.90	0	0	351	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.90
12	2	11	62.75	0	0	1715	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.75
12	2	12	55.84	0	0	2092	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.84
12	2	13	54.93	0	0	1692	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.93
12	2	14	62.63	0	0	1685	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.63
12	2	15	31.61	0	0	169	31.61	331.84	182.51	182.51	1.83	-3.32	1.69	-1.63	31.61	0.00
12	2	16	23.42	0	0	160	23.42	245.85	135.22	135.22	1.35	-2.46	1.35	-1.11	23.42	0.00
12	2	17	43.87	0	0	409	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	8.87
12	2	18	43.94	0	0	442	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	8.94
12	2	19	49.58	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	2	20	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
12	2	21	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	2	22	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	2	23	49.48	0	0	512	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
12	2	24	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
12	3	1	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
12	3	2	50.03	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.03
12	3	3	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	3	4	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	3	5	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	3	6	74.12	0	0	3357	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.12
12	3	7	110.82	0	0	3291	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.82
12	3	8	153.08	0	0	3324	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.08
12	3	9	183.35	0	0	3181	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.35
12	3	10	182.85	0	0	2885	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.85
12	3	11	182.64	0	0	2751	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.64
12	3	12	182.30	0	0	2520	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.30
12	3	13	181.56	0	0	2027	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.56
12	3	14	181.36	0	0	1803	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.36
12	3	15	181.21	0	0	1695	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.21
12	3	16	181.20	0	0	1631	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.20
12	3	17	130.84	0	0	1717	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.84
12	3	18	75.28	0	0	1759	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.28
12	3	19	54.27	0	0	1577	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.27
12	3	20	27.10	0	0	292	27.10	284.56	156.51	156.51	1.57	-2.85	1.57	-1.28	27.10	0.00
12	3	21	27.01	0	0	252	27.01	283.58	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
12	3	22	26.93	0	0	219	26.93	282.77	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	3	23	26.93	0	0	219	26.93	282.77	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	3	24	26.93	0	0	219	26.93	282.78	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	4	1	26.93	0	0	219	26.93	282.77	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	4	2	26.93	0	0	219	26.93	282.77	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	4	3	26.93	0	0	219	26.93	282.77	155.52	155.52	1.56	-2.83	1.56	-1.27	26.93	0.00
12	4	4	27.01	0	0	252	27.01	283.58	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
12	4	5	26.93	0	0	219	26.93	282.77	155.53	155.53	1.56	-2.83	1.56	-1.27	26.93	0.00
12	4	6	71.61	0	0	1094	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	36.61
12	4	7	107.93	0	0	698	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	72.93
12	4	8	149.78	86	7	390	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	114.78
12	4	9	180.09	270	23	200	35.00	367.45	202.10	202.10	2.02	-3.67	2.00	-1.67	35.00	145.09
12	4	10	179.75	409	34	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.75
12	4	11	179.60	471	39	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.60
12	4	12	179.43	737	61	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.43
12	4	13	179.85	937	78	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	144.85
12	4	14	180.36	977	81	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	145.36
12	4	15	235.30	617	51	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	200.30
12	4	16	221.13	581	48	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	186.13
12	4	17	135.70	221	18	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	100.70
12	4	18	78.66	0	0	941	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
12	4	19	57.61	0	0	1707	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
12	4	20	26.43	0	0	729	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	4	21	26.43	0	0	837	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	4	22	26.43	0	0	1024	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	4	23	26.43	0	0	1139	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	4	24	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	1	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	2	26.43	0	0	1287	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	3	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	4	26.43	0	0	1245	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	5	26.43	0	0	1211	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	6	75.58	0	0	2756	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
12	5	7	112.53	0	0	2670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.53
12	5	8	154.86	0	0	2664	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.86
12	5	9	185.40	0	0	2744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	10	185.40	0	0	2862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	11	185.40	0	0	3075	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	12	185.40	0	0	3128	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	13	185.40	0	0	3058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	14	185.40	0	0	2972	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	15	185.40	0	0	2995	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	16	185.40	0	0	3046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	5	17	134.60	0	0	3184	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
12	5	18	78.66	0	0	3286	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
12	5	19	57.61	0	0	3532	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
12	5	20	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	21	26.43	0	0	1484	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	22	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	23	26.43	0	0	1407	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	5	24	26.43	0	0	1442	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	1	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	2	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	3	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	4	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	5	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	6	74.11	0	0	3011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.11
12	6	7	110.81	0	0	2892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.81
12	6	8	152.90	0	0	2833	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.90
12	6	9	182.40	0	0	2207	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.40
12	6	10	179.92	494	41	1044	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.92
12	6	11	179.43	862	72	349	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	6	12	179.43	507	42	576	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	6	13	185.40	590	49	1031	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	6	14	185.40	464	39	1142	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	6	15	185.40	361	30	1404	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	6	16	185.40	12	1	1901	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.40
12	6	17	134.60	0	0	2814	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	99.60
12	6	18	78.66	0	0	3005	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.66
12	6	19	57.61	0	0	3074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
12	6	20	26.43	0	0	1288	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	21	26.43	0	0	1406	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	22	26.43	0	0	1406	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	23	26.43	0	0	1322	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	6	24	26.43	0	0	1364	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	1	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	2	26.43	0	0	1441	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	3	26.43	0	0	1518	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	4	26.43	0	0	1483	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	5	26.43	0	0	1557	26.43	277.46	152.60	152.60	1.53	-2.77	1.53	-1.25	26.43	0.00
12	7	6	75.58	0	0	3642	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.58
12	7	7	110.81	0	0	2892	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.81
12	7	8	152.54	0	0	2560	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.54
12	7	9	182.04	0	0	2089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.04
12	7	10	180.84	0	0	1629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.84
12	7	11	180.12	53	4	1349	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.12
12	7	12	179.69	173	14	1118	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.69

12	7	13	179.93	0	0	1218	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.93
12	7	14	179.59	50	4	1106	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.59
12	7	15	179.73	36	3	1130	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.73
12	7	16	180.12	0	0	1203	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.12
12	7	17	129.86	0	0	1450	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	94.86
12	7	18	74.34	0	0	1522	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.34
12	7	19	53.80	0	0	1727	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.80
12	7	20	26.94	0	0	220	26.94	282.79	155.53	155.53	1.56	-2.83	1.56	-1.27	26.94	0.00
12	7	21	27.01	0	0	252	27.01	283.59	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
12	7	22	27.01	0	0	252	27.01	283.59	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
12	7	23	27.01	0	0	252	27.01	283.59	155.97	155.97	1.56	-2.84	1.56	-1.28	27.01	0.00
12	7	24	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
12	8	1	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
12	8	2	27.11	0	0	293	27.11	284.57	156.51	156.51	1.57	-2.85	1.57	-1.28	27.11	0.00
12	8	3	27.11	0	0	293	27.11	284.56	156.51	156.51	1.57	-2.85	1.57	-1.28	27.11	0.00
12	8	4	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
12	8	5	27.20	0	0	333	27.20	285.55	157.05	157.05	1.57	-2.86	1.57	-1.28	27.20	0.00
12	8	6	27.11	0	0	293	27.11	284.56	156.51	156.51	1.57	-2.85	1.57	-1.28	27.11	0.00
12	8	7	21.72	0	0	292	21.72	228.08	125.44	125.44	1.25	-2.28	1.25	-1.03	21.72	0.00
12	8	8	21.63	0	0	252	21.63	227.10	124.90	124.90	1.25	-2.27	1.25	-1.02	21.63	0.00
12	8	9	23.53	0	0	210	23.53	247.02	135.86	135.86	1.36	-2.47	1.36	-1.11	23.53	0.00
12	8	10	31.54	0	0	142	31.54	331.15	182.13	182.13	1.82	-3.31	1.42	-1.89	31.54	0.00
12	8	11	62.36	0	0	613	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.36
12	8	12	53.10	644	54	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.10
12	8	13	53.56	15	1	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.56
12	8	14	61.14	111	9	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	26.14
12	8	15	31.21	219	18	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	8	16	23.04	186	16	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
12	8	17	21.05	110	9	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
12	8	18	21.05	108	9	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
12	8	19	26.43	179	15	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	8	20	26.43	179	15	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	8	21	26.43	247	21	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	8	22	26.43	75	6	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	8	23	26.43	36	3	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	8	24	26.44	0	0	4	26.44	277.55	152.65	152.65	1.53	-2.78	0.04	-2.74	26.44	0.00
12	9	1	26.43	75	6	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	2	26.43	75	6	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	3	26.43	36	3	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	4	26.43	75	6	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	5	26.43	75	6	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	6	26.43	147	12	0	26.43	277.46	152.60	152.60	1.53	-2.77	0.00	-2.77	26.43	0.00
12	9	7	21.05	108	9	0	21.05	220.97	121.54	121.54	1.22	-2.21	0.00	-2.21	21.05	0.00
12	9	8	21.63	0	0	252	21.63	227.10	124.91	124.91	1.25	-2.27	1.25	-1.02	21.63	0.00
12	9	9	23.70	0	0	283	23.70	248.80	136.84	136.84	1.37	-2.49	1.37	-1.12	23.70	0.00
12	9	10	31.96	0	0	325	31.96	335.58	184.57	184.57	1.85	-3.36	1.85	-1.51	31.96	0.00
12	9	11	63.75	0	0	1771	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.75
12	9	12	56.14	0	0	1906	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.14
12	9	13	56.30	0	0	2015	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.30
12	9	14	64.34	0	0	2217	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.34
12	9	15	32.47	0	0	540	32.47	340.85	187.47	187.47	1.87	-3.41	1.87	-1.53	32.47	0.00
12	9	16	24.47	0	0	614	24.47	256.87	141.28	141.28	1.41	-2.57	1.41	-1.16	24.47	0.00
12	9	17	22.59	0	0	667	22.59	237.19	130.45	130.45	1.30	-2.37	1.30	-1.07	22.59	0.00
12	9	18	44.64	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
12	9	19	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	9	20	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	9	21	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	9	22	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	9	23	50.27	0	0	851	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	9	24	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	10	1	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	10	2	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	10	3	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	10	4	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	10	5	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	10	6	75.41	0	0	4071	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.41
12	10	7	112.47	0	0	4172	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.47
12	10	8	154.71	0	0	4305	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.71
12	10	9	184.87	0	0	4202	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.87
12	10	10	183.06	0	0	3445	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.06
12	10	11	183.08	0	0	3449	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.08
12	10	12	182.39	0	0	3169	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.39
12	10	13	182.39	0	0	3156	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.39
12	10	14	183.50	0	0	3659	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.50
12	10	15	182.76	0	0	3350	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.76
12	10	16	183.46	0	0	3642	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.46
12	10	17	133.85	0	0	3981	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.85
12	10	18	78.72	0	0	4247	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.72
12	10	19	57.92	0	0	4329	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.92
12	10	20	29.20	0	0	1198	29.20	306.56	168.61	168.61	1.69	-3.07	1.69	-1.38	29.20	0.00
12	10	21	29.30	0	0	1241	29.30	307.59	169.18	169.18	1.69	-3.08	1.69	-1.38	29.30	0.00
12	10	22	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	10	23	51.35	0	0	1319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
12	10	24	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
12	11	1	51.35	0	0	1318	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
12	11	2	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
12	11	3	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
12	11	4	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
12	11	5	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
12	11	6	76.90	0	0	4760	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.90
12	11	7	113.52	0	0	4665	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	78.52
12	11	8	155.82	0	0	4789	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	120.82
12	11	9	185.62	0	0	4558	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.62
12	11	10	183.62	0	0	3702	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.62
12	11	11	182.19	0	0	3074	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.19
12	11	12	181.86	0	0	2888	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.86
12	11	13	181.62	0	0	2815	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.62
12	11	14	181.89	0	0	2944	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.89
12	11	15	181.83	0	0	2917	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.83
12	11	16	182.91	0	0	3374	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.91
12	11	17	133.55	0	0	3817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.55
12	11	18	78.55	0	0	4129	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.55
12	11	19	57.46	0	0	4067	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.46
12	11	20	29.03	0	0	1124	29.03	304.76	167.62	167.62	1.68	-3.05	1.68	-1.37	29.03	0.00
12	11	21	28.95	0	0	1089	28.95	303.92	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
12	11	22	29.03	0	0	1124	29.03	304.76	167.62	167.62	1.68	-3.05	1.68	-1.37	29.03	0.00
12	11	23	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	11	24	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	12	1	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	12	2	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	12	3	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	12	4	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	12	5	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	12	6	75.72	0	0	4076	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.72
12	12	7	112.80	0	0	4202	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.80
12	12	8	154.87	0	0	4179	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.87
12	12	9	184.66	0	0	3835	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.66
12	12	10	184.36	0	0	3696	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.36
12	12	11	183.98	0	0	3526	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.98
12	12	12	183.25	0	0	3164	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.25
12	12	13	182.02	0	0	2714	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.02
12	12	14	181.48	0	0	2414	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.48
12	12	15	182.31	0	0	2807	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.31
12	12	16	181.60	0	0	2492	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.60
12	12	17	132.36	0	0	3035	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.36
12	12	18	77.37	0	0	3383	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.37
12	12	19	56.63	0	0	3487	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.63
12	12	20	28.50	0	0	894	28.50	299.16	164.54	164.54	1.65	-2.99	1.65	-1.35	28.50	0.00
12	12	21	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
12	12	22	28.40	0	0	852	28.40	298.14	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
12	12	23	28.85	0	0	1046	28.85	302.87	166.58	166.58	1.67	-3.03	1.67	-1.36	28.85	0.00
12	12	24	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	13	1	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	13	2	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	13	3	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	13	4	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	13	5	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	13	6	75.25	0	0	3705	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.25
12	13	7	111.80	0	0	3565	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.80
12	13	8	153.99	0	0	3584	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.99
12	13	9	183.34	0	0	3009	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.34
12	13	10	180.68	230	19	1872	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.68
12	13	11	179.62	558	46	1407	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.62
12	13	12	179.43	725	60	1070	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	13	13	179.43	705	59	1004	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	13	14	179.43	586	49	1052	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	13	15	179.43	607	51	1058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.43
12	13	16	179.93	149	12	1584	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.93
12	13	17	130.74	0	0	2195	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	95.74
12	13	18	75.91	0	0	2594	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	40.91
12	13	19	55.34	0	0	2777	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.34
12	13	20	27.98	0	0	670	27.98	293.73	161.55	161.55	1.62	-2.94	1.62	-1.32	27.98	0.00
12	13	21	27.61	0	0	513	27.61	289.91	159.45	159.45	1.59	-2.90	1.59	-1.30	27.61	0.00
12	13	22	27.61	0	0	513	27.61	289.91	159.45	159.45	1.59	-2.90	1.59	-1.30	27.61	0.00
12	13	23	27.79	0	0	588	27.79	291.73	160.45	160.45	1.60	-2.92	1.60	-1.31	27.79	0.00
12	13	24	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
12	14	1	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
12	14	2	28.32	0	0	818	28.32	297.32	163.53	163.53	1.64	-2.97	1.64	-1.34	28.32	0.00
12	14	3	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	14	4	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	14	5	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	14	6	74.58	0	0	3583	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.58
12	14	7	111.30	0	0	3545	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.30
12	14	8	153.60	0	0	3677	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.60
12	14	9	183.71	0	0	3557	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.71
12	14	10	183.77	0	0	3636	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.77
12	14	11	183.46	0	0	3523	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.46

12	14	12	182.64	0	0	3203	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.64
12	14	13	181.35	0	0	2659	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.35
12	14	14	182.09	0	0	2978	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.09
12	14	15	182.10	0	0	2990	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.10
12	14	16	183.06	0	0	3406	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.06
12	14	17	133.10	0	0	3593	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.10
12	14	18	77.88	0	0	3797	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.88
12	14	19	57.13	0	0	3890	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.13
12	14	20	28.77	0	0	1013	28.77	302.05	166.13	166.13	1.66	-3.02	1.66	-1.36	28.77	0.00
12	14	21	28.77	0	0	1012	28.77	302.05	166.13	166.13	1.66	-3.02	1.66	-1.36	28.77	0.00
12	14	22	28.85	0	0	1047	28.85	302.89	166.59	166.59	1.67	-3.03	1.67	-1.36	28.85	0.00
12	14	23	28.85	0	0	1047	28.85	302.89	166.59	166.59	1.67	-3.03	1.67	-1.36	28.85	0.00
12	14	24	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	15	1	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	15	2	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	15	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	15	4	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	15	5	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	15	6	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	15	7	45.16	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.16
12	15	8	44.99	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.99
12	15	9	46.86	0	0	843	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.86
12	15	10	54.79	0	0	738	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.79
12	15	11	64.35	0	0	2812	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.35
12	15	12	56.09	0	0	2602	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.09
12	15	13	55.38	0	0	2283	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.38
12	15	14	61.42	0	0	1539	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.42
12	15	15	31.21	654	54	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	15	16	23.04	429	36	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
12	15	17	21.77	0	0	310	21.77	228.53	125.69	125.69	1.26	-2.29	1.26	-1.03	21.77	0.00
12	15	18	22.33	0	0	554	22.33	234.43	128.94	128.94	1.29	-2.34	1.29	-1.05	22.33	0.00
12	15	19	49.75	0	0	629	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.75
12	15	20	49.93	0	0	704	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
12	15	21	49.85	0	0	670	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
12	15	22	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	15	23	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	15	24	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	16	1	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	16	2	50.37	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	16	3	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	16	4	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	16	5	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	16	6	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	16	7	44.99	0	0	893	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.99
12	16	8	44.81	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
12	16	9	46.70	0	0	770	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.70
12	16	10	54.13	0	0	453	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.13
12	16	11	62.88	0	0	2083	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.88
12	16	12	54.25	0	0	1733	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.25
12	16	13	53.96	0	0	1579	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.96
12	16	14	60.91	0	0	1169	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	25.91
12	16	15	31.21	663	55	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	16	16	23.04	472	39	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
12	16	17	21.47	0	0	183	21.47	225.44	123.99	123.99	1.24	-2.25	1.24	-1.01	21.47	0.00
12	16	18	22.16	0	0	479	22.16	232.61	127.94	127.94	1.28	-2.33	1.28	-1.05	22.16	0.00
12	16	19	49.49	0	0	513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.49
12	16	20	49.49	0	0	513	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.49
12	16	21	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	16	22	49.41	0	0	479	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	16	23	49.66	0	0	587	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
12	16	24	49.66	0	0	586	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
12	17	1	49.58	0	0	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	17	2	49.58	0	0	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	17	3	49.58	0	0	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	17	4	49.41	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	17	5	49.58	0	0	553	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	17	6	73.32	0	0	2725	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	38.32
12	17	7	110.18	0	0	2862	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.18
12	17	8	152.39	0	0	2928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	117.39
12	17	9	182.41	0	0	2760	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.41
12	17	10	180.43	112	9	1925	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.43
12	17	11	180.39	154	13	1977	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.39
12	17	12	180.25	146	12	1991	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.25
12	17	13	180.28	179	15	2007	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.28
12	17	14	181.25	0	0	2498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.25
12	17	15	181.99	0	0	2838	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.99
12	17	16	182.26	0	0	2925	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.26
12	17	17	131.97	0	0	3013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.97
12	17	18	76.73	0	0	3261	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.73
12	17	19	56.01	0	0	3365	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.01
12	17	20	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	17	21	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	17	22	28.23	0	0	780	28.23	296.41	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	17	23	28.15	0	0	746	28.15	295.58	162.57	162.57	1.63	-2.96	1.63	-1.33	28.15	0.00
12	17	24	28.23	0	0	780	28.23	296.41	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	18	1	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	18	2	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	18	3	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	18	4	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	18	5	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	18	6	74.12	0	0	3394	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.12
12	18	7	110.97	0	0	3397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	75.97
12	18	8	153.25	0	0	3492	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	118.25
12	18	9	183.19	0	0	3323	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.19
12	18	10	181.04	0	0	2392	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.04
12	18	11	181.40	0	0	2498	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.40
12	18	12	180.24	249	21	1940	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.24
12	18	13	180.15	180	15	1976	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.15
12	18	14	180.69	0	0	2268	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.69
12	18	15	181.33	0	0	2599	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.33
12	18	16	181.35	0	0	2592	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.35
12	18	17	131.76	0	0	2971	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	96.76
12	18	18	76.73	0	0	3293	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.73
12	18	19	56.15	0	0	3462	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.15
12	18	20	28.06	0	0	705	28.06	294.57	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
12	18	21	27.98	0	0	671	27.98	293.74	161.56	161.56	1.62	-2.94	1.62	-1.32	27.98	0.00
12	18	22	27.98	0	0	671	27.98	293.74	161.56	161.56	1.62	-2.94	1.62	-1.32	27.98	0.00
12	18	23	28.15	0	0	746	28.15	295.58	162.57	162.57	1.63	-2.96	1.63	-1.33	28.15	0.00
12	18	24	28.06	0	0	704	28.06	294.56	162.01	162.01	1.62	-2.95	1.62	-1.33	28.06	0.00
12	19	1	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	19	2	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	19	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	19	4	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	19	5	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	19	6	76.05	0	0	4476	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.05
12	19	7	112.81	0	0	4311	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	77.81
12	19	8	154.88	0	0	4548	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.88
12	19	9	185.05	0	0	4458	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	150.05
12	19	10	183.67	0	0	3907	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.67
12	19	11	182.91	0	0	3560	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.91
12	19	12	183.34	0	0	3740	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.34
12	19	13	183.72	0	0	3897	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.72
12	19	14	183.98	0	0	4004	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.98
12	19	15	183.61	0	0	3818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	148.61
12	19	16	184.26	0	0	4092	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.26
12	19	17	133.78	0	0	4033	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.78
12	19	18	78.22	0	0	4109	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	43.22
12	19	19	57.61	0	0	4252	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.61
12	19	20	28.95	0	0	1090	28.95	303.93	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
12	19	21	29.03	0	0	1125	29.03	304.78	167.63	167.63	1.68	-3.05	1.68	-1.37	29.03	0.00
12	19	22	29.12	0	0	1163	29.12	305.71	168.14	168.14	1.68	-3.06	1.68	-1.38	29.12	0.00
12	19	23	28.95	0	0	1090	28.95	303.93	167.16	167.16	1.67	-3.04	1.67	-1.37	28.95	0.00
12	19	24	50.72	0	0	1048	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	20	1	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	20	2	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	20	3	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	20	4	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	20	5	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	20	6	74.94	0	0	3899	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	39.94
12	20	7	111.66	0	0	3823	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	76.66
12	20	8	154.00	0	0	3983	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	119.00
12	20	9	184.49	0	0	4014	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.49
12	20	10	184.36	0	0	3903	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.36
12	20	11	184.36	0	0	3926	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.36
12	20	12	184.16	0	0	3836	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.16
12	20	13	184.16	0	0	3744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.16
12	20	14	184.37	0	0	3788	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.37
12	20	15	184.37	0	0	3635	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.37
12	20	16	184.33	0	0	3569	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	149.33
12	20	17	133.55	0	0	3451	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	98.55
12	20	18	77.69	0	0	3358	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	42.69
12	20	19	56.62	0	0	3291	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.62
12	20	20	28.32	0	0	817	28.32	297.29	163.51	163.51	1.64	-2.97	1.64	-1.34	28.32	0.00
12	20	21	28.23	0	0	779	28.23	296.37	163.00	163.00	1.63	-2.96	1.63	-1.33	28.23	0.00
12	20	22	28.05	0	0	703	28.05	294.53	161.99	161.99	1.62	-2.95	1.62	-1.33	28.05	0.00
12	20	23	27.98	0	0	669	27.98	293.70	161.54	161.54	1.62	-2.94	1.62	-1.32	27.98	0.00
12	20	24	27.71	0	0	552	27.71	290.87	159.98	159.98	1.60	-2.91	1.60	-1.31	27.71	0.00
12	21	1	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
12	21	2	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
12	21	3	27.61	0	0	511	27.61	289.87	159.43	159.43	1.59	-2.90	1.59	-1.30	27.61	0.00
12	21	4	27.53	0	0	478	27.53	289.06	158.98	158.98	1.59	-2.89	1.59	-1.30	27.53	0.00
12	21	5	27.53	0	0	478	27.53	289.06	158.98	158.98	1.59	-2.89	1.59	-1.30	27.53	0.00
12	21	6	72.53	0	0	1762	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	37.53
12	21	7	109.05	0	0	1580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	74.05
12	21	8	150.97	0	0	1365	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	115.97
12	21	9	181.33	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.33
12	21	10	180.13	281	23	1408	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.13

12	21	11	179.68	352	29	1339	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	144.68
12	21	12	181.93	0	0	2397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.93
12	21	13	180.94	0	0	2046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	145.94
12	21	14	181.69	0	0	2440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	146.69
12	21	15	182.30	0	0	2674	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.30
12	21	16	182.54	0	0	2834	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	147.54
12	21	17	132.22	0	0	2991	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	97.22
12	21	18	76.73	0	0	3119	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	41.73
12	21	19	56.01	0	0	3252	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.01
12	21	20	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	21	21	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
12	21	22	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	21	23	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
12	21	24	28.15	0	0	746	28.15	295.57	162.56	162.56	1.63	-2.96	1.63	-1.33	28.15	0.00
12	22	1	28.23	0	0	780	28.23	296.40	163.02	163.02	1.63	-2.96	1.63	-1.33	28.23	0.00
12	22	2	28.40	0	0	852	28.40	298.15	163.98	163.98	1.64	-2.98	1.64	-1.34	28.40	0.00
12	22	3	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	22	4	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	22	5	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	22	6	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	22	7	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
12	22	8	45.26	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
12	22	9	46.87	0	0	845	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.87
12	22	10	31.21	221	18	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	22	11	62.35	0	0	1960	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.35
12	22	12	54.38	0	0	1883	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.38
12	22	13	54.58	0	0	2011	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.58
12	22	14	62.60	0	0	2061	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	27.60
12	22	15	31.21	263	22	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	22	16	23.13	0	0	40	23.13	242.87	133.58	133.58	1.34	-2.43	0.40	-2.03	23.13	0.00
12	22	17	22.48	0	0	621	22.48	236.05	129.83	129.83	1.30	-2.36	1.30	-1.06	22.48	0.00
12	22	18	44.81	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
12	22	19	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	22	20	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	22	21	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	22	22	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	22	23	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	22	24	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	23	1	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	23	2	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	23	3	50.72	0	0	1046	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	23	4	50.82	0	0	1088	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	23	5	50.90	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	23	6	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	23	7	45.52	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
12	23	8	45.52	0	0	1123	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
12	23	9	47.04	0	0	921	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.04
12	23	10	53.10	335	28	0	35.00	367.45	202.10	202.10	2.02	-3.67	0.00	-3.67	35.00	18.10
12	23	11	61.90	0	0	1613	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.90
12	23	12	53.36	31	3	1332	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.36
12	23	13	53.46	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	18.46
12	23	14	61.69	0	0	1586	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	26.69
12	23	15	31.21	386	32	0	31.21	327.63	180.20	180.20	1.80	-3.28	0.00	-3.28	31.21	0.00
12	23	16	23.04	47	4	0	23.04	241.90	133.04	133.04	1.33	-2.42	0.00	-2.42	23.04	0.00
12	23	17	22.17	0	0	486	22.17	232.79	128.03	128.03	1.28	-2.33	1.28	-1.05	22.17	0.00
12	23	18	44.72	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.72
12	23	19	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	23	20	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	23	21	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	23	22	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	23	23	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	23	24	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	24	1	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	24	2	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	24	3	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	24	4	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	24	5	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	24	6	50.99	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	24	7	45.69	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.69
12	24	8	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
12	24	9	47.14	0	0	963	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.14
12	24	10	55.05	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.05
12	24	11	65.30	0	0	3058	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.30
12	24	12	57.23	0	0	2936	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.23
12	24	13	57.08	0	0	2805	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.08
12	24	14	64.66	0	0	2679	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.66
12	24	15	54.55	0	0	636	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.55
12	24	16	46.46	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.46
12	24	17	44.37	0	0	628	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.37
12	24	18	44.37	0	0	627	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.37
12	24	19	49.66	0	0	586	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.66
12	24	20	49.58	0	0	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	24	21	49.48	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
12	24	22	49.40	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
12	24	23	49.40	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
12	24	24	49.40	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
12	25	1	49.41	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.41
12	25	2	49.40	0	0	478	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.40
12	25	3	49.58	0	0	552	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.58
12	25	4	49.85	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.85
12	25	5	50.02	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	25	6	49.93	0	0	703	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.93
12	25	7	44.47	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.47
12	25	8	44.47	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.47
12	25	9	46.25	0	0	580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.25
12	25	10	54.17	0	0	469	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.17
12	25	11	64.01	0	0	2391	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.01
12	25	12	55.02	0	0	1938	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.02
12	25	13	56.41	0	0	2600	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.41
12	25	14	64.48	0	0	2777	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.48
12	25	15	54.34	0	0	544	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.34
12	25	16	45.91	0	0	433	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.91
12	25	17	44.40	0	0	638	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.40
12	25	18	44.81	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
12	25	19	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	25	20	50.37	0	0	894	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.37
12	25	21	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	25	22	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	25	23	50.54	0	0	970	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.54
12	25	24	50.82	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.82
12	26	1	50.64	0	0	1012	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	26	2	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	26	3	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	26	4	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	26	5	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	26	6	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	26	7	45.61	0	0	1162	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.61
12	26	8	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
12	26	9	47.14	0	0	963	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.14
12	26	10	53.41	0	0	142	35.00	367.45	202.10	202.10	2.02	-3.67	1.42	-2.26	35.00	18.41
12	26	11	63.77	0	0	2631	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.77
12	26	12	56.54	0	0	2891	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.54
12	26	13	55.71	0	0	2502	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.71
12	26	14	63.57	0	0	2527	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.57
12	26	15	54.40	0	0	569	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.40
12	26	16	46.46	0	0	669	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.46
12	26	17	44.66	0	0	751	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.66
12	26	18	44.64	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.64
12	26	19	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	26	20	50.10	0	0	780	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	26	21	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	26	22	50.02	0	0	745	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	26	23	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	26	24	50.02	0	0	746	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.02
12	27	1	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	27	2	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	27	3	50.45	0	0	928	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.45
12	27	4	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	27	5	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	27	6	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	27	7	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
12	27	8	45.44	0	0	1089	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
12	27	9	47.32	0	0	1040	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.32
12	27	10	53.25	0	0	74	35.00	367.45	202.10	202.10	2.02	-3.67	0.74	-2.93	35.00	18.25
12	27	11	63.74	0	0	2752	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.74
12	27	12	55.73	0	0	2649	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.73
12	27	13	56.99	0	0	3199	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.99
12	27	14	63.96	0	0	2827	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.96
12	27	15	31.52	0	0	134	31.52	330.91	182.00	182.00	1.82	-3.31	1.34	-1.97	31.52	0.00
12	27	16	45.97	0	0	456	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.97
12	27	17	45.31	0	0	1031	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.31
12	27	18	45.52	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.52
12	27	19	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	27	20	50.99	0	0	1163	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.99
12	27	21	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	27	22	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	27	23	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	27	24	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	28	1	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	28	2	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	28	3	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	28	4	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	28	5	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	28	6	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	28	7	45.87	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.87
12	28	8	45.87	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.87
12	28	9	47.59	0	0	1156	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.59

12	28	10	53.47	0	0	170	35.00	367.45	202.10	202.10	2.02	-3.67	1.70	-1.97	35.00	18.47
12	28	11	63.86	0	0	2861	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	28.86
12	28	12	55.87	0	0	2761	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.87
12	28	13	55.89	0	0	2767	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.89
12	28	14	64.07	0	0	2932	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.07
12	28	15	31.47	0	0	111	31.47	330.34	181.69	181.69	1.82	-3.30	1.11	-2.20	31.47	0.00
12	28	16	23.91	0	0	375	23.91	251.00	138.05	138.05	1.38	-2.51	1.38	-1.13	23.91	0.00
12	28	17	45.08	0	0	934	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.08
12	28	18	45.44	0	0	1090	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.44
12	28	19	50.90	0	0	1124	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.90
12	28	20	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	28	21	51.07	0	0	1198	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	28	22	51.17	0	0	1241	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	28	23	51.25	0	0	1276	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	28	24	51.35	0	0	1319	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.35
12	29	1	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
12	29	2	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
12	29	3	51.53	0	0	1397	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.53
12	29	4	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
12	29	5	51.63	0	0	1440	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.63
12	29	6	51.80	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.80
12	29	7	46.42	0	0	1515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.42
12	29	8	46.33	0	0	1475	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.33
12	29	9	47.95	0	0	1312	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.95
12	29	10	54.35	0	0	549	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.35
12	29	11	64.98	0	0	3341	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.98
12	29	12	56.76	0	0	3138	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.76
12	29	13	56.22	0	0	2867	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.22
12	29	14	64.27	0	0	2988	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.27
12	29	15	31.94	0	0	316	31.94	335.34	184.43	184.43	1.84	-3.35	1.84	-1.51	31.94	0.00
12	29	16	46.65	0	0	750	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.65
12	29	17	45.14	0	0	961	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.14
12	29	18	45.26	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.26
12	29	19	50.64	0	0	1013	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.64
12	29	20	50.72	0	0	1047	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.72
12	29	21	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	29	22	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	29	23	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	29	24	51.07	0	0	1197	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.07
12	30	1	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	30	2	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	30	3	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	30	4	51.25	0	0	1275	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.25
12	30	5	51.45	0	0	1361	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.45
12	30	6	51.17	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	16.17
12	30	7	45.79	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.79
12	30	8	45.79	0	0	1240	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	10.79
12	30	9	47.59	0	0	1156	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	12.59
12	30	10	55.04	0	0	846	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	20.04
12	30	11	65.17	0	0	3236	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.17
12	30	12	57.55	0	0	3347	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.55
12	30	13	57.42	0	0	3325	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	22.42
12	30	14	65.16	0	0	3282	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.16
12	30	15	54.42	0	0	580	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.42
12	30	16	46.54	0	0	705	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.54
12	30	17	44.90	0	0	855	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.90
12	30	18	44.89	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.89
12	30	19	50.27	0	0	852	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.27
12	30	20	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	30	21	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	30	22	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	30	23	50.19	0	0	818	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	30	24	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	31	1	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	31	2	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	31	3	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	31	4	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	31	5	50.19	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.19
12	31	6	50.10	0	0	779	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	15.10
12	31	7	44.81	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
12	31	8	44.81	0	0	817	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.81
12	31	9	46.79	0	0	810	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.79
12	31	10	54.80	0	0	744	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.80
12	31	11	65.13	0	0	2715	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	30.13
12	31	12	56.92	0	0	2415	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.92
12	31	13	56.59	0	0	2188	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	21.59
12	31	14	64.34	0	0	2121	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	29.34
12	31	15	54.27	0	0	515	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	19.27
12	31	16	46.08	0	0	505	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	11.08
12	31	17	44.10	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.10
12	31	18	44.10	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	9.10
12	31	19	49.48	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
12	31	20	49.48	0	0	511	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.48
12	31	21	49.32	0	0	441	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.32
12	31	22	49.24	0	0	407	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.24
12	31	23	49.15	0	0	366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.15
12	31	24	49.15	0	0	366	35.00	367.45	202.10	202.10	2.02	-3.67	2.02	-1.65	35.00	14.15

Months	Sum of Total Electric Load (kWh)	Max of Total Electric Load (kW)	Sum of Heating Load that can be offset (Therms)	Sum of NG Use for Running Generator (Therms)	Sum of Net Heating Change (Therms)	Sum of Total Potential kWh Savings	Max of Total Potential kW Savings
1	66,199	189	1,437	(2,668)	(1,231)	25,418	35
2	58,627	187	1,283	(2,371)	(1,088)	22,580	35
3	61,587	282	1,320	(2,494)	(1,174)	23,756	35
4	55,218	366	1,115	(2,295)	(1,180)	21,861	35
5	67,240	474	927	(2,348)	(1,421)	22,362	35
6	46,923	454	-	(2,202)	(2,202)	20,973	35
7	64,050	446	-	(2,404)	(2,404)	22,897	35
8	69,935	490	-	(2,409)	(2,409)	22,949	35
9	76,457	571	-	(2,277)	(2,277)	21,693	35
10	64,347	402	1,129	(2,376)	(1,248)	22,636	35
11	53,830	345	1,215	(2,337)	(1,122)	22,260	35
12	54,621	235	1,360	(2,602)	(1,242)	24,787	35
Grand Total	**739,035**	**571**	**9,785**	**(28,784)**	**(18,998)**	**274,171**	**35**

ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters			Station Location Details			Design Day Selections		
Source	TMY3	Name	WBAN	724080		Design Data	99.0%	
Location	PA, Philadelphia-International	Name	Latitude	39.867	°	Heating DB Temp	11.5	°F
			Longitude	75.233	°	Cooling DB Temp	92.7	°F
			Elevation	6.6	ft	Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	169	66	95	35

Yearly Day Type Definitions

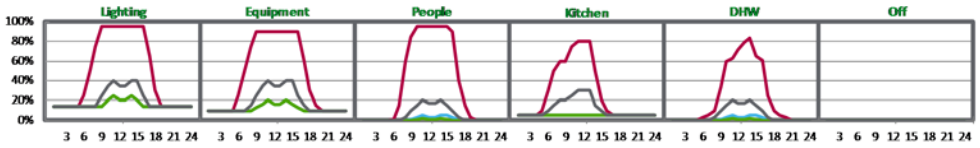
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	3	3	3	3	3	3	3	3
Period 3	4/23	5/25	2	1	1	1	1	1	2	3
Period 4	5/26	7/31	3	3	3	3	3	3	3	3
Period 5	8/1	9/10	4	4	4	4	4	4	2	3
Period 6	9/11	11/7	2	1	1	1	1	1	2	3
Period 7	11/8	11/12	3	3	3	3	3	3	3	3
Period 8	11/13	11/21	2	1	1	1	1	1	2	3
Period 9	11/22	11/25	3	3	3	3	3	3	3	3
Period 10	11/26	12/21	2	1	1	1	1	1	2	3
Period 11	12/22	12/31	3	3	3	3	3	3	3	3
Period 12										
		365								

Holidays

Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
2	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
3	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
4	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
6	25%	14%	14%	14%	25%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	10%	3%	0%	0%	0%	0%	0%	0%	0%
7	50%	14%	14%	14%	50%	10%	10%	10%	15%	0%	0%	0%	50%	5%	5%	15%	5%	0%	0%	0%	0%	0%	0%	0%
8	75%	14%	14%	14%	75%	10%	10%	15%	60%	0%	0%	3%	60%	5%	5%	20%	10%	0%	0%	3%	0%	0%	0%	0%
9	95%	14%	14%	25%	90%	13%	13%	25%	85%	1%	0%	10%	60%	5%	5%	20%	34%	1%	0%	10%	0%	0%	0%	0%
10	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	15%	75%	5%	5%	25%	60%	3%	1%	15%	0%	0%	0%	0%
11	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	80%	5%	5%	30%	63%	5%	2%	20%	0%	0%	0%	0%
12	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	72%	3%	1%	17%	0%	0%	0%	0%
13	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	79%	3%	1%	17%	0%	0%	0%	0%
14	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	50%	5%	5%	15%	83%	5%	2%	20%	0%	0%	0%	0%
15	95%	20%	20%	40%	90%	16%	16%	40%	95%	5%	1%	15%	20%	5%	5%	10%	65%	5%	1%	15%	0%	0%	0%	0%
16	95%	14%	14%	25%	90%	13%	13%	25%	90%	3%	0%	10%	10%	5%	5%	5%	61%	3%	0%	10%	0%	0%	0%	0%
17	65%	14%	14%	14%	60%	10%	10%	15%	40%	1%	0%	3%	5%	5%	5%	5%	25%	1%	0%	3%	0%	0%	0%	0%
18	30%	14%	14%	14%	30%	10%	10%	10%	15%	0%	0%	0%	5%	5%	5%	5%	10%	0%	0%	0%	0%	0%	0%	0%
19	14%	14%	14%	14%	15%	10%	10%	10%	3%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
20	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
21	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
22	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
23	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
24	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	11.6	3.8	3.8	5.0	10.8	2.9	2.9	4.5	8.8	0.3	0.1	1.3	6.7	1.2	1.2	2.8	5.8	0.3	0.1	1.3	0.0	0.0	0.0	0.0
Hr/Yr :	2,748				2,439				1,558				1,413				1,049				0			



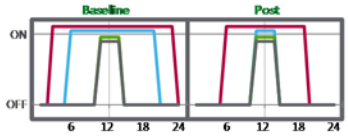
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	1	0	0	1	0	0	0
7	1	1	0	0	1	0	0	0
8	1	1	0	0	1	0	0	0
9	1	1	0	0	1	0	0	0
10	1	1	0	0	1	0	0	0
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	1	0	0	1	0	0	0
16	1	1	0	0	1	0	0	0
17	1	1	0	0	1	0	0	0
18	1	1	0	0	1	0	0	0
19	1	1	0	0	1	0	0	0
20	1	1	0	0	0	0	0	0
21	1	0	0	0	0	0	0	0
22	1	0	0	0	0	0	0	0
23	1	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	21.0	15.0	4.0	4.0	14.0	4.0	4.0	4.0
Hr/Yr :	5,059				3,150			



ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CMA

Run Simulation

Baseline Calculation Inputs

Building Envelope

148,080	Building Area, sqft	
Medium	Building Weight	
Exterior Walls		
13.00	R_wall, hr-sqft-oF/Btu	
97,788	Total Exterior Wall Area, sqft	
Medium	Outside Surface Color	
Windows		
Aluminum/Thermal Break	Frame Type	
Low-e, Clear Double	Glass Type	
0%	Exterior Shading Percentage	
13,559	Window Area, sqft	
22%	% North Facing	
30%	% East Facing	
28%	% South Facing	
21%	% West Facing	
Roof		
18.00	R-value, hr-sqft-oF/Btu	
108,630	Roof Area, sqft	
Light	Outside Surface Color	
3.00	Plenum Height, ft	

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	1.11	W/sqft	Lighting
Equipment	0.40	W/sqft	Equipment
People	303	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration		
0.280	CFM/sqft of Exterior Wall Area	
12.0	Average Ceiling Height, ft	
0.382	Air Change Per Hour, ACH	
Ventilation		
17.5	OA Rate, CFM per person	
0.15	OA Rate, CFM per sqft	
16,043	OA CFM Total	
ON Night	OA Modulation Schedule	

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const Vol	27.50	Variable Vol	18.49
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	45%

Space Set Points

	Occupied	Unoccupied	
Heating	68.0	60.0	oF
Cooling	74.0	78.0	oF
	60.0	65.0	% RH

Heating Pumps

Pump kW	17.91	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Cooling Pumps

Pump kW	5.67	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

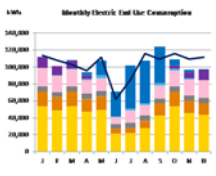
Heating and Cooling Systems

Heating	Hot Air - Forced Draft		System Type
80%	Fuel Efficiency, %		
1.05	Oversize Factor		
0%	% Load Electric Heat		
100%	Electric Efficiency, %		
Cooling	DX Cooling		System Type
1.471	Cooling Efficiency, kW/ton		
0.75	Oversize Factor		
100%	% Bldg Cooled		
No	Remote Chilled Water?		

Miscellaneous Loads

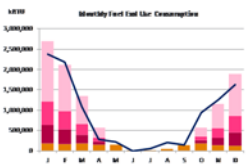
Electric	Peak kW	Schedule		
Bldg	17.2	Bldg Lighting		
N/A	0.0	Off		
N/A	0.0	Off		Standalone
Fuel	Peak kBtu	Schedule	Plant?	Efficiency
Dmst	1,198.0	Dmst	No	87%
N/A	0.0	Off	No	80%
N/A	0.0	Off	No	80%

Energy Modeling Calibration



Electric Calibration			
Modeled	Utility	Error	
kWh	kWh	%	
111,802	113,954	-2%	Jan
100,824	107,959	-7%	Feb
108,114	102,708	5%	Mar
94,006	95,802	-2%	Apr
107,257	111,541	-4%	May
70,824	61,372	15%	Jun
101,494	84,880	20%	Jul
107,207	116,102	-8%	Aug
103,877	109,190	-5%	Sep
109,041	113,561	-4%	Oct
96,725	109,855	-12%	Nov
97,902	111,182	-12%	Dec
1,228,073	1,240,222	-1.0%	

Fuel Calibration			
Modeled	Utility	Error	
kBTU	kBTU	%	
2,690,184	2,375,298	13%	Jan
2,112,744	2,174,581	-3%	Feb
1,335,772	1,080,333	24%	Mar
364,332	278,760	31%	Apr
154,023	211,742	-27%	May
3,289	0	n/a	Jun
3,409	33,894	-90%	Jul
49,847	187,834	-73%	Aug
128,728	140,247	-8%	Sep
567,921	932,675	-39%	Oct
1,138,616	1,247,857	-9%	Nov
1,889,808	1,818,025	3%	Dec
10,678,662	10,321,066	3.5%	



Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps				Heating and Cooling				Fuel Consumption: Miscellaneous Loads			Heating			
	Lighting	Equipment	Bldg	N/A	N/A	Fans	Cig Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat		Dmst	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	41.4%	15.2%	6.1%	0.0%	0.0%	16.3%	1.5%	4.6%	0.4%	14.6%	0.6%	0.0%		13.5%	0.0%	0.0%	15.7%	20.6%	50.6%	0.0%
Month	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh		kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	33,524	17,448	8,387	0	0	11,811	0	12,433	0	0	0	0		177,819	0	0	450,651	579,817	1,481,878	0
2	48,330	15,815	5,769	0	0	18,722	143	10,833	0	0	0	0		181,817	0	0	559,813	455,440	1,155,874	0
3	33,524	17,448	8,387	0	0	20,349	841	9,202	0	364	0	0		178,396	0	0	209,551	249,888	702,156	0
4	47,099	15,167	8,181	0	0	16,029	1,790	4,031	0	3,758	0	0		146,366	0	0	75,310	91,423	250,233	0
5	44,116	11,661	6,267	0	0	12,407	2,416	0	0	17,247	0	0		134,643	0	0	0	0	0	0
6	21,198	5,780	8,181	0	0	7,242	1,287	0	0	19,157	0	0		3,294	0	0	0	0	0	0
7	21,905	5,875	8,387	0	0	14,066	2,836	0	0	30,514	0	0		3,409	0	0	0	0	0	0
8	27,748	8,755	8,387	0	0	11,987	2,202	0	0	30,130	0	0		49,847	0	0	0	0	0	0
9	41,051	13,805	8,181	0	0	15,219	2,942	0	0	42,879	0	0		128,728	0	0	0	0	0	0
10	33,524	17,448	8,387	0	0	18,454	2,591	3,758	0	7,160	0	0		178,108	0	0	79,318	88,727	227,371	0
11	48,631	14,844	8,181	0	0	18,848	1,191	7,518	0	2,849	0	0		137,666	0	0	184,342	238,144	598,369	0
12	45,443	13,783	8,387	0	0	21,104	107	11,733	0	560	0	0		133,479	0	0	321,316	419,281	1,050,313	0
	508,580	162,064	75,205	0	0	200,408	18,618	59,480	0	201,895	0	0		1,442,156	0	0	1,672,476	2,134,810	5,429,401	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps				Heating and Cooling			
	Lighting	Equipment	Bldg	N/A	N/A	Fans	Cig Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat	
	29.4%	10.1%	6.4%	0.0%	0.0%	8.4%	1.0%	3.1%	0.0%	44.8%	0.0%	0.0%	
Month	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw	
1	173.7	59.8	0.0	0.0	0.0	19.8	0.0	17.0	0.0	0.0	0.0	0.0	
2	173.7	59.8	0.0	0.0	0.0	19.8	0.0	17.0	0.0	0.0	0.0	0.0	
3	173.7	59.8	0.0	0.0	0.0	19.8	0.0	0.0	0.0	128.2	0.0	0.0	
4	173.7	59.8	0.0	0.0	0.0	31.8	0.0	0.0	0.0	222.8	0.0	0.0	
5	173.7	59.8	0.0	0.0	0.0	19.6	0.0	0.0	0.0	336.1	0.0	0.0	
6	44.2	15.2	0.0	0.0	0.0	19.8	0.0	0.0	0.0	417.9	0.0	0.0	
7	44.2	15.2	0.0	0.0	0.0	37.8	0.0	0.0	0.0	417.9	0.0	0.0	
8	74.0	39.8	0.0	0.0	0.0	19.6	0.0	0.0	0.0	417.9	0.0	0.0	
9	173.7	59.8	0.0	0.0	0.0	19.5	0.0	0.0	0.0	417.9	0.0	0.0	
10	173.7	59.8	0.0	0.0	0.0	34.2	0.0	0.0	0.0	186.0	0.0	0.0	
11	173.7	59.8	0.0	0.0	0.0	31.2	0.0	0.0	0.0	220.6	0.0	0.0	
12	173.7	59.8	0.0	0.0	0.0	19.8	0.0	0.0	0.0	81.1	0.0	0.0	
	1,748	591	0	0	0	505	60	34	0	2,929	0	0	



Print HVAC Loads Tab?

Print TOU Data?

Design Loads Check

Rule of Thumb Checks

System	Modeled	Actual	Units	% Error
Heating	13,777	14,151	kBH	-2.6%
Heating	83	85	Btu/ sf	-2.3%
Cooling	194	211	Tons	-8.1%
Cooling	165	151	sf / Ton	10.0%
Fans	153,302		CFM	#DIV/0!
Fans	1.34	0.00	CFM/ sf	#DIV/0!
Fans	0.11		kW / HCFM	#DIV/0!
Oa	16,043		CFM	#DIV/0!
Oa	14%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index

	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	29.2	29.9	-4.0%
Fuel	64.3	62.1	3.5%
CHW	0.0	0.0	#DIV/0!
Total	93.5	92.0	2.2%

Fan and Pump Input Aid

Supply Fan Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details

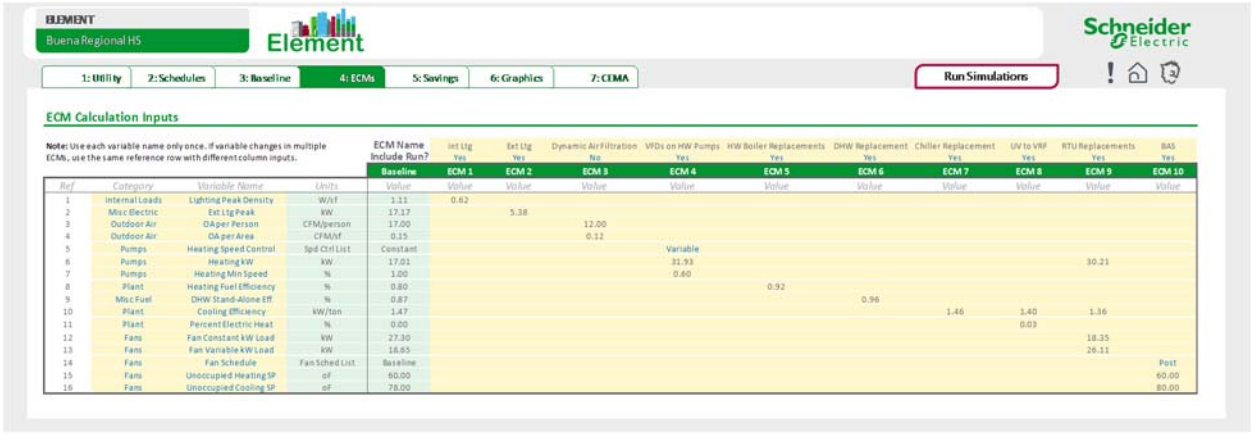
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration

	Modeled	Utility	Error
	kW	kW	%
Jan	181.4	161.7	-6%
Feb	181.4	147.1	-19%
Mar	400.9	376.2	6%
Apr	497.1	434.1	14%
May	618.1	467.0	32%
Jun	550.4	418.9	31%
Jul	541.3	413.4	28%
Aug	592.1	411.3	44%
Sep	714.9	508.8	40%
Oct	558.7	558.6	0%
Nov	482.0	451.4	12%
Dec	383.4	508.2	-18%
	5,867	4,969	18.1%

Load Factor

	Modeled	Utility
	LF	LF
Jan	0.33	0.31
Feb	0.33	0.48
Mar	0.38	0.17
Apr	0.28	0.21
May	0.23	0.11
Jun	0.18	0.20
Jul	0.20	0.17
Aug	0.24	0.28
Sep	0.24	0.30
Oct	0.27	0.28
Nov	0.28	0.35
Dec	0.38	0.48
	0.20	0.26



ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				ECM Name	Int Ltg	Ext Ltg	Dynamic Air Filtration	VFDs on HW Pumps	HW Boiler Replacements	DHW Replacement	Chiller Replacement	UV to VRF	RTU Replacements	BAS
				Include Run?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
					Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	Category	Variable Name	Units		Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1	Internal Loads	Lighting Peak Density	W/sf		1.11	0.62									
2	Misc Electric	Ext Ltg Peak	kW		17.17		5.38								
3	Outdoor Air	OA per Person	CFM/person		17.00			12.00							
4	Outdoor Air	OA per Area	CFM/sf		0.15			0.12							
5	Pumps	Heating Speed Control	Spd Ctrl List		Constant				Variable						
6	Pumps	Heating kW	kW		17.01				31.93					30.21	
7	Pumps	Heating Min Speed	%		1.00				0.60						
8	Plant	Heating Fuel Efficiency	%		0.80					0.92					
9	Misc Fuel	DHW Stand-Alone Eff	%		0.87						0.96				
10	Plant	Cooling Efficiency	kW/ton		1.47							1.46	1.40	1.36	
11	Plant	Percent Electric Heat	%		0.00								0.03		
12	Fans	Fan Constant kW Load	kW		27.30									18.35	
13	Fans	Fan Variable kW Load	kW		18.65									26.11	
14	Fans	Fan Schedule	Fan Sched List		Baseline										Post
15	Fans	Unoccupied Heating SP	oF		60.00										60.00
16	Fans	Unoccupied Cooling SP	oF		78.00										80.00

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1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

CEMA Monthly Savings

Export to CEMA

ECM 1: Int Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	11,535	12,799	16,045	24,249	25,429	20,214	19,443	23,752	21,439	23,812	21,524	25,286	245,528	100%
1	Electric	kW	22	22	35	82	110	110	119	78	78	114	109	116	996	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	-234	-1,447	-797	-959	-994	-692	-282	0	-5,406	100%

ECM 2: Ext Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	4,244	4,386	4,386	4,244	4,386	4,244	4,386	4,386	3,961	4,386	4,244	4,386	51,640	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 4: VFDs on HW Pumps

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	0	0	0	0	3,810	8,709	11,906	12,433	11,039	9,389	4,116	0	61,402	100%
1	Electric	kW	0	0	0	0	0	0	0	17	11	0	0	0	28	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 5: HW Boiler Replacemen

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	539	1,520	2,409	3,402	2,674	1,626	582	0	12,753	100%

ECM 6: DHW Replacement

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Natural Gas	Therm	3	3	47	121	167	129	115	167	152	167	137	144	1,352	100%

ECM 7: Chiller Replacement

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	300	527	516	410	58	21	1	0	0	2	32	151	2,019	100%
1	Electric	kW	5	5	5	5	3	2	1	0	0	1	2	3	30	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 8: UV to VRF

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	1,048	1,839	1,799	1,432	-485	-1,923	-3,208	-4,667	-3,640	-2,124	-623	527	-10,022	100%
1	Electric	kW	16	16	16	16	9	7	2	-10	-2	4	7	12	92	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	108	304	482	680	535	325	116	0	2,551	100%

ECM 9: RTU Replacements

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	2,347	4,419	3,739	4,817	5,073	5,091	5,626	5,797	5,235	5,417	4,365	4,449	56,375	100%
1	Electric	kW	4	8	4	10	13	13	10	8	8	11	13	13	116	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	-8	-22	-28	-30	-26	-21	-9	0	-144	100%

ECM 10: BAS

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	4,000	6,752	8,338	10,963	3,959	1,029	422	343	417	1,394	3,057	5,474	46,147	90%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	90%
kBTu 1	Natural Gas	Therm	0	0	0	0	506	751	997	1,415	1,298	1,221	537	0	6,725	90%

ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters			Station Location Details			Design Day Selections		
Source	TMY3	Name	WBAN	724080		Design Data	99.0%	
Location	PA, Philadelphia-International	Name	Latitude	39.867	°	Heating DB Temp	11.5	°F
			Longitude	75.233	°	Cooling DB Temp	92.7	°F
			Elevation	6.6	ft	Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	169	66	95	35

Yearly Day Type Definitions

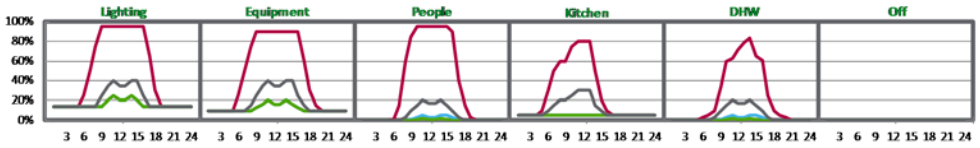
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	3	3	3	3	3	3	3	3
Period 3	4/23	5/25	2	1	1	1	1	1	2	3
Period 4	5/26	7/31	3	3	3	3	3	3	3	3
Period 5	8/1	9/10	4	4	4	4	4	4	2	3
Period 6	9/11	11/7	2	1	1	1	1	1	2	3
Period 7	11/8	11/12	3	3	3	3	3	3	3	3
Period 8	11/13	11/21	2	1	1	1	1	1	2	3
Period 9	11/22	11/25	3	3	3	3	3	3	3	3
Period 10	11/26	12/21	2	1	1	1	1	1	2	3
Period 11	12/22	12/31	3	3	3	3	3	3	3	3
Period 12										
		365								

Holidays

Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
2	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
3	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
4	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
6	25%	14%	14%	14%	25%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	10%	3%	0%	0%	0%	0%	0%	0%	0%
7	50%	14%	14%	14%	50%	10%	10%	10%	15%	0%	0%	0%	50%	5%	5%	15%	5%	0%	0%	0%	0%	0%	0%	0%
8	75%	14%	14%	14%	75%	10%	10%	15%	60%	0%	0%	3%	60%	5%	5%	20%	10%	0%	0%	3%	0%	0%	0%	0%
9	95%	14%	14%	25%	90%	13%	13%	25%	85%	1%	0%	10%	60%	5%	5%	20%	34%	1%	0%	10%	0%	0%	0%	0%
10	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	15%	75%	5%	5%	25%	60%	3%	1%	15%	0%	0%	0%	0%
11	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	80%	5%	5%	30%	63%	5%	2%	20%	0%	0%	0%	0%
12	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	72%	3%	1%	17%	0%	0%	0%	0%
13	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	79%	3%	1%	17%	0%	0%	0%	0%
14	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	50%	5%	5%	15%	83%	5%	2%	20%	0%	0%	0%	0%
15	95%	20%	20%	40%	90%	16%	16%	40%	95%	5%	1%	15%	20%	5%	5%	10%	65%	5%	1%	15%	0%	0%	0%	0%
16	95%	14%	14%	25%	90%	13%	13%	25%	90%	3%	0%	10%	10%	5%	5%	5%	61%	3%	0%	10%	0%	0%	0%	0%
17	65%	14%	14%	14%	60%	10%	10%	15%	40%	1%	0%	3%	5%	5%	5%	5%	25%	1%	0%	3%	0%	0%	0%	0%
18	30%	14%	14%	14%	30%	10%	10%	10%	15%	0%	0%	0%	5%	5%	5%	5%	10%	0%	0%	0%	0%	0%	0%	0%
19	14%	14%	14%	14%	15%	10%	10%	10%	3%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
20	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
21	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
22	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
23	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
24	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	11.6	3.8	3.8	5.0	10.8	2.9	2.9	4.5	8.8	0.3	0.1	1.3	6.7	1.2	1.2	2.8	5.8	0.3	0.1	1.3	0.0	0.0	0.0	0.0
Hr/Yr :	2,748				2,439				1,558				1,413				1,049				0			



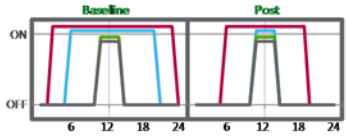
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	1	0	0	1	0	0	0
7	1	1	0	0	1	0	0	0
8	1	1	0	0	1	0	0	0
9	1	1	0	0	1	0	0	0
10	1	1	0	0	1	0	0	0
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	1	0	0	1	0	0	0
16	1	1	0	0	1	0	0	0
17	1	1	0	0	1	0	0	0
18	1	1	0	0	1	0	0	0
19	1	1	0	0	1	0	0	0
20	1	1	0	0	0	0	0	0
21	1	0	0	0	0	0	0	0
22	1	0	0	0	0	0	0	0
23	1	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	21.0	15.0	4.0	4.0	14.0	4.0	4.0	4.0
Hr/Yr :	5,059				3,150			



ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CMA

Run Simulation

Baseline Calculation Inputs

Building Envelope

144,000	Building Area, sqft	
Medium	Building Weight	
Exterior Walls		
13.00	R_wall, hr-sqft-oF/Btu	
97,760	Total Exterior Wall Area, sqft	
Medium	Outside Surface Color	
Windows		
Aluminum Thermal Break	Frame Type	
Low-e, Clear Double	Glass Type	
0%	Exterior Shading Percentage	
13,559	Window Area, sqft	
22%	% North Facing	
30%	% East Facing	
28%	% South Facing	
21%	% West Facing	
Roof		
18.00	R-value, hr-sqft-oF/Btu	
108,630	Roof Area, sqft	
Light	Outside Surface Color	
3.00	Plenum Height, ft	

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	0.62	W/sqft	Lighting
Equipment	0.40	W/sqft	Equipment
People	303	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.280	CFM/sqft of Exterior Wall Area
12.0	Average Ceiling Height, ft
0.382	Air Change Per Hour, ACH
Ventilation	
17.5	OA Rate, CFM per person
0.15	OA Rate, CFM per sqft
14,043	OA CFM Total
ON Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const Vol	18.55	Variable Vol	24.12
Schedule	Fan1	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	45%

Space Set Points

	Occupied	Unoccupied	
Heating	68.0	60.0	oF
Cooling	74.0	80.0	oF
	6.0	20.0	% RH

Heating Pumps

Pump kW	10.23	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	60%

Cooling Pumps

Pump kW	5.67	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

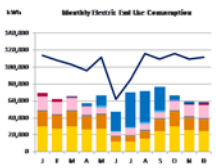
Heating and Cooling Systems

Heating	Hot Air - Forced Draft	System Type
82%	Fuel Efficiency, %	
1.00	Oversize Factor	
0%	% Load Electric Heat	
100%	Electric Efficiency, %	
Cooling	DX Cooling	System Type
1.301	Cooling Efficiency, kW/ton	
0.75	Oversize Factor	
100%	% Sing Colored	
No	Remote Chilled Water?	

Miscellaneous Loads

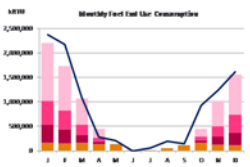
Electric	Peak kW	Schedule		
Bldg	3.4	Ext Lighting New		
N/A	0.0	Off		
N/A	0.0	Off		Standalone
Fuel	Peak kBtu	Schedule	Plant?	Efficiency
Dmst	1,198.0	Dmst	No	80%
N/A	0.0	Off	No	80%
N/A	0.0	Off	No	80%

Energy Modeling Calibration



Electric Calibration	Modeled	Utility	Error
	kWh	kWh	%
Jan	69,519	113,954	-39%
Feb	82,327	107,893	-42%
Mar	65,668	102,708	-56%
Apr	56,992	95,802	-41%
May	66,550	111,541	-40%
Jun	47,272	81,872	-43%
Jul	70,527	84,880	-17%
Aug	71,568	114,102	-38%
Sep	76,867	109,190	-30%
Oct	66,401	113,561	-41%
Nov	59,260	109,655	-46%
Dec	58,383	111,182	-47%
	771,205	1,240,222	-37.8%

Fuel Calibration	Modeled	Utility	Error
	kBTU	kBTU	%
Jan	2,206,937	2,375,298	-7%
Feb	1,754,432	2,174,581	-19%
Mar	1,079,554	1,089,333	-1%
Apr	450,172	278,760	61%
May	159,593	211,742	-24%
Jun	2,980	0	n/a
Jul	3,090	33,894	-91%
Aug	45,174	197,834	-77%
Sep	114,660	140,247	-17%
Oct	454,561	932,675	-51%
Nov	1,026,696	1,247,857	-18%
Dec	1,581,031	1,818,025	-9%
	8,820,899	10,321,066	-34.5%



Baseline Breakout Analysis

Electric Consumption

Month	Lighting 36.7% kwh	Equipment 21.0% kwh	Bldg 3.1% kwh	N/A 0.0% kwh	N/A 0.0% kwh	Fans 16.2% kwh	Chg Pumps 1.3% kwh	Htg Pumps 0.0% kwh	Heating 2.4% kwh	Cooling 13.6% kwh	Dehumid 0.0% kwh	Reheat 0.0% kwh	Dmst 14.8% kBtu	N/A 0.0% kBtu	N/A 0.0% kBtu	Envelope 15.6% kBtu	Infiltration 20.3% kBtu	Ventilation 48.3% kBtu	Reheat 0.0% kBtu
1	28,772	17,448	2,001	0	0	13,993	0	0	4,515	0	0	0	161,149	0	0	371,382	496,316	1,178,111	0
2	28,894	15,815	1,909	0	0	14,342	42	0	3,516	0	0	0	148,647	0	0	284,880	378,490	913,414	0
3	28,772	17,448	2,001	0	0	13,948	519	0	1,828	173	0	0	161,671	0	0	169,913	210,450	541,919	0
4	26,181	15,167	1,907	0	0	9,315	1,140	0	904	2,669	0	0	132,644	0	0	36,214	48,184	130,130	0
5	27,274	15,661	2,001	0	0	7,001	1,674	0	0	12,216	0	0	124,243	0	0	0	0	0	0
6	12,781	5,780	1,907	0	0	3,827	985	0	0	23,072	0	0	3,990	0	0	0	0	0	0
7	12,184	5,875	2,001	0	0	7,401	1,718	0	0	40,648	0	0	3,090	0	0	0	0	0	0
8	15,435	8,755	2,001	0	0	8,853	1,546	0	0	34,901	0	0	43,174	0	0	0	0	0	0
9	15,847	13,805	1,907	0	0	7,220	1,748	0	0	18,310	0	0	116,640	0	0	0	0	0	0
10	28,772	17,448	2,001	0	0	12,245	1,438	0	563	4,864	0	0	161,410	0	0	88,940	88,878	170,212	0
11	29,592	16,866	1,907	0	0	13,181	513	0	1,808	1,862	0	0	124,758	0	0	164,118	214,373	525,445	0
12	26,178	15,783	2,001	0	0	13,328	32	0	1,890	81	0	0	111,178	0	0	248,914	331,375	830,362	0
	282,781	162,064	23,564	0	0	124,786	11,415	0	15,405	151,170	0	0	1,306,954	0	0	1,575,163	1,788,368	4,550,413	0

Electric Demand

Month	Lighting 21.4% kw	Equipment 15.0% kw	Bldg 0.0% kw	N/A 0.0% kw	N/A 0.0% kw	Fans 10.0% kw	Chg Pumps 1.3% kw	Htg Pumps 0.0% kw	Heating 0.0% kw	Cooling 10.6% kw	Dehumid 0.0% kw	Reheat 0.0% kw
1	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	16.1	0.0	0.0	0.0
2	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	7.9	0.0	0.0	0.0
3	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	0.0	87.2	0.0	0.0
4	97.7	59.8	0.0	0.0	0.0	13.5	0.0	0.0	0.0	178.8	0.0	0.0
5	97.7	59.8	0.0	0.0	0.0	34.2	0.0	0.0	0.0	282.5	0.0	0.0
6	19.7	13.2	0.0	0.0	0.0	30.8	0.0	0.0	0.0	360.9	0.0	0.0
7	19.7	13.2	0.0	0.0	0.0	34.4	0.0	0.0	0.0	360.9	0.0	0.0
8	41.2	39.8	0.0	0.0	0.0	32.1	0.0	0.0	0.0	360.9	0.0	0.0
9	97.7	59.8	0.0	0.0	0.0	27.3	0.0	0.0	0.0	360.9	0.0	0.0
10	97.7	59.8	0.0	0.0	0.0	28.7	0.0	0.0	0.0	219.8	0.0	0.0
11	97.7	59.8	0.0	0.0	0.0	32.8	0.0	0.0	0.0	186.2	0.0	0.0
12	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	0.0	48.3	0.0	0.0
	972	591	0	0	0	481	60	0	18	2,430	0	0



Design Loads Check

Rule of Thumb Checks			
System	Modeled	Actual	Units
Heating	13,777	14,151	kBtu
Heating	83	85	Btu / sf
Cooling	286	332	Tons
Cooling	823	332	sf / Ton
Fans	253,302		CFM
Fans	1.76	0.00	CFM / sf
Fans	0.07		kW / CFM
OA	36,043		CFM
OA	14%	#DIV/0!	% OA

Energy Usage Index			
	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	19.8	29.9	-67.8%
Fuel	53.1	62.1	-14.5%
CMA	0.0	0.0	#DIV/0!
Total	69.0	87.8	-21.5%

Fan and Pump Input Aid

Supply Fan Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration	Modeled	Utility	Error
	kW	kW	%
Jan	188.5	581.7	-67%
Feb	187.3	547.1	-66%
Mar	172.6	376.2	-54%
Apr	165.7	434.1	-58%
May	480.6	467.0	3%
Jun	488.8	418.9	17%
Jul	474.2	423.4	12%
Aug	518.7	411.3	26%
Sep	583.6	508.8	14%
Oct	468.6	718.4	-53%
Nov	352.5	451.4	-28%
Dec	333.7	508.2	-34%
	4,552	4,969	-8.4%

Load Factor	Modeled	Utility
	LF	LF
	0.48	0.31
	0.50	0.48
	0.32	0.17
	0.22	0.21
	0.18	0.11
	0.12	0.20
	0.20	0.17
	0.18	0.38
	0.18	0.30
	0.22	0.28
	0.23	0.33
	0.36	0.48
	0.15	0.26

ELEMENT
Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				ECM Name	DCV	Kitchen Hood Blocking	Envelope	-	-	-	-	-	-	-
				Include Run?	Yes	Yes	Yes	No	No	No	No	No	No	No
					Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	*Category*	*Variable Name*	*Units*		*Value*	*Value*	*Value*	*Value*	*Value*	*Value*	*Value*	*Value*	*Value*	*Value*	*Value*
1	Outdoor Air	OA Schedule	OA List		ON Night	DCV									
2	Outdoor Air	Infiltration Rate	CFM/sf ext wall		0.290		0.286	0.232							

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CEMA Monthly Savings

Export to CEMA

ECM 1: DCV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	56	648	161	48	266	621	369	300	342	443	223	-41	3,436	12%
1	Electric	kW	2	2	2	0	0	0	0	0	0	0	0	0	6	12%
kBTu 1	Natural Gas	Therm	0	0	0	0	285	640	644	726	664	469	255	0	3,682	12%

ECM 2: Kitchen Hood Blocking

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	38	93	76	21	-7	6	12	62	14	1	13	-15	315	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	-1	0	1	2	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	6	22	54	81	60	77	6	0	305	100%

ECM 3: Envelope

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	35	1,208	516	196	78	90	817	758	839	815	287	-225	5,414	100%
1	Electric	kW	6	4	5	3	4	6	0	1	0	-7	0	7	29	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	554	569	1,425	1,110	951	1,246	566	0	6,421	100%

ELEMENT
Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters			Station Location Details			Design Day Selections		
Source	TMY3	Name	WBAN	724080		Design Data	99.0%	
Location	PA, Philadelphia-International	Name	Latitude	39.867	°	Heating DB Temp	11.5	°F
			Longitude	75.233	°	Cooling DB Temp	92.7	°F
			Elevation	6.6	ft	Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	169	66	95	35

Yearly Day Type Definitions

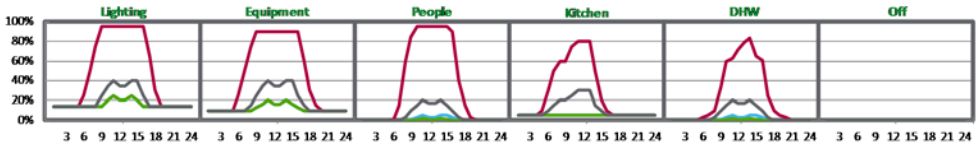
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	3	3	3	3	3	3	3	3
Period 3	4/23	5/25	2	1	1	1	1	1	2	3
Period 4	5/26	7/31	3	3	3	3	3	3	3	3
Period 5	8/1	9/10	4	4	4	4	4	4	2	3
Period 6	9/11	11/7	2	1	1	1	1	1	2	3
Period 7	11/8	11/12	3	3	3	3	3	3	3	3
Period 8	11/13	11/21	2	1	1	1	1	1	2	3
Period 9	11/22	11/25	3	3	3	3	3	3	3	3
Period 10	11/26	12/21	2	1	1	1	1	1	2	3
Period 11	12/22	12/31	3	3	3	3	3	3	3	3
Period 12										
		365								

Holidays

Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
2	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
3	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
4	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
6	25%	14%	14%	14%	25%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	10%	3%	0%	0%	0%	0%	0%	0%	0%
7	50%	14%	14%	14%	50%	10%	10%	10%	15%	0%	0%	0%	50%	5%	5%	15%	5%	0%	0%	0%	0%	0%	0%	0%
8	75%	14%	14%	14%	75%	10%	10%	15%	60%	0%	0%	3%	60%	5%	5%	20%	10%	0%	0%	3%	0%	0%	0%	0%
9	95%	14%	14%	25%	90%	13%	13%	25%	85%	1%	0%	10%	60%	5%	5%	20%	34%	1%	0%	10%	0%	0%	0%	0%
10	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	15%	75%	5%	5%	25%	60%	3%	1%	15%	0%	0%	0%	0%
11	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	80%	5%	5%	30%	63%	5%	2%	20%	0%	0%	0%	0%
12	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	72%	3%	1%	17%	0%	0%	0%	0%
13	95%	20%	20%	35%	90%	16%	16%	35%	95%	3%	1%	17%	80%	5%	5%	30%	79%	3%	1%	17%	0%	0%	0%	0%
14	95%	25%	25%	40%	90%	20%	20%	40%	95%	5%	2%	20%	50%	5%	5%	15%	83%	5%	2%	20%	0%	0%	0%	0%
15	95%	20%	20%	40%	90%	16%	16%	40%	95%	5%	1%	15%	20%	5%	5%	10%	65%	5%	1%	15%	0%	0%	0%	0%
16	95%	14%	14%	25%	90%	13%	13%	25%	90%	3%	0%	10%	10%	5%	5%	5%	61%	3%	0%	10%	0%	0%	0%	0%
17	65%	14%	14%	14%	60%	10%	10%	15%	40%	1%	0%	3%	5%	5%	5%	5%	25%	1%	0%	3%	0%	0%	0%	0%
18	30%	14%	14%	14%	30%	10%	10%	10%	15%	0%	0%	0%	5%	5%	5%	5%	10%	0%	0%	0%	0%	0%	0%	0%
19	14%	14%	14%	14%	15%	10%	10%	10%	3%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
20	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
21	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
22	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
23	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
24	14%	14%	14%	14%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	11.6	3.8	3.8	5.0	10.8	2.9	2.9	4.5	8.8	0.3	0.1	1.3	6.7	1.2	1.2	2.8	5.8	0.3	0.1	1.3	0.0	0.0	0.0	0.0
Hr/Yr :	2,748				2,439				1,558				1,413				1,049				0			



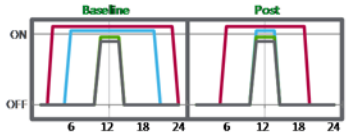
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	1	0	0	1	0	0	0
7	1	1	0	0	1	0	0	0
8	1	1	0	0	1	0	0	0
9	1	1	0	0	1	0	0	0
10	1	1	0	0	1	0	0	0
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	1	0	0	1	0	0	0
16	1	1	0	0	1	0	0	0
17	1	1	0	0	1	0	0	0
18	1	1	0	0	1	0	0	0
19	1	1	0	0	1	0	0	0
20	1	1	0	0	0	0	0	0
21	1	0	0	0	0	0	0	0
22	1	0	0	0	0	0	0	0
23	1	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	21.0	15.0	4.0	4.0	14.0	4.0	4.0	4.0
Hr/Yr :	5,059				3,150			



ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CBAA

Run Simulation

Baseline Calculation Inputs

Building Envelope

168,000	Building Area, sqft	
Medium	Building Weight	
Exterior Walls		
13.00	R_wall, hr-sqft-oF/Btu	
97,788	Total Exterior Wall Area, sqft	
Medium	Outside Surface Color	
Windows		
Aluminum Thermal Break	Frame Type	
Low-e, Clear Double	Glass Type	
0%	Exterior Shading Percentage	
13,559	Window Area, sqft	
22%	% North Facing	
30%	% East Facing	
28%	% South Facing	
21%	% West Facing	
Roof		
18.00	R-value, hr-sqft-oF/Btu	
168,000	Roof Area, sqft	
Light	Outside Surface Color	
3.00	Plenum Height, ft	

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	0.62	W/sqft	Lighting
Equipment	0.40	W/sqft	Equipment
People	303	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.222	CFM/sqft of Exterior Wall Area
12.0	Average Ceiling Height, ft
0.473	Air Change Per Hour, ACH
Ventilation	
17.5	OA Rate, CFM per person
0.15	OA Rate, CFM per sqft
58,043	OA CFM Total
DCV	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const Vol	18.55	Variable kW	24.10
Schedule	Fan	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	45%

Space Set Points

	Occupied	Unoccupied	
Heating	68.0	60.0	oF
Cooling	74.0	80.0	oF
	60.0	90.0	% RH

Heating Pumps

Pump kW	10.23	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	60%

Cooling Pumps

Pump kW	5.67	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

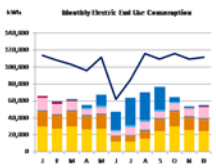
Heating and Cooling Systems

Heating	Hot Air - Forced Draft		System Type
82%	Fuel Efficiency, %		
1.05	Oversize Factor		
0%	% Load Electric Heat		
100%	Electric Efficiency, %		
Cooling	DX Cooling		System Type
1.361	Cooling Efficiency, kW/ton		
0.75	Oversize Factor		
100%	% Bldg Cooled		
No	Remote Chilled Water?		

Miscellaneous Loads

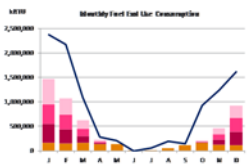
Electric	Peak kW	Schedule		
Bldg	3.4	Ext Lighting New		
N/A	0.0	Off		
N/A	0.0	Off		Standalone
Fuel	Peak kBtu	Schedule	Plant?	Efficiency
Dmst	1,198.0	Dmst	No	80%
N/A	0.0	Off	No	80%
N/A	0.0	Off	No	80%

Energy Modeling Calibration



Electric Calibration			
Modeled	Utility	Error	
kWh	kWh	%	
66,189	113,954	-42%	Jan
58,827	107,855	-46%	Feb
61,567	102,708	-40%	Mar
55,218	95,802	-42%	Apr
87,240	111,541	-40%	May
68,823	81,372	-24%	Jun
64,050	84,880	-25%	Jul
69,955	116,102	-40%	Aug
76,407	109,190	-30%	Sep
94,347	113,561	-44%	Oct
53,830	109,655	-51%	Nov
54,821	111,182	-51%	Dec
759,035	1,240,222	-38.8%	

Fuel Calibration			
Modeled	Utility	Error	
kBTU	kBTU	%	
1,475,539	2,275,298	-35%	Jan
1,072,305	2,174,581	-51%	Feb
820,745	1,589,335	-48%	Mar
224,811	378,760	-59%	Apr
159,593	211,742	-24%	May
2,860	0	n/a	Jun
3,090	33,894	-91%	Jul
45,174	197,834	-77%	Aug
116,660	140,267	-17%	Sep
211,799	932,675	-77%	Oct
457,067	1,247,857	-63%	Nov
821,299	1,818,025	-55%	Dec
5,291,053	10,321,066	-48.7%	



Baseline Breakout Analysis

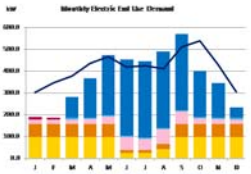
Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps				Heating and Cooling			
	Lighting	Equipment	Bldg	N/A	N/A	Fans	Chg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	38.5%	21.0%	3.2%	0.0%	0.0%	14.8%	2.0%	0.0%	1.1%	18.7%	0.0%	0.0%
Month	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh	kwh
1	28,772	17,448	2,001	0	0	14,321	0	0	2,698	0	0	0
2	26,994	15,815	1,909	0	0	13,954	208	0	1,855	5	0	0
3	28,772	17,448	2,001	0	0	10,357	907	0	867	257	0	0
4	26,181	15,167	1,907	0	0	7,122	1,492	0	168	3,150	0	0
5	27,774	15,941	2,041	0	0	7,973	1,874	0	0	13,017	0	0
6	12,781	5,780	1,907	0	0	4,867	1,182	0	0	21,557	0	0
7	12,184	3,875	2,001	0	0	3,764	1,200	0	0	32,895	0	0
8	15,435	8,755	2,001	0	0	8,647	2,131	0	0	32,969	0	0
9	15,847	13,805	1,907	0	0	7,408	1,880	0	0	17,581	0	0
10	18,772	17,448	2,001	0	0	7,917	1,876	0	94	5,360	0	0
11	29,592	16,866	1,907	0	0	8,475	967	0	857	1,799	0	0
12	26,178	15,783	2,001	0	0	12,855	191	0	1,546	87	0	0
	282,781	162,064	23,564	0	0	109,499	14,860	0	7,823	138,444	0	0

	Miscellaneous Loads			Heating			
	Dmst	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	24.7%	0.0%	0.0%	23.4%	26.4%	27.5%	0.0%
	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	161,149	0	0	186,157	406,873	519,561	0
2	148,647	0	0	199,860	295,364	340,454	0
3	161,672	0	0	140,875	147,395	170,802	0
4	132,644	0	0	28,914	28,257	36,996	0
5	124,240	0	0	0	0	0	0
6	2,890	0	0	0	0	0	0
7	3,090	0	0	0	0	0	0
8	43,174	0	0	0	0	0	0
9	116,660	0	0	0	0	0	0
10	141,410	0	0	18,271	15,598	18,710	0
11	124,758	0	0	104,057	110,043	118,233	0
12	111,178	0	0	172,287	198,168	248,818	0
	1,306,954	0	0	1,258,170	1,291,274	1,454,655	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps				Heating and Cooling		
	Lighting	Equipment	Bldg	N/A	N/A	Fans	Chg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	33.8%	19.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	44.9%	0.0%	0.0%
Month	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw	kw
1	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	9.2	0.0	0.0	0.0
2	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	7.2	0.0	0.0	0.0
3	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	0.0	84.5	0.0	0.0
4	97.7	59.8	0.0	0.0	0.0	14.0	0.0	0.0	0.0	178.9	0.0	0.0
5	97.7	59.8	0.0	0.0	0.0	14.0	0.0	0.0	0.0	275.5	0.0	0.0
6	19.7	13.2	0.0	0.0	0.0	10.1	0.0	0.0	0.0	350.5	0.0	0.0
7	19.7	13.2	0.0	0.0	0.0	10.1	0.0	0.0	0.0	350.5	0.0	0.0
8	41.2	39.8	0.0	0.0	0.0	10.1	0.0	0.0	0.0	350.5	0.0	0.0
9	97.7	59.8	0.0	0.0	0.0	10.1	0.0	0.0	0.0	350.5	0.0	0.0
10	97.7	59.8	0.0	0.0	0.0	27.0	0.0	0.0	0.0	211.5	0.0	0.0
11	97.7	59.8	0.0	0.0	0.0	22.5	0.0	0.0	0.0	138.9	0.0	0.0
12	97.7	59.8	0.0	0.0	0.0	21.8	0.0	0.0	0.0	49.9	0.0	0.0
	972	591	0	0	0	427	60	0	16	2,573	0	0



Print HVAC Loads Tab?

Print TOU Data?

Design Loads Check

Rule of Thumb Checks				
System	Modeled	Actual	Units	% Error
Heating	12,948	14,151	kBtH	-8.4%
Heating	79	85	Btu / sf	-8.4%
Cooling	157	311	Tons	-49.7%
Cooling	646	932	sf / Ton	21.9%
Fans	117,105		CFM	#DIV/0!
Fans	1.37	0.00	CFM / sf	#DIV/0!
Fans	0.08		kW / kCFM	#DIV/0!
OA	36,563		CFM	#DIV/0!
OA	16%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index			
	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	19.2	25.9	-40.6%
Fuel	31.8	82.1	-48.7%
CHW	0.0	0.0	#DIV/0!
Total	47.0	87.8	-46.5%

Energy Modeling Calibration

Electric Demand Calibration			
Modeled	Utility	Error	
kW	kW	%	
188.6	301.7	-37%	Jan
196.7	347.1	-43%	Feb
181.9	376.2	-52%	Mar
166.4	434.1	-58%	Apr
473.9	467.0	1%	May
492.7	468.9	5%	Jun
449.8	423.4	5%	Jul
484.9	411.3	15%	Aug
376.6	508.8	-35%	Sep
460.6	568.6	-23%	Oct
344.8	451.6	-31%	Nov
155.3	368.2	-137%	Dec
4,419	4,969	-12.7%	

Load Factor	
Modeled	Utility
LF	LF
0.47	0.31
0.47	0.48
0.28	0.37
0.21	0.21
0.18	0.11
0.16	0.20
0.18	0.17
0.18	0.38
0.18	0.30
0.22	0.28
0.22	0.33
0.31	0.48
0.15	0.26

Fan and Pump Input Aid

Supply Fan Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details					
Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

ELEMENT

Buena Regional HS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
				ECM Name	-	-	-	-	-	-	-	-	-	-
				Include Run?	No	No	No	No	No	No	No	No	No	No
Ref	Category	Variable Name	Units	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1			-	-										
2			-	-										
3			-	-										
4			-	-										
5			-	-										
6			-	-										
7			-	-										
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48			-	-										
49			-	-										
50			-	-										

ELEMENT

Buena Regional MS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters		
Source	TMY3	Name
Location	PA, Philadelphia-International	Name

Station Location Details		
WABN	724080	
Latitude	39.867	°
Longitude	75.233	°
Elevation	6.6	ft

Design Day Selections		
Design Data	99.0%	
Heating DB Temp	11.5	°F
Cooling DB Temp	92.7	°F
Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	187	69	109	0

Yearly Day Type Definitions

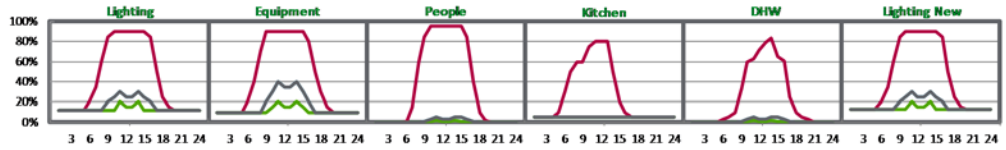
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	3	3	3	3	3	3	3	3
Period 3	4/23	6/18	2	1	1	1	1	1	2	3
Period 4	6/19	9/6	3	3	3	3	3	3	3	3
Period 5	9/7	11/7	2	1	1	1	1	1	2	3
Period 6	11/8	11/12	3	3	3	3	3	3	3	3
Period 7	11/13	11/21	2	1	1	1	1	1	2	3
Period 8	11/22	11/25	3	3	3	3	3	3	3	3
Period 9	11/26	12/21	2	1	1	1	1	1	2	3
Period 10	12/22	12/31	3	3	3	3	3	3	3	3
Period 11										
Period 12										
		365								

Holidays

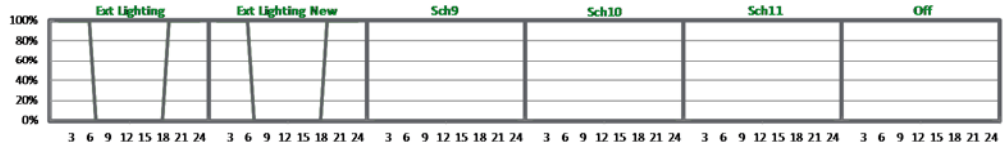
Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Lighting New			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
2	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
3	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
4	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
5	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
6	20%	12%	12%	12%	20%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	5%	3%	0%	0%	0%	20%	13%	13%	13%
7	35%	12%	12%	12%	40%	10%	10%	10%	15%	0%	0%	0%	50%	5%	5%	5%	5%	0%	0%	0%	35%	13%	13%	13%
8	60%	12%	12%	12%	70%	10%	10%	10%	60%	0%	0%	0%	60%	5%	5%	5%	10%	0%	0%	0%	60%	13%	13%	13%
9	85%	20%	12%	20%	90%	20%	10%	20%	85%	1%	0%	1%	60%	5%	5%	5%	34%	1%	0%	1%	85%	20%	13%	20%
10	90%	25%	12%	25%	90%	30%	15%	30%	95%	3%	1%	3%	75%	5%	5%	5%	60%	3%	1%	3%	90%	25%	13%	25%
11	90%	30%	20%	30%	90%	40%	20%	40%	95%	5%	2%	5%	80%	5%	5%	5%	63%	5%	2%	5%	90%	30%	20%	30%
12	90%	25%	15%	25%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	72%	3%	1%	3%	90%	25%	15%	25%
13	90%	25%	15%	25%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	79%	3%	1%	3%	90%	25%	15%	25%
14	90%	30%	20%	30%	90%	40%	20%	40%	95%	5%	2%	5%	50%	5%	5%	5%	83%	5%	2%	5%	90%	30%	20%	30%
15	90%	25%	12%	25%	90%	30%	15%	30%	95%	5%	1%	5%	20%	5%	5%	5%	65%	5%	1%	5%	90%	25%	13%	25%
16	85%	20%	12%	20%	80%	20%	10%	20%	85%	3%	0%	3%	10%	5%	5%	5%	61%	3%	0%	3%	85%	20%	13%	20%
17	50%	12%	12%	12%	50%	10%	10%	10%	40%	1%	0%	1%	5%	5%	5%	5%	25%	1%	0%	1%	50%	13%	13%	13%
18	25%	12%	12%	12%	30%	10%	10%	10%	10%	0%	0%	0%	5%	5%	5%	5%	10%	0%	0%	0%	25%	13%	13%	13%
19	15%	12%	12%	12%	15%	10%	10%	10%	2%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	15%	13%	13%	13%
20	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	13%	13%	13%	13%
21	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
22	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
23	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
24	12%	12%	12%	12%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	13%	13%	13%	13%
Hr/Day :	10.4	3.9	3.1	3.9	10.4	4.1	2.8	4.1	8.7	0.3	0.1	0.3	6.7	1.2	1.2	1.2	5.8	0.3	0.1	0.3	10.5	4.1	3.3	4.1
Hr/Yr :	2,544				2,524				1,652				1,457				1,110				2,595			



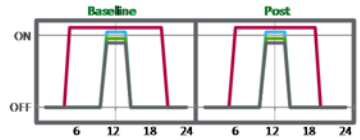
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	0	0	0	1	0	0	0
7	1	0	0	0	1	0	0	0
8	1	0	0	0	1	0	0	0
9	1	0	0	0	1	0	0	0
10	1	0	0	0	1	0	0	0
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	0	0	0	1	0	0	0
16	1	0	0	0	1	0	0	0
17	1	0	0	0	1	0	0	0
18	1	0	0	0	1	0	0	0
19	1	0	0	0	1	0	0	0
20	1	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	16.0	4.0	4.0	4.0	14.0	4.0	4.0	4.0
Hr/Yr :	3,704				3,330			



Buena Regional MS

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CBMA

Run Simulations

Baseline Calculation Inputs

Building Envelope

92,335	Building Area, sqft
Medium	Building Weight
Exterior Walls	
15.00	R_wall, hr-sqft-oF/Btu
28,580	Total Exterior Wall Area, sqft
Medium	Outside Surface Color
Windows	
Alum w/ Thermal Breaks	Frame Type
1/4 in. Clear Double	Glass Type
0%	Exterior Shading Percentage
2,836	Window Area, sqft
20%	% North Facing
30%	% East Facing
20%	% South Facing
30%	% West Facing
Roof	
20.00	R-value, hr-sqft-oF/Btu
92,335	Roof Area, sqft
Medium	Outside Surface Color
1.00	Plenum Height, ft

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	1.00	W / sqft	Lighting
Equipment	0.45	W / sqft	Equipment
People	496	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.250	CFM / sqft of Exterior Wall Area
9.0	Average Ceiling Height, ft
0.518	Air Change Per Hour, ACH
Ventilation	
14.0	OA Rate, CFM per person
0.14	OA Rate, CFM per sqft
19,035	OA CFM Total
ON Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Constant	74.60	Variable kW	193.96
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	45%

Space Set Points

	Occupied	Unoccupied	
Heating	70.0	64.0	oF
Cooling	75.0	76.0	oF
	60.0	60.0	% RH

Heating Pumps

Pump kW	22.38	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	50%

Cooling Pumps

Pump kW	17.90	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	50%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

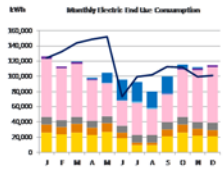
Heating and Cooling Systems

Heating	HW Bl- Forced Draft		System Type
83%	Fuel Efficiency, %		
1.64	Oversize Factor		
0%	% Load Electric Heat		
100%	Electric Efficiency, %		
Cooling	Screw Chiller, 2 Compressor		System Type
1.353	Cooling Efficiency, kW/ton		
1.30	Oversize Factor		
100%	% Bldg Cooled		
No	Remote Chilled Water?		

Miscellaneous Loads

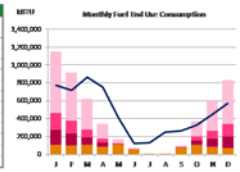
Electric	Peak kW	Schedule		
Ext Ltg	23.9	Ext Lighting		
N/A	0.0	Off		
N/A	0.0	Off		Stand-alone
Fuel	Peak kBtu	Schedule	Plant?	Efficiency
DHW	650.0	DHW	No	80%
Reheat	0.0	Sch9	Yes	85%
N/A	0.0	Off	No	100%

Energy Modeling Calibration



Electric Calibration			
Modeled	Utility	Error	
kWh	kWh	%	
126,334	124,376	2%	Jan
112,881	132,223	-15%	Feb
119,305	144,107	-17%	Mar
90,685	148,535	-24%	Apr
104,529	152,190	-31%	May
96,232	73,643	31%	Jun
92,523	99,372	-7%	Jul
79,981	102,047	-22%	Aug
99,859	112,286	-11%	Sep
115,674	112,194	3%	Oct
112,597	99,238	13%	Nov
114,970	101,123	14%	Dec
1,273,570	1,401,395	-9.1%	

Fuel Calibration			
Modeled	Utility	Error	
kBTU	kBTU	%	
1,153,324	773,576	49%	Jan
913,124	720,169	27%	Feb
620,529	861,196	-28%	Mar
340,245	749,280	-55%	Apr
169,630	412,217	-59%	May
60,579	124,139	-51%	Jun
2,035	126,048	-98%	Jul
2,035	246,492	-99%	Aug
97,346	261,217	-63%	Sep
370,126	322,948	15%	Oct
595,396	446,866	33%	Nov
830,148	573,535	45%	Dec
5,154,476	5,616,683	-8.2%	



Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling				Fuel Consumption: Miscellaneous Loads			Heating			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumd	Reheat	DHW	Reheat	N/A	Envelope	Infiltration	Ventilation	Reheat
	19.0%	8.2%	8.3%	0.0%	0.0%	51.8%	0.5%	1.5%	0.0%	9.2%	0.0%	0.0%	17.3%	0.0%	0.0%	14.1%	14.7%	53.7%	0.0%
Month	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	26,056	10,886	9,642	0	0	76,670	0	3,079	0	0	0	0	106,097	0	0	173,326	183,506	691,395	0
2	23,683	9,910	8,709	0	0	67,915	0	2,664	0	0	0	0	95,639	0	0	139,265	145,904	532,316	0
3	26,220	10,994	9,642	0	0	69,457	25	2,690	0	277	0	0	105,438	0	0	86,101	80,813	340,097	0
4	22,856	9,515	9,331	0	0	53,100	193	1,840	0	1,850	0	0	86,507	0	0	44,317	44,202	165,219	0
5	16,773	11,206	9,642	0	0	40,864	864	605	0	11,434	0	0	103,718	0	0	5,561	5,360	41,810	0
6	18,437	7,579	9,331	0	0	32,343	1,008	16	0	27,523	0	0	58,549	0	0	241	230	1,559	0
7	9,581	3,607	9,642	0	0	42,867	1,342	0	0	25,504	0	0	2,035	0	0	0	0	0	0
8	9,581	3,607	9,642	0	0	34,726	1,089	0	0	21,335	0	0	2,035	0	0	0	0	0	0
9	21,492	8,941	9,331	0	0	36,571	913	293	0	21,318	0	0	77,415	0	0	2,948	2,820	14,163	0
10	26,138	10,940	9,642	0	0	61,881	332	2,010	0	4,730	0	0	105,268	0	0	47,960	47,263	169,636	0
11	21,888	9,039	9,331	0	0	67,879	117	2,512	0	1,831	0	0	91,364	0	0	90,141	95,060	328,830	0
12	20,915	8,634	9,642	0	0	72,922	0	2,956	0	0	0	0	72,926	0	0	131,729	140,812	485,100	0
	253,626	104,855	113,530	0	0	659,315	5,879	18,564	0	117,802	0	0	901,542	0	0	725,688	757,912	2,769,334	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumd	Reheat
	21.2%	8.9%	0.0%	0.0%	0.0%	29.4%	0.7%	0.3%	0.0%	39.5%	0.0%	0.0%
Month	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1	84.7	37.4	0.0	0.0	0.0	118.2	0.0	5.0	0.0	0.0	0.0	0.0
2	89.7	37.4	0.0	0.0	0.0	100.9	0.0	4.0	0.0	0.0	0.0	0.0
3	89.7	37.4	0.0	0.0	0.0	100.9	3.2	0.0	0.0	86.0	0.0	0.0
4	89.7	37.4	0.0	0.0	0.0	100.9	3.2	0.0	0.0	134.9	0.0	0.0
5	89.7	37.4	0.0	0.0	0.0	100.9	3.2	0.0	0.0	188.9	0.0	0.0
6	84.7	33.2	0.0	0.0	0.0	117.7	4.0	0.0	0.0	266.5	0.0	0.0
7	19.9	8.3	0.0	0.0	0.0	110.4	3.3	0.0	0.0	246.2	0.0	0.0
8	19.9	8.3	0.0	0.0	0.0	119.3	4.1	0.0	0.0	270.8	0.0	0.0
9	89.7	37.4	0.0	0.0	0.0	111.0	3.4	0.0	0.0	248.1	0.0	0.0
10	89.7	37.4	0.0	0.0	0.0	100.9	3.2	0.0	0.0	149.9	0.0	0.0
11	89.7	37.4	0.0	0.0	0.0	100.9	3.2	0.0	0.0	134.5	0.0	0.0
12	89.7	37.4	0.0	0.0	0.0	100.9	0.0	4.0	0.0	0.0	0.0	0.0
	927	386	0	0	0	1,281	31	13	0	1,726	0	0



No	Print HVAC Loads Tab?
No	Print TOU Data?

Design Loads Check

Rule of Thumb Checks

System	Modeled	Actual	Units	% Error
Heating	2,443	3,430	MBH	1.3%
Heating	37	37	Btu / sf	1.3%
Cooling	356	350	Tons	1.1%
Cooling	281	284	sf / Ton	-1.1%
Fans	136,192		CFM	#DIV/0!
Fans	1.47	0.00	CFM / sf	#DIV/0!
Fans	0.55		BHP / HPNP	#DIV/0!
OA	19,035		CFM	#DIV/0!
OA	14%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index

	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	47.1	51.8	-9.1%
Fuel	55.8	60.0	-8.2%
DHW	0.0	0.0	#DIV/0!
Total	102.9	112.6	-8.6%

Fan and Pumps Input Aid

Supply Fan Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration

	Modeled	Utility	Error
	kW	kW	%
Jan	245.4	446.1	-45%
Feb	232.0	420.5	-45%
Mar	317.2	447.0	-29%
Apr	366.1	462.6	-21%
May	420.2	504.9	-17%
Jun	506.1	480.9	5%
Jul	386.2	393.3	-2%
Aug	422.6	422.7	0%
Sep	439.4	520.1	-8%
Oct	381.2	473.2	-19%
Nov	365.5	437.8	-17%
Dec	232.0	428.9	-46%
	4,366	5,438	-19.7%

Load Factor

	Modeled	Utility
	LF	LF
Jan	0.69	0.37
Feb	0.72	0.47
Mar	0.51	0.43
Apr	0.37	0.45
May	0.33	0.41
Jun	0.26	0.21
Jul	0.32	0.34
Aug	0.25	0.32
Sep	0.28	0.30
Oct	0.41	0.32
Nov	0.43	0.31
Dec	0.67	0.32
	0.29	0.31

ELEMENT
Buena Regional MS

Element

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1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				ECM Name	Int Ltg	Ext Ltg	Dynamic Air Filtration	BAS	DCV	Envelope	-	-	-	-
				Include Run?	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No
					Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	Category	Variable Name	Units		Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1	Internal Loads	Lighting Peak Density	W/sf		1.08	0.47									
2	Misc Electric	Ext Ltg Peak	kW		25.92		8.70								
3	Outdoor Air	OA per Person	CFM/person		14.00			10.00							
4	Outdoor Air	OA per Area	CFM/sf		0.14			0.10							
5	Fans	Fan Schedule	Fan Sched List		Baseline				Post						
6	Fans	Unoccupied Heating SP	oF		64.00				62.00						
7	Fans	Unoccupied Cooling SP	oF		76.00				78.00						
8	Outdoor Air	OA Schedule	OA List		ON Night					DCV					
9	Outdoor Air	Infiltration Rate	CFM/sf ext wall		0.250						0.227				

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CEMA Monthly Savings

Export to CEMA

ECM 1: Int Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	15,131	10,456	7,995	15,978	14,915	13,228	11,265	13,962	12,848	13,987	12,674	17,240	**159,679**	100%
1	Electric	kW	75	18	18	78	72	184	50	33	50	71	72	72	**793**	100%
kBTu 1	Natural Gas	Therm	-23	0	0	-26	-243	-374	-428	-555	-494	-428	-309	-108	**-2,988**	100%

ECM 2: Ext Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	6,199	6,406	6,406	6,199	6,406	6,199	6,406	6,406	5,786	6,406	6,199	6,406	**75,424**	100%
1	Electric	kW	0	0	0	0	0	0	0	3	0	0	0	0	**3**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	**0**	100%

ECM 4: BAS

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	7,249	18,370	14,629	8,044	9,360	8,221	3,444	1,689	2,114	5,985	8,665	7,194	**94,962**	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	**0**	100%
kBTu 1	Natural Gas	Therm	14	0	0	55	303	396	464	463	411	409	287	125	**2,927**	100%

ECM 5: DCV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	583	1,980	1,422	294	3,709	3,282	3,143	3,170	3,197	4,578	2,781	138	**28,278**	21%
1	Electric	kW	2	11	14	0	0	0	0	1	0	0	0	0	**29**	21%
kBTu 1	Natural Gas	Therm	5	0	0	36	263	480	684	807	672	430	246	103	**3,727**	21%

ECM 6: Envelope

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	354	631	962	239	554	1,154	1,365	1,349	1,067	1,990	886	53	**10,603**	100%
1	Electric	kW	6	5	6	5	2	0	0	3	0	0	1	2	**28**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	51	107	159	227	181	110	-1	3	**836**	100%

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Weather Import

Import Weather

Selection Parameters		
Source	TMY3	Name
Location	PA, Philadelphia-International	Name

Station Location Details		
WABN	724080	
Latitude	39.867	°
Longitude	75.233	°
Elevation	6.6	ft

Design Day Selections		
Design Data	99.0%	
Heating DB Temp	11.5	°F
Cooling DB Temp	92.7	°F
Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	N/A
Days per year	186	69	24	86

Yearly Day Type Definitions

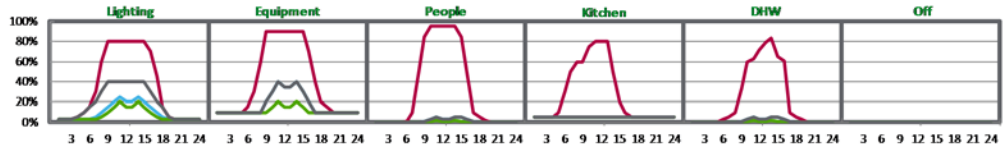
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	2	1	1	1	1	1	2	3
Period 3	4/23	6/12	2	1	1	1	1	1	2	3
Period 4	6/13	9/6	4	4	4	4	4	4	4	4
Period 5	9/7	11/7	2	1	1	1	1	1	2	3
Period 6	11/8	11/12	3	3	3	3	3	3	3	3
Period 7	11/13	11/21	2	1	1	1	1	1	2	3
Period 8	11/22	11/25	3	3	3	3	3	3	3	3
Period 9	11/26	12/21	2	1	1	1	1	1	2	3
Period 10	12/22	12/31	3	3	3	3	3	3	3	3
Period 11										
Period 12										
		365								

Holidays

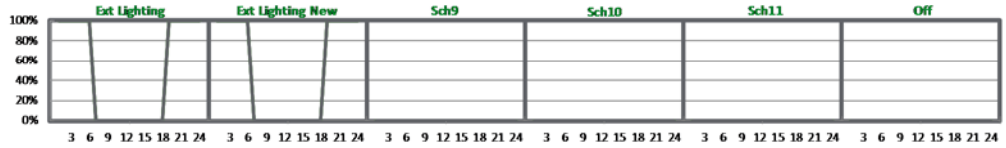
Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
2	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
3	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
4	5%	3%	3%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	10%	3%	3%	10%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
6	15%	3%	3%	15%	15%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
7	30%	5%	3%	20%	30%	10%	10%	10%	10%	0%	0%	0%	50%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
8	60%	10%	5%	30%	60%	10%	10%	10%	50%	0%	0%	0%	60%	5%	5%	5%	10%	0%	0%	0%	0%	0%	0%	0%
9	80%	15%	10%	40%	90%	20%	10%	20%	85%	1%	0%	1%	60%	5%	5%	5%	34%	1%	0%	1%	0%	0%	0%	0%
10	80%	20%	15%	40%	90%	30%	15%	30%	95%	3%	1%	3%	75%	5%	5%	5%	60%	3%	1%	3%	0%	0%	0%	0%
11	80%	25%	20%	40%	90%	40%	20%	40%	95%	5%	2%	5%	80%	5%	5%	5%	63%	5%	2%	5%	0%	0%	0%	0%
12	80%	20%	15%	40%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	72%	3%	1%	3%	0%	0%	0%	0%
13	80%	20%	15%	40%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	79%	3%	1%	3%	0%	0%	0%	0%
14	80%	25%	20%	40%	90%	40%	20%	40%	95%	5%	2%	5%	50%	5%	5%	5%	83%	5%	2%	5%	0%	0%	0%	0%
15	80%	20%	15%	40%	90%	30%	15%	30%	85%	5%	1%	5%	20%	5%	5%	5%	65%	5%	1%	5%	0%	0%	0%	0%
16	70%	15%	10%	30%	70%	20%	10%	20%	50%	3%	0%	3%	10%	5%	5%	5%	61%	3%	0%	3%	0%	0%	0%	0%
17	45%	10%	5%	20%	40%	10%	10%	10%	10%	1%	0%	1%	5%	5%	5%	5%	10%	1%	0%	1%	0%	0%	0%	0%
18	15%	5%	3%	15%	20%	10%	10%	10%	5%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
19	5%	3%	3%	5%	15%	10%	10%	10%	2%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
20	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
21	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
22	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
23	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
24	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	8.4	2.3	1.7	4.5	9.8	4.1	2.8	4.1	7.7	0.3	0.1	0.3	6.7	1.2	1.2	1.2	5.5	0.3	0.1	0.3	0.0	0.0	0.0	0.0
Hr/Yr :	2,148				2,526				1,485				1,452				1,075				0			



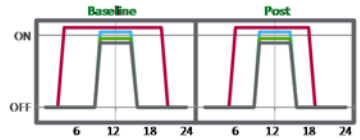
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	1	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	0	0	0	1	0	0	0
7	1	0	0	0	1	0	0	0
8	1	0	0	0	1	0	0	0
9	1	0	0	0	1	0	0	0
10	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1
16	1	0	0	0	1	0	0	0
17	1	0	0	0	1	0	0	0
18	1	0	0	0	1	0	0	0
19	1	0	0	0	0	0	0	0
20	1	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	17.0	6.0	6.0	6.0	13.0	6.0	6.0	6.0
Hr/Yr :	4,236				3,492			



Element

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Cleary ES

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Run Simulations

Baseline Calculation Inputs

Building Envelope

58,700	Building Area, sqft	
Medium	Building Weight	
Exterior Walls		
15.00	R_wall, hr-sqft-oF/Btu	
25,500	Total Exterior Wall Area, sqft	
Medium	Outside Surface Color	
Windows		
Alum w/ Thermal Breaks	Frame Type	
1/4 in. Clear Double	Glass Type	
0%	Exterior Shading Percentage	
8,925	Window Area, sqft	
22%	% North Facing	
17%	% East Facing	
39%	% South Facing	
22%	% West Facing	
Roof		
20.00	R-value, hr-sqft-oF/Btu	
58,700	Roof Area, sqft	
Light	Outside Surface Color	
4.00	Plenum Height, ft	

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	0.84	W / sqft	Lighting
Equipment	0.60	W / sqft	Equipment
People	284	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.180	CFM / sqft of Exterior Wall Area
8.0	Average Ceiling Height, ft
0.607	Air Change Per Hour, ACH
Ventilation	
17.0	OA Rate, CFM per person
0.17	OA Rate, CFM per sqft
14,482	OA CFM Total
Off Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const kW	37.67	Variable kW	0.00
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	100%

Space Set Points

	Occupied	Unoccupied	
Heating	70.0	64.0	oF
Cooling	70.0	74.0	oF
	50.0	90.0	% RH

Heating Pumps

Pump kW	11.19	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Cooling Pumps

Pump kW	3.73	Availability?	Enabled
Speed Ctrl	Variable	Min Speed	50%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

Heating and Cooling Systems

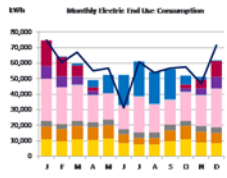
Heating	HW Bh - Condensing	System Type
	93%	Fuel Efficiency, %
	2.30	Oversize Factor
	45%	% Load Electric Heat
	457K	Electric Efficiency, %
Cooling	Grnd Srce HP / Wtr Loop HP	System Type
	0.90	Cooling Efficiency, kW/ton
	0.87	Oversize Factor
	100%	% Bldg Cooled
	No	Remote Chilled Water?

Miscellaneous Loads

Electric	Peak kW	Schedule	
Ext Ltg	9.8	Ext Lighting	
N/A	0.0	Off	
N/A	0.0	Off	
Fuel	Peak kBtu	Schedule	Plant?
DHW	600.0	Dmnd	No
N/A	0.0	Off	No
N/A	0.0	Off	No

Standalone Efficiency
94%
100%
100%

Energy Modeling Calibration

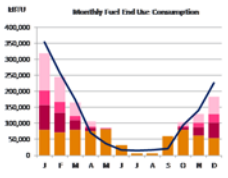


Electric Calibration

	Modeled	Utility	Error
	kWh	kWh	%
Jan	74,506	74,826	0%
Feb	63,952	60,240	6%
Mar	59,652	67,203	-11%
Apr	49,180	55,236	-11%
May	52,591	56,721	-7%
Jun	52,277	31,120	68%
Jul	60,930	60,668	0%
Aug	54,587	53,724	2%
Sep	55,943	56,906	-2%
Oct	52,030	57,486	-9%
Nov	51,352	46,956	9%
Dec	61,460	71,359	-14%
	688,460	692,444	**-0.6%**

Fuel Calibration

	Modeled	Utility	Error
	kBTU	kBTU	%
Jan	319,873	355,544	-10%
Feb	246,390	257,848	-4%
Mar	165,986	174,066	-5%
Apr	105,249	70,585	49%
May	84,724	37,468	126%
Jun	32,311	16,300	98%
Jul	5,738	14,812	-61%
Aug	5,738	17,505	-67%
Sep	59,068	20,327	191%
Oct	104,796	95,572	10%
Nov	129,066	140,012	-8%
Dec	183,596	227,151	-19%
	1,442,536	1,427,190	**1.1%**



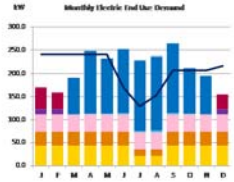
Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling				Miscellaneous Loads			Heating			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat	Dmnd	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	16.4%	13.5%	6.1%	0.0%	0.0%	35.5%	0.4%	5.4%	8.2%	15.4%	0.0%	0.0%	47.6%	0.0%	0.0%	16.3%	10.0%	24.1%	0.0%
Month	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	10,856	8,502	3,556	0	0	27,200	0	8,079	16,313	0	0	0	79,053	0	0	79,353	45,174	116,292	0
2	9,871	7,740	3,212	0	0	23,922	17	6,815	12,194	181	0	0	71,943	0	0	61,613	34,625	78,210	0
3	10,913	8,590	3,556	0	0	22,981	80	5,461	6,996	1,073	0	0	79,321	0	0	30,247	13,302	43,095	0
4	10,467	8,257	3,442	0	0	17,292	165	2,462	2,679	4,418	0	0	75,791	0	0	9,834	4,921	14,703	0
5	11,211	8,740	3,556	0	0	16,515	300	145	371	11,545	0	0	80,502	0	0	614	337	3,241	0
6	8,408	5,736	3,442	0	0	15,145	334	0	0	19,212	0	0	52,311	0	0	0	0	0	0
7	7,486	4,324	3,556	0	0	22,943	512	0	0	22,100	0	0	5,738	0	0	0	0	0	0
8	7,486	4,324	3,556	0	0	18,234	427	0	0	28,551	0	0	5,738	0	0	0	0	0	0
9	9,563	7,287	3,442	0	0	16,011	337	0	0	19,304	0	0	59,068	0	0	0	0	0	0
10	10,885	8,546	3,556	0	0	18,535	196	2,227	2,297	5,786	0	0	79,187	0	0	8,468	4,539	12,601	0
11	8,902	7,083	3,442	0	0	20,004	91	4,398	5,541	1,891	0	0	61,206	0	0	25,860	14,696	27,303	0
12	8,361	6,790	3,556	0	0	25,090	7	7,329	10,247	92	0	0	54,568	0	0	46,000	27,028	54,003	0
	114,407	85,918	41,873	0	0	244,272	2,471	36,916	56,442	106,161	0	0	686,457	0	0	264,010	144,625	347,447	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling			
	Lighting	Equipment	Ext Ltg	N/A	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	16.4%	13.5%	0.0%	0.0%	0.0%	17.8%	0.3%	1.9%	0.0%	44.0%	0.0%	0.0%
Month	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	47.5	0.0	0.0	0.0
2	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	36.3	0.0	0.0	0.0
3	42.6	30.6	0.0	0.0	0.0	37.7	0.7	0.0	0.0	79.8	0.0	0.0
4	42.6	30.6	0.0	0.0	0.0	37.7	1.5	0.0	0.0	134.9	0.0	0.0
5	42.6	30.6	0.0	0.0	0.0	37.7	1.9	0.0	0.0	120.2	0.0	0.0
6	42.6	30.6	0.0	0.0	0.0	37.7	2.6	0.0	0.0	137.9	0.0	0.0
7	21.3	13.6	0.0	0.0	0.0	37.7	3.3	0.0	0.0	161.9	0.0	0.0
8	21.3	13.6	0.0	0.0	0.0	37.7	4.2	0.0	0.0	159.5	0.0	0.0
9	42.6	30.6	0.0	0.0	0.0	37.7	3.2	0.0	0.0	150.3	0.0	0.0
10	42.6	30.6	0.0	0.0	0.0	37.7	1.2	0.0	0.0	100.1	0.0	0.0
11	42.6	30.6	0.0	0.0	0.0	37.7	0.6	0.0	0.0	82.9	0.0	0.0
12	42.6	30.6	0.0	0.0	0.0	37.7	0.0	11.2	32.3	0.0	0.0	0.0
	469	333	0	0	0	452	20	34	116	1,118	0	0



No	Print HVAC Loads Tab?
No	Print TOU Data?

Design Loads Check

Rule of Thumb Checks

System	Modeled	Actual	Units	% Error
Heating	4,005	4,000	kBTH	0.1%
Heating	71	71	Btu / sf	0.1%
Cooling	178	179	Tons	-0.4%
Cooling	318	317	sf / Ton	0.4%
Fans	80,029		CFM	#DIV/0!
Fans	1.41	0.00	CFM / sf	#DIV/0!
Fans	0.47		kW / KCFM	#DIV/0!
OA	14,482		CFM	#DIV/0!
OA	18%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index

	Modeled	Utility	% Error
	kBtu/SF	kBtu/SF	kBtu/SF
Utility	41.4	41.7	-0.6%
Electric	25.4	25.2	1.1%
Fuel	0.0	0.0	#DIV/0!
CHW	66.9	66.8	0.0%

Fan and Pump Input Aid

Supply Fan Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration

	Modeled	Utility	Error
	kW	kW	%
Jan	169.6	240.0	-29%
Feb	158.4	240.0	-34%
Mar	191.4	240.0	-20%
Apr	248.3	240.0	3%
May	233.0	240.0	-3%
Jun	251.4	169.6	48%
Jul	227.7	128.4	77%
Aug	236.3	153.0	54%
Sep	264.4	207.2	28%
Oct	212.2	207.2	2%
Nov	194.5	207.2	-6%
Dec	154.4	216.7	-29%
	2,542	2,489	**2.1%**

Load Factor

	Modeled	Utility
	LF	LF
Jan	0.59	0.42
Feb	0.60	0.37
Mar	0.41	0.56
Apr	0.28	0.32
May	0.30	0.32
Jun	0.29	0.35
Jul	0.36	0.64
Aug	0.31	0.47
Sep	0.29	0.38
Oct	0.33	0.37
Nov	0.37	0.31
Dec	0.53	0.44
	0.30	0.33

ELEMENT
Cleary ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

		ECM Name		Int Ltg	Ext Ltg	Dynamic Air Filtration	High Eff Electric AC	Reheat Coils	BAS	DCV	Envelope	-	-
		Include Run?		Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No
				Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	Category	Variable Name	Units	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1	Internal Loads	Lighting Peak Density	W/sf	0.94	0.43									
2	Internal Loads	Lighting Schedule	Int Sched List	Lighting	Lighting									
3	Misc Electric	Ext Ltg Peak	kW	9.56		3.12								
4	Misc Electric	Ext Ltg Schedule	Int Sched List	Ext Lighting		Ext Lighting New								
5	Outdoor Air	OA per Person	CFM/person	17.00			12.00							
6	Outdoor Air	OA per Area	CFM/sf	0.17			0.13							
7	Plant	Cooling Efficiency	kW/ton	0.90				0.836						
8	Plant	Cooling Oversize Factor	Factor	0.87				0.84						
9	Plant	Heating Electric Efficiency	%	4.57				4.88						
10	Plant	Percent Electric Heat	%	0.45				0.37						
11	Fans	Fan Schedule	Fan Sched List	Baseline						Post				
12	Fans	Unoccupied Heating SP	oF	64.00						62.00				
13	Fans	Unoccupied Cooling SP	oF	74.00					73.00	77.00				
14	Fans	Occupied Cooling SP	oF	70.00					69.00					
15	Outdoor Air	OA Schedule	OA List	OFF Night							DCV			
16	Outdoor Air	Infiltration Rate	CFM/sf ext wall	0.18								0.13		

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CEMA Monthly Savings

Export to CEMA

ECM 1: Int Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	5,909	5,859	5,559	6,495	6,317	4,644	2,497	5,155	4,743	5,384	3,794	7,213	63,568	100%
1	Electric	kW	27	15	12	30	29	29	21	21	21	29	30	29	292	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	-18	-37	-88	-105	-85	-50	-39	-2	-424	100%

ECM 2: Ext Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	2,318	2,396	2,396	2,318	2,396	2,318	2,396	2,396	2,164	2,396	2,318	2,396	28,207	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 4: High Eff Electric AC

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	1,165	1,326	1,220	1,147	888	1,442	2,993	3,882	2,919	1,746	2,943	699	22,370	100%
1	Electric	kW	10	9	15	9	6	5	8	11	9	5	8	7	102	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	-40	-104	-196	-366	-266	-133	-32	-3	-1,140	100%

ECM 5: Reheat Coils

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	-1,520	-1,800	-1,780	-1,416	-696	-268	-15	0	-73	-242	-486	-1,091	-9,387	100%
1	Electric	kW	-4	-4	0	-4	-4	-4	0	0	0	-4	-4	-4	-32	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	1	100%

ECM 6: BAS

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	6,646	12,575	8,685	6,133	4,830	4,085	3,287	2,972	3,699	7,295	4,950	4,672	69,830	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	132	233	318	550	439	348	180	13	2,213	100%

ECM 7: DCV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	309	598	506	202	130	343	245	192	127	267	-107	70	2,881	18%
1	Electric	kW	0	4	2	0	0	0	0	0	0	0	0	0	8	18%
kBTu 1	Natural Gas	Therm	0	0	0	0	10	21	31	42	32	22	11	2	172	18%

ECM 8: Envelope

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	523	872	1,004	510	948	930	2,810	1,425	1,350	745	851	94	12,062	100%
1	Electric	kW	5	6	7	5	3	2	1	2	2	0	4	3	40	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	39	83	183	239	181	78	27	0	831	100%

ELEMENT
Collings Lake ES

Element

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1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters		
Source	TMY3	Name
Location	PA, Philadelphia-International	Name

Station Location Details		
WABN	724080	
Latitude	39.867	°
Longitude	75.233	°
Elevation	6.6	ft

Design Day Selections		
Design Data	99.0%	
Heating DB Temp	11.5	°F
Cooling DB Temp	92.7	°F
Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	186	69	110	0

Yearly Day Type Definitions

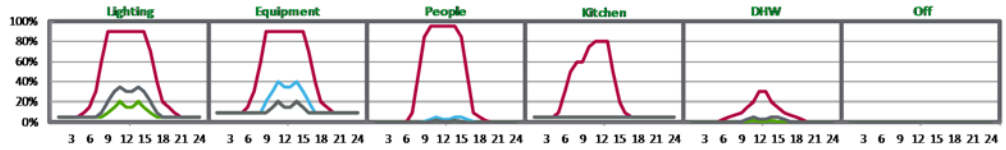
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	2	1	1	1	1	1	2	3
Period 3	4/23	6/12	2	1	1	1	1	1	2	3
Period 4	6/13	9/6	3	3	3	3	3	3	3	3
Period 5	9/7	11/7	2	1	1	1	1	1	2	3
Period 6	11/8	11/12	3	3	3	3	3	3	3	3
Period 7	11/13	11/21	2	1	1	1	1	1	2	3
Period 8	11/22	11/25	3	3	3	3	3	3	3	3
Period 9	11/26	12/21	2	1	1	1	1	1	2	3
Period 10	12/22	12/31	3	3	3	3	3	3	3	3
Period 11										
Period 12										
		365								

Holidays

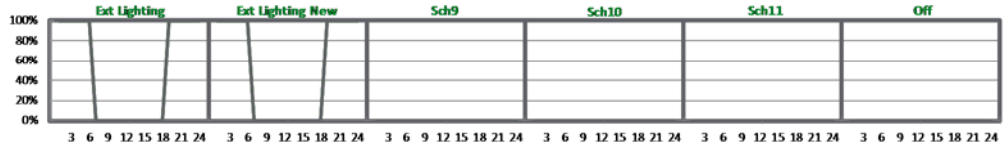
Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
2	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
3	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
4	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	10%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
6	15%	5%	5%	5%	15%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
7	30%	5%	5%	5%	30%	10%	10%	10%	10%	0%	0%	0%	50%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
8	60%	10%	5%	10%	60%	10%	10%	10%	50%	0%	0%	0%	60%	5%	5%	5%	7%	0%	0%	0%	0%	0%	0%	0%
9	90%	20%	10%	20%	90%	20%	10%	10%	85%	1%	0%	0%	60%	5%	5%	5%	10%	1%	0%	1%	0%	0%	0%	0%
10	90%	30%	15%	30%	90%	30%	15%	15%	95%	3%	1%	1%	75%	5%	5%	5%	15%	3%	1%	3%	0%	0%	0%	0%
11	90%	35%	20%	35%	90%	40%	20%	20%	95%	5%	2%	2%	80%	5%	5%	5%	20%	5%	2%	5%	0%	0%	0%	0%
12	90%	30%	15%	30%	90%	35%	15%	15%	95%	3%	1%	1%	80%	5%	5%	5%	30%	3%	1%	3%	0%	0%	0%	0%
13	90%	30%	15%	30%	90%	35%	15%	15%	95%	3%	1%	1%	80%	5%	5%	5%	30%	3%	1%	3%	0%	0%	0%	0%
14	90%	35%	20%	35%	90%	40%	20%	20%	95%	5%	2%	2%	50%	5%	5%	5%	20%	5%	2%	5%	0%	0%	0%	0%
15	90%	30%	15%	30%	90%	30%	15%	15%	85%	5%	1%	1%	20%	5%	5%	5%	15%	5%	1%	5%	0%	0%	0%	0%
16	70%	20%	10%	20%	70%	20%	10%	10%	50%	3%	0%	0%	10%	5%	5%	5%	10%	3%	0%	3%	0%	0%	0%	0%
17	40%	10%	5%	10%	40%	10%	10%	10%	10%	1%	0%	0%	5%	5%	5%	5%	7%	1%	0%	1%	0%	0%	0%	0%
18	20%	5%	5%	5%	20%	10%	10%	10%	5%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%
19	15%	5%	5%	5%	15%	10%	10%	10%	2%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	0%	0%	0%	0%
20	10%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
21	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
22	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
23	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
24	5%	5%	5%	5%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	9.4	3.2	2.0	3.2	9.8	4.1	2.8	2.8	7.7	0.3	0.1	0.1	6.7	1.2	1.2	1.2	1.8	0.3	0.1	0.3	0.0	0.0	0.0	0.0
Hr/Yr :	2,189				2,414				1,467				1,452				364				0			



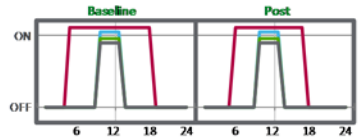
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				0				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0
6	1	0	0	0	1	0	0	0
7	1	0	0	0	1	0	0	0
8	1	0	0	0	1	0	0	0
9	1	0	0	0	1	0	0	0
10	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	0	0	0	1	0	0	0
15	1	0	0	0	1	0	0	0
16	1	0	0	0	1	0	0	0
17	1	0	0	0	1	0	0	0
18	1	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	14.0	4.0	4.0	4.0	12.0	4.0	4.0	4.0
Hr/Yr :	3,320				2,948			



ELEMENT

Collings Lake ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CBMA

Run Simulations

Baseline Calculation Inputs

Building Envelope

32,766	Building Area, sqft	
Medium	Building Weight	
Exterior Walls		
13.00	R_wall, hr-sqft-oF/Btu	
17,550	Total Exterior Wall Area, sqft	
Light	Outside Surface Color	
Windows		
Alum w/ Thermal Breaks	Frame Type	
1/4 in. Clear Double	Glass Type	
0%	Exterior Shading Percentage	
2,633	Window Area, sqft	
15%	% North Facing	
35%	% East Facing	
15%	% South Facing	
35%	% West Facing	
Roof		
18.00	R-value, hr-sqft-oF/Btu	
32,766	Roof Area, sqft	
Light	Outside Surface Color	
3.00	Plenum Height, ft	

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	0.47	W / sqft	Lighting
Equipment	0.50	W / sqft	Equipment
People	202	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.150	CFM / sqft of Exterior Wall Area
7.0	Average Ceiling Height, ft
0.669	Air Change Per Hour, ACH
Ventilation	
14.0	OA Rate, CFM per person
0.14	OA Rate, CFM per sqft
7,417	OA CFM Total
Off Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const kW	22.96	Variable kW	0.00
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	100%

Space Set Points

	Occupied	Unoccupied	
Heating	68.0	60.0	oF
Cooling	72.0	80.0	oF
	60.0	60.0	% RH

Heating Pumps

Pump kW	0.00	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Cooling Pumps

Pump kW	8.21	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

Heating and Cooling Systems

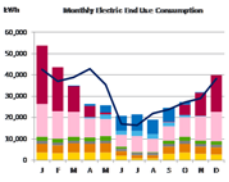
Heating	Furnace	System Type
80%	Fuel Efficiency, %	
1.61	Oversize Factor	
100%	% Load Electric Heat	
272k	Electric Efficiency, %	
Cooling	Grnd Src HP / Wtr Loop HP	System Type
1.188	Cooling Efficiency, kW/ton	
1.66	Oversize Factor	
100%	% Bldg Cooled	
No	Remote Chilled Water?	

Miscellaneous Loads

Electric	Peak kW	Schedule	
Ext Lig	3.5	Ext Lighting	
DHW	48.0	DHW	
N/A	0.0	Off	
Fuel	Peak kBtu	Schedule	Plant?
DHW Propan	0.0	DHW	No
N/A	0.0	Off	No
N/A	0.0	Off	No

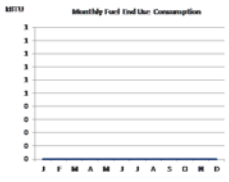
			Stand-alone Efficiency
			93%
			100%
			100%

Energy Modeling Calibration



Electric Calibration		
Modeled	Utility	Error
kWh	kWh	%
53,894	42,423	27%
43,587	37,074	18%
34,714	39,000	-11%
26,465	42,731	-38%
25,767	35,599	-28%
20,807	16,968	23%
21,448	16,439	30%
19,093	22,000	-13%
24,615	23,900	3%
27,440	27,153	1%
32,046	29,043	10%
38,837	38,168	4%
369,713	370,499	-0.2%

Fuel Calibration			
Modeled	Utility	Error	
kBTU	kBTU	%	
0	0	n/a	Jan
0	0	n/a	Feb
0	0	n/a	Mar
0	0	n/a	Apr
0	0	n/a	May
0	0	n/a	Jun
0	0	n/a	Jul
0	0	n/a	Aug
0	0	n/a	Sep
0	0	n/a	Oct
0	0	n/a	Nov
0	0	n/a	Dec
0	0	#DIV/0!	



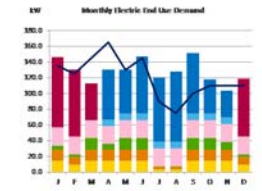
Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling				Miscellaneous Loads			Heating			
	Lighting	Equipment	Ext Lig	DHW	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat	DHW Propan	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	9.2%	10.7%	4.1%	4.7%	0.0%	31.6%	3.5%	0.0%	27.0%	9.2%	0.0%	0.0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Month	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	3,608	4,094	1,296	2,006	0	15,280	0	0	27,608	0	0	0	0	0	0	0	0	0	0
2	3,286	3,727	1,173	1,829	0	12,982	0	0	20,590	0	0	0	0	0	0	0	0	0	0
3	3,645	4,137	1,296	2,026	0	11,465	107	0	11,966	70	0	0	0	0	0	0	0	0	0
4	3,500	3,976	1,256	1,940	0	8,800	686	0	5,101	1,006	0	0	0	0	0	0	0	0	0
5	3,712	4,209	1,296	1,049	0	8,134	1,944	0	978	3,359	0	0	0	0	0	0	0	0	0
6	1,910	2,379	1,256	816	0	5,514	1,969	0	0	4,953	0	0	0	0	0	0	0	0	0
7	959	1,422	1,296	119	0	7,376	2,634	0	0	7,828	0	0	0	0	0	0	0	0	0
8	959	1,422	1,296	119	0	6,296	2,248	0	0	6,751	0	0	0	0	0	0	0	0	0
9	2,909	3,381	1,256	1,917	0	6,824	2,019	0	261	6,428	0	0	0	0	0	0	0	0	0
10	3,627	4,115	1,296	2,014	0	9,182	837	0	5,168	1,211	0	0	0	0	0	0	0	0	0
11	2,949	3,411	1,256	1,969	0	11,281	243	0	10,908	419	0	0	0	0	0	0	0	0	0
12	3,788	3,370	1,296	1,418	0	13,809	0	0	17,254	0	0	0	0	0	0	0	0	0	0
	33,870	39,544	15,286	17,453	0	116,929	12,949	0	99,850	33,831	0	0	0	0	0	0	0	0	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling			
	Lighting	Equipment	Ext Lig	DHW	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	8.5%	9.4%	0.0%	6.7%	0.0%	10.0%	4.3%	0.0%	13.1%	11.7%	0.0%	0.0%
Month	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1	13.9	14.7	0.0	4.8	0.0	15.0	0.0	0.0	89.4	0.0	0.0	0.0
2	9.3	9.8	0.0	3.4	0.0	23.0	0.0	0.0	84.6	0.0	0.0	0.0
3	13.9	14.7	0.0	14.4	0.0	23.0	0.0	0.0	46.6	0.0	0.0	0.0
4	13.9	14.7	0.0	7.2	0.0	23.0	8.2	0.0	0.0	63.2	0.0	0.0
5	13.9	14.7	0.0	14.4	0.0	23.0	8.2	0.0	0.0	56.2	0.0	0.0
6	13.9	14.7	0.0	14.4	0.0	23.0	8.2	0.0	0.0	72.5	0.0	0.0
7	3.1	3.3	0.0	1.0	0.0	23.0	8.2	0.0	0.0	82.1	0.0	0.0
8	3.1	3.3	0.0	1.0	0.0	23.0	8.2	0.0	0.0	89.3	0.0	0.0
9	13.9	14.7	0.0	14.4	0.0	23.0	8.2	0.0	0.0	76.7	0.0	0.0
10	13.9	14.7	0.0	14.4	0.0	23.0	8.2	0.0	0.0	43.8	0.0	0.0
11	13.9	14.7	0.0	9.6	0.0	23.0	8.2	0.0	0.0	34.4	0.0	0.0
12	9.3	9.8	0.0	3.4	0.0	23.0	0.0	0.0	73.2	0.0	0.0	0.0
	136	144	0	102	0	276	66	0	294	518	0	0



No	Print HVAC Loads Tab?
No	Print TOU Data?

Design Loads Check

Rule of Thumb Checks

System	Modeled	Actual	Units	% Error
Heating	1,395	1,397	MBH	-0.2%
Heating	43	43	Btu / sf	-0.2%
Cooling	117	117	Tons	0.2%
Cooling	280	281	sf / Ton	-0.2%
Fans	40,503		CFM	#DIV/0!
Fans	1.24	0.00	CFM / sf	#DIV/0!
Fans	0.57		kW / kCFM	#DIV/0!
OA	7,417		CFM	#DIV/0!
OA	18%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index

	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	30.5	30.6	-0.2%
Fuel	0.0	0.0	#DIV/0!
DHW	0.0	0.0	#DIV/0!
Total	30.5	30.6	-0.2%

Fan and Pump Input Aid

Supply Fan Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration

	Modeled	Utility	Error
	kW	kW	%
Jan	145.8	135.0	8%
Feb	130.1	125.0	4%
Mar	112.8	145.0	-22%
Apr	130.2	165.0	-21%
May	130.4	130.0	0%
Jun	146.7	145.0	1%
Jul	120.6	90.0	34%
Aug	127.9	75.0	70%
Sep	150.9	100.0	51%
Oct	118.1	110.0	7%
Nov	103.9	110.0	-6%
Dec	118.8	110.0	8%
	1,556	1,440	8.1%

Load Factor

	Modeled	Utility
	LF	LF
Jan	0.50	0.42
Feb	0.50	0.44
Mar	0.41	0.36
Apr	0.28	0.36
May	0.27	0.37
Jun	0.30	0.36
Jul	0.24	0.25
Aug	0.20	0.39
Sep	0.23	0.33
Oct	0.33	0.33
Nov	0.43	0.37
Dec	0.45	0.47
	0.28	0.26

ELEMENT
Collings Lake ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				ECM Name	Int Ltg	Ext Ltg	Dynamic Air Filtration	Fix ERV	BAS	DCV	Kitchen Hood Blocking	Envelope	-	-
				Include Run?	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No
					Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	Category	Variable Name	Units		Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1	Internal Loads	Lighting Peak Density	W/sf		0.47	0.45									
2	Misc Electric	Ext Ltg Peak	kW		3.49		3.24								
3	Outdoor Air	OA per Person	CFM/person		14.00			11.00							
4	Outdoor Air	OA per Area	CFM/sf		0.14			0.10							
5	Plant	Cooling Efficiency	kW/ton		1.19				1.14						
6	Fans	Unoccupied Heating SP	oF		60.00					60.00					
7	Fans	Unoccupied Cooling SP	oF		80.00					80.00					
8	Fans	Fan Schedule	Fan Sched List		Baseline					Post					
9	Outdoor Air	OA Schedule	OA List		OFF Night						DCV				
10	Outdoor Air	Infiltration Rate	CFM/sf ext wall		0.150							0.114	0.075		

ELEMENT
Collings Lake ES

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CEMA Monthly Savings

Export to CEMA

ECM 1: Int Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	133	49	144	148	144	99	79	97	91	116	134	173	1,407	100%
1	Electric	kW	1	0	0	1	1	1	0	0	0	0	1	1	6	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 2: Ext Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	90	93	93	90	93	90	93	93	84	93	90	93	1,095	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 4: Fix ERV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	274	302	267	253	48	16	0	0	0	3	40	132	1,334	100%
1	Electric	kW	3	3	4	3	2	0	0	0	0	0	2	2	19	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 5: BAS

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	600	0	0	1,260	1,406	1,132	990	1,897	1,447	1,358	1,543	1,676	13,310	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	0	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 6: DCV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	114	244	172	59	75	136	196	273	214	141	78	-42	1,660	14%
1	Electric	kW	0	2	2	0	0	0	1	0	1	0	0	0	7	14%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	14%

ECM 7: Kitchen Hood Blocking

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	-70	146	-18	43	347	541	730	982	894	568	253	-14	4,402	100%
1	Electric	kW	1	1	2	1	0	1	2	2	2	1	1	0	14	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ECM 8: Envelope

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	-10	169	2	-388	1,099	2,965	3,062	4,049	3,362	2,569	1,155	-121	17,913	100%
1	Electric	kW	4	5	6	4	1	1	6	8	6	5	3	2	49	100%
kBTu 1	Propane	gal	0	0	0	0	0	0	0	0	0	0	0	0	0	100%

ELEMENT
Milanesi ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Weather Import

Import Weather

Selection Parameters		
Source	TMY3	Name
Location	PA, Philadelphia-International	Name

Station Location Details		
WABN	724080	
Latitude	39.867	°
Longitude	75.233	°
Elevation	6.6	ft

Design Day Selections		
Design Data	99.0%	
Heating DB Temp	11.5	°F
Cooling DB Temp	92.7	°F
Cooling WB Temp	75.6	°F

Calendar Schedules

Update Days/Yr

Day Types	1	2	3	4
Day Name	WEEKDAY	WEEKEND	HOLIDAY	SUMMER
Days per year	183	67	29	86

Yearly Day Type Definitions

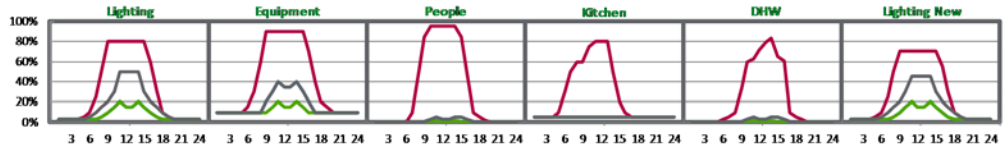
Name	Start	Stop	Su	M	Tu	W	Th	F	Sa	H
Period 1	1/1	4/17	2	1	1	1	1	1	2	3
Period 2	4/18	4/22	3	3	3	3	3	3	3	3
Period 3	4/23	6/12	2	1	1	1	1	1	2	3
Period 4	6/13	9/6	4	4	4	4	4	4	4	4
Period 5	9/7	11/7	2	1	1	1	1	1	2	3
Period 6	11/8	11/12	3	3	3	3	3	3	3	3
Period 7	11/13	11/21	2	1	1	1	1	1	2	3
Period 8	11/22	11/25	3	3	3	3	3	3	3	3
Period 9	11/26	12/21	2	1	1	1	1	1	2	3
Period 10	12/22	12/31	3	3	3	3	3	3	3	3
Period 11										
Period 12										
		365								

Holidays

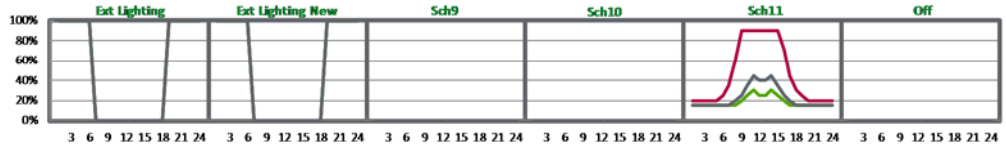
Month	Day	Description
1	1	New Years
1	21	MLK
2	18	President's Day
5	27	Memorial Day
10	8	Columbus Day
11	22	Thanksgiving
11	23	Thanksgiving
12	25	Christmas

Internal Space and Miscellaneous Load Schedules

Name :	Lighting				Equipment				People				Kitchen				DHW				Lighting New			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
2	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
3	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
4	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
5	5%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	10%	5%	5%	5%	0%	0%	0%	0%	5%	3%	3%	3%
6	10%	3%	3%	5%	15%	10%	10%	10%	1%	0%	0%	0%	30%	5%	5%	5%	3%	0%	0%	0%	10%	3%	3%	5%
7	25%	3%	3%	10%	30%	10%	10%	10%	10%	0%	0%	0%	50%	5%	5%	5%	5%	0%	0%	0%	25%	3%	3%	10%
8	50%	5%	5%	15%	60%	10%	10%	10%	50%	0%	0%	0%	60%	5%	5%	5%	10%	0%	0%	0%	50%	5%	5%	15%
9	80%	10%	10%	20%	90%	20%	10%	20%	85%	1%	0%	1%	60%	5%	5%	5%	34%	1%	0%	1%	70%	10%	10%	20%
10	80%	15%	15%	30%	90%	30%	15%	30%	95%	3%	1%	3%	75%	5%	5%	5%	60%	3%	1%	3%	70%	15%	15%	30%
11	80%	20%	20%	50%	90%	40%	20%	40%	95%	5%	2%	5%	80%	5%	5%	5%	63%	5%	2%	5%	70%	20%	20%	45%
12	80%	15%	15%	50%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	72%	3%	1%	3%	70%	15%	15%	45%
13	80%	15%	15%	50%	90%	35%	15%	35%	95%	3%	1%	3%	80%	5%	5%	5%	79%	3%	1%	3%	70%	15%	15%	45%
14	80%	20%	20%	50%	90%	40%	20%	40%	95%	5%	2%	5%	50%	5%	5%	5%	83%	5%	2%	5%	70%	20%	20%	45%
15	80%	15%	15%	30%	90%	30%	15%	30%	85%	5%	1%	5%	20%	5%	5%	5%	65%	5%	1%	5%	70%	15%	15%	30%
16	60%	10%	10%	20%	70%	20%	10%	20%	50%	3%	0%	3%	10%	5%	5%	5%	61%	3%	0%	3%	55%	10%	10%	20%
17	30%	5%	5%	15%	40%	10%	10%	10%	10%	1%	0%	1%	5%	5%	5%	5%	10%	1%	0%	1%	30%	5%	5%	15%
18	10%	3%	3%	10%	20%	10%	10%	10%	5%	0%	0%	0%	5%	5%	5%	5%	5%	0%	0%	0%	10%	3%	3%	10%
19	5%	3%	3%	5%	15%	10%	10%	10%	2%	0%	0%	0%	5%	5%	5%	5%	3%	0%	0%	0%	5%	3%	3%	5%
20	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
21	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
22	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
23	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
24	3%	3%	3%	3%	10%	10%	10%	10%	0%	0%	0%	0%	5%	5%	5%	5%	0%	0%	0%	0%	3%	3%	3%	3%
Hr/Day :	7.8	1.7	1.7	3.9	9.8	4.1	2.8	4.1	7.7	0.3	0.1	0.3	6.7	1.2	1.2	1.2	5.5	0.3	0.1	0.3	7.1	1.7	1.7	3.7
Hr/Yr :	1,932				2,502				1,461				1,435				1,059				1,777			



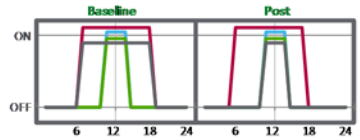
Name :	Ext Lighting				Ext Lighting New				Sch9				Sch10				Sch11				Off			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
2	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
3	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
4	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
5	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
6	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%	15%	15%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	15%	15%	15%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%	20%	15%	20%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	25%	20%	25%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	35%	25%	35%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	45%	30%	45%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	40%	25%	40%	0%	0%	0%	0%
13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	40%	25%	40%	0%	0%	0%	0%
14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	45%	30%	45%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	35%	25%	35%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	70%	25%	20%	25%	0%	0%	0%	0%
17	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	45%	20%	15%	20%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%	15%	15%	15%	0%	0%	0%	0%
19	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	25%	15%	15%	15%	0%	0%	0%	0%
20	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
21	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
22	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
23	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
24	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	20%	15%	15%	15%	0%	0%	0%	0%
Hr/Day :	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	5.4	4.4	5.4	0.0	0.0	0.0	0.0
Hr/Yr :	4,380				4,380				0				0				3,003				0			



HVAC Schedules

On (=1) / Off (=0)

Name :	Baseline				Post			
Hour	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	0	0	1	0	0	0
7	1	0	0	1	1	0	0	0
8	1	0	0	1	1	0	0	0
9	1	0	0	1	1	0	0	0
10	1	0	0	1	1	0	0	0
11	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1
15	1	0	0	1	1	0	0	0
16	1	0	0	1	1	0	0	0
17	1	0	0	1	1	0	0	0
18	1	0	0	1	0	0	0	0
19	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
Hr/Day :	12.0	4.0	4.0	12.0	12.0	4.0	4.0	4.0
Hr/Yr :	3,612				2,924			



Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: EEMs | 5: Savings | 6: Graphics | 7: ECMA

Run Simulations

Baseline Calculation Inputs

Building Envelope

39,617	Building Area, sqft
Medium	Building Weight
Exterior Walls	
15.00	R_wall, hr-sqft-oF/Btu
14,593	Total Exterior Wall Area, sqft
Medium	Outside Surface Color
Windows	
Alum w/ Thermal Breaks	Frame Type
1/4 in. Clear Double	Glass Type
5%	Exterior Shading Percentage
2,599	Window Area, sqft
20%	% North Facing
30%	% East Facing
20%	% South Facing
30%	% West Facing
Roof	
20.00	R-value, hr-sqft-oF/Btu
39,617	Roof Area, sqft
Medium	Outside Surface Color
3.00	Plenum Height, ft

Internal Space Loads

	Peak Load	Units	Schedule
Lighting	1.06	W / sqft	Lighting
Equipment	0.30	W / sqft	Equipment
People	274	People	People
People Activity Level		Seated at Rest	

Outdoor Air

Infiltration	
0.200	CFM / sqft of Exterior Wall Area
8.0	Average Ceiling Height, ft
0.565	Air Change Per Hour, ACH
Ventilation	
10.0	OA Rate, CFM per person
0.11	OA Rate, CFM per sqft
8,522	OA CFM Total
ON Night	OA Modulation Schedule

Dehumidification

No	Does Building Dehumidify?
Fuel	Type of Reheat

Supply Fans

Const kW	11.00	Variable kW	32.13
Schedule	Baseline	Speed Ctrl	Variable
Availability?	Enabled	Min Speed	40%

Space Set Points

	Occupied	Unoccupied	
Heating	68.0	64.0	oF
Cooling	70.0	76.0	oF
	40.0	80.0	% RH

Heating Pumps

Pump kW	7.46	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Cooling Pumps

Pump kW	5.60	Availability?	Enabled
Speed Ctrl	Constant	Min Speed	100%

Fuel Distribution

Fuel 1	100%	Fuel 2	0%

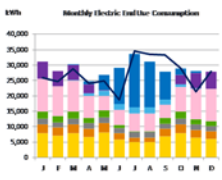
Heating and Cooling Systems

Heating	HW Bin - Forced Draft		System Type
	76%	Fuel Efficiency, %	
	2.50	Oversize Factor	
	0%	% Load Electric Heat	
	100%	Electric Efficiency, %	
Cooling	Screw-Chiller, 2 Compressor		System Type
	1.01	Cooling Efficiency, kW/ton	
	1.37	Oversize Factor	
	100%	% Bldg Cooled	
	No	Remote Chilled Water?	

Miscellaneous Loads

Electric	Peak kW	Schedule			
Ext Lig	4.8	Ext Lighting			
DHW	18.0	DHW			
N/A	0.0	Off			
Fuel	Peak kBtu	Schedule	Plant?	Stand-alone Efficiency	
DHW	200.0	DHW	No	80%	
N/A	0.0	Off	No	100%	
N/A	0.0	Off	No	100%	

Energy Modeling Calibration

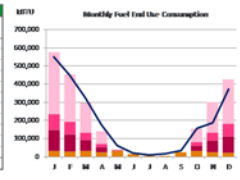


Electric Calibration

Modeled	Utility	Error
kWh	kWh	%
31,061	25,988	20%
28,047	24,621	14%
30,222	28,725	5%
24,692	24,133	2%
26,800	24,818	8%
29,186	18,699	56%
33,692	34,442	-2%
31,131	33,576	-7%
27,913	33,200	-16%
28,844	29,062	-1%
28,126	21,402	31%
27,854	27,997	-1%
347,568	326,666	6.4%

Fuel Calibration

	Modeled	Utility	Error
	kBTU	kBTU	%
Jan	574,535	549,299	5%
Feb	454,897	449,224	1%
Mar	297,571	322,061	-8%
Apr	139,422	175,199	-20%
May	39,033	61,851	-37%
Jun	12,655	20,578	-39%
Jul	2,248	10,075	-78%
Aug	2,248	15,499	-85%
Sep	23,135	31,484	-27%
Oct	153,066	156,670	-2%
Nov	299,600	185,844	61%
Dec	424,823	372,661	14%
	2,425,231	2,350,447	3.2%



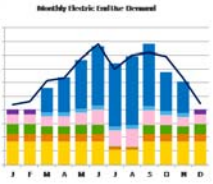
Baseline Breakout Analysis

Electric Consumption

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling				Miscellaneous Loads			Heating			
	Lighting	Equipment	Ext Lig	DHW	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat	DHW	N/A	N/A	Envelope	Infiltration	Ventilation	Reheat
	23.4%	8.6%	6.1%	5.5%	0.0%	26.3%	3.3%	9.2%	0.0%	17.6%	0.0%	0.0%	10.9%	0.0%	0.0%	15.6%	15.0%	54.5%	0.0%
Month	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu	kBtu
1	7,881	2,965	1,789	2,229	0	10,634	0	5,543	0	0	0	0	30,963	0	0	115,442	89,112	341,018	0
2	7,151	2,716	1,616	2,029	0	9,549	0	4,963	0	0	0	0	28,178	0	0	93,464	71,422	261,834	0
3	7,881	3,016	1,789	2,237	0	9,978	252	4,871	0	197	0	0	31,068	0	0	58,138	44,069	164,297	0
4	6,783	2,617	1,732	1,835	0	7,190	660	2,872	0	1,002	0	0	25,493	0	0	26,042	19,160	68,728	0
5	6,197	3,069	1,789	2,327	0	1,457	1,679	372	0	1,979	0	0	24,305	0	0	3,574	1,319	3,994	0
6	5,869	2,014	1,732	913	0	4,982	1,858	0	0	11,822	0	0	12,855	0	0	0	0	0	0
7	5,881	1,516	1,789	162	0	5,714	2,093	0	0	17,334	0	0	2,248	0	0	0	0	0	0
8	5,081	1,516	1,789	162	0	5,603	2,061	0	0	14,816	0	0	2,248	0	0	0	0	0	0
9	6,820	2,019	1,732	1,666	0	4,433	1,690	0	0	9,016	0	0	23,135	0	0	0	0	0	0
10	7,881	3,001	1,789	2,233	0	8,063	884	3,028	0	1,964	0	0	31,015	0	0	29,312	21,141	71,599	0
11	6,527	2,487	1,732	1,726	0	9,921	168	4,953	0	613	0	0	23,973	0	0	62,141	47,516	165,948	0
12	6,086	2,364	1,789	1,539	0	10,590	0	5,505	0	0	0	0	21,373	0	0	89,408	69,373	244,670	0
	81,180	29,885	21,068	19,056	0	91,354	11,363	31,929	0	61,732	0	0	264,670	0	0	475,517	362,957	1,322,087	0

Electric Demand

	Internal Loads		Miscellaneous Loads			Fans and Pumps			Heating and Cooling			
	Lighting	Equipment	Ext Lig	DHW	N/A	Fans	Clg Pumps	Htg Pumps	Heating	Cooling	Dehumid	Reheat
	24.4%	7.5%	0.0%	8.7%	0.0%	13.7%	3.3%	1.4%	0.0%	40.5%	0.0%	0.0%
Month	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1	33.6	10.8	0.0	14.9	0.0	14.3	0.0	7.5	0.0	0.0	0.0	0.0
2	33.6	10.8	0.0	14.9	0.0	14.3	0.0	7.5	0.0	0.0	0.0	0.0
3	33.6	10.8	0.0	11.7	0.0	14.3	5.6	0.0	0.0	36.2	0.0	0.0
4	33.6	10.8	0.0	11.7	0.0	14.3	5.6	0.0	0.0	52.3	0.0	0.0
5	33.6	10.8	0.0	14.2	0.0	17.6	5.6	0.0	0.0	71.0	0.0	0.0
6	33.6	10.8	0.0	14.2	0.0	21.7	5.6	0.0	0.0	87.0	0.0	0.0
7	21.0	4.8	0.0	0.9	0.0	23.6	5.6	0.0	0.0	92.8	0.0	0.0
8	21.0	4.2	0.0	0.5	0.0	26.4	5.6	0.0	0.0	100.6	0.0	0.0
9	33.6	10.8	0.0	13.0	0.0	22.8	5.6	0.0	0.0	90.3	0.0	0.0
10	33.6	10.8	0.0	13.0	0.0	16.0	5.6	0.0	0.0	57.1	0.0	0.0
11	33.6	10.8	0.0	11.3	0.0	14.3	5.6	0.0	0.0	46.1	0.0	0.0
12	33.6	10.8	0.0	14.9	0.0	14.3	0.0	7.5	0.0	0.0	0.0	0.0
	378	116	0	135	0	213	50	22	0	633	0	0



No	Print HVAC Loads Tab?
No	Print TOU Data?

Design Loads Check

Rule of Thumb Checks

System	Modeled	Actual	Units	% Error
Heating	1,594	7,065	kBtu	-66.1%
Heating	60	177	Btu / sf	-66.1%
Cooling	134	134	Tons	-0.4%
Cooling	297	296	sf / Ton	0.4%
Fans	54,851		CFM	#DIV/0!
Fans	1.38	0.00	CFM / sf	#DIV/0!
Fans	0.20		kW / nCFM	#DIV/0!
OA	8,522		CFM	#DIV/0!
OA	16%	#DIV/0!	% OA	#DIV/0!

Energy Usage Index

	Modeled	Utility	% Error
Utility	kBtu/SF	kBtu/SF	kBtu/SF
Electric	29.8	28.0	6.4%
Fuel	60.9	59.0	3.2%
CHW	0.0	0.0	#DIV/0!
Total	90.7	87.0	4.2%

Fan and Pump Input Aid

Supply Fan Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
					0.00
Total	0				0.00

Heating Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Cooling Pump Details

Description	Qty	HP	Oversize	Motor Eff	kW
					0.00
					0.00
					0.00
Total	0				0.00

Electric Demand Calibration

Modeled	Utility	Error
kW	kW	%
Jan	81.1	87.7	-8%
Feb	81.1	92.8	-13%
Mar	112.2	123.4	-9%
Apr	118.3	124.3	-5%
May	152.8	155.7	-2%
Jun	173.0	175.6	-1%
Jul	148.6	139.9	6%
Aug	158.3	160.4	-1%
Sep	176.9	164.3	7%
Oct	135.1	158.6	-15%
Nov	121.7	126.7	-4%
Dec	81.1	89.4	-9%
	1,549	1,601	-3.2%

Load Factor

Modeled	Utility
LF	LF
0.51	0.40
0.51	0.39
0.36	0.31
0.27	0.27
0.24	0.21
0.23	0.16
0.30	0.33
0.26	0.28
0.22	0.28
0.29	0.25
0.32	0.23
0.46	0.41
0.23	0.21

ELEMENT
Milanesi ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

Run Simulations

ECM Calculation Inputs

Note: Use each variable name only once. If variable changes in multiple ECMs, use the same reference row with different column inputs.

				ECM Name	Int Ltg	Ext Ltg	Dynamic Air Filtration	Boiler Replacements	BAS	DCV	Envelope	-	-	-
				Include Run?	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	No
					Baseline	ECM 1	ECM 2	ECM 3	ECM 4	ECM 5	ECM 6	ECM 7	ECM 8	ECM 9	ECM 10
Ref	Category	Variable Name	Units		Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
1	Internal Loads	Lighting Peak Density	W/sf	1.06	0.46									
2	Misc Electric	Ext Ltg Peak	kW	4.81		1.53								
3	Outdoor Air	OA per Person	CFM/person	10.00			8.00							
4	Outdoor Air	OA per Area	CFM/sf	0.12			0.08							
5	Plant	Heating Fuel Efficiency	%	0.78				0.92						
6	Pumps	Heating kW	kW	7.46				5.22						
7	Fans	Fan Schedule	Fan Sched List	Baseline					Post					
8	Fans	Unoccupied Cooling SP	oF	76.00					78.00					
9	Fans	Unoccupied Heating SP	oF	64.00					62.00					
10	Outdoor Air	OA Schedule	OA List	ON Night						DCV				
11	Outdoor Air	Infiltration Rate	CFM/sf ext wall	0.200							0.140			

ELEMENT
Milanesi ES

Element

Schneider Electric

1: Utility | 2: Schedules | 3: Baseline | 4: ECMs | 5: Savings | 6: Graphics | 7: CEMA

CEMA Monthly Savings

Export to CEMA

ECM 1: Int Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	4,268	3,763	3,723	4,905	4,149	3,788	3,454	4,448	4,036	4,431	3,481	5,515	**49,959**	100%
1	Electric	kW	26	17	17	26	26	25	19	19	19	25	25	26	**271**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	-153	-96	-134	-184	-155	-134	-166	-3	**-1,024**	100%

ECM 2: Ext Ltg

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	1,181	1,220	1,220	1,181	1,220	1,181	1,220	1,220	1,102	1,220	1,181	1,220	**14,366**	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	**0**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	0	0	0	0	0	0	0	0	**0**	100%

ECM 4: Boiler Replacements

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	0	0	0	0	1,093	1,490	1,653	1,667	1,499	1,490	997	54	**9,941**	100%
1	Electric	kW	0	0	0	0	0	0	2	2	2	0	0	0	**7**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	209	434	634	858	673	426	199	11	**3,444**	100%

ECM 5: BAS

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	5,793	9,649	9,027	1,575	868	655	293	119	137	586	962	196	**29,860**	100%
1	Electric	kW	0	0	0	0	0	0	0	0	0	0	0	0	**0**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	104	157	185	168	150	146	88	3	**1,002**	100%

ECM 6: DCV

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	85	258	147	59	335	297	127	64	96	274	230	22	**1,994**	10%
1	Electric	kW	0	2	3	0	0	0	0	0	0	0	0	0	**5**	10%
kBTu 1	Natural Gas	Therm	0	0	0	0	72	113	143	176	144	113	56	6	**823**	10%

ECM 7: Envelope

Savings Methodology: Actual Savings

	Utility	Units	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Adjustment Factor
1	Electric	kWh	275	474	391	242	160	588	468	273	312	588	696	-11	**4,458**	100%
1	Electric	kW	4	6	6	4	2	2	0	0	0	0	1	2	**27**	100%
kBTu 1	Natural Gas	Therm	0	0	0	0	35	119	201	287	226	146	214	0	**1,228**	100%

POWERSMITHS

The ESP Calculator™

Energy Savings Payback Calculator

Building / Faciity:

Buena Regional HS

Date:	**30-Jan-19**
Version:	**1**

								Adjustments							Baseline Transformer Losses					Powersmiths Transformer Losses					Total Savings		
Transformer Count	Tag Number	Location ID or Room #	Transformer Designation	Proposed Powersmiths OPAL Transformer	Baseline kVA	Replacement kVA	Replace	Bseline % Load During Normal Operating Hours	Baseline % Load Outside Operating Hours	Powersmiths % Load During Normal Operating Hours	Powersmiths % Load Outside Operating Hours	Equipment Operating hrs/ day	Equipment Operating days/yr	A/C System Performance (kW/ton)	Baseline Transformer kW Losses (Normal Operation)	Baseline Transformer kW Losses (Outside Op. hrs)	Baseline Annual kWh Losses from Transformers	Baseline Annual kW Losses from A/C (Peak)	Baseline Annual kWh from A/C	Powersmiths Transformer kW Losses (Normal Operation)	Powersmiths Transformer kW Losses (Outside Op. hrs)	Powersmiths Annual kWh Losses from Transformers	Powersmiths Annual kW Losses from A/C (Peak)	Powersmiths Annual kWh from A/C	Monthly Peak kW Reduction During Normal Op. Hrs.	Annual kW Savings	Total kWh Savings
1	**56622**	Stage Storage (Drama)	TX1	E-Saver-80R	**150**	**150**	**1**	0.2%	0.2%	0.2%	0.2%	16	200	0	1.614	1.614	14,138	0.00	0	0.203	0.203	1,778	0.00	0	1.41	16.93	12,360
2	**56623**	New Wing Mech Lower B	DPL	E-Saver-80R	**150**	**150**	**1**	7.6%	3.0%	7.6%	3.0%	16	255	0	1.654	1.635	14,404	0.00	0	0.225	0.206	1,882	0.00	0	1.43	17.16	12,521
3	56624	Custodian Closet Lower B	Greenhouse	E-Saver-80R	**15**	**15**	**1**	13.5%	8.0%	13.5%	8.0%	16	255	0	0.327	0.317	2,815	0.00	0	0.048	0.040	384	0.00	0	0.28	3.34	2,431
4	56625	Custodian Closet Lower B	HBF1	E-Saver-80R	**15**	**15**	**1**	13.5%	8.0%	13.5%	8.0%	16	255	0	0.327	0.317	2,815	0.00	0	0.048	0.040	384	0.00	0	0.28	3.34	2,431
5	56626	C Wing Class 113	HF	E-Saver-80R	**50**	**50**	**1**	9.6%	5.0%	9.6%	5.0%	16	255	0.75	0.572	0.560	4,952	0.12	1,055	0.090	0.082	753	0.02	160	0.58	7.01	5,095
6	56627	Main Electric Old Wing	TX1	E-Saver-80R	**300**	**300**	**1**	9.7%	5.0%	9.7%	5.0%	16	255	0	2.550	2.508	22,144	0.00	0	0.426	0.386	3,543	0.00	0	2.12	25.49	18,601
							6								**7.04**		**61,269**	**0.12**	**1,055**	**1.04**		**8,724**	**0.02**	**160**	**6.11**	**73.27**	**53,439**

POWERSMITHS

The ESP Calculator™

Energy Savings Payback Calculator

Building / Faciity:

Collings Lakes ES

Date:	**30-Jan-19**
Version:	**1**

								Adjustments							**Baseline Transformer Losses**					**Powersmiths Transformer Losses**					**Total Savings**		
Transformer Count	Tag Number	Location ID or Room #	Transformer Designation	Proposed Powersmiths OPAL Transformer	Baseline kVA	Replacement kVA	Replace	Bseline % Load During Normal Operating Hours	Baseline % Load Outside Operating Hours	Powersmiths % Load During Normal Operating Hours	Powersmiths % Load Outside Operating Hours	Equipment Operating hrs/ day	Equipment Operating days/yr	A/C System Performance (kW/ton)	Baseline Transformer kW Losses (Normal Operation)	Baseline Transformer kW Losses (Outside Op. hrs)	Baseline Annual kWh Losses from Transformers	Baseline Annual kW Losses from A/C (Peak)	Baseline Annual kWh from A/C	Powersmiths Transformer kW Losses (Normal Operation)	Powersmiths Transformer kW Losses (Outside Op. hrs)	Powersmiths Annual kWh Losses from Transformers	Powersmiths Annual kW Losses from A/C (Peak)	Powersmiths Annual kWh from A/C	Monthly Peak kW Reduction During Normal Op. Hrs.	Annual kW Savings	Total kWh Savings
1	**56628**	Mech Rm 314	TX 1L	E-Saver-80R	**30**	**30**	**1**	3.7%	2.0%	3.7%	2.0%	12	200	0.75	0.419	0.418	3,668	0.09	781	0.059	0.058	507	0.01	108	0.44	5.25	3,835
							1								**0.42**		**3,668**	**0.09**	**781**	**0.06**		**507**	**0.01**	**108**	**0.44**	**5.25**	**3,835**

Interior

	Base kWh	Base kW	kWh Savings	Monthly kW Savings	Annual kW Savings
HS	498,909	157.2	202,649	71.5	786.4
MS	237,968	84.7	128,775	47.9	526.6
Cleary	103,513	45.3	58,735	24.5	269.1
Collings Lake	32,509	12.9	916	0.9	9.7
Total	872899	300.1	391075	144.7	1,591.8

Exterior

	Base kWh	Base kW	kWh Savings
HS	71,424	13.9	47,842
MS	287,625	55.8	69,762
Cleary	39,763	7.7	26,078
Collings Lake	14,509	2.8	1,040
Total	413320	80.2	144722

Interior Lighting HVAC Savings

	kWh Savings	Annual kW Savings	Therm Savings
HS	19,929	220.1	-5,406
MS	17,345	244.7	-2,988
Cleary	1,749	29.0	-424
Collings Lake	-19	-4.2	0
Total	39,004	489.6	-8,818

Total Savings

kWh Savings	kW Savings	Therm Savings
270,419	1006.4	-5,406
215,882	771.3	-2,988
86,562	298.1	-424
1,937	5.6	0
574,800	2081.5	-8,818

SCOPE (Y/N)	BUILDING	FLOOR/GENERAL AREA	ROOM NAME	Existing Fixture Description	Retrofit Description	Schedule Annual HOURS	Switch Qty	Space Type (Quantity Factor)	Effective Annual Operating Hours	Default Sensor % Savings (% Time Areas Light Off)	% BURST DUTI (dd/H)	FIXTURE QUANTITY	Occ Sensor Qty	Dim Sensor Qty	Qty Hours Saved w/Control	Proposed Annual Operating Hours w/Control	Baseline Weekly Fixture	Proposed Weekly Fixture	Baseline Annual kWh	Proposed Annual kWh (w/ Occ Sensor Savings)	Proposed Annual kWh (w/ Occ and DUTI Savings)	Proposed Annual kWh (w/ Occ Sensor Savings)	Proposed Annual kWh (w/Timers)	Annual kWh Savings	Baseline Total Watts/kW	Baseline Peak kW	Proposed Peak kW (w/ Occ Sensor)	Proposed Peak kW (w/ Occ and DUTI Savings)	Proposed Max Peak kW Savings	Proposed Peak kW (w/Timers)	Proposed Demand kW Saved
NO	Collings Lake Elementary School	Interior	MAIN ENTRANCE VESTIBULE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	5604.25	0%	5.000%	1	0	0	0	4005	80	80	129	156	0	129	0	0.04	0.03	0.04	0.03	0.00	0.03	0.00
NO	Collings Lake Elementary School	Interior	MAIN ENTRANCE VESTIBULE	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	SKIP, Revising 400 Fixture(s), Not included in project	8760		85%	8760	0%	5.000%	1	0	0	0	8760	4	4	3.5	3.5	0	3.5	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO	Collings Lake Elementary School	Interior	MAIN OFFICE 101	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	7	0	0	0	3822	40	40	479	505	0	479	0	0.27	0.23	0.27	0.23	0.00	0.23	0.00
NO	Collings Lake Elementary School	Interior	PRINCIPALS OFFICE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	4	0	0	0	3822	40	40	274	288	0	270	0	0.15	0.13	0.15	0.13	0.00	0.13	0.00
NO	Collings Lake Elementary School	Interior	CONFERENCE ROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	1203.5	0%	5.000%	7	0	0	0	1202	40	40	520	556	0	520	0	0.27	0.23	0.27	0.23	0.00	0.23	0.00
NO	Collings Lake Elementary School	Interior	STORAGE CLOSET (NO ACCESS)	SKIP, FIXTURE OR SPACE NOT INCLUDED IN PROJECT	SKIP, Not included in project	4005		85%	4005	0%	5.000%	0	0	0	0	4005	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO	Collings Lake Elementary School	Interior	BOYS RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
YES	Collings Lake Elementary School	Interior	STORAGE ROOM 102	SUSPENDED INDUSTRIAL HOOD FIXTURE, 1' X 4', 2L F32T8, 32W, NLO ELECTRONIC BALLAST, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	3	0	0	0	601	58	24	66	29	0	29	37	0.17	0.14	0.07	0.06	0.06	0.06	0.02
YES	Collings Lake Elementary School	Interior	201 CUSTODIAN OFFICE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	2	0	0	0	3822	58	24	199	87	0	87	112	0.11	0.09	0.05	0.06	0.05	0.06	0.02
NO	Collings Lake Elementary School	Interior	CLASSROOM 202	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	GIRL'S RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 207	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 206	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	BATHROOM 209	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 209	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
YES	Collings Lake Elementary School	Interior	STORAGE (NO ACCESS)	GRID TROFFER, 2' X 4', LED F32T8, (1)VOL, 5LEC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	1	0	0	0	601	58	24	2.2	3.0	0	3.0	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 211	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	BATHROOM 211	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 208	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	BATHROOM 206	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 213	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	BATHROOM 213	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 213 STORAGE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	4005.5	0%	5.000%	2	0	0	0	601	40	40	50	3.2	0	80	0	0.08	0.06	0.08	0.06	0.00	0.06	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 210	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	BATHROOM 210	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	HALLWAY 200	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	4005	0%	5.000%	13	0	0	0	4005	40	40	1978	2083	0	1978	0	0.49	0.42	0.49	0.42	0.00	0.42	0.00
NO	Collings Lake Elementary School	Interior	HALLWAY 200	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	SKIP, Revising 400 Fixture(s), Not included in project	8760		85%	8760	0%	5.000%	2	0	0	0	8760	4	4	6.7	7.0	0	6.7	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
NO	Collings Lake Elementary School	Interior	HALLWAY 200 VESTIBULE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	5604.25	0%	5.000%	1	0	0	0	4005	80	80	129	156	0	129	0	0.04	0.03	0.04	0.03	0.00	0.03	0.00
NO	Collings Lake Elementary School	Interior	HALLWAY 200 VESTIBULE	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	SKIP, Revising 400 Fixture(s), Not included in project	8760		85%	8760	0%	5.000%	1	0	0	0	8760	4	4	3.5	3.5	0	3.5	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO	Collings Lake Elementary School	Interior	NURSES ROOM 105	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	0		85%	0	0%	5.000%	4	0	0	0	0	40	40	0	0	0	0	0	0.15	0.13	0.15	0.13	0.00	0.13	0.00
NO	Collings Lake Elementary School	Interior	NURSES OFFICE BATHROOM	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	MEN'S RESTROOM	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	WOMEN'S RESTROOM	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
NO	Collings Lake Elementary School	Interior	OFFICE 111	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	6	0	0	0	3822	40	40	411	433	0	411	0	0.23	0.19	0.23	0.19	0.00	0.19	0.00
NO	Collings Lake Elementary School	Interior	FACULTY ROOM 113	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	6	0	0	0	3822	40	40	411	433	0	411	0	0.23	0.19	0.23	0.19	0.00	0.19	0.00
YES	Collings Lake Elementary School	Interior	ELECTRICAL ROOM	STRADDLED STIRF FIXTURE, 4', 1/2 F32T8, 32W, 1LEC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 1 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	1	0	0	0	601	32	12	5.7	2.4	0	2.4	33	0.14	0.12	0.06	0.05	0.07	0.05	0.00
NO	Collings Lake Elementary School	Interior	CAFETERIA	GRID TROFFER, 2' X 2', LED 3200 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	55	0	0	0	2005	85	85	2192	2453	0	2192	0	1.36	0.99	1.16	0.99	0.00	0.99	0.00
NO	Collings Lake Elementary School	Interior	CAFETERIA	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	SKIP, Revising 400 Fixture(s), Not included in project	8760		85%	8760	0%	5.000%	4	0	0	0	8760	4	4	13.3	14.0	0	13.3	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
NO	Collings Lake Elementary School	Interior	KITCHEN	GRID TROFFER, 2' X 2', LED 3200 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	1602	0%	5.000%	13	0	0	0	1602	85	85	692	729	0	692	0	0.43	0.37	0.43	0.37	0.00	0.37	0.00
NO	Collings Lake Elementary School	Interior	KITCHEN STORAGE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	4005.5	0%	5.000%	2	0	0	0	601	80	80	50	3.2	0	80	0	0.08	0.06	0.08	0.06	0.00	0.06	0.00
YES	Collings Lake Elementary School	Interior	DISH WASH AREA	GRID TROFFER, 2' X 2', (1)T8, 2L4C NORMAL POWER BALLAST, 120/277V, STRADDLED STIRF FIXTURE, 4', 1/2 F32T8, 32W, 1LEC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1 LED 4LAMP/M, 4000K, 120-277V, 50 YEAR WARRANTY RETRO, LED, 1 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	1602	0%	5.000%	2	0	0	0	1602	32	16	97	58	0	58	40	0.06	0.05	0.04	0.03	0.02	0.03	0.00
YES	Collings Lake Elementary School	Interior	KITCHEN VESTIBULE	STRADDLED STIRF FIXTURE, 4', 1/2 F32T8, 32W, 1LEC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 1 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	5604.25	0%	5.000%	2	0	0	0	4005	80	32	264	82	0	82	112	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Collings Lake Elementary School	Interior	KITCHEN RESTROOM	VANITY MOUNT FIXTURE, LED, 1500 LUMEN, 20W, 120/277V	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	20	20	5.5	5.6	0	5.5	0	0.02	0.02	0.02	0.02	0.00	0.02	0.00
YES	Collings Lake Elementary School	Interior	COMPRESSOR ROOM	JANITORIAL, SURFACE MOUNT, INCANDESCENT A19 LAMP, 40W, 120V	RETRO, LED, 1X 11W, 1055 LAMP, 90CRI TYPE-BA, 11W/5-LUMEN, 4000K, 120V, 5 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	2	0	0	0	601	60	11	66	9	0	9	37	0.11	0.10	0.02	0.06	0.02	0.02	0.00
YES	Collings Lake Elementary School	Interior	1ST HALLWAY	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	4005	0%	5.000%	24	0	0	0	4005	40	40	3653	3845	0	3653	0	0.91	0.78	0.91	0.78	0.00	0.78	0.00
NO	Collings Lake Elementary School	Interior	1ST HALLWAY	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	SKIP, Revising 400 Fixture(s), Not included in project	8760		85%	8760	0%	5.000%	4	0	0	0	8760	4	4	13.3	14.0	0	13.3	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
NO	Collings Lake Elementary School	Interior	OFFICE 117	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	5	0	0	0	3822	40	40	205	216	0	205	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
NO	Collings Lake Elementary School	Interior	LIBRARY	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	13	0	0	0	3822	80	80	860	907	0	860	0	0.49	0.42	0.49	0.42	0.00	0.42	0.00
NO	Collings Lake Elementary School	Interior	LIBRARY STORAGE	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	4005.5	0%	5.000%	1	0	0	0	601	40	40	15	16	0	15	0	0.04	0.03	0.04	0.03	0.00	0.03	0.00
NO	Collings Lake Elementary School	Interior	BOYS RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
YES	Collings Lake Elementary School	Interior	STORAGE ROOM 101	SUSPENDED INDUSTRIAL HOOD FIXTURE, 1' X 4', 2L F32T8, 32W, NLO ELECTRONIC BALLAST, GRID TROFFER, 2' X 4', (1)VOL, 5LEC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	3	0	0	0	601	58	24	66	29	0	29	37	0.17	0.14	0.07	0.06	0.06	0.06	0.02
YES	Collings Lake Elementary School	Interior	STORAGE ROOM 104	GRID TROFFER, 2' X 4', LED F32T8, (1)VOL, 5LEC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	2	0	0	0	601	58	24	4.4	1.9	0	1.9	25	0.11	0.09	0.05	0.04	0.05	0.04	0.02
NO	Collings Lake Elementary School	Interior	WORK ROOM 103	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	3822.25	0%	5.000%	9	0	0	0	3822	40	40	616	649	0	609	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	GIRL'S RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 308	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 308	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 310	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 312	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 307	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	12	0	0	0	2005	60	60	913	961	0	913	0	0.46	0.39	0.46	0.39	0.00	0.39	0.00
NO	Collings Lake Elementary School	Interior	BOYS RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
NO	Collings Lake Elementary School	Interior	GIRL'S RESTROOM	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2403.5	0%	5.000%	3	0	0	0	2806	40	40	320	356	0	320	0	0.11	0.10	0.11	0.10	0.00	0.10	0.00
YES	Collings Lake Elementary School	Interior	FACULTY RESTROOM	GRID TROFFER, 2' X 4', LED F32T8, (1)VOL, 5LEC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	2403.5	0%	5.000%	1	0	0	0	2806	58	24	19.4	8.7	0	8.7	87	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Collings Lake Elementary School	Interior	PIPE CHASE (NO ACCESS)	JANITORIAL, SURFACE MOUNT, INCANDESCENT A19 LAMP, 40W, 120V	RETRO, LED, 1X 11W, 1055 LAMP, 90CRI TYPE-BA, 11W/5-LUMEN, 4000K, 120V, 5 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	1	0	0	0	601	60	11	66	11	0	11	55	0.17	0.15	0.03	0.05	0.12	0.03	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 317	GRID TROFFER, 2' X 4', LED 4000 LUMENS, 120/277V, 5TAP DIM	SKIP, Revising 400 Fixture(s), Not included in project	4005		85%	2002.5	0%	5.000%	9	0	0	0	2005	40	40	685	721	0	685	0	0.34	0.29	0.34	0.29	0.00	0.29	0.00
YES	Collings Lake Elementary School	Interior	STORAGE 317	GRID TROFFER, 2' X 4', LED F32T8, (1)VOL, 5LEC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 LED TUBE, TYPE B (USE VOLTAGE OPERATION), 1800 LM/FIM, 4000K, 120-277V, 50 YEAR WARRANTY	4005		85%	4005.5	0%	5.000%	1	0	0	0	601	58	24	2.2	3.0	0	3.0	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Collings Lake Elementary School	Interior	CLASSROOM 319	GRID TROFFER, 2' X 4', LED 4000 LUMENS,

ND	Buena Regional Middle School	Interior	COMPUTER LAB 501	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 504	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	8	0	0	2005	86	86	1305	577	0	577	712	0.65	0.56	0.29	0.26	0.31	0.26	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 506	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	8	0	0	2005	86	86	1305	577	0	577	712	0.65	0.56	0.29	0.26	0.31	0.26	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 503	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	6	0	0	2005	86	86	962	433	0	433	549	0.49	0.42	0.22	0.18	0.23	0.18	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 505	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	6	0	0	2005	86	86	962	433	0	433	549	0.49	0.42	0.22	0.18	0.23	0.18	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 507	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	6	0	0	2005	86	86	962	433	0	433	549	0.49	0.42	0.22	0.18	0.23	0.18	0.00
YES	Buena Regional Middle School	Interior	FACULTY'S RESTROOM 509	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1001.25	0%	5.000%	1	0	0	1001	58	24	55	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	FACULTY'S RESTROOM 511	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1001.25	0%	5.000%	1	0	0	1001	58	24	55	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 508	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	9	0	0	2005	86	86	1472	649	0	649	824	0.74	0.63	0.32	0.28	0.35	0.28	0.00
YES	Buena Regional Middle School	Interior	STORAGE 515	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	400.5	0%	5.000%	2	0	0	401	58	24	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 510	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 517	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	11	0	0	2005	86	86	1800	793	0	793	1027	0.90	0.76	0.40	0.34	0.43	0.34	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 517	RECESSED CAN 6", (COMPACT FLUORESCENT, 4 PIN DUAL TUBE, 26 26W, 120/277V	RETRO, (40) 26 5 DVL PLAFON HAMP LINE VOLTAGE, RSS 5W/4ME, 4000K, 120-277V, 5-YEAR WARRANTY	4005	85%	2002.5	0%	5.000%	1	0	0	2005	52	19	99	58	0	58	61	0.05	0.04	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 512	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 520	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 522	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 524	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 529	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 527	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	11	0	0	2005	86	86	1800	793	0	793	1027	0.90	0.76	0.40	0.34	0.43	0.34	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 527	RECESSED CAN 6", (COMPACT FLUORESCENT, 4 PIN DUAL TUBE, 26 26W, 120/277V	RETRO, (40) 26 5 DVL PLAFON HAMP LINE VOLTAGE, RSS 5W/4ME, 4000K, 120-277V, 5-YEAR WARRANTY	4005	85%	2002.5	0%	5.000%	1	0	0	2005	52	19	99	58	0	58	61	0.05	0.04	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	ISF 4 - 525	INDUSTRIAL HOOD FIXTURE, 3' X 4', 20 FIXTR, 50W, NLO ELECTRONIC BALLAST, 120/277V	RETRO, (40) 26 5 DVL PLAFON HAMP LINE VOLTAGE, RSS 5W/4ME, 4000K, 120-277V, 5-YEAR WARRANTY	4005	85%	400.5	0%	5.000%	1	0	0	401	58	24	22	10	0	10	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	MEN'S RESTROOM 523	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2403.5	0%	5.000%	4	0	0	2806	58	24	618	269	0	269	349	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional Middle School	Interior	JANITOR CLOSET 521	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	600.75	0%	5.000%	1	0	0	601	58	24	33	14	0	14	19	0.09	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	WOMEN'S RESTROOM 523 (NO ACCESS)	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2403.5	0%	5.000%	4	0	0	2806	58	24	618	269	0	269	349	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional Middle School	Interior	500 CORRIDOR SOUTH	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	5604.25	0%	5.000%	15	0	0	8408	58	24	2614	1226	0	1226	1588	0.83	0.70	0.36	0.31	0.40	0.31	0.00
ND	Buena Regional Middle School	Interior	500 CORRIDOR SOUTH	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	4	0	0	8760	4	4	133	140	0	133	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	500 CORRIDOR NORTH	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	5604.25	0%	5.000%	8	0	0	8408	58	24	1501	654	0	654	847	0.48	0.37	0.19	0.16	0.21	0.16	0.00
ND	Buena Regional Middle School	Interior	500 CORRIDOR NORTH	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	214 GUIDANCE OFFICE	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	STORAGE 214C	INDUSTRIAL HOOD FIXTURE, 3' X 4', 20 FIXTR, 50W, NLO ELECTRONIC BALLAST, 120/277V	RETRO, (40) 26 5 DVL PLAFON HAMP LINE VOLTAGE, RSS 5W/4ME, 4000K, 120-277V, 5-YEAR WARRANTY	4005	85%	400.5	0%	5.000%	1	0	0	401	58	24	22	10	0	10	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	214A GUIDANCE OFFICE	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	214B GUIDANCE OFFICE	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 212	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 209	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	SCIENCE LAB 210	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	16	0	0	2005	86	86	2618	1153	0	1153	1404	1.31	1.11	0.58	0.49	0.62	0.49	0.00
ND	Buena Regional Middle School	Interior	SCIENCE LAB 210	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	206A SCIENCE PREP ROOM	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	400.5	0%	5.000%	2	0	0	401	86	86	65	29	0	29	37	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 207	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	FACULTY RESTROOM 205B	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1001.25	0%	5.000%	1	0	0	1001	58	24	55	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	FACULTY RESTROOM 205A	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1001.25	0%	5.000%	1	0	0	1001	58	24	55	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	FACULTY MEN'S ROOM 205	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	6	0	0	1802	86	86	883	389	0	389	494	0.49	0.42	0.22	0.18	0.23	0.18	0.00
YES	Buena Regional Middle School	Interior	ELECTRICAL ROOM 208	INDUSTRIAL HOOD FIXTURE, 3' X 4', 20 FIXTR, 50W, NLO ELECTRONIC BALLAST, 120/277V	RETRO, (40) 26 5 DVL PLAFON HAMP LINE VOLTAGE, RSS 5W/4ME, 4000K, 120-277V, 5-YEAR WARRANTY	4005	85%	400.5	0%	5.000%	2	0	0	401	58	24	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	SCIENCE LAB 208	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	16	0	0	2005	86	86	2618	1153	0	1153	1464	1.31	1.11	0.58	0.49	0.62	0.49	0.00
ND	Buena Regional Middle School	Interior	SCIENCE LAB 208	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 203	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 201	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 204	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	ASSISTANT PRINCIPAL OFFICE 202	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	OFFICE 202A	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	OFFICE 202A	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	1602.25	0%	5.000%	2	0	0	1802	112	48	984	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	STORAGE 202C	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	400.5	0%	5.000%	1	0	0	401	86	86	33	14	0	14	18	0.08	0.07	0.04	0.03	0.04	0.03	0.00
YES	Buena Regional Middle School	Interior	200 CORRIDOR	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V, PREMATIC LENS	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	5604.25	0%	5.000%	22	0	0	8408	58	24	4127	1797	0	1797	2329	1.21	1.03	0.53	0.45	0.58	0.45	0.00
ND	Buena Regional Middle School	Interior	200 CORRIDOR	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	NEW, Bonding #20 Fixture(s), Not Included in project	8760	85%	8760	0%	5.000%	7	0	0	8760	4	4	233	245	0	233	0	0.03	0.02	0.01	0.02	0.00	0.02	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 126	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	CLASSROOM 125	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	12	0	0	2005	86	86	1963	865	0	865	1056	0.98	0.83	0.43	0.37	0.47	0.37	0.00
YES	Buena Regional Middle School	Interior	SCIENCE ROOM 116	GRID TROFFER, 2' X 4', 38 FIXTR, (12W), ISAC NORMAL POWER BALLAST, 120/277V,	RETRO, (40) 3 LAMP, 4FT T8 LED TUBE, TYPE B (USE ISOLTAGE DRIVER/TOOL LESS) (LAMPS INCL 4000K, 120-277V, 50-60HZ 90289437)	4005	85%	2002.5	0%	5.000%	11	0	0

YES	Buena Regional Middle School	Interior	COMPUTER LAB 1016	GRID TROFFER, 2' X 4', 36 FIXTR, 32W, 5100 NORMAL POWER BALLAST, 120/277V, PARABOLIC LENS	40205	85%	2002.5	0%	5.000%	19	0	0	2005	86	86	9108	1370	0	1370	1769	1.55	1.32	0.68	0.58	0.76	0.58	0.00
NO	Buena Regional Middle School	Interior	COMPUTER LAB 1016	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	1016/1-SF 2	INDUSTRIAL HOOD FIXTURE, 1' X 4', 2X FIXTR, 32W, NLO ELECTRONIC BALLAST, 120/277V, GRID TROFFER, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	1	0	0	4010	58	58	22	10	0	32	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	100 CORRIDOR SOUTH	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	5610.25	0%	5.000%	15	0	0	5630	58	58	2814	1226	0	1226	1588	0.83	0.70	0.36	0.31	0.40	0.31	0.00
NO	Buena Regional Middle School	Interior	100 CORRIDOR SOUTH	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	4	0	0	8760	4	4	133	140	0	133	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	100 CORRIDOR NORTH	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	5610.25	0%	5.000%	8	0	0	5630	58	58	1501	654	0	654	847	0.44	0.37	0.19	0.16	0.21	0.16	0.00
NO	Buena Regional Middle School	Interior	100 CORRIDOR NORTH	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	PRIVATE OFFICE 1009	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V,	40205	85%	1602.25	0%	5.000%	2	0	0	1602	86	86	294	150	0	150	193	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	PRIVATE OFFICE 1027	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V,	40205	85%	1602.25	0%	5.000%	2	0	0	1602	86	86	294	150	0	150	193	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	GRID TROFFER, CENTER BASKET, 2' X 4', 3X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V,	40205	85%	1602.25	0%	5.000%	16	0	0	1602	86	86	2316	1038	0	1038	1316	1.31	1.11	0.56	0.49	0.62	0.49	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	GRID TROFFER, CENTER BASKET, 2' X 4', 3X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, INDIRECT FLUORESCENT	0	85%	0	0%	5.000%	4	0	0	0	86	86	0	0	0	0	0	0.00	0.28	0.14	0.12	0.16	0.12	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V,	40205	85%	1602.25	0%	5.000%	24	0	0	1602	86	86	3154	1017	0	1017	1977	1.96	1.67	0.84	0.73	0.93	0.73	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	RECESSED CAN 6", COMPACT FLUORESCENT, 2-PIN DULI TUBE, 26 26W, 120/277V	40205	85%	1602.25	0%	5.000%	8	0	0	1602	52	39	712	274	0	274	459	0.40	0.34	0.15	0.13	0.21	0.13	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	LOW BAY FIXTURE, COMPACT FLUORESCENT, 6X 32W 120/277V	40205	85%	1602.25	0%	5.000%	2	0	0	1602	106	62	466	223	0	223	242	0.26	0.23	0.12	0.11	0.11	0.11	0.00
YES	Buena Regional Middle School	Interior	MEDIA CENTER 1005	PENDANT FIXTURE, COMPACT FLUORESCENT, 32W, 120V	40205	85%	1602.25	0%	5.000%	6	0	0	1602	93	35.5	231	112	0	112	121	0.13	0.11	0.06	0.05	0.06	0.05	0.00
NO	Buena Regional Middle School	Interior	MEDIA CENTER 1005	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	WORKROOM 1010	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	4	0	0	1602	58	58	397	173	0	173	224	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional Middle School	Interior	OFFICE 1001C	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	2	0	0	1602	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	COMPUTER LAB 1009	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, 5100 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	2002.5	0%	5.000%	9	0	0	2005	86	86	1472	669	0	669	824	0.74	0.63	0.32	0.28	0.35	0.28	0.00
YES	Buena Regional Middle School	Interior	SEMINAR ROOM 1007	GRID TROFFER, 2' X 4', 4S FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1203.5	0%	5.000%	3	0	0	1232	112	48	384	173	0	173	211	0.32	0.27	0.14	0.12	0.15	0.12	0.00
YES	Buena Regional Middle School	Interior	SEMINAR ROOM 1007	RECESSED CAN 8", INCANDESCENT, 4-FR LAMP, 150 WATT, 120V	40205	85%	1203.5	0%	5.000%	8	0	0	1232	100	35	913	164	0	164	769	0.76	0.65	0.12	0.10	0.14	0.10	0.00
YES	Buena Regional Middle School	Interior	MECHANICAL ROOM	SUSPENDED INDUSTRIAL HOOD FIXTURE, 1' X 4', 2X FIXTR, 32W, NLO ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	CONFERENCE ROOM 1013	GRID TROFFER, 2' X 4', 4S FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1203.5	0%	5.000%	3	0	0	1232	112	48	384	173	0	173	211	0.32	0.27	0.14	0.12	0.15	0.12	0.00
YES	Buena Regional Middle School	Interior	CONFERENCE ROOM 1013	RECESSED CAN 8", INCANDESCENT, 4-FR LAMP, 150 WATT, 120V	40205	85%	1203.5	0%	5.000%	8	0	0	1232	100	35	913	164	0	164	769	0.76	0.65	0.12	0.10	0.14	0.10	0.00
YES	Buena Regional Middle School	Interior	STORAGE 1008	GRID TROFFER, 2' X 4', 2X FIXTR, 32W, 5100 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	ELECTRICAL ROOM 1016	SUSPENDED INDUSTRIAL HOOD FIXTURE, 1' X 4', 2X FIXTR, 32W, NLO ELECTRONIC BALLAST,	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	1014 CHILD STUDY TEAM ROOM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	2	0	0	1602	86	86	294	150	0	150	193	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	OFFICE 1016C	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	2	0	0	1602	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	OFFICE 1016A	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	2	0	0	1602	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional Middle School	Interior	OFFICE 1016A	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	2	0	0	1602	86	86	294	150	0	150	193	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	NURSES OFFICE 1021	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1602.25	0%	5.000%	4	0	0	1602	86	86	589	260	0	260	329	0.33	0.28	0.14	0.12	0.16	0.12	0.00
YES	Buena Regional Middle School	Interior	NURSES OFFICE 1021	RECESSED CAN 6", COMPACT FLUORESCENT, 2-PIN DULI TUBE, 26 26W, 120/277V	40205	85%	1602.25	0%	5.000%	5	0	0	1602	52	39	445	171	0	171	274	0.25	0.21	0.10	0.08	0.13	0.08	0.00
YES	Buena Regional Middle School	Interior	RESTROOM 1018	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	1001.25	0%	5.000%	1	0	0	1005	58	58	55	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	EXAM ROOM 1014C	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V,	40205	85%	1602.25	0%	5.000%	2	0	0	1602	86	86	294	150	0	150	193	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	GYM/AUDIUM	HIGH BAY FIXTURE, METAL HALIDE, 480W, 120/277V	40205	85%	5610.25	0%	5.000%	26	0	0	5630	458	320	18011	8651	0	8651	29660	11.31	9.62	2.69	2.21	7.41	2.21	0.00
NO	Buena Regional Middle School	Interior	GYM/AUDIUM	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	4	0	0	8760	4	4	133	140	0	133	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	GYM/AUDIUM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	5610.25	0%	5.000%	2	0	0	5630	58	58	570	163	0	163	212	0.11	0.09	0.05	0.05	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	5009 WRESTLING ROOM	HIGH BAY FIXTURE, METAL HALIDE, 250W, 120/277V	40205	85%	2805.25	0%	5.000%	8	0	0	2820	288	320	5058	2083	0	2083	5615	2.19	1.86	0.93	0.68	1.16	0.68	0.00
NO	Buena Regional Middle School	Interior	5009 WRESTLING ROOM	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	STORAGE 5006A	INDUSTRIAL HOOD FIXTURE, 1' X 4', 2X FIXTR, 32W, NLO ELECTRONIC BALLAST, 120/277V, GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	6	0	0	4010	58	58	132	58	0	58	75	0.33	0.28	0.14	0.12	0.16	0.12	0.00
YES	Buena Regional Middle School	Interior	MEN'S RESTROOM 1011	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	2403.5	0%	5.000%	2	0	0	2410	58	58	329	135	0	135	174	0.11	0.09	0.05	0.05	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	MEN'S RESTROOM 1011	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	0	85%	0	0%	5.000%	1	0	0	0	58	58	0	0	0	0	0	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Buena Regional Middle School	Interior	MEN'S RESTROOM 1011	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	BOY'S LOCKER ROOM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	5610.25	0%	5.000%	10	0	0	5630	58	58	1876	817	0	817	1059	0.55	0.47	0.24	0.20	0.26	0.20	0.00
YES	Buena Regional Middle School	Interior	BOY'S LOCKER ROOM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	4005	85%	4005	0%	5.000%	3	0	0	4035	58	58	662	288	0	288	374	0.17	0.14	0.07	0.06	0.08	0.06	0.00
NO	Buena Regional Middle School	Interior	BOY'S LOCKER ROOM	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	BOY'S LOCKER ROOM	RECESSED CAN 6", COMPACT FLUORESCENT, 2-PIN DULI TUBE, 26 26W, 5007 LOCATION APPROVED	40205	85%	5610.25	0%	5.000%	5	0	0	5630	52	39	861	323	0	323	517	0.25	0.21	0.10	0.08	0.15	0.08	0.00
YES	Buena Regional Middle School	Interior	GIRL'S LOCKER ROOM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	5610.25	0%	5.000%	10	0	0	5630	58	58	1876	817	0	817	1059	0.55	0.47	0.24	0.20	0.26	0.20	0.00
YES	Buena Regional Middle School	Interior	GIRL'S LOCKER ROOM	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	4005	85%	4005	0%	5.000%	3	0	0	4035	58	58	662	288	0	288	374	0.17	0.14	0.07	0.06	0.08	0.06	0.00
NO	Buena Regional Middle School	Interior	GIRL'S LOCKER ROOM	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	2	0	0	8760	4	4	67	70	0	67	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	GIRL'S LOCKER ROOM	RECESSED CAN 6", COMPACT FLUORESCENT, 2-PIN DULI TUBE, 26 26W, 5007 LOCATION APPROVED	40205	85%	5610.25	0%	5.000%	5	0	0	5630	52	39	861	323	0	323	517	0.25	0.21	0.10	0.08	0.15	0.08	0.00
YES	Buena Regional Middle School	Interior	WOMEN'S RESTROOM 1015	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	2403.5	0%	5.000%	3	0	0	2800	58	58	463	202	0	202	262	0.17	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Interior	WOMEN'S RESTROOM 1015	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	0	85%	0	0%	5.000%	1	0	0	0	58	58	0	0	0	0	0	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Buena Regional Middle School	Interior	WOMEN'S RESTROOM 1015	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	STORAGE 1015	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	GYM AND MUSIC ROOM HALLWAY	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	16	0	0	4035	58	58	3151	1538	0	1538	1993	0.89	0.75	0.38	0.33	0.42	0.33	0.00
NO	Buena Regional Middle School	Interior	GYM AND MUSIC ROOM HALLWAY	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	4	0	0	8760	4	4	133	140	0	133	0	0.02	0.01	0.02	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	MUSIC ROOM 1012	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V,	40205	85%	2002.5	0%	5.000%	18	0	0	2020	86	86	2643	1298	0	1298	1667	1.47	1.25	0.63	0.55	0.70	0.55	0.00
YES	Buena Regional Middle School	Interior	MUSIC STORAGE 1028	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	MUSIC PRACTICE ROOM 1016	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	2002.5	0%	5.000%	1	0	0	2020	58	58	110	48	0	48	62	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	EXIT MEZZ/ELE	WRAP-AROUND FIXTURE, 2' X 4', 2X FIXTR, 32W, NLO NORMAL POWER BALLAST, 120/277V	40205	85%	5610.25	0%	5.000%	3	0	0	5630	58	58	169	82	0	82	106	0.06	0.05	0.02	0.02	0.03	0.02	0.00
NO	Buena Regional Middle School	Interior	EXIT MEZZ/ELE	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YES	Buena Regional Middle School	Interior	STORAGE 226	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	2	0	0	4010	58	58	44	19	0	19	25	0.11	0.09	0.05	0.04	0.05	0.04	0.00
YES	Buena Regional Middle School	Interior	STAGE	SUSPENDED INDUSTRIAL HOOD FIXTURE, 1' X 4', 2X FIXTR, 32W, NLO ELECTRONIC BALLAST,	40205	85%	2002.5	0%	5.000%	9	0	0	2020	58	58	663	564	0	564	458	0.66	0.57	0.29	0.26	0.31	0.26	0.00
NO	Buena Regional Middle School	Interior	STAGE	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	100	105	0	100	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	STAGE ENTRANCE	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	40205	85%	4005	0%	5.000%	1	0	0	4035	58	58	221	96	0	96	126	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional Middle School	Interior	STAGE ENTRANCE	RECESSED CAN 6", COMPACT FLUORESCENT, 2-PIN DULI TUBE, 26 26W, 120/277V	40205	85%	4005	0%	5.000%	2	0	0	4035	52	39	996	152	0	152	244	0.10	0.08	0.04	0.03	0.05	0.03	0.00
NO	Buena Regional Middle School	Interior	AUDITORIUM	RECESSED CAN 8", HALOGEN, 150W, 120V, MEDIUM BASE	40205	85%	4005	0%	5.000%	23	0	0	4025	150	150	13126	13617	0	13126	0	3.28	2.79	1.24	2.79	0.00	2.79	0.00
YES	Buena Regional Middle School	Interior	AUDITORIUM	WALL SCONCE FIXTURE, SCREW-IN, INCANDESCENT LAMP, 40W, 120/277V	40205	85%	4005	0%	5.000%	13	0	0	4025	60	60	2958	3121	0	2958	0	0.74	0.63	0.74	0.63	0.00	0.63	0.00
YES	Buena Regional Middle School	Interior	AUDITORIUM	OUTDOOR, DECORATIVE PENDANT MOUNTED FIXTURE, 4 X METAL HALIDE, 100W, 120/277V	40205	85%	4005	0%	5.000%	6	0	0	4025	500	500	11410	12015	0	11410	0	2.85	2.42	2.85	2.42	0.00	2.42	0.00
NO	Buena Regional Middle School	Interior	AUDITORIUM	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	100	105	0	100	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional Middle School	Interior	CENTRAL-SOUTH	GRID TROFFER, 2' X 4', 2X FIXTR, (12W), 5142 NORMAL POWER BALLAST, 120/277V,	40205	85%	4005	0%	5.000%	2	0	0	4035	86	86	656	288	0	288	368	0.16	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional Middle School	Exterior	COURTYARD WALL PACK	OUTDOOR, WALLPACK FIXTURE, METAL HALIDE, 100W, 120/277V	40180	85%	4180	0%	5.000%	1	0	0	4180	125	42	520	184	0	184	336	0.12	0.10	0.04	0.05	0.00	0.05	0.00
NO	Buena Regional Middle School	Exterior	EXIT SIGN	EXIT SIGN, 4W, LED 120/277V, BATTERY BACK-UP	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	33	35	0	33	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NO	Buena Regional Middle School	Exterior	EMERGENCY WALL PACK	OUTDOOR, WALLPACK FIXTURE, COMPACT FLUORESCENT, 2-PIN TRIPLE TUBE, 2B 26W, 120/277V	40180	85%	4180	0%	5.000%	1	0	0	4180	92	92	574	564	0	574	0	0.29	0.27	0.09	0.07	0.00	0.07	0.00
YES	Buena Regional Middle School	Exterior	COURTYARD WALL PACK	OUTDOOR, WALLPACK FIXTURE, METAL HALIDE, 100W, 120/277V	40180	85%	4180	0%	5.000%	1	0	0	4180	125	42	520	184	0	184	336	0.12	0.10	0.04	0.05	0.00	0.05	0.00
YES	Buena Regional Middle School	Exterior	COURTYARD FLOOD	OUTDOOR, FLOOD LIGHT, HALOGEN, 150W, 120/277V	40180	85%	4180	0%	5.000%	1	0	0	4180	150	60	624	263	0	263	361	0.14	0.12	0.06	0.05	0.00	0.05	0.00
YES	Buena Regional Middle School	Exterior	COURTYARD FLOOD	OUTDOOR, FLOOD LIGHT, HALOGEN, 150W, 120/277V	40180	85%	4180	0%	5.000%	1	0	0	4180	150	60	624	263	0	263	361	0.14	0.12	0.06	0.05	0.00	0.05	0.00

ND	Buena Regional High School	Interior	AUDITORIUM HALLWAY	EXIT SIGN, 6W, LED 120/277V, BATTERY BACK-UP	SIGNS	8760	85%	8760	0%	5.000%	1	0	0	8760	4	4	100	105	0	100	0	0.01	0.01	0.01	0.01	0.00	0.01	0.00
YES	Buena Regional High School	Interior	AUDITORIUM/ TROPHY CASE	STRADA3RD STRIP FIXTURE, 3 X 2', 29 X 7TR, 17W, 81/C, NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	32	38	244	166	0	166	99	0.06	0.05	0.04	0.03	0.02	0.03	0.02
YES	Buena Regional High School	Interior	AUDITORIUM/ TROPHY CASE	STRADA3RD STRIP FIXTURE, 3 X 2', 29 X 7TR, 17W, 81/C, NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	32	38	244	166	0	166	99	0.06	0.05	0.04	0.03	0.02	0.03	0.02
YES	Buena Regional High School	Interior	MAIN OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	5	0	0	18622	112	48	909	493	0	493	526	0.53	0.45	0.24	0.20	0.25	0.20	0.03
YES	Buena Regional High School	Interior	307 SUPPLY CLOSET	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	112	48	43	19	0	19	21	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	307 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	FILE STORAGE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	112	48	43	19	0	19	21	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	COPY ROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	112	58	199	87	0	87	112	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	306 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	305 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	VAULT (NO ACCESS)	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	58	24	44	19	0	19	25	0.13	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	OFFICE HALLWAY	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	5	0	0	4005	58	24	1103	481	0	481	623	0.28	0.23	0.12	0.10	0.13	0.10	0.00
YES	Buena Regional High School	Interior	303 PRINCIPALS OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	3	0	0	18622	112	48	575	260	0	260	316	0.32	0.27	0.14	0.12	0.15	0.12	0.00
YES	Buena Regional High School	Interior	302 SECRETARY OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	301 GUIDANCE OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	OFFICE KITCHENETTE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	5	0	0	18622	112	48	909	493	0	493	526	0.53	0.45	0.24	0.20	0.25	0.20	0.03
YES	Buena Regional High School	Interior	GUIDANCE OPEN OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	22417.75	0%	5.000%	5	0	0	22417	112	48	1172	529	0	529	643	0.53	0.45	0.24	0.20	0.25	0.20	0.03
YES	Buena Regional High School	Interior	300 COPY ROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	58	24	99	43	0	43	56	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional High School	Interior	300 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	102 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	101 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	CONFERENCE ROOM	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	11241.5	0%	5.000%	3	0	0	11242	112	48	384	173	0	173	211	0.32	0.27	0.14	0.12	0.15	0.12	0.00
YES	Buena Regional High School	Interior	MECHANICAL ROOM/ FILE STORAGE	WIDE BODY WRAP AROUND FIXTURE, 3' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	112	48	43	19	0	19	25	0.13	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	MECHANICAL ROOM/ FILE STORAGE	STRADA3RD STRIP FIXTURE, 3' X 4', 29 X 6TR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	9	0	0	4005	58	24	199	87	0	87	112	0.50	0.42	0.22	0.18	0.24	0.18	0.00
YES	Buena Regional High School	Interior	MECHANICAL ROOM/ FILE STORAGE	STRADA3RD STRIP FIXTURE, 3' X 4', 19 FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	6	0	0	4005	93	12	68	29	0	29	40	0.17	0.15	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional High School	Interior	SOUND BOOTH	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	3	0	0	4005	93	12	342	144	0	144	198	0.09	0.07	0.04	0.03	0.04	0.03	0.00
YES	Buena Regional High School	Interior	SOUND BOOTH	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 81/C NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	58	24	221	96	0	96	125	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional High School	Interior	NURSES OFFICE	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	18622.25	0%	5.000%	3	0	0	18622	58	24	266	150	0	150	168	0.17	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional High School	Interior	NURSES EXAM 1	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	0	85%	0	0%	5.000%	4	0	0	0	58	24	0	0	0	0	0	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	NURSES EXAM 2	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	0	85%	0	0%	5.000%	4	0	0	0	58	24	0	0	0	0	0	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	NURSE RESTROOM	VANITY MOUNT FIXTURE, 2' X 4', 2S FIXTR, 17W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	10021.25	0%	5.000%	1	0	0	10021	92	38	50	18	0	18	12	0.03	0.03	0.02	0.02	0.01	0.02	0.00
YES	Buena Regional High School	Interior	NURSE RESTROOM #2	VANITY MOUNT FIXTURE, 2' X 4', 2S FIXTR, 17W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	10021.25	0%	5.000%	1	0	0	10021	92	38	50	18	0	18	12	0.03	0.03	0.02	0.02	0.01	0.02	0.00
YES	Buena Regional High School	Interior	TICKET BOOTH	WIDE BODY WRAP AROUND FIXTURE, 3' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	112	48	426	192	0	192	234	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	ELECTRICAL CLOSET	PORCELAIN SOCKET FIXTURE, SCREW-IN, COMPACT FLUORESCENT, 32W, 120V	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	32	11	13	6	0	6	8	0.03	0.03	0.01	0.01	0.02	0.01	0.00
YES	Buena Regional High School	Interior	FACULTY WOMEN'S RESTROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	3	0	0	28015	58	24	463	202	0	202	262	0.17	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional High School	Interior	FACULTY MEN'S RESTROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	3	0	0	28015	58	24	463	202	0	202	262	0.17	0.14	0.07	0.06	0.08	0.06	0.00
YES	Buena Regional High School	Interior	10-09	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	15	0	0	20025	112	48	3246	1442	0	1442	1754	1.60	1.36	0.72	0.61	0.76	0.61	0.03
YES	Buena Regional High School	Interior	ART/ MUS ROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	58	24	22	10	0	10	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional High School	Interior	10-09 STORAGE	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	58	24	44	19	0	19	25	0.13	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	10-05	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	16	0	0	20025	112	48	3439	1538	0	1538	1871	1.70	1.45	0.77	0.65	0.79	0.65	0.03
YES	Buena Regional High School	Interior	10-08 STORAGE ROOM (NO ACCESS)	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	5	0	0	4005	58	24	110	48	0	48	62	0.28	0.23	0.12	0.10	0.13	0.10	0.00
YES	Buena Regional High School	Interior	10-03 WOOD SHOP	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	23	0	0	20025	112	48	4901	2211	0	2211	2690	2.45	2.08	1.10	0.94	1.16	0.94	0.03
YES	Buena Regional High School	Interior	10-01 WOOD FINISHING	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	20022.5	0%	5.000%	1	0	0	20025	112	48	213	96	0	96	117	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	TOOL ROOM	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	112	48	85	38	0	38	47	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	TOOL ROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	58	24	22	10	0	10	12	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional High School	Interior	10-03 MEZZANINE	STRADA3RD STRIP FIXTURE, 3' X 4', 29 X 6TR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	4	0	0	4005	58	24	88	38	0	38	50	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	10-03 MEZZANINI STORAGE	STRADA3RD STRIP FIXTURE, 3' X 4', 29 X 6TR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	58	24	44	19	0	19	25	0.11	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	FACULTY RESTROOM	VANITY MOUNT FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	1	0	0	28015	93	12	80	34	0	34	46	0.03	0.02	0.01	0.01	0.01	0.01	0.00
YES	Buena Regional High School	Interior	FACULTY RESTROOM	VANITY MOUNT FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	1	0	0	28015	93	12	80	34	0	34	46	0.03	0.02	0.01	0.01	0.01	0.01	0.00
YES	Buena Regional High School	Interior	ART/ MUSIC HALLWAY	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 81/C NORMAL POWER BALLAST, 120/277V, FROSTED DROP LENS	SIGNS	4005	85%	4005	0%	5.000%	15	0	0	4005	58	24	3310	1442	0	1442	1868	0.83	0.70	0.36	0.31	0.40	0.31	0.00
YES	Buena Regional High School	Interior	10-11 BAND ROOM	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	17	0	0	20025	112	48	3622	1634	0	1634	1988	1.81	1.54	0.82	0.69	0.84	0.69	0.03
YES	Buena Regional High School	Interior	10-05 PRACTICE ROOM	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	2	0	0	20025	112	48	426	192	0	192	234	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	10-06 PRACTICE ROOM	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	1	0	0	20025	112	48	213	96	0	96	117	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	10-07 PRACTICE ROOM (NO ACCESS)	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	1	0	0	20025	112	48	213	96	0	96	117	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	10-08 OFFICE (NO ACCESS)	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	18622.25	0%	5.000%	1	0	0	18622	112	48	192	87	0	87	105	0.11	0.09	0.05	0.04	0.05	0.05	0.00
YES	Buena Regional High School	Interior	10-12 MUSIC ROOM	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	12	0	0	20025	112	48	2557	1153	0	1153	1403	1.28	1.09	0.58	0.49	0.60	0.49	0.03
YES	Buena Regional High School	Interior	10-12 MUSIC ROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	8	0	0	20025	58	24	441	192	0	192	249	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	10-13 MEZZANINE	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	112	48	43	19	0	19	25	0.13	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	10-02 MEZZANINE OFFICE (NO ACCESS)	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	58	24	199	87	0	87	112	0.11	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	WOMEN'S RESTROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	2	0	0	28015	112	48	597	269	0	269	327	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	WOMEN'S RESTROOM	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	28015	0%	5.000%	1	0	0	28015	58	24	154	67	0	67	87	0.06	0.05	0.02	0.02	0.03	0.02	0.00
YES	Buena Regional High School	Interior	C106 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	1602	10%	5.000%	9	1	801	1202	112	48	1016	652	69	539	1015	0.86	0.81	0.43	0.37	0.45	0.37	0.00
YES	Buena Regional High School	Interior	C105 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	1602	10%	5.000%	9	1	801	1202	112	48	1016	652	69	539	1015	0.86	0.81	0.43	0.37	0.45	0.37	0.00
YES	Buena Regional High School	Interior	C105 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	16	0	0	20025	112	48	3439	1538	0	1538	1871	1.70	1.45	0.77	0.65	0.79	0.65	0.03
YES	Buena Regional High School	Interior	C105 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	4	0	0	20025	58	24	441	192	0	192	249	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	C103 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	16	0	0	20025	112	48	3439	1538	0	1538	1871	1.70	1.45	0.77	0.65	0.79	0.65	0.03
YES	Buena Regional High School	Interior	C103 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 2S FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	4	0	0	20025	58	24	441	192	0	192	249	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	C102 COMPUTER LAB	WRAP-AROUND FIXTURE, 2' X 4', 4S FIXTR, 64W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	20022.5	0%	5.000%	9	0	0	20025	112	48	1916	865	0	865	1053	0.96	0.81	0.43	0.37	0.45	0.37	0.00
YES	Buena Regional High School	Interior	C WING HALLWAY	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 81/C NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	16	0	0	4005	58	24	3311	1538	0	1538	1901	0.88	0.75	0.38	0.33	0.42	0.33	0.00
YES	Buena Regional High School	Interior	DOOR 201 ENTRY	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 81/C NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	4005	0%	5.000%	4	0	0	4005	58	24	883	564	0	564	499	0.22	0.19	0.10	0.08	0.11	0.08	0.00
YES	Buena Regional High School	Interior	C111 MAINTENANCE	STRADA3RD STRIP FIXTURE, 3' X 4', 19 FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	22417.75	0%	5.000%	8	0	0	22418	58	24	971	423	0	423	548	0.44	0.37	0.19	0.16	0.21	0.16	0.00
YES	Buena Regional High School	Interior	C111 MAINTENANCE	STRADA3RD STRIP FIXTURE, 3' X 4', 19 FIXTR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	22417.75	0%	5.000%	1	0	0	22418	93	12	69	29	0	29	39	0.03	0.02	0.01	0.01	0.01	0.01	0.00
YES	Buena Regional High School	Interior	PARTS ROOM	PORCELAIN SOCKET, INCANDESCENT, 60W, 120V	SIGNS	4005	85%	4005	0%	5.000%	1	0	0	4005	60	11	23	6	0	6	16	0.06	0.05	0.01	0.01	0.02	0.01	0.00
YES	Buena Regional High School	Interior	MAINTENANCE STORAGE	STRADA3RD STRIP FIXTURE, 3' X 4', 29 X 6TR, 32W, 81/C NORMAL POWER BALLAST, 120/277V,	SIGNS	4005	85%	4005	0%	5.000%	2	0	0	4005	58	24	44	19	0	19	25	0.11	0.09	0.05	0.05	0.05	0.05	0.00
YES	Buena Regional High School	Interior	C112 OFFICE	GRID TROFFER, 2' X 4', 48 FIXTR, (12W), 4S ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	SIGNS	4005	85%	18622.25	0%	5.000%	2	0	0	18622	112	48	384	173	0	173	211	0.21	0.18	0.10	0.08	0.10	0.08	0.00
YES	Buena Regional High School	Interior	C114 CURATORIA	WRAP-AROUND FIXTURE, 2' X

YES	Dr. J.P. Cleary Elementary School		Interior	2108/MDF ROOM	SUSPENDED INDUSTRIAL HOOD/FIXTURE, 2' X 4', 2L FSTR, 32W, 5420 ELECTRONIC BALLAST, 120/277V, SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	4000		0%	5.000%	2	0	0	4000		58		24	44	19	0	19	25	0.11	0.09	0.05	0.06	0.05	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	HALLWAY	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	4000		0%	5.000%	7	0	0	4000		58		24	1165	673	0	673	872	0.39	0.33	0.17	0.16	0.18	0.16	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	HALLWAY	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	4000		0%	5.000%	6	0	0	4000		58		24	1010	577	0	577	747	0.33	0.28	0.14	0.12	0.16	0.12	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	2109 STORAGE	GRID TROFFER, 2' X 4', 2L ELECTRONIC FSTR, (32W), 4L ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	4000.5		0%	5.000%	2	0	0	4001		112		48	85	58	0	58	47	0.21	0.18	0.10	0.08	0.10	0.08	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	221 OFFICE	GRID TROFFER, 2' X 4', 2L ELECTRONIC FSTR, (32W), 4L ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	3832.21		0%	5.000%	1	0	0	3832		112		48	162	87	0	87	101	0.11	0.09	0.05	0.06	0.05	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	221/LOFFICE RESTROOM	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1003.25		0%	5.000%	1	0	0	1003		58		24	93	24	0	24	31	0.06	0.05	0.02	0.02	0.03	0.02	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	218 JANITOR'S	SUSPENDED INDUSTRIAL HOOD/FIXTURE, 2' X 4', 2L FSTR, 32W, 5420 ELECTRONIC BALLAST, GRID TROFFER, 2' X 4', 2L FSTR, (32W), 4L ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	600.75		0%	5.000%	1	0	0	601		58		24	93	14	0	14	19	0.06	0.05	0.02	0.02	0.03	0.02	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	216 MUSIC CLASSROOM	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1602		10%	5.000%	9	5	4001		1202		112		48	1016	662	69	539	1015	0.86	0.81	0.43	0.37	0.45	0.37	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	214/LMUSIC STORAGE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	200.25		10%	5.000%	2	1	401		200		58		24	22	10	1	10	52	0.11	0.09	0.05	0.06	0.05	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	212 THERAPY CLASSROOM	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1602		10%	5.000%	4	1	401		1202		112		48	662	508	31	231	451	0.43	0.36	0.19	0.16	0.20	0.16	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	220 BOY'S RESTROOM	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	2405	10%	5.000%	2	1	401		2005		86		36	393	173	17	140	244	0.16	0.14	0.07	0.06	0.08	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	220 BOY'S RESTROOM	RECESSED CAN 6", COMPACT FLUORESCENT, 2 PIN TRPLX TUBE, 26 26W, 120/277V	RETRO, LED, 24 5 5W, PL-4P/IN 4000K LUM/ 4/3/2/1420, 5/10 WARRANTY, 4000K, 120-277V, 5-YEAR WARRANTY	4000		85%	2405	10%	5.000%	1	1	401		2005		52		19	118	66	5	98	81	0.05	0.04	0.02	0.02	0.03	0.02	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	216 BOY'S RESTROOM	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	2405	10%	5.000%	2	1	401		2005		86		36	393	173	17	140	244	0.16	0.14	0.07	0.06	0.08	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	216 BOY'S RESTROOM	RECESSED CAN 6", COMPACT FLUORESCENT, 2 PIN TRPLX TUBE, 26 26W, 120/277V	RETRO, LED, 24 5 5W, PL-4P/IN 4000K LUM/ 4/3/2/1420, 5/10 WARRANTY, 4000K, 120-277V, 5-YEAR WARRANTY	4000		85%	2405	10%	5.000%	2	1	401		2005		52		19	118	66	5	98	81	0.05	0.04	0.02	0.02	0.03	0.02	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	225 GRAB&GOM	HIGH BAY, 4/6 FSTR, 52W, INSTANT START, HLO, SUAC BALLAST, 120/277V	FIXTURE, LED, 153W, HIGH BAY, DIFFUSE DISC, WHITE FINISH, 120-277V, 5-YEAR WARRANTY, 21312 LUMENS, 4000K, 120-277V, SD REAR MOUNDED	4000		85%	5634.25		0%	5.000%	20	0	0	5636		222		350	14559	10215	0	10215	4166	4.22	3.59	1.69	2.55	1.66	2.55	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	225 GRAB&GOM	HIGH BAY, 4/6 FSTR, 52W, INSTANT START, HLO, SUAC BALLAST, 120/277V, Emergency Back-Up	FIXTURE, LED, 153W, HIGH BAY, DIFFUSE DISC, WHITE FINISH, 120-277V, 5-YEAR WARRANTY, 21312 LUMENS, 4000K, 120-277V, SD REAR MOUNDED, BATTERY BACK-UP, 90MIN	4000		85%	5634.25		0%	5.000%	10	0	0	5636		222		350	7080	5156	0	5156	2071	2.11	1.79	1.53	1.28	0.12	1.28	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	225/LGRAT/STORAGE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), 4L ELECTRONIC BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	4002.5		0%	5.000%	1	0	0	4001		112		48	43	19	0	19	23	0.11	0.09	0.05	0.06	0.05	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	119 PRINCIPALS OFFICE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	3832.21		0%	5.000%	2	0	0	3832		86		36	294	150	0	150	165	0.16	0.14	0.07	0.06	0.08	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	117 OFFICE CLOSET	RECESSED CAN 6", COMPACT FLUORESCENT, 2 PIN TRPLX TUBE, 26 26W, 120/277V	RETRO, LED, 24 5 5W, PL-4P/IN 4000K LUM/ 4/3/2/1420, 5/10 WARRANTY, 4000K, 120-277V, 5-YEAR WARRANTY	4000		85%	400.5		0%	5.000%	1	0	0	401		52		12	20	5	0	5	15	0.05	0.04	0.01	0.01	0.01	0.01	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	119 OFFICE CLOSET (NO ACCESS)	RECESSED CAN 6", COMPACT FLUORESCENT, 2 PIN TRPLX TUBE, 26 26W, 120/277V	RETRO, LED, 24 5 5W, PL-4P/IN 4000K LUM/ 4/3/2/1420, 5/10 WARRANTY, 4000K, 120-277V, 5-YEAR WARRANTY	4000		85%	400.5		0%	5.000%	1	0	0	401		52		12	20	5	0	5	15	0.05	0.04	0.01	0.01	0.01	0.01	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	117 MAIN OFFICE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1601.75	10%	5.000%	4	1	401		1603		86		36	458	202	20	160	314	0.33	0.28	0.14	0.12	0.16	0.12	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	117 MAIN OFFICE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V, PRISMATIC LENS	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1601.75	10%	5.000%	3	1	401		1603		86		36	344	151	15	120	235	0.25	0.21	0.11	0.09	0.12	0.09	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	117/B PRIVATE OFFICE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1601.75	10%	5.000%	2	1	401		1603		86		36	229	101	10	72	157	0.16	0.14	0.07	0.06	0.08	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Interior	117/A PRIVATE OFFICE	GRID TROFFER, 2' X 4', 2L FSTR, (32W), SUAC NORMAL POWER BALLAST, 120/277V	RETRO, LED, 2 LAMP, 4FT T8 UNV, TUBE, TYPE B (USE 3317420 - OPTIONAL ENERGIZED BALLAST, 3000 LUMENS, 4000K, 120-277V), SD REAR MOUNDED	4000		85%	1601.75	10%	5.000%	1	1	401		1603		86		36	115	50	5	36	78	0.08	0.07	0.04	0.03	0.04	0.03	0.03
YES	Dr. J.P. Cleary Elementary School		Exterior	MAIN ENTRANCE CANOPY	RECESSED CAN 6", COMPACT FLUORESCENT, 2 PIN DULX TUBE, 26 26W, 120/277V	RETRO, LED, 24 5 5W, PL-4P/IN 4000K LUM/ 4/3/2/1420, 5/10 WARRANTY, 4000K, 120-277V, 5-YEAR WARRANTY	4160		85%	4160		0%	5.000%	4	0	0	4160		52		19	865	503	0	503	553	0.20	0.17	0.08	0.06	0.10	0.06	0.03
YES	Dr. J.P. Cleary Elementary School		Exterior	FRONT PARKING LOT	OUTDOOR, SHOE BOX AREA, LIGHT, METAL HALIDE, 250W, 120/277V, ARM-MOUNT	FIXTURE, LED, 111W, AREA LIGHT, TYPE 5, 5,764, 754/727 LED, RECEPTACLE & PHOTOCELL, 34,170 LUMENS, 4000K, 120-277V, 10 YEAR WARRANTY	4160		85%	4160		0%	5.000%	1	0	0	4160		288		300	1156	458	0	458	760	0.27	0.23	0.10	0.09	0.10	0.09

BE RETROFIT
FEEL THE SAVINGS

BUENA REGIONAL SCHOOL DISTRICT, NJ
MECHANICAL INSULATION SAVINGS SUMMARY

Building	Fluid Type	Pipe Dia (") or Tank Surface Area(SF)*	Component	Insulation Thickness (")	Proposed Insulation Type	Quantity or Length	Total Eq Length(LF) or Total Area(SF)*	Heating or Cooling Hrs/Yr	Fuel Savings MMBTU
	MTHW	3	90 Degree Elbow	2	Cellular Glass	2	3.6	5110	1.9 MMBtu
	MTHW	3	Check Valve	1.5	Removable Blanket	1	5.3	5110	2.6 MMBtu
	MTHW	3	Flange	1.5	Removable Blanket	5	9	5110	4.5 MMBtu
	MTHW	3	Gate Valve	1.5	Removable Blanket	2	8.2	5110	4.1 MMBtu
	MTHW	3	In-line Pump	1.5	Removable Blanket	1	5	5110	2.5 MMBtu
	MTHW	3	Straight Pipe	2	Cellular Glass	6	6	5110	3.1 MMBtu
	MTHW	3	T Intersection	2	Cellular Glass	3	3.6	5110	1.9 MMBtu
	MTHW	4	Butterfly Valve	1.5	Removable Blanket	1	4.1	5110	2.6 MMBtu
	MTHW	4	Control Valve	1.5	Removable Blanket	1	4.1	5110	2.6 MMBtu
	MTHW	4	Flange	1.5	Removable Blanket	2	3.6	5110	4.5 MMBtu
	MTHW	4	Gate Valve	1.5	Removable Blanket	1	4.1	5110	2.6 MMBtu
	MTHW	4	Straight Pipe	2	Cellular Glass	2	2	5110	1.3 MMBtu
	MTHW	4	T Intersection	2	Cellular Glass	1	1.2	5110	0.8 MMBtu
	MTHW	6	Control Valve	1.5	Removable Blanket	1	4.1	5110	3.6 MMBtu
	MTHW	6	Flange	1.5	Removable Blanket	25	45	5110	40.1 MMBtu
	MTHW	6	Flange	2	Cellular Glass	6	10.8	5110	10.1 MMBtu
	MTHW	6	Gate Valve	1.5	Removable Blanket	12	49.2	5110	43.8 MMBtu
	MTHW	6	Straight Pipe	2	Cellular Glass	18	18	5110	16.8 MMBtu
	MTHW	6	Strainer	1.5	Removable Blanket	1	5	5110	4.5 MMBtu
	MTHW	20	End Cap	2	Cellular Glass	1	1.5	5110	3.8 MMBtu
	MTHW Total								**157.5 MMBtu**
Buena Regional High School Total									**157.5 MMBtu**
	MTHW	3	In-line Pump	2	Cellular Glass	3	15	5110	7.8 MMBtu
	MTHW	6	Centrifugal Pump	2	Cellular Glass	2	10	5110	9.3 MMBtu
	MTHW	6	Flange	2	Cellular Glass	10	18	5110	16.8 MMBtu
	MTHW	6	Suction Diffuser	2	Cellular Glass	2	8.8	5110	8.2 MMBtu
	MTHW Total								**42.1 MMBtu**
Buena Regional Middle School Total									**42.1 MMBtu**
	MTHW	1.5	Straight Pipe	2	Cellular Glass	2	2	5110	0.6 MMBtu
	MTHW	2	Butterfly Valve	2	Cellular Glass	2	8.2	5110	3.0 MMBtu
	MTHW	3	90 Degree Elbow	2	Cellular Glass	1	1.8	5110	0.9 MMBtu
	MTHW	3	Centrifugal Pump	1.5	Removable Blanket	2	10	5110	5.0 MMBtu
	MTHW	3	Control Valve	1.5	Removable Blanket	1	4.1	5110	2.0 MMBtu
	MTHW	3	Flange	1.5	Removable Blanket	4	7.2	5110	3.6 MMBtu
	MTHW	3	Flange	1.5	Removable Blanket	17	30.6	5110	15.2 MMBtu
	MTHW	3	Gate Valve	1.5	Removable Blanket	2	8.2	5110	4.1 MMBtu
	MTHW	3	Gate Valve	1.5	Removable Blanket	7	28.7	5110	14.3 MMBtu
	MTHW	3	Strainer	1.5	Removable Blanket	1	5	5110	2.5 MMBtu
	MTHW	3	T Intersection	2	Cellular Glass	2	2.4	5110	1.3 MMBtu
	MTHW	4	End Cap	2	Cellular Glass	1	1.5	5110	1.0 MMBtu
	MTHW	4	In-line Pump	1.5	Removable Blanket	2	10	5110	6.3 MMBtu
	MTHW	6	90 Degree Elbow	2	Cellular Glass	1	1.8	5110	3.4 MMBtu
	MTHW	6	Butterfly Valve	1.5	Removable Blanket	1	4.1	5110	3.6 MMBtu
	MTHW	6	End Cap	2	Cellular Glass	1	1.5	5110	2.8 MMBtu
	MTHW	6	Flange	1.5	Removable Blanket	2	3.6	5110	3.2 MMBtu
	MTHW	6	Flange	2	Cellular Glass	2	3.6	5110	3.4 MMBtu
	MTHW	6	Flange	2	Cellular Glass	1	1.8	5110	1.7 MMBtu
	MTHW	6	Gate Valve	1.5	Removable Blanket	1	4.1	5110	3.6 MMBtu
	MTHW	6	Straight Pipe	2	Cellular Glass	9	9	5110	8.4 MMBtu
	MTHW	6	Straight Pipe	2	Cellular Glass	6	6	5110	5.6 MMBtu
	MTHW	6	T Intersection	2	Cellular Glass	1	1.2	5110	1.1 MMBtu
	MTHW Total								**96.4 MMBtu**
	DHW	1.5	90 Degree Elbow	1.5	Cellular Glass	4	7.2	8760	0.4 MMBtu
	DHW	1.5	Straight Pipe	1.5	Cellular Glass	9	9	8760	0.5 MMBtu
	DHW Total								**0.9 MMBtu**
John C. Milanesi Elementary School Total									**97.4 MMBtu**
Grand Totals									**297.0 MMBtu**

ELEMENT

The ELEMENT tool was developed to provide transparency into the end use breakdown of energy consumption for each fuel type. The simplified building inputs and schedules are used in a powerful hourly load analysis to provide quick building calibrations. Energy saving scenarios can be run quickly to see the financial impact to the overall project and generate useful graphs for visualization and reports.

Introduction

ELEMENT is Schneider Electric's proprietary Microsoft Excel based spreadsheet calculation tool used for simulating building energy consumption. Its purpose is to allow a user with prior knowledge of a facility and its energy using equipment to simulate energy consumption, compare the outputs to historical utility data of the facility, breakout the calibrated baseline into its end use components and determine the energy savings of Energy Conservation Measures (ECMs).

The tool uses a variety of Excel functions and custom generated algorithms written in Visual Basic for Applications (VBA) to quickly simulate the energy consumption of a simple to moderately complex building. Heating and cooling loads are determined on an hourly basis (8,760 hours per year) using TMY2 or TMY3 weather data and the building definitions specified by the user. Loads are generated by the user inputs and key building variables are defined and adjusted to calibrate and predict energy impacts.

Calculations

The Element tool is an hourly load and energy analysis tool used for whole building energy models. The results show end use breakdowns of energy on a monthly basis while allowing for quick calibration to utility billing data. Energy conservation measures can be easily defined and reviewed using the ECM tab to redefine variables used in the baseline model. Each new ECM run is sequential and uses the variable last defined by the previously successful run. The savings are determined by the difference in runs by either actual, percent or minimum unit method, as described previously.

The hourly outdoor air conditions and solar data are imported from the National Renewable Energy Laboratories (NREL) typical meteorological year (TMY) data set. The building calendar defines up to four typical day types that occur throughout the year. These day types are used by the hourly load percentage schedules and HVAC schedules used to define the operation of internal and external building loads, as well as the fan operation of the HVAC system. All 365 days of the year are assigned a day type as defined by the calendar and each hour of the day has an hourly load percentage for each load schedule name and on or off status for each HVAC schedule name. The occupied and unoccupied set points are also driven by the on/off status of the HVAC fan. An algorithm determines if the system is in heating or cooling mode based on the user inputs and weather data in order to determine which occupied heating or cooling set point to use.

Zone and system loads are calculated using industry standard engineering equations (ASHRAE) as listed below based on the user defined building parameters described in the baseline calculation inputs section. The total sensible system load determines if heating or cooling energy is required (negative results for heating and positive values for cooling). Calculations are repeated for each hour of the year to determine the total annual loads and energy consumption.

The following is a sampling of the variables and equations used for calculations the building loads and energy consumption and demand.

Weather and Solar Data

Outdoor Air Dry Bulb Temperature, °F

Outdoor Air Density, lbm air/ft^3

Outdoor Air Humidity Ratio, lbm water/lbm air

Solar Direct Normal Irradiance, Btu/ft^2

Solar Diffuse Horizontal Irradiance, Btu/ft^2

Sol-air Temperature, °F

- $T_{SA} = T_{OA} + (\alpha \times I_N / h_o) - (\varepsilon \times \Delta R / h_o)$
  - α = wall or roof absorptivity of solar radiation based on surface color, dimensionless
  - I_N = direct normal solar flux on wall and diffuse horizontal irradiance on roof, Btu/hr-ft^2
  - h_o = the convective heat transfer coefficient on exterior wall or roof = 3.0 Btu/h-ft^2 °F
  - ε = hemispherical emittance of exterior surface = 1.0 Btu/h-ft^2
  - ΔR = long wave radiation incident on exterior surface and blackbody radiation
    - For vertical surfaces (walls), ΔR = 0 (vertical surfaces)
    - For horizontal surfaces (roof), ΔR = 20.0 Btu/h-ft^2

Zone Loads

Sensible Zone Loads, Btu

Internal Heat Gains

- Lighting, $Q_{S_LTG} = L_{LTG} \times A_{BLDG} / 1000 \times HLP_{LTG} \times C$
- Equipment, $Q_{S_EQUIP} = L_{EQUIP} \times A_{BLDG} / 1000 \times HLP_{EQUIP} \times C$
- People, $Q_{S_PEOPLE} = n_{PEOPLE} \times HGF_{S_PEOPLE} \times HLP_{PEOPLE}$
  - A_{BLDG} = building area, ft^2
  - C = conversion factor kW to kBtu = 3412 kBtu/kWh
  - HGF_{S_PEOPLE} = heat gain factor (sensible) based on activity level, (see Table 1), Btu/h-person
  - HLP = hourly load percentage of peak load based on assigned schedule, %
  - L = peak load density, W/ft^2
  - n_{PEOPLE} = number of people, persons

Envelope Loads

- Wall, $Q_{S_WALL} = 1/R_{WALL} \times (A_{WALL} - A_{WINDOW}) \times (T_{SA_WALL} - T_{SP})$
- Roof, $Q_{S_ROOF} = 1/R_{ROOF} \times (A_{ROOF}) \times (T_{SA_ROOF} - T_{SP})$
- Window Conduction, $Q_{S_WINDOW,C} = U_{WINDOW} \times A_{WINDOW} \times (T_{OA} - T_{SP})$
- Window Radiation, $Q_{S_WINDOW,R} = A_{WINDOW} \times SHGC \times (1 - ES) \times I_N$
- Infiltration, $Q_{S_INFIL} = \rho \times c_p \times q_{INF} \times A_{WALL} \times 60 \times (T_{OA} - T_{SP})$
    - ρ = density of outdoor air, lbm/ft^3
    - A_{ROOF} = roof area, ft^2
    - A_{WALL} = exterior wall area, ft^2
    - A_{WINDOW} = window area, ft^2
    - c_p = heat capacity of air = 0.24 Btu/lbm ^oF
    - ES = exterior shading, %
    - q_{INF} =infiltration rate per area of exterior wall, CFM/ft^2
    - R_{WALL} = R-value of roof, hr-ft^2-^{o}F/Btu
    - R_{ROOF} = R-value of roof, hr-ft^2-^{o}F/Btu
    - SHGC = solar heat gain coefficient based on window selection (see Table 2), dimensionless
    - T_{OA} = outdoor air dry bulb temperature, ^{o}F
    - T_{SA_ROOF} = sol-air temperature of the roof, ^{o}F
    - T_{SA_WALL} = sol-air temperature of the wall, ^{o}F
    - T_{SP} = indoor air dry bulb temperature, ^{o}F
    - U_{WINDOW} = U-value of the window based on window selection (see Table 3), Btu/h-^{o}F-ft^2

Latent Zone Loads, Btu

Internal Heat Gains

- People, $Q_{L_PEOPLE} = n_{PEOPLE} \times HGF_{L_PEOPLE} \times HLP_{PEOPLE}$
    - HGF_{L_PEOPLE} = heat gain factor (latent) based on activity level (see Table 1), Btu/h-person

Envelope Loads

- Infiltration, $Q_{L_INFIL} = \rho \times h_{fg} \times q_{INF} \times A_{WALL} \times 60 \times (\omega_{OA} - \omega_{SP})$
    - h_{fg} = latent heat of vaporization of water = 1054.8 Btu/lbm water
    - ω_{OA} = humidity ratio of outdoor air, lbm water/lbm air
    - ω_{SP} = humidity ratio of indoor space set point, lbm water/lbm air

Total Zone Loads, kBtu

- Sensible, $Q_{S_ZONE} = (Q_{S_LTG} + Q_{S_EQUIP} + Q_{S_PEOPLE} + Q_{S_WALL} + Q_{S_ROOF} + Q_{S_WINDOW,C} + Q_{S_WINDOW,R} + Q_{S_INFIL}) / 1000$
- Latent, $Q_{L_ZONE} = (Q_{L_PEOPLE} + Q_{L_INFIL}) / 1000$
- Total, $Q_{TOTAL_ZONE} = Q_{S_ZONE} + Q_{L_ZONE}$

System Loads

Ventilation, CFM

- Ventilation Rate, $Q_{OA} = R_{PEOPLE} \times n_{PEOPLE} + R_{AREA} \times A_{BLDG}$
    - R_{PEOPLE} = outdoor air rate per person, CFM/person

Proprietary & Confidential

- R_{AREA} = outdoor air rate per floor area, CFM/ft^2

Ventilation Loads, Btu

- Ventilation Sensible, $Q_{S_VENT} = \rho \times c_p \times 60 \times Q_{OA} \times (T_{OA} - T_{SP})$
- Ventilation Latent, $Q_{L_VENT} = \rho \times h_{fg} \times 60 \times Q_{OA} \times (\omega_{OA} - \omega_{SP})$

Total System Loads, kBtu

- System Sensible, $Q_{S_SYSTEM} = Q_{S_ZONE} + (Q_{S_VENT} / 1000)$
- System Latent, $Q_{L_SYSTEM} = Q_{L_ZONE} + (Q_{L_VENT} / 1000)$
- System Total, $Q_{TOTAL_SYSTEM} = Q_{S_SYSTEM} + Q_{L_SYSTEM}$

Energy Consumption

Electric, kWh

- Lighting, $E_{LTG} = L_{LTG} \times A_{BLDG} / 1000 \times HLP_{LTG}$
- Equipment, $E_{EQUIP} = L_{EQUIP} \times A_{BLDG} / 1000 \times HLP_{EQUIP}$
- Miscellaneous Electric Load 1, $E_{MISCE,1} = L_{MISCE,1} \times HLP_{MISCE,1}$ (typical of 3)
  - $L_{MISCE,1}$ = peak miscellaneous electric load 1, kW (typical of 3)
  - $HLP_{MISCE,1}$ = hourly load percentage of miscellaneous electric load 1 (typical of 3)
- Fans, $E_{FAN} = E_{C,FAN} + E_{P,FAN} + E_{V,FAN}$
  If the HVAC schedule is on or if the fan availability is enabled and there is a load on the system, then
  - Constant fan speed, $E_{C,FAN} = L_{C,FAN}$
  - Proportional fan speed, $E_{P,FAN} = L_{V,FAN} \times PL$
  - Variable fan speed, $E_{V,FAN} = L_{V,FAN} \times PL^{2.5}$
    - $L_{C,FAN}$ = constant fan load, kW
    - $L_{V,FAN}$ = variable fan load, kW
    - S_{MIN_FAN} = minimum fan speed, %
    - PL = percentage of load equal to the maximum of $(Q_{S_SYSTEM} / Q_{HTG_DESIGN})$, $(Q_{TOTAL_SYSTEM} / Q_{CLG_DESIGN})$, or (S_{MIN_FAN})
- Pumps, $E_{PUMP} = E_{C,PUMP} + E_{P,PUMP} + E_{V,PUMP}$ (typical of heating and cooling)
  If the HVAC schedule is on or if the pump availability is enabled and there is a load on the system, then
  - Constant pump speed, $E_{C,PUMP} = L_{C,PUMP}$
  - Proportional pump speed, $E_{P,PUMP} = L_{V,PUMP} \times PL$
  - Variable pump speed, $E_{V,PUMP} = L_{V,PUMP} \times PL^{2.5}$
    - $L_{C,PUMP}$ = constant pump load, kW (typical of heating and cooling)
    - $L_{V,PUMP}$ = variable pump load, kW (typical of heating and cooling)
    - S_{MIN_PUMP} = minimum pump speed, % (typical of heating and cooling)
    - PL_{HTG} = percentage of heating load equal to the maximum of $(Q_{S_SYSTEM} / Q_{HTG_DESIGN})$ or $S_{MIN_PUMP,HTG}$

- PL_{CLG} = percentage of cooling load equal to the maximum of (Q_{TOTAL_SYSTEM} / Q_{CLG_DESIGN}) or $S_{MIN_PUMP,CLG}$

If the HVAC schedule is on or if the fan availability is enabled and there is a load on the system, then energy calculations will be done for heating or cooling depending on the polarity of the load (positive for cooling, negative for heating).

- Heating (Electric), $E_{HTG} = (-1) \times Q_{S_SYSTEM} \times P_{HTG,E} / \eta_{HTG_E} / 3.412$
  - $\eta_{HTG,E}$ = electric nominal heating efficiency, %
  - $P_{HTG,E}$ = percentage of load assigned to electric heat, %
  - Q_{S_SYSTEM} = hourly calculated heating load (negative values), kBtu
- Cooling, $E_{CLG} = Q_{TOTAL_SYSTEM} / 12 \times \eta_{CLG_PL} \times P_{CLG}$
  - Part Load Ratio, $PLR_{CLG} = Q_{TOTAL_SYSTEM} / (Q_{CLG_DESIGN} \times OF_{CLG})$, dimensionless
  - Energy Input Ratio, $EIR_{CLG} = a + b \times PLR_{CLG} + c \times PLR_{CLG}^2 + d \times PLR_{CLG}^3$, dimensionless
  - Cooling Part Load Efficiency, $\eta_{CLG_PL} = \eta_{CLG} \times PLR_{CLG} / EIR_{CLG}$, kW/ton
    - a, b, c, d = cooling efficiency curve coefficients (see Table 4) based on system selection, dimensionless
    - η_{CLG} = nominal cooling efficiency, kW/ton
    - OF_{CLG} = oversize factor used to adjust calculated cooling design load, %
    - P_{CLG} = percent of building with cooling, %
    - Q_{CLG_DESIGN} = total cooling design load based on design day conditions, kBtu
    - Q_{TOTAL_SYSTEM} = hourly calculated cooling load (positive values), kBtu

Fuel, kBtu

- Miscellaneous Fuel Load 1, $F_{MISCF,1} = L_{MISCF,1} \times HLP_{MISCF,1} / \eta_{MISCF,1}$ (typical of 3)
  - $L_{MISCF,1}$ = peak miscellaneous fuel load 1, kBtu (typical of 3)
  - $HLP_{MISCF,1}$ = hourly load percentage of miscellaneous fuel load 1 (typical of 3)
  - $\eta_{MISCF,1}$ = miscellaneous fuel load 1 stand-alone efficiency, % (typical of 3)
    - Note: $\eta_{MISCF,1} = \eta_{HTG_PL,F}$ if miscellaneous load is included on main boiler plant

The heating energy consumption of fuel is calculated and further broken down to provide more resolution into three main end use categories: Envelope, Infiltration, and Ventilation.

- Envelope, $F_{HTG_ENV} = (-1) \times Q_{S_ZONE} \times (1 - P_{HTG,E}) \times (1 - P_{INF}) / \eta_{HTG_PL,F}$
- Infiltration, $F_{HTG,INF} = (-1) \times Q_{S_ZONE} \times (1 - P_{HTG,E}) \times P_{INF} / \eta_{HTG_PL,F}$
- Ventilation, $F_{HTG,VENT} = (-1) \times Q_{S_VENT} \times (1 - P_{HTG,E}) / \eta_{HTG_PL,F}$
  - Part Load Ratio, $PLR_{HTG} = Q_{S_SYSTEM} / (Q_{HTG_DESIGN} \times OF_{HTG})$, dimensionless
    - For miscellaneous fuel loads on the plant, Q_{S_SYSTEM} includes these loads.
  - Energy Input Ratio, $EIR_{HTG} = a + b \times PLR_{HTG} + c \times PLR_{HTG}^2$, dimensionless
  - Fuel Part Load Efficiency, $\eta_{HTG_PL,F} = \eta_{HTG,F} \times PLR_{HTG} / EIR_{HTG}$, %
    - a, b, c = heating efficiency curve coefficients (see Table 5) based on system selection, dimensionless

- $\eta_{HTG,F}$ = fuel nominal heating efficiency, %
- OF_{HTG} = oversize factor used to adjust calculated heating design load, %
- $P_{HTG,E}$ = percentage of load assigned to electric heat, %
- Q_{HTG_DESIGN} = heating design load calculated on design day conditions, kBtu
- Q_{S_SYSTEM} = hourly calculated heating load (negative values), kBtu

○ Zone Envelope Sensible Load, $Q_{S_ZONE,ENV} = Q_{S_WALL} + Q_{S_ROOF} + Q_{S_WINDOW,C} + Q_{S_WINDOW,R}$

○ Percent of Zone Sensible Load attributed to infiltration, $P_{INF} = Q_{S_ZONE,INF} / (Q_{S_ZONE,ENV} + Q_{S_INF})$

Energy Demand

Electric, kW

The tool determined the peak kW load of the month and displays the demand of each end use category component for that hour.

References

The following are data tables and assumptions used to calculate loads and energy consumption.

Table 1 - People Activity Level, Btu/hr-person

Activity Level	Sensible	Latent
Seated at Rest	230	120
Office Work	245	205
Sedentary Work	280	270
Medium Work	295	455
Heavy Work	525	925
Dancing	305	545
Athletics	710	1090

Table 2 - Solar Heat Gain Coefficient (SHGC)

	Window Frame Types			
Window Glass Types	Aluminum w/ Breaks	Aluminum w/o Breaks	Wood	Vinyl
1/8 in. Clear Single	0.76647	0.79692	0.72297	0.71949
1/4 in. Clear Single	0.73515	0.7656	0.69252	0.68904
1/8 in. Bronze Single	0.64554	0.67599	0.60639	0.60204
1/4 in. Bronze Single	0.55332	0.58377	0.51765	0.5133
1/8 in. Gray Single	0.63771	0.66816	0.59856	0.59508
1/4 in. Gray Single	0.54114	0.57159	0.50634	0.50199
1/8 in. Clear Double	0.68904	0.71949	0.64902	0.64467
1/4 in. Clear Double	0.64989	0.68034	0.61074	0.60639
1/8 in. Bronze Double	0.57246	0.60291	0.53592	0.53157
1/4 in. Bronze Double	0.48546	0.51591	0.45153	0.44805
1/8 in. Gray Double	0.56376	0.59421	0.52809	0.52374
1/4 in. Gray Double	0.47502	0.50547	0.44196	0.43848
1/8 in. Clear Low-e Double	0.60813	0.63858	0.56985	0.56637
1/4 in. Clear Low-e Double	0.56115	0.59073	0.52461	0.52026

Table 3- Window U-Values

	Window Frame Types

Window Glass Types	Aluminum w/ Breaks	Aluminum w/o Breaks	Wood	Vinyl
1/8 in. Clear Single	1.093	1.228	0.982	0.964
1/4 in. Clear Single	1.077	1.212	0.967	0.949
1/8 in. Bronze Single	1.093	1.228	0.982	0.964
1/4 in. Bronze Single	1.077	1.212	0.967	0.949
1/8 in. Gray Single	1.093	1.228	0.982	0.964
1/4 in. Gray Single	1.077	1.212	0.967	0.949
1/8 in. Clear Double	0.653	0.788	0.558	0.54
1/4 in. Clear Double	0.645	0.78	0.55	0.532
1/8 in. Bronze Double	0.653	0.788	0.558	0.54
1/4 in. Bronze Double	0.645	0.78	0.55	0.532
1/8 in. Gray Double	0.653	0.788	0.558	0.54
1/4 in. Gray Double	0.645	0.78	0.55	0.532
1/8 in. Clear Low-e Double	0.653	0.788	0.558	0.54
1/4 in. Clear Low-e Double	0.645	0.78	0.55	0.532

Table 4 - Cooling Efficiency Curve Coefficients

Cooling Type		Efficiency Curve Equation	a	b	c	d	e	f
Centrifugal Chiller	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.24258	0.41468	0.34274	0.00000	0.00000	0.00000
Recip Chiller, 1 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.03893	1.07532	-0.10724	-0.00058	0.00000	0.00030
Recip Chiller, 2 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.04812	0.69573	0.23494	0.00046	0.00000	0.00002
Recip Chiller, 3 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.03297	0.57721	0.33923	0.00155	-0.00001	-0.00007
Recip Chiller, 4 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.00435	0.61917	0.32643	0.00179	-0.00001	-0.00029
Screw Chiller, 1 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.01041	1.05183	-0.09462	0.00164	-0.00001	-0.00060
Screw Chiller, 2 Compressor	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.09611	0.72899	0.19517	-0.00041	0.00000	-0.00010
Scroll Chiller	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.03367	0.53153	0.43481	0.00000	0.00000	0.00000
DX Cooling	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.20123	-0.03122	1.95050	-1.12051	0.00000	0.00000
Grnd Srce HP / Wtr Loop HP	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.00988	1.08033	-0.10527	0.01514	0.00000	0.00000
Heat Pump	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.12500	0.87500	0.00000	0.00000	0.00000	0.00000
PTAC	EIR (PLR)	fEIR,PLR = a+bx+cx^2+dx^3	0.12500	0.87500	0.00000	0.00000	0.00000	0.00000

Table 5 - Heating Efficiency Curve Coefficients

Heating Fuel Type		Efficiency Curve Equation	a	b	c
HW Blr - FD Hi/Lo	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.07044	0.75428	0.17375
HW Blr - FD Mod 12:1	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.00499	0.92535	0.06251
HW Blr - FD Mod 6:1	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.05165	0.87841	0.07148
HW Blr - Forced Draft	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.01600	0.94495	0.03905
HW Blr - Natural Draft	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.02700	1.10550	-0.13250
Stm Blr - Forced Draft	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.01600	0.94495	0.03905
Stm Blr - Natural Draft	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.02700	1.10550	-0.13250
Furnace	EIR (PLR)	fEIR,PLR =a+bx+cx^2+dx^3+ex^4	0.01861	1.09421	-0.11282

NATIONAL RESOURCE MANAGEMENT, INC.

800-377-5439

CORPORATE HEADQUARTERS

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San Diego, CA 92121

18340 Yorba Linda Blvd., Suite 107-325
Yorba Linda, CA 92886

CUSTOMER INFORMATION

Location: **Buena Schools - Collings Lake Elem School**
Address: **620 Cain's Mill Rd, Williamstown, NJ 8094**
Contact: **0**
Phone:
Utility: **0** Account # **0-000-0000-00**

NRM OFFICE USE ONLY
Job #2918-JR
Installation Code
2TC1DH1FH2ECM

REFRIGERATION PROPOSAL
Scope of Work

Existing Conditions

Existing Evaporator Fan Motors run continuously, 8,760 hours per year.

Shaded pole motors in existing evaporators.

Anti-sweat door heaters run continuously, 8,760 hours per year.

Proposed Conditions

2TC: 2 zone(s) of Energy-saving CoolTrol refrigeration controls to cycle temperature and evaporator fans.

2ECM: Replace 2 existing shaded-pole motors with 2 high-efficiency EC motors in evaporators.

1DH1FH: Dewpoint-based pulse control for anti-sweat door heaters

Installation

- Installation to be performed by NRM licensed electricians during normal business hours
- Some measures may be impossible or unsuitable for application depending on local or national safety codes, etc. NRM licensed electricians shall have final discretion over which measures may be installed.
- Customer to provide access to NRM installers. There is no need to empty the cooler, reschedule deliveries, or make any special arrangements, unless the cooler is so full that our installers are unable to work in it.

Prepared: *1/28/2019*

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1) *Customer:* **Buena Schools - Collings Lake Elem School** **#2918-JR**
2) *Address:* **620 Cain's Mill Rd, Williamstown, NJ 8094**
3) *Telephone:*
Contact: **0**
4) *Utility Company:*
5) *Account Number:* **0000-000-0000** Install Code: **2TC1DH1FH2ECM**

5) Cooler ID:	Cooler temperature set point: Degrees F	ft. length X	ft. width X	ft. height =	Walk-in Volume affected by Economizer	Total Walk-in Volume in Cu Ft
Cooler A	38.0	5.50	7.00	8.00	0	308
Freezer B	-5.0	7.00	7.00	8.00	0	392
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
Average Weighted Temp - Economizer Application:	38.0			Total Volume:	0	700

PART I

REFRIGERATION COMPRESSOR(S) AND CONDENSER FAN(S):

6) [Compr motor (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)+Cond fan (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)]/1,000

	Comp V:	Comp A:	Comp Ph:	Fan V:	Fan A:	Phase	KW Load:
Cooler A	208	2.8	3	230	1.0	1	1.04
Freezer B	208	5.9	3	230	1.6	1	2.12
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
TOTAL KW Load:							3.16
TOTAL KW Load Affected by Economizers:							0.00

6a)	Percent of total Compressor Load Employed by Coolers Listed above:		100%	100%
7)	Total compressor load affected by Economizers in KW	KW	0.00	3.16
8)	Compressor duty cycle during winter months:		35%	35%
9)	Compressor duty cycle during non-winter months: Many variables affect the compressor duty cycle		55%	55%
9a)	such as box design, temperature, age, etc.	Avg. Adjusted Winter KW	0.00	1.11
9b)		Avg. Adjusted Summer KW	0.00	1.74
10)	Bin hours = ECONOMIZER potential use per year (ref. chart)	Hours	2,195	2,195
11)	ECONOMIZER off hours per year. 8,760 - (line10)	Hours	6,565	6,565
12)	Compressor energy use per year. (line 7) x ((line 8) x (line 10) + (line 9) x (line 11))	KWH/yr	0	13,825
13a)	No. of wall mounted ECONOMIZER units proposed for installation.		0	NRM-500
13b)	No. of large roof/wall mounted ECONOMIZER units proposed for installation. (up to 2000CFM)		0	NRM-2000
14a)	ECONOMIZER load. .285KW | .75KW x (line 13a | 13b)		0.000	KW
14b)	ECONOMIZER energy use based on 75% duty cycle. 75% x (line 10) x (line 13) x (line 14a)		0	KWH/yr
15)	Reduced compressor energy use. (line 7) x (line 8) x (line 10)		0	KWH/yr
16)	Net compressor energy savings from ECONOMIZER. (line 15) - (line 14)		**0**	KWH/yr
	Percent savings from ECONOMIZER of the affected load: Annual & Winter months		**0.00%**	

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Collings Lake Elem School**	**#2918-JR**
2)	*Address:*	**620 Cain's Mill Rd, Williamstown, NJ 8094**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH2ECM**

PART II

ANALYSIS OF CYCLING EVAPORATOR FAN SET(S):

Evaporator fan sets shall be cycled off when refrigeration supply line temperature rises above set point

1)	Current annual operating hours of evaporator fans.	8,760	8,760
2)	Compressor average run time.	41%	50%
3)	Projected annual operating hours of compressor. W/Econ Part I (line9)x(line11) and W/No Econ Part I (line8)x(line10) + Part I (line9)x(line11)	3,611	4,379
4)	Evap fan off-hours incl off-delay affected by economizer: (line 1) - ((line 3) X 1.16)	4,572	3,680

Evaporator fan off-hours including off-delay not affected by Economizer: (line 1) - ((line 3) X 1.16)

Cooler ID:	Fans	Amps X	Volts X	Phase X	Factor	Wattage Load	
Cooler A	1	1.00	115	1.00	0.55 PF	63	Watts
Freezer B	1	1.10	230	1.00	0.55 PF	139	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts

5) Total KW demand of all evaporator fan sets: 0.2024 KW

		a) Economi	b) Non Economizer	
6)	Total KW demand of all evaporator fan sets with and without economizer	0.0000	0.2024	
7)	Load and No. of installed destratifying fans: (each fan represents 30 Watts) 0.030 KW	0	0	
8)	Total load of installed fans:	0.0000	0.0000	
9)	Savings due to cycling of evaporator fans: (line 4) X (line 6)	0	745	KWH/yr
10)	Savings due to reduced cooling load from evaporator fans. (line 9) X (3413/12000) X 1.6	0	339	KWH/yr
11)	Energy used by new recirculating fans: (line 1) X (line 8)	0	0	
12)	Energy use due to increased cooling load from recirc fans. (line 11) X (3413/12000) X 1.6	0	0	
13)	Net energy saved by cycling evaporator fans: (line 9)+(line 10)-(line 11)-(line 12)	**0**	**1,084**	KWH/yr
	a) Percent total reduction of evaporator fan run time:	**52.19%**	**42.01%**	
14)	Projected Demand Savings average for year: (Line 19) / 8,760		**0.2082**	KW

ANALYSIS OF SAVINGS FROM DIRECT DIGITAL TEMP CONTROLS:

15)	Annual energy use by compressor. Part I (line 12) - Part I (line 16)		13,825	KWH/yr
16)	Compressor savings: compressor kwh(line 15) X controller reduce run time (%)	**5.0%**	688	KWH/yr
17)	Resulting evaporator savings: (evap load Part II line5) X (evap hours 8,760 Hr/Yr - Part II line4) X controller reduced time		51	KWH/yr
18)	Total savings from Direct Digital Controller: (line 16) + (line 17)		**740**	KWH/yr
19)	**SAVINGS SUMMARY: Economizer and Digital Evaporator Fan and Temperature Control**			
	Projected Energy Savings = PART I (line 16) + PART II [(line 13) +(line 17)]		**1,824**	KWH/yr

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Collings Lake Elem School**	**#2918-JR**
2)	*Address:*	**620 Cain's Mill Rd, Williamstown, NJ 8094**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH2ECM**

PART III

ANALYSIS OF REPLACING EVAPORATOR MOTORS WITH ECM MOTORS

ECM Motors are designed to reduced the motor and refrigeration load when the fans are on.

1)	Does Cooler Currently utilize CoolTrol?	Yes	
2)	Estimated on time of Evaporator Fans (if system uses CoolTrol, estimated on time = 4,730 otherwise estimated on time of Evaporator Fans is 8,760)	4,730	Hours
3)	KW Load of Evaporator Fans	0.202	KW
4)	Estimated Percentage Reduction in Motor Load	65%	KWH/yr
5)	KWH Motor Savings (line 2 * line 3 * line 4)	622	KWH/yr
6)	Savings due to reduced cooling load from evaporator fans. (line 5) X .28 X 1.6	283	KWH/yr
7)	**Projected Energy Savings from Installing ECM Motors**	**905**	KWH/yr
8)	**Projected KW Savings from Installing ECM Motors: (Line 7) / (Line 2)**	**0.191**	KW

PART IV

ANALYSIS OF CONTROLLING ELECTRIC DEFROST:

By Controlling the Electric Defrost, defrosts can be eliminated approximately 35% of time.

Cooler ID:	Total Watts
Cooler A	0
Freezer B	0
N/A	0
N/A	0
N/A	0
N/A	0

1)	Total Load from Electric Defrosts	0.000	KW
2)	Electric Defrost annual energy use: (line 1) X 365 days X 4 Defrosts/Day X 40 minutes	0	KWH/yr
3)	Estimated hours that Electric Defrost can be shut off: (365 Days X 4 Defrosts/Day X 40 minutes * .35)	341	Hours
4)	Estimated Savings from Electric Defrost Reduction (line 3 X line 1)	0	KWH/yr
5)	Savings due to reduced cooling load. (line 4) X .28 X 1.6	0	KWH/yr
6)	**Estimated Savings from Reduction in Electric Defrost Runtime (line 3 * line 1)**	**0**	KWH/yr
7)	**Estimated KW Savings from Reduction in Electric Defrost Runtime**	**0.000**	KW

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Collings Lake Elem School**	**#2918-JR**
2)	*Address:*	**620 Cain's Mill Rd, Williamstown, NJ 8094**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*	**0**	
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH2ECM**

PART VI

ANALYSIS OF CONTROLLING DOOR HEATERS:

By installing humidity sensors to control door heaters operating hours of door heaters can be reduced by 5,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	1	120	1.000	120
Freezer B	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Medium Temp Door Heaters	Total:	0.120	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		1,051	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		3,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		60%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.089	KW
6) Door heaters annual energy use with humidity control: (line 1 x line 3 x line 4)		271	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**780**	KWH/yr
8) Total OFF hours of Cooler Door Heaters [line 7] / [line 1]	74%	6,504	hours

PART VII

ANALYSIS OF CONTROLLING DOOR HEATERS ON FROZEN FOOD COOLERS:

By controlling door heaters based on dew point operating power level of door heaters can be reduced to 40% for 4,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	0	120	0.000	0
Freezer B	1	120	2.060	247
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Frozen Food Door Heaters		0.247	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		2,165	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		8,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		65%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.115	KW
6) Door heaters annual energy use with dew point control: (40% x line 1 x 4000 + line 1 x 4760 x line 4)		1,160	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**1,005**	KWH/yr
8) Total OFF hours of Freezer Door Heaters [line 7] / [line 1]	46%	4,066	hours
Total Door Heater Control Savings:	**1,786**	KWH/yr	

NATIONAL RESOURCE MANAGEMENT, INC.

800-377-5439

CORPORATE HEADQUARTERS

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Canton, MA 02021

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7313 Carroll Rd., Suite E
San Diego, CA 92121

18340 Yorba Linda Blvd., Suite 107-325
Yorba Linda, CA 92886

CUSTOMER INFORMATION

Location: **Buena Schools - Buena Regional Middle School**
Address: **175 Weymouth Rd, Buena, NJ 8310**
Contact: **0**
Phone:
Utility: **0**
Account # **0-000-0000-00**

NRM OFFICE USE ONLY
Job #2919-JR
Installation Code
2TC1DH1FH

REFRIGERATION PROPOSAL
Scope of Work

Existing Conditions

Existing Evaporator Fan Motors run continuously, 8,760 hours per year.

Anti-sweat door heaters run continuously, 8,760 hours per year.

Proposed Conditions

2TC: 2 zone(s) of Energy-saving CoolTrol refrigeration controls to cycle temperature and evaporator fans.

1DH1FH: Dewpoint-based pulse control for anti-sweat door heaters

Installation

- Installation to be performed by NRM licensed electricians during normal business hours
- Some measures may be impossible or unsuitable for application depending on local or national safety codes, etc. NRM licensed electricians shall have final discretion over which measures may be installed.
- Customer to provide access to NRM installers. There is no need to empty the cooler, reschedule deliveries, or make any special arrangements, unless the cooler is so full that our installers are unable to work in it.

Prepared: *1/28/2019*

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1) *Customer:* **Buena Schools - Buena Regional Middle School** **#2919-JR**
2) *Address:* **175 Weymouth Rd, Buena, NJ 8310**
3) *Telephone:*
Contact: **0**
4) *Utility Company:*
5) *Account Number:* **0000-000-0000** Install Code: **2TC1DH1FH**

5) Cooler ID:	Cooler temperature set point: Degrees F	ft. length X	ft. width X	ft. height =	Walk-in Volume affected by Economizer	Total Walk-in Volume in Cu Ft
Cooler A	38.0	10.00	7.00	8.00	0	560
Freezer B	-5.0	7.00	12.00	8.00	0	672
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
Average Weighted Temp - Economizer Application:	38.0			Total Volume:	0	1,232

PART I

REFRIGERATION COMPRESSOR(S) AND CONDENSER FAN(S):

6) [Compr motor (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)+Cond fan (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)]/1,000

	Comp V:	Comp A:	Comp Ph:	Fan V:	Fan A:	Phase	KW Load:
Cooler A	208	5.0	3	230	1.6	1	1.84
Freezer B	208	9.0	3	230	3.0	1	3.34
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
TOTAL KW Load:							5.19
TOTAL KW Load Affected by Economizers:							0.00

6a)	Percent of total Compressor Load Employed by Coolers Listed above:		100%	100%
7)	Total compressor load affected by Economizers in KW	KW	0.00	5.19
8)	Compressor duty cycle during winter months:		35%	35%
9)	Compressor duty cycle during non-winter months: Many variables affect the compressor duty cycle		55%	55%
9a)	such as box design, temperature, age, etc.	Avg. Adjusted Winter KW	0.00	1.82
9b)		Avg. Adjusted Summer KW	0.00	2.85
10)	Bin hours = ECONOMIZER potential use per year (ref. chart)	Hours	2,195	2,195
11)	ECONOMIZER off hours per year. 8,760 - (line10)	Hours	6,565	6,565
12)	Compressor energy use per year. (line 7) x ((line 8) x (line 10) + (line 9) x (line 11))	KWH/yr	0	22,712
13a)	No. of wall mounted ECONOMIZER units proposed for installation.		0	NRM-500
13b)	No. of large roof/wall mounted ECONOMIZER units proposed for installation. (up to 2000CFM)		0	NRM-2000
14a)	ECONOMIZER load. .285KW | .75KW x (line 13a | 13b)		0.000	KW
14b)	ECONOMIZER energy use based on 75% duty cycle. 75% x (line 10) x (line 13) x (line 14a)		0	KWH/yr
15)	Reduced compressor energy use. (line 7) x (line 8) x (line 10)		0	KWH/yr
16)	Net compressor energy savings from ECONOMIZER. (line 15) - (line 14)		**0**	KWH/yr
	Percent savings from ECONOMIZER of the affected load: Annual & Winter months		**0.00%**	

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional Middle School**	**#2919-JR**
2)	*Address:*	**175 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH**

PART II

ANALYSIS OF CYCLING EVAPORATOR FAN SET(S):

Evaporator fan sets shall be cycled off when refrigeration supply line temperature rises above set point

1)	Current annual operating hours of evaporator fans.	8,760	8,760
2)	Compressor average run time.	41%	50%
3)	Projected annual operating hours of compressor. W/Econ Part I (line9)x(line11) and W/No Econ Part I (line8)x(line10) + Part I (line9)x(line11)	3,611	4,379
4)	Evap fan off-hours incl off-delay affected by economizer: (line 1) - ((line 3) X 1.16)	4,572	3,680

Evaporator fan off-hours including off-delay not affected by Economizer: (line 1) - ((line 3) X 1.16)

Cooler ID:	Fans	Amps X	Volts X	Phase X	Factor	Wattage Load	
Cooler A	2	0.45	230	1.00	0.55 PF	114	Watts
Freezer B	3	0.45	230	1.00	0.55 PF	171	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts

5) Total KW demand of all evaporator fan sets: 0.2846 KW

		a) Economi	b) Non Economizer	
6)	Total KW demand of all evaporator fan sets with and without economizer	0.0000	0.2846	
7)	Load and No. of installed destratifying fans: (each fan represents 30 Watts) 0.030 KW	0	0	
8)	Total load of installed fans:	0.0000	0.0000	
9)	Savings due to cycling of evaporator fans: (line 4) X (line 6)	0	1,048	KWH/yr
10)	Savings due to reduced cooling load from evaporator fans. (line 9) X (3413/12000) X 1.6	0	477	KWH/yr
11)	Energy used by new recirculating fans: (line 1) X (line 8)	0	0	
12)	Energy use due to increased cooling load from recirc fans. (line 11) X (3413/12000) X 1.6	0	0	
13)	Net energy saved by cycling evaporator fans: (line 9)+(line 10)-(line 11)-(line 12)	**0**	**1,524**	KWH/yr
	a) Percent total reduction of evaporator fan run time:	**52.19%**	**42.01%**	
14)	Projected Demand Savings average for year: (Line 19) / 8,760		**0.3113**	KW

ANALYSIS OF SAVINGS FROM DIRECT DIGITAL TEMP CONTROLS:

15)	Annual energy use by compressor. Part I (line 12) - Part I (line 16)		22,712	KWH/yr
16)	Compressor savings: compressor kwh(line 15) X controller reduce run time (%)	**5.0%**	1,131	KWH/yr
17)	Resulting evaporator savings: (evap load Part II line5) X (evap hours 8,760 Hr/Yr - Part II line4) X controller reduced time		72	KWH/yr
18)	Total savings from Direct Digital Controller: (line 16) + (line 17)		**1,203**	KWH/yr
19)	**SAVINGS SUMMARY: Economizer and Digital Evaporator Fan and Temperature Control**			
	Projected Energy Savings = PART I (line 16) + PART II [(line 13) +(line 17)]		**2,727**	KWH/yr

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional Middle School**	**#2919-JR**
2)	*Address:*	**175 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH**

PART III

ANALYSIS OF REPLACING EVAPORATOR MOTORS WITH ECM MOTORS

ECM Motors are designed to reduced the motor and refrigeration load when the fans are on.

1)	Does Cooler Currently utilize CoolTrol?	0	
2)	Estimated on time of Evaporator Fans (if system uses CoolTrol, estimated on time = 4,730 otherwise estimated on time of Evaporator Fans is 8,760)	FALSE	Hours
3)	KW Load of Evaporator Fans	0.000	KW
4)	Estimated Percentage Reduction in Motor Load	65%	KWH/yr
5)	KWH Motor Savings (line 2 * line 3 * line 4)	0	KWH/yr
6)	Savings due to reduced cooling load from evaporator fans. (line 5) X .28 X 1.6	0	KWH/yr
7)	**Projected Energy Savings from Installing ECM Motors**	**0**	KWH/yr
8)	**Projected KW Savings from Installing ECM Motors: (Line 7) / (Line 2)**	**0.000**	KW

PART IV

ANALYSIS OF CONTROLLING ELECTRIC DEFROST:

By Controlling the Electric Defrost, defrosts can be eliminated approximately 35% of time.

Cooler ID:	Total Watts
Cooler A	0
Freezer B	0
N/A	0
N/A	0
N/A	0
N/A	0

1)	Total Load from Electric Defrosts	0.000	KW
2)	Electric Defrost annual energy use: (line 1) X 365 days X 4 Defrosts/Day X 40 minutes	0	KWH/yr
3)	Estimated hours that Electric Defrost can be shut off: (365 Days X 4 Defrosts/Day X 40 minutes * .35)	341	Hours
4)	Estimated Savings from Electric Defrost Reduction (line 3 X line 1)	0	KWH/yr
5)	Savings due to reduced cooling load. (line 4) X .28 X 1.6	0	KWH/yr
6)	**Estimated Savings from Reduction in Electric Defrost Runtime (line 3 * line 1)**	**0**	KWH/yr
7)	**Estimated KW Savings from Reduction in Electric Defrost Runtime**	**0.000**	KW

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional Middle School**	**#2919-JR**
2)	*Address:*	**175 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*	**0**	
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1DH1FH**

PART VI

ANALYSIS OF CONTROLLING DOOR HEATERS:

By installing humidity sensors to control door heaters operating hours of door heaters can be reduced by 5,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	1	120	1.500	180
Freezer B	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Medium Temp Door Heaters	Total:	0.180	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		1,577	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		3,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		60%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.134	KW
6) Door heaters annual energy use with humidity control: (line 1 x line 3 x line 4)		406	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**1,171**	KWH/yr
8) Total OFF hours of Cooler Door Heaters [line 7] / [line 1]	74%	6,504	hours

PART VII

ANALYSIS OF CONTROLLING DOOR HEATERS ON FROZEN FOOD COOLERS:

By controlling door heaters based on dew point operating power level of door heaters can be reduced to 40% for 4,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	0	120	0.000	0
Freezer B	1	120	1.500	180
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Frozen Food Door Heaters		0.180	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		1,577	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		8,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		65%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.084	KW
6) Door heaters annual energy use with dew point control: (40% x line 1 x 4000 + line 1 x 4760 x line 4)		845	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**732**	KWH/yr
8) Total OFF hours of Freezer Door Heaters [line 7] / [line 1]	46%	4,066	hours

Total Door Heater Control Savings: **1,903** KWH/yr

NATIONAL RESOURCE MANAGEMENT, INC.

800-377-5439

CORPORATE HEADQUARTERS

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Union City, CA 94587

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San Diego, CA 92121

18340 Yorba Linda Blvd., Suite 107-325
Yorba Linda, CA 92886

CUSTOMER INFORMATION

Location: **Buena Schools - Buena Regional High School**
Address: **125 Weymouth Rd, Buena, NJ 8310**
Contact: **0**
Phone:
Utility: **0** Account # **0-000-0000-00**

NRM OFFICE USE ONLY
Job #2920-JR
Installation Code
2TC1FH4ECM

REFRIGERATION PROPOSAL
Scope of Work

Existing Conditions

Existing Evaporator Fan Motors run continuously, 8,760 hours per year.

Shaded pole motors in existing evaporators.

Anti-sweat door heaters run continuously, 8,760 hours per year.

Proposed Conditions

2TC: 2 zone(s) of Energy-saving CoolTrol refrigeration controls to cycle temperature and evaporator fans.

4ECM: Replace 4 existing shaded-pole motors with 4 high-efficiency EC motors in evaporators.

1FH: Dewpoint-based pulse control for anti-sweat door heaters

Installation

- Installation to be performed by NRM licensed electricians during normal business hours
- Some measures may be impossible or unsuitable for application depending on local or national safety codes, etc. NRM licensed electricians shall have final discretion over which measures may be installed.
- Customer to provide access to NRM installers. There is no need to empty the cooler, reschedule deliveries, or make any special arrangements, unless the cooler is so full that our installers are unable to work in it.

Prepared: ***1/28/2019***

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1) *Customer:* **Buena Schools - Buena Regional High School** **#2920-JR**
2) *Address:* **125 Weymouth Rd, Buena, NJ 8310**
3) *Telephone:*
Contact: **0**
4) *Utility Company:*
5) *Account Number:* **0000-000-0000** Install Code: **2TC1FH4ECM**

5) Cooler ID:	Cooler temperature set point: Degrees F	ft. length X	ft. width X	ft. height =	Walk-in Volume affected by Economizer	Total Walk-in Volume in Cu Ft
Cooler A	38.0	10.00	7.00	8.00	0	560
Freezer B	-5.0	8.00	7.00	8.00	0	448
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
Average Weighted Temp - Economizer Application:	38.0			Total Volume:	0	1,008

PART I

REFRIGERATION COMPRESSOR(S) AND CONDENSER FAN(S):

6) [Compr motor (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)+Cond fan (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)]/1,000

	Comp V:	Comp A:	Comp Ph:	Fan V:	Fan A:	Phase	KW Load:
Cooler A	208	6.3	3	230	0.5	1	2.03
Freezer B	208	9.0	3	230	0.5	1	2.85
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
TOTAL KW Load:							4.88
TOTAL KW Load Affected by Economizers:							0.00

6a)	Percent of total Compressor Load Employed by Coolers Listed above:		100%	100%
7)	Total compressor load affected by Economizers in KW	KW	0.00	4.88
8)	Compressor duty cycle during winter months:		35%	35%
9)	Compressor duty cycle during non-winter months: Many variables affect the compressor duty cycle		55%	55%
9a)	such as box design, temperature, age, etc.	Avg. Adjusted Winter KW	0.00	1.71
9b)		Avg. Adjusted Summer KW	0.00	2.68
10)	Bin hours = ECONOMIZER potential use per year (ref. chart)	Hours	2,195	2,195
11)	ECONOMIZER off hours per year. 8,760 - (line10)	Hours	6,565	6,565
12)	Compressor energy use per year. (line 7) x ((line 8) x (line 10) + (line 9) x (line 11))	KWH/yr	0	21,373
13a)	No. of wall mounted ECONOMIZER units proposed for installation.		0	NRM-500
13b)	No. of large roof/wall mounted ECONOMIZER units proposed for installation. (up to 2000CFM)		0	NRM-2000
14a)	ECONOMIZER load. .285KW | .75KW x (line 13a | 13b)		0.000	KW
14b)	ECONOMIZER energy use based on 75% duty cycle. 75% x (line 10) x (line 13) x (line 14a)		0	KWH/yr
15)	Reduced compressor energy use. (line 7) x (line 8) x (line 10)		0	KWH/yr
16)	Net compressor energy savings from ECONOMIZER. (line 15) - (line 14)		**0**	KWH/yr
	Percent savings from ECONOMIZER of the affected load: Annual & Winter months		**0.00%**	

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional High School**	**#2920-JR**
2)	*Address:*	**125 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1FH4ECM**

PART II

ANALYSIS OF CYCLING EVAPORATOR FAN SET(S):

Evaporator fan sets shall be cycled off when refrigeration supply line temperature rises above set point

1)	Current annual operating hours of evaporator fans.	8,760	8,760
2)	Compressor average run time.	41%	50%
3)	Projected annual operating hours of compressor. W/Econ Part I (line9)x(line11) and W/No Econ Part I (line8)x(line10) + Part I (line9)x(line11)	3,611	4,379
4)	Evap fan off-hours incl off-delay affected by economizer: (line 1) - ((line 3) X 1.16)	4,572	3,680

Evaporator fan off-hours including off-delay not affected by Economizer: (line 1) - ((line 3) X 1.16)

Cooler ID:	Fans	Amps X	Volts X	Phase X	Factor	Wattage Load	
Cooler A	2	2.10	115	1.00	0.55 PF	266	Watts
Freezer B	2	1.00	230	1.00	0.55 PF	253	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts

5) Total KW demand of all evaporator fan sets: 0.5187 KW

		a) Economi	b) Non Economizer	
6)	Total KW demand of all evaporator fan sets with and without economizer	0.0000	0.5187	
7)	Load and No. of installed destratifying fans: (each fan represents 30 Watts) 0.030 KW	0	0	
8)	Total load of installed fans:	0.0000	0.0000	
9)	Savings due to cycling of evaporator fans: (line 4) X (line 6)	0	1,909	KWH/yr
10)	Savings due to reduced cooling load from evaporator fans. (line 9) X (3413/12000) X 1.6	0	869	KWH/yr
11)	Energy used by new recirculating fans: (line 1) X (line 8)	0	0	
12)	Energy use due to increased cooling load from recirc fans. (line 11) X (3413/12000) X 1.6	0	0	
13)	Net energy saved by cycling evaporator fans: (line 9)+(line 10)-(line 11)-(line 12)	**0**	**2,777**	KWH/yr
	a) Percent total reduction of evaporator fan run time:	**52.19%**	**42.01%**	
14)	Projected Demand Savings average for year: (Line 19) / 8,760		**0.4535**	KW

ANALYSIS OF SAVINGS FROM DIRECT DIGITAL TEMP CONTROLS:

15)	Annual energy use by compressor. Part I (line 12) - Part I (line 16)		21,373	KWH/yr
16)	Compressor savings: compressor kwh(line 15) X controller reduce run time (%)	**5.0%**	1,064	KWH/yr
17)	Resulting evaporator savings: (evap load Part II line5) X (evap hours 8,760 Hr/Yr - Part II line4) X controller reduced time		131	KWH/yr
18)	Total savings from Direct Digital Controller: (line 16) + (line 17)		**1,196**	KWH/yr
19)	**SAVINGS SUMMARY: Economizer and Digital Evaporator Fan and Temperature Control** **Projected Energy Savings = PART I (line 16) + PART II [(line 13) +(line 17)]**		**3,973**	KWH/yr

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional High School**	**#2920-JR**
2)	*Address:*	**125 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1FH4ECM**

PART III

ANALYSIS OF REPLACING EVAPORATOR MOTORS WITH ECM MOTORS

ECM Motors are designed to reduced the motor and refrigeration load when the fans are on.

1)	Does Cooler Currently utilize CoolTrol?	Yes	
2)	Estimated on time of Evaporator Fans (if system uses CoolTrol, estimated on time = 4,730 otherwise estimated on time of Evaporator Fans is 8,760)	4,730	Hours
3)	KW Load of Evaporator Fans	0.519	KW
4)	Estimated Percentage Reduction in Motor Load	65%	KWH/yr
5)	KWH Motor Savings (line 2 * line 3 * line 4)	1,595	KWH/yr
6)	Savings due to reduced cooling load from evaporator fans. (line 5) X .28 X 1.6	726	KWH/yr
7)	**Projected Energy Savings from Installing ECM Motors**	**2,320**	KWH/yr
8)	**Projected KW Savings from Installing ECM Motors: (Line 7) / (Line 2)**	**0.491**	KW

PART IV

ANALYSIS OF CONTROLLING ELECTRIC DEFROST:

By Controlling the Electric Defrost, defrosts can be eliminated approximately 35% of time.

Cooler ID:	Total Watts
Cooler A	0
Freezer B	0
N/A	0
N/A	0
N/A	0
N/A	0

1)	Total Load from Electric Defrosts	0.000	KW
2)	Electric Defrost annual energy use: (line 1) X 365 days X 4 Defrosts/Day X 40 minutes	0	KWH/yr
3)	Estimated hours that Electric Defrost can be shut off: (365 Days X 4 Defrosts/Day X 40 minutes * .35)	341	Hours
4)	Estimated Savings from Electric Defrost Reduction (line 3 X line 1)	0	KWH/yr
5)	Savings due to reduced cooling load. (line 4) X .28 X 1.6	0	KWH/yr
6)	**Estimated Savings from Reduction in Electric Defrost Runtime (line 3 * line 1)**	**0**	KWH/yr
7)	**Estimated KW Savings from Reduction in Electric Defrost Runtime**	**0.000**	KW

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Buena Regional High School**	**#2920-JR**
2)	*Address:*	**125 Weymouth Rd, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*	**0**	
5)	*Account Number:*	**0000-000-0000**	Install Code: **2TC1FH4ECM**

PART VI

ANALYSIS OF CONTROLLING DOOR HEATERS:

By installing humidity sensors to control door heaters operating hours of door heaters can be reduced by 5,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	0	120	0.000	0
Freezer B	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1)	Total load of Medium Temp Door Heaters	Total:	0.000	KW
2)	Door heaters annual energy use: (line 1) X 8,760 hours		0	KWH/yr
3)	Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		3,760	hours
4)	Estimated average power level of door heaters when operated to maintain 5 deg above DP		60%	
5)	Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.000	KW
6)	Door heaters annual energy use with humidity control: (line 1 x line 3 x line 4)		0	KWH/yr
7)	Annual energy savings from door heater controls: (line 2 - line 6)		**0**	KWH/yr
8)	Total OFF hours of Cooler Door Heaters [line 7] / [line 1]	0%	0	hours

PART VII

ANALYSIS OF CONTROLLING DOOR HEATERS ON FROZEN FOOD COOLERS:

By controlling door heaters based on dew point operating power level of door heaters can be reduced to 40% for 4,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	0	120	0.000	0
Freezer B	1	120	1.420	170
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1)	Total load of Frozen Food Door Heaters		0.170	KW
2)	Door heaters annual energy use: (line 1) X 8,760 hours		1,493	KWH/yr
3)	Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		8,760	hours
4)	Estimated average power level of door heaters when operated to maintain 5 deg above DP		65%	
5)	Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.079	KW
6)	Door heaters annual energy use with dew point control: (40% x line 1 x 4000 + line 1 x 4760 x line 4)		800	KWH/yr
7)	Annual energy savings from door heater controls: (line 2 - line 6)		**693**	KWH/yr
8)	Total OFF hours of Freezer Door Heaters [line 7] / [line 1]	46%	4,066	hours

Total Door Heater Control Savings: **693** KWH/yr

NATIONAL RESOURCE MANAGEMENT, INC.

800-377-5439

CORPORATE HEADQUARTERS

480 Neponset St., Building 2
Canton, MA 02021

REGIONAL OFFICES

29572 Union City Blvd.
Union City, CA 94587

7313 Carroll Rd., Suite E
San Diego, CA 92121

18340 Yorba Linda Blvd., Suite 107-325
Yorba Linda, CA 92886

CUSTOMER INFORMATION

Location: **Buena Schools - John C. Milanesi Elem School**
Address: **880 Harding Hwy, Buena, NJ 8310**
Contact: **0**
Phone:
Utility: **0** Account # **0-000-0000-00**

NRM OFFICE USE ONLY
Job #2921-JR
Installation Code
1TC1FH1ECM

REFRIGERATION PROPOSAL
Scope of Work

Existing Conditions

Existing Evaporator Fan Motors run continuously, 8,760 hours per year.

Shaded pole motors in existing evaporators.

Anti-sweat door heaters run continuously, 8,760 hours per year.

Proposed Conditions

1TC: 1 zone(s) of Energy-saving CoolTrol refrigeration controls to cycle temperature and evaporator fans.

1ECM: Replace 1 existing shaded-pole motors with 1 high-efficiency EC motors in evaporators.

1FH: Dewpoint-based pulse control for anti-sweat door heaters

Installation

- Installation to be performed by NRM licensed electricians during normal business hours
- Some measures may be impossible or unsuitable for application depending on local or national safety codes, etc. NRM licensed electricians shall have final discretion over which measures may be installed.
- Customer to provide access to NRM installers. There is no need to empty the cooler, reschedule deliveries, or make any special arrangements, unless the cooler is so full that our installers are unable to work in it.

Prepared: ***1/28/2019***

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1) *Customer:* **Buena Schools - John C. Milanesi Elem School** **#2921-JR**
2) *Address:* **880 Harding Hwy, Buena, NJ 8310**
3) *Telephone:*
Contact: **0**
4) *Utility Company:*
5) *Account Number:* **0000-000-0000** Install Code: **1TC1FH1ECM**

5) Cooler ID:	Cooler temperature set point: Degrees F	ft. length X	ft. width X	ft. height =	Walk-in Volume affected by Economizer	Total Walk-in Volume in Cu Ft
Freezer A	-5.0	6.00	6.00	8.00	0	288
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
N/A	38.0	0.00	0.00	0.00	0	0
Average Weighted Temp - Economizer Application:	38.0			Total Volume:	0	288

PART I

REFRIGERATION COMPRESSOR(S) AND CONDENSER FAN(S):

6) [Compr motor (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)+Cond fan (amps FLA) X (voltage) X (.85 PF) X sqrt(of ph)]/1,000

	Comp V:	Comp A:	Comp Ph:	Fan V:	Fan A:	Phase	KW Load:
Freezer A	208	9.0	3	230	0.5	1	2.85
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
N/A	0	0.0	0	0	0.0	0	0.00
TOTAL KW Load:							2.85
TOTAL KW Load Affected by Economizers:							0.00

6a)	Percent of total Compressor Load Employed by Coolers Listed above:		100%	100%
7)	Total compressor load affected by Economizers in KW	KW	0.00	2.85
8)	Compressor duty cycle during winter months:		35%	35%
9)	Compressor duty cycle during non-winter months: Many variables affect the compressor duty cycle		55%	55%
9a)	such as box design, temperature, age, etc.	Avg. Adjusted Winter KW	0.00	1.00
9b)		Avg. Adjusted Summer KW	0.00	1.57
10)	Bin hours = ECONOMIZER potential use per year (ref. chart)	Hours	2,195	2,195
11)	ECONOMIZER off hours per year. 8,760 - (line10)	Hours	6,565	6,565
12)	Compressor energy use per year. (line 7) x ((line 8) x (line 10) + (line 9) x (line 11))	KWH/yr	0	12,497
13a)	No. of wall mounted ECONOMIZER units proposed for installation.		0	NRM-500
13b)	No. of large roof/wall mounted ECONOMIZER units proposed for installation. (up to 2000CFM)		0	NRM-2000
14a)	ECONOMIZER load. .285KW | .75KW x (line 13a | 13b)		0.000	KW
14b)	ECONOMIZER energy use based on 75% duty cycle. 75% x (line 10) x (line 13) x (line 14a)		0	KWH/yr
15)	Reduced compressor energy use. (line 7) x (line 8) x (line 10)		0	KWH/yr
16)	Net compressor energy savings from ECONOMIZER. (line 15) - (line 14)		**0**	KWH/yr
	Percent savings from ECONOMIZER of the affected load: Annual & Winter months		**0.00%**	

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - John C. Milanesi Elem School**	**#2921-JR**
2)	*Address:*	**880 Harding Hwy, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*		
5)	*Account Number:*	**0000-000-0000**	Install Code: **1TC1FH1ECM**

PART II

ANALYSIS OF CYCLING EVAPORATOR FAN SET(S):

Evaporator fan sets shall be cycled off when refrigeration supply line temperature rises above set point

1)	Current annual operating hours of evaporator fans.	8,760	8,760
2)	Compressor average run time.	41%	50%
3)	Projected annual operating hours of compressor. W/Econ Part I (line9)x(line11) and W/No Econ Part I (line8)x(line10) + Part I (line9)x(line11)	3,611	4,379
4)	Evap fan off-hours incl off-delay affected by economizer: (line 1) - ((line 3) X 1.16)	4,572	3,680

Evaporator fan off-hours including off-delay not affected by Economizer: (line 1) - ((line 3) X 1.16)

Cooler ID:	Fans	Amps X	Volts X	Phase X	Factor	Wattage Load	
Freezer A	1	1.10	230	1.00	0.55 PF	139	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts
N/A	0	0.00	0	0.00	0.55 PF	0	Watts

5) Total KW demand of all evaporator fan sets: 0.1392 KW

		a) Economi	b) Non Economizer	
6)	Total KW demand of all evaporator fan sets with and without economizer	0.0000	0.1392	
7)	Load and No. of installed destratifying fans: (each fan represents 30 Watts) 0.030 KW	0	0	
8)	Total load of installed fans:	0.0000	0.0000	
9)	Savings due to cycling of evaporator fans: (line 4) X (line 6)	0	512	KWH/yr
10)	Savings due to reduced cooling load from evaporator fans. (line 9) X (3413/12000) X 1.6	0	233	KWH/yr
11)	Energy used by new recirculating fans: (line 1) X (line 8)	0	0	
12)	Energy use due to increased cooling load from recirc fans. (line 11) X (3413/12000) X 1.6	0	0	
13)	Net energy saved by cycling evaporator fans: (line 9)+(line 10)-(line 11)-(line 12)	**0**	**745**	KWH/yr
	a) Percent total reduction of evaporator fan run time:	**52.19%**	**42.01%**	
14)	Projected Demand Savings average for year: (Line 19) / 8,760		**0.1601**	KW

ANALYSIS OF SAVINGS FROM DIRECT DIGITAL TEMP CONTROLS:

15)	Annual energy use by compressor. Part I (line 12) - Part I (line 16)		12,497	KWH/yr
16)	Compressor savings: compressor kwh(line 15) X controller reduce run time (%)	**5.0%**	622	KWH/yr
17)	Resulting evaporator savings: (evap load Part II line5) X (evap hours 8,760 Hr/Yr - Part II line4) X controller reduced time		35	KWH/yr
18)	Total savings from Direct Digital Controller: (line 16) + (line 17)		**658**	KWH/yr
19)	**SAVINGS SUMMARY: Economizer and Digital Evaporator Fan and Temperature Control** **Projected Energy Savings = PART I (line 16) + PART II [(line 13) +(line 17)]**		**1,403**	KWH/yr

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - John C. Milanesi Elem School**		**#2921-JR**
2)	*Address:*	**880 Harding Hwy, Buena, NJ 8310**		
3)	*Telephone:*			
	Contact:	**0**		
4)	*Utility Company:*			
5)	*Account Number:*	**0000-000-0000**	Install Code:	**1TC1FH1ECM**

PART III

ANALYSIS OF REPLACING EVAPORATOR MOTORS WITH ECM MOTORS

ECM Motors are designed to reduced the motor and refrigeration load when the fans are on.

1)	Does Cooler Currently utilize CoolTrol?	Yes	
2)	Estimated on time of Evaporator Fans (if system uses CoolTrol, estimated on time = 4,730 otherwise estimated on time of Evaporator Fans is 8,760)	4,730	Hours
3)	KW Load of Evaporator Fans	0.139	KW
4)	Estimated Percentage Reduction in Motor Load	65%	KWH/yr
5)	KWH Motor Savings (line 2 * line 3 * line 4)	428	KWH/yr
6)	Savings due to reduced cooling load from evaporator fans. (line 5) X .28 X 1.6	195	KWH/yr
7)	**Projected Energy Savings from Installing ECM Motors**	**623**	KWH/yr
8)	**Projected KW Savings from Installing ECM Motors: (Line 7) / (Line 2)**	**0.132**	KW

PART IV

ANALYSIS OF CONTROLLING ELECTRIC DEFROST:

By Controlling the Electric Defrost, defrosts can be eliminated approximately 35% of time.

Cooler ID:	Total Watts
Freezer A	0
N/A	0
N/A	0
N/A	0
N/A	0
N/A	0

1)	Total Load from Electric Defrosts	0.000	KW
2)	Electric Defrost annual energy use: (line 1) X 365 days X 4 Defrosts/Day X 40 minutes	0	KWH/yr
3)	Estimated hours that Electric Defrost can be shut off: (365 Days X 4 Defrosts/Day X 40 minutes * .35)	341	Hours
4)	Estimated Savings from Electric Defrost Reduction (line 3 X line 1)	0	KWH/yr
5)	Savings due to reduced cooling load. (line 4) X .28 X 1.6	0	KWH/yr
6)	**Estimated Savings from Reduction in Electric Defrost Runtime (line 3 * line 1)**	**0**	KWH/yr
7)	**Estimated KW Savings from Reduction in Electric Defrost Runtime**	**0.000**	KW

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - John C. Milanesi Elem School**	**#2921-JR**
2)	*Address:*	**880 Harding Hwy, Buena, NJ 8310**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*	**0**	
5)	*Account Number:*	**0000-000-0000**	Install Code: **1TC1FH1ECM**

PART VI

ANALYSIS OF CONTROLLING DOOR HEATERS:

By installing humidity sensors to control door heaters operating hours of door heaters can be reduced by 5,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Freezer A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Medium Temp Door Heaters	Total:	0.000	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		0	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		3,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		60%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.000	KW
6) Door heaters annual energy use with humidity control: (line 1 x line 3 x line 4)		0	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**0**	KWH/yr
8) Total OFF hours of Cooler Door Heaters [line 7] / [line 1]	0%	0	hours

PART VII

ANALYSIS OF CONTROLLING DOOR HEATERS ON FROZEN FOOD COOLERS:

By controlling door heaters based on dew point operating power level of door heaters can be reduced to 40% for 4,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Freezer A	1	120	2.640	317
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1) Total load of Frozen Food Door Heaters		0.317	KW
2) Door heaters annual energy use: (line 1) X 8,760 hours		2,775	KWH/yr
3) Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		8,760	hours
4) Estimated average power level of door heaters when operated to maintain 5 deg above DP		65%	
5) Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.147	KW
6) Door heaters annual energy use with dew point control: (40% x line 1 x 4000 + line 1 x 4760 x line 4)		1,487	KWH/yr
7) Annual energy savings from door heater controls: (line 2 - line 6)		**1,288**	KWH/yr
8) Total OFF hours of Freezer Door Heaters [line 7] / [line 1]	46%	4,066	hours

Total Door Heater Control Savings: **1,288** KWH/yr

NATIONAL RESOURCE MANAGEMENT, INC.

800-377-5439

CORPORATE HEADQUARTERS

480 Neponset St., Building 2
Canton, MA 02021

REGIONAL OFFICES

29572 Union City Blvd.
Union City, CA 94587

7313 Carroll Rd., Suite E
San Diego, CA 92121

18340 Yorba Linda Blvd., Suite 107-325
Yorba Linda, CA 92886

CUSTOMER INFORMATION

Location: **Buena Schools - Dr. J.P. Cleary Elem School**
Address: **1501 Central Ave, Minotola, NJ 8341**
Contact: **0**
Phone:
Utility: **0**
Account # **0-000-0000-00**

NRM OFFICE USE ONLY
Job #2922-JR
Installation Code
1DH1FH

REFRIGERATION PROPOSAL
Scope of Work

Existing Conditions

Anti-sweat door heaters run continuously, 8,760 hours per year.

Proposed Conditions

1DH1FH: Dewpoint-based pulse control for anti-sweat door heaters

Installation

- Installation to be performed by NRM licensed electricians during normal business hours
- Some measures may be impossible or unsuitable for application depending on local or national safety codes, etc. NRM licensed electricians shall have final discretion over which measures may be installed.
- Customer to provide access to NRM installers. There is no need to empty the cooler, reschedule deliveries, or make any special arrangements, unless the cooler is so full that our installers are unable to work in it.

Prepared: ***1/28/2019***

WALK-IN COOLER ENERGY CONSERVATION BENEFIT ANALYSIS

1)	*Customer:*	**Buena Schools - Dr. J.P. Cleary Elem School**	**#2922-JR**
2)	*Address:*	**1501 Central Ave, Minotola, NJ 8341**	
3)	*Telephone:*		
	Contact:	**0**	
4)	*Utility Company:*	**0**	
5)	*Account Number:*	**0000-000-0000**	Install Code: **1DH1FH**

PART VI

ANALYSIS OF CONTROLLING DOOR HEATERS:

By installing humidity sensors to control door heaters operating hours of door heaters can be reduced by 5,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	1	120	1.310	157
Freezer B	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1)	Total load of Medium Temp Door Heaters	Total:	0.157	KW
2)	Door heaters annual energy use: (line 1) X 8,760 hours		1,377	KWH/yr
3)	Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		3,760	hours
4)	Estimated average power level of door heaters when operated to maintain 5 deg above DP		60%	
5)	Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.117	KW
6)	Door heaters annual energy use with humidity control: (line 1 x line 3 x line 4)		355	KWH/yr
7)	Annual energy savings from door heater controls: (line 2 - line 6)		**1,022**	KWH/yr
8)	Total OFF hours of Cooler Door Heaters [line 7] / [line 1]	74%	6,504	hours

PART VII

ANALYSIS OF CONTROLLING DOOR HEATERS ON FROZEN FOOD COOLERS:

By controlling door heaters based on dew point operating power level of door heaters can be reduced to 40% for 4,000 hours.

Cooler ID:	No of doors:	volts:	amps:	Watts:
Cooler A	0	120	0.000	0
Freezer B	1	120	2.440	293
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0
N/A	0	120	0.000	0

1)	Total load of Frozen Food Door Heaters		0.293	KW
2)	Door heaters annual energy use: (line 1) X 8,760 hours		2,565	KWH/yr
3)	Estimated run hours of door heaters by operating heaters to maintain 5 deg above dew point		8,760	hours
4)	Estimated average power level of door heaters when operated to maintain 5 deg above DP		65%	
5)	Demand reduction of door heater load: (Line 1) X (Line 8 / 8,760)		0.136	KW
6)	Door heaters annual energy use with dew point control: (40% x line 1 x 4000 + line 1 x 4760 x line 4)		1,374	KWH/yr
7)	Annual energy savings from door heater controls: (line 2 - line 6)		**1,191**	KWH/yr
8)	Total OFF hours of Freezer Door Heaters [line 7] / [line 1]	46%	4,066	hours

Total Door Heater Control Savings: **2,213** KWH/yr

A. Fixture Usage-based Consumption Allocation

1 Buena High School

Facility Days/yr occupation: 221.00

WC	1546.4
UV	366.2
FC	210.4
SH	36.0

Actual: 4,906,500

Allocated: 1,619,145

Cls	SC	Fixture Retrofit	pre flow	post flow	Δ flow	% Δ	Quantity	Avg Daily Usage	Gallons Saved Per use	Days Per Year Occupation	Pre Peak Demand (gpm)	Post Peak Demand (gpm)	Pre Gallons Consumed per yr
WC	WC	STANDARD > LC	4.50	1.28	3.22	72%	0	-	3.22	221.00	0.00	0.00	-
WC	WC	STANDARD > HE	3.50	1.28	2.22	63%	56	27.6	2.22	221.00	196.00	71.68	1,196,126
WC	WC	LC > HE	1.60	1.28	0.32	20%		-	0.32	221.00	0.00	0.00	-
WC	NA	LC WC > no retrofit	1.28	1.28	0.00	0%	0	-	0	221.00	0.00	0.00	-
WC	TT	TT > HETT	3.50	1.00	2.50	71%	0	-	2.5	221.00	0.00	0.00	-
WC	TT	LC TT > HETT	1.60	1.00	0.60	38%	0	-	0.6	221.00	0.00	0.00	-
WC	TT	LC TT > no retrofit	1.00	1.00	0.00	0%	0	-	0	221.00	0.00	0.00	-
U	U	STANDARD U > PINT	1.50	0.13	1.38	92%	26	14.1	1.375	221.00	39.00	3.25	121,394
U	U	STANDARD U > PINT	1.00	0.13	0.88	88%	0	-	0.875	221.00	0.00	0.00	-
U	U	STANDARD U > PINT	0.50	0.13	0.38	75%	0	-	0.375	221.00	0.00	0.00	-
U	U	UV LC > no retrofit	0.13	0.13	0.00	0%	0	-	0	221.00	0.00	0.00	-
U	NA	UV STL > LCV	1.50	0.50	1.00	67%	0	-	1	221.00	0.00	0.00	-
FC	AER	LAV AER	2.50	1.50	1.00	40%	0	-	1	221.00	0.00	0.00	-
FC	AER	LAV AER	3.20	0.50	2.70	84%	79	2.66	2.7	221.00	252.80	39.50	148,783
FC	FC	LAV AER	1.50	0.50	1.00	67%	0	-	1	221.00	0.00	0.00	-
FC	NA	LAV AER	0.50	0.50	0.00	0%	0	-	0	221.00	0.00	0.00	-
PF	LK	Minor Leak	0.03	0.00	0.03	100%			0.025	221.00	0.00	0.00	-
PF	LK	Major Leak	5.00	0.00	5.00	100%			5	221.00	0.00	0.00	-
SH	SH	SHOWER	2.50	1.50	1.00	40%	0	-	1	221.00	0.00	0.00	-
SH	NA	LC SHOWER > no retrofit	1.50	1.50	0.00	0%	9	4.00	0	221.00	13.50	13.50	11,940
											0.00	0.00	
											1,519.09	**387.67**	**1,478,243**

B. Hot Water Savings

Post Gallons consumed per yr	HWH QTY	%/Gal	Gas, Electric, Steam (G,E,S)	Make/Model	Combined Size (gal)	Make-up temp	Hot water temp	HWH efficiency
-	1	120.00	g		120.00	65°	120°	77%
437,440					-			
-					-			
-					-			
-					-			
-					-			
-					-			
10,116					-			
-					-			
-					-			
-					-			
-					-			
-					-			
23,247					-			
-								
-								
-				GAS	120.00	65°	120°	77%
-				ELECTRIC	0.00			
-				STEAM	0.00			
11,940						(default:65mu, 130hw)		(default:77%gas, 80%elec)
482,744	**995**	**kGal Saved**						

		ELECTRIC	GAS	STEAM
Total HWH gallons:			120.00	
Percentage:			100%	
Total usage before:	gal/yr	0	160724	0
Total usage after:	gal/yr		35188	
HW Heater efficiency:			77%	
Make-up Water Temp:			65°	
Hot Water Supply Temp:			120°	
Hot Water of Total Fixture Flow:		35%	35%	35%
		per kwh	*per therm*	*per klbh*
Current BTU usage		0	33,470,693	0
Conversion:		0.00	334.71	0.00
HW SAVINGS CALCULATION:				
Total Water saved:	gal/yr	0	125,536	0
Hot Water saved:	gal/yr	0	43,938	0
BTU		0	26,142,827	0
Conversion:		0.00	261.43	0.00
Energy Savings:			261.4	
			therm	

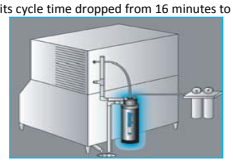
Buena HS

Ice Machine Measures

• GENERAL SPECS refrigeration line heat exchanger

With a refrigeration line heat exchanger system installed, the ice machine had to work less to produce more ice. The refrigeration line heat exchanger system lowered the temperature of the incoming water by 13.8 °F. This drop in temperature improved the efficiency of the ice machine by more than 18%, as its cycle time dropped from 16 minutes to 13 minutes.

- Lowers incoming water temperature
- Shortens ice making cycle times which produces more ice
- Optimizes ice availability in the bin
- Potentially eliminates the need to buy additional bags of ice
- Saves electricity by filling the bin faster and allowing the ice machine to shut off
- Models available for all types of ice machines
- Extends the life of the ice machine by lowering compressor head pressure
- Reduces air conditioning costs (for air-cooled ice machines)
- 99% Maintenance free utilizing patented anti-mineralization technology
- Delivers performance when you need it the most





•• SAVINGS CALCULATIONS refrigeration line heat exchanger

Buena HS	Bldg	**Buena High School**
Site Specific		
KWH rate for location (+ fuel charge)		$ 0.080
Ice Machine Run Time (% per day)		80%
Ice Machine(s)		
Ice Machine Count		3
ARI* rated ice production (lbs. / 24 hrs)		500
ARI* rated KWH usage (KWH / 100 lbs.)		5
Maximicer Info		
Manitowoc, Hoshizaki	15 to 20%	
All others	25 to 30%	
Selected Savings rate:		15%
Per Unit Energy Usage (daily)		
Current Kw/h		20
With Maximicer		17
Annual Savings		
Per Unit Savings	Kw/h	1095
Total Savings	Kw/h	3285

* Ice Machine manufacturers certify ice production performance numbers at 90°F ambient air and 70°F water temperatures (ARI Standard 810 ratings).



HS (Kitchen Hand Sinks)

	General					Current Inputs			Post-Retrofit Inputs			Hot Water Savings Calcs									
	Number of HS:	Operating Days:	Kitchen Staff	Hand washing Person/ MIN/Day:	Hand washing MIN /Day:	AVG GPM of SINK	Total Pre Retrofit Gallons:	Annual	New GPM of Sink	Total Post Retrofit Gallons:	Annual	Total usage before:	Total usage after:	HW Heater efficiency:	Make-up Water Temp:	Hot Water Supply Temp:	Hot Water of Total Fixture Flow:	Total Water saved (gal):	Hot Water saved (gal):	Gas Input (btu):	(therms)
Buena High School	2	185.00	5.00	2.00	10.00	2.50	25.00	4,625.00	1.50	15.00	2,775.00	4,625	2,775	77.0%	65°	120°	50%	1,850	925	545,089	6.0



DS (Kitchen Dish Sprayers)

	General					Current Inputs			Post-Retrofit Inputs			Hot Water Savings Calcs									
	Number of DS:	Operating Days:	Washing HRS /Day:	Washing MIN /Day:	Sessions / Day Per Person	AVG GPM of Spray	Total Pre Retrofit Gallons:	Annual	New GPM of Sink with Pre Rinse Sprayer	Total Post Retrofit Gallons:	Annual	Total usage before:	Total usage after:	HW Heater efficiency:	Make-up Water Temp:	Hot Water Supply Temp:	Hot Water of Total Fixture Flow:	Total Water saved (gal):	Hot Water saved (gal):	Energy Input (BTU):	Therms
Buena High School	2	185.00	0.50	30.00	2.00	3.00	90.00	16,650.00	0.60	18.00	3,330.00	16,650	3,330	77.0%	65°	120°	50%	13,320	6,660	3,924,643	39.2



PREP (Pedal Valve On Prep Sinks)

	General			Current Inputs					Post-Retrofit Inputs					Hot Water Savings Calcs								
	Number of Prep Sinks:	Operating Days:	Pre Meals / Day Per Person	AVG GPM of SINK	Pre Prep Hours /Day:	Pre Prep Sink MINUTES /Day:	Total Pre Retrofit Gallons:	Annual	New GPM of Sink with Knee Valve	Post Prep Hours /Day:	Post Prep Sink MINUTES /Day:	Total Post Retrofit Gallons:	Annual	Total usage before (gal):	Total usage after (gal):	HW Heater efficiency:	Make-up Water Temp:	Hot Water Supply Temp:	Hot Water of Total Fixture Flow:	Total Water saved (gal):	Hot Water saved (gal):	Energy Input (BTU):	Therms
Buena High School	1	185.00	2.00	2.00	4.00	240.00	480.00	88,800.00	1.50	4.00	240.00	360.00	66,600.00	88,800	66,600	77.0%	65°	120°	50%	22,200	11,100	6,541,071	65.4

TOTALS

	Kitchen Equipment Totals			
	Total water usage before (gal):	Total water usage after (gal):	Total water savings (kGal)	Total energy saved (therms)
Buena High School	110,075	72,705	37	111

7.2 Sample School Calendar

Please see the following pages.

Buena Regional School District

Twelve Month School Calendar 2019-2020

September 2019 (T-20 S-18)						
S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October 2019 (T-22 S-22)						
S	M	T	W	R	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November 2019 (T-16 S-16)						
S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December 2019 (T-15 S-15)						
S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

January 2020 (T-21 S-21)						
S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February 2020 (T-19 S-19)						
S	M	T	W	R	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

September 2	Labor Day
September 3	Opening Day-All Staff
September 4	Staff In-Service
September 5	Student's First Day
September 16	Milanesi Back to School Night
September 18	BRMS Back to School Night
September 19	BRHS Back to School Night
September 24	CLES Back to School Night
September 25	Cleary Back to School Night
October 14	Columbus Day
October 16	PSAT TestingStaff Inservice
November 7-8	NJEA Convention
November 11	Veterans Day
November 12	End of First Marking Period
November 18	BRMS Parent Conf./6:00-8:00 PM
November 19	CLES/Mil Parent Conf./6:00-8:00 PM
November 20	Cleary/Parent Conf./6:00-8:00 PM
November 21	BRHS Parent/Conf./6:00-8:00 PM
November 27	Single Session Day
November 28-29	Thanksgiving Recess
December 23-31	Winter Recess
January 1	New Year's Day
January 2	District Reopens
January 20	Martin Luther King, Jr. Day
January 29	Staff Inservice
January 29	End of Second Marking Period
February 12	BRMS Evening Parent Conf.
February 17	President's Day
February 26	Staff In-service
March 25	Staff In-service
April 1	K-5 Parent Conf/Single Session
April 1	BRMS/BRHS Staff In-service
April 3	End of Third Marking Period
April 8	Single Session
April 9-13	Spring Recess
April - May (TBD)	NJSLA Testing Grades 3 - 8
April - May (TBD)	NJSLA Testing BRHS
May 1	Prom/Teacher In-service
May 25	Memorial Day
June 5	BRHS Senior Grades Due
June 9	End of Fourth Marking Period
June 10	BRMS 8th Grade Recognition Program
June 11	Student's Last Day
June 11	BRHS Graduation
June 12	Staff Inservice/Last Day Staff
July 3	District Closed

March 2020 (T-22 S-21)						
S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 2020 (T-19 S-19)						
S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2020 (T-20 S-20)						
S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 2020 (T-10 S-9)						
S	M	T	W	R	F	S
	1	2	3	4	5	6
7	8	9	10	☆	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July 2020						
S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August 2020						
S	M	T	W	R	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

School Closed-Students & Staff
School Closed for Students
Single Session-Students
Single Session-Students/Staff

In the event of emergency closings, 1 day will be taken from spring recess which will be April 9th. April 8th will become a full day. In the event that additional closings are necessary, those days will be added to the end of the year in June. Parents, students, and staff must anticipate and prepare for the last day of school and tentative graduation to change in the event that the calendar adjusts due to emergency closings.

7.3 Local Government Energy Audit (LGEA)

Please see the following pages for a copy of the Local Government Energy Audit (LGEA).

Local Government Energy Audit:
Energy Audit Report



Buena Regional

High School

125 Weymouth Road

Buena, NJ 08650

Buena Regional School District

June 29, 2018

Draft Report by:

TRC Energy Services

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Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate saving are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

DRAFT

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Buena Regional High School.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey public schools in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Buena Regional High School is a 166,090 square foot facility and constructed in 1973. It is comprised of classrooms, administrative offices, locker rooms, a cafeteria, kitchen, library, gymnasium and an auditorium. In 2000, there was a renovation and the new "B" wing (known as New Wing) was added.

The building's interior lighting consists of a combination of T8 linear fluorescent fixtures and compact fluorescent lamps. Lighting is mainly controlled by manual wall switches. Occupancy based lighting controls were found in only a few areas. The exterior lighting system consists of high intensity discharge (HID) lamps and compact fluorescent lamps. They are controlled with timers and photocells.

The building's HVAC consists of split DX unit ventilators with heating coils (UVs) in the classrooms in the older wings, and a ducted variable air volume air handler unit (AHU) in the newer wing. The library has a 30 ton DX package unit on the roof. The auditorium has two AHUs with both chilled and hot water coils. There are also two heating ventilation units (HV) serving the gym.

There are two chillers and four natural gas boilers providing chilled water (CHW) and space heating hot water (HHW) to designated coils located throughout the building.

The facility has an older BMS (Siebel) controlling the AHU, VAVs and the chiller and boiler in the new wing and also the unit ventilators (UVs) in the B wing. The school has expressed interest in a newer BMS that can control systems that serve the other areas of the school.

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated 12 measures and recommended 10 measures which together represent an opportunity for Buena Regional High School to reduce annual energy costs by roughly $62,224 and annual greenhouse gas emissions by 403,498 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 4.5 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Buena Regional High School's annual energy use by 11%.

Figure 1 – Previous 12 Month Utility Costs

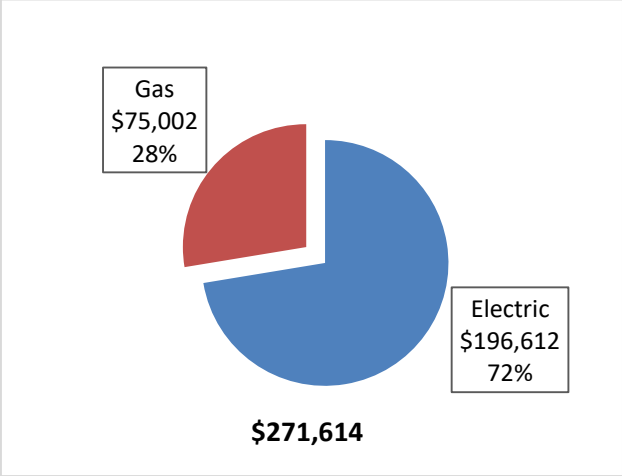
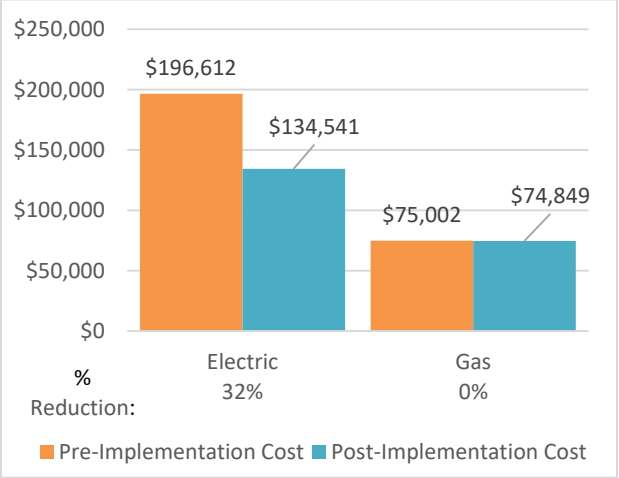


Figure 2 – Potential Post-Implementation Costs



A detailed description of Buena Regional High School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**263,632**	**49.1**	**0.0**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	Yes	64,713	10.8	0.0	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	Yes	196,422	38.1	0.0	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	Yes	2,497	0.2	0.0	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Lighting Control Measures			**46,107**	**8.8**	**0.0**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	41,637	8.0	0.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	Yes	4,470	0.8	0.0	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502
Motor Upgrades			**2,161**	**0.5**	**0.0**	**0.0**	**$336.38**	**$5,310.98**	**$0.00**	**$5,310.98**	**15.8**	**2,176**
ECM 6	Premium Efficiency Motors	Yes	2,161	0.5	0.0	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176
Variable Frequency Drive (VFD) Measures			**20,011**	**5.7**	**0.0**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	Yes	20,011	5.7	0.0	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150
Electric Unitary HVAC Measures			**1,895**	**1.4**	**0.0**	**0.0**	**$294.92**	**$66,479.15**	**$0.00**	**$66,479.15**	**225.4**	**1,908**
	Install High Efficiency Electric AC	No	1,895	1.4	0.0	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908
Electric Chiller Replacement			**56,669**	**38.0**	**0.0**	**0.0**	**$8,820.52**	**$73,854.40**	**$6,750.00**	**$67,104.40**	**7.6**	**57,065**
ECM 8	Install High Efficiency Chillers	Yes	56,669	38.0	0.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065
HVAC System Improvements			**2,143**	**0.0**	**16.5**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	Yes	2,143	0.0	16.5	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086
Domestic Water Heating Upgrade			**0**	**0.0**	**73.3**	**73.3**	**$681.10**	**$26,145.52**	**$200.00**	**$25,945.52**	**38.1**	**8,578**
	Install High Efficiency Gas Water Heater	No	0	0.0	73.3	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578
Plug Load Equipment Control - Vending Machine			**8,059**	**0.0**	**0.0**	**0.0**	**$1,254.42**	**$1,000.00**	**$0.00**	**$1,000.00**	**0.8**	**8,116**
ECM 10	Vending Machine Control	Yes	8,059	0.0	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116
TOTALS FOR HIGH PRIORITY MEASURES			**398,782**	**102.0**	**16.5**	**16.5**	**$62,223.66**	**$326,075.55**	**$43,455.00**	**$282,620.55**	**4.5**	**403,498**
TOTALS FOR ALL EVALUATED MEASURES			**400,677**	**103.5**	**163.0**	**163.0**	**$63,880.77**	**$444,845.74**	**$47,655.00**	**$397,190.74**	**6.2**	**422,562**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Motor Upgrades generally involve replacing older standard efficiency motors with high efficiency standard (NEMA Premium). Motors replacements generally assume the same size motors, just higher efficiency. Although occasionally additional savings can be achieved by downsizing motors to better meet current load requirements. This measure saves energy by reducing the power used by the motors, due to improved electrical efficiency.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

Electric Chiller measures generally involve replacing older inefficient hydronic chillers with modern energy efficient systems. New chillers can provide equivalent cooling compared to older chillers at a reduced energy cost. These measures save energy by reducing chiller energy usage, due to improved electrical and heat transfer efficiency.

Gas Heating (HVAC/Process) measures generally involve replacing older inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide equivalent heating compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel demands for heating, due to improved combustion and heat transfer efficiency.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand during periods of reduced demand. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperature conditions. These measures save energy by reducing the demand on HVAC systems and the amount of time systems operate.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC Energy Services also identified 15 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments

and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at Buena Regional High School include:

- Reduce Air Leakage
- Close Doors and Windows
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Perform Routine Motor Maintenance
- Install Destratification Fans
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Ensure Economizers are Functioning Properly
- Assess Chillers & Request Tune-Ups
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation for Buena Regional High School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	400	kW DC STC
Electric Generation	476,549	kWh/yr
Displaced Cost	$41,460	/yr
Installed Cost	$1,040,000	

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important

because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SS incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SS program. More details on this program and others are available in Section 8.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.3 for additional information on the ESIP Program.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck	Interim Building and Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
TRC Energy Services			
Vish Nimbalkar	Auditor	VNaikNimbalkar@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 02, 2018, TRC Energy Services performed an energy audit at Buena Regional High School located in Buena, NJ. TRC Energy Services' team met with John Baylis to review the facility operations and help focus our investigation on specific energy-using systems.

Buena Regional High School is a 166,090 square foot facility and constructed in 1973. It is comprised of classrooms, administrative offices, locker rooms cafeteria, kitchen, library, gymnasium and an auditorium. In 2000, there was a renovation, and the new "B" wing (known as New Wing) was added.

The building's interior lighting consists of a combination of T8 linear fluorescent fixtures and compact fluorescent lamps. Lighting is mainly manually controlled by wall switches. Occupancy lighting control were found in only a few areas. The exterior lighting system consists of high intensity discharge (HID) lamps and compact fluorescent lamps. They are controlled with timers and photocells.

The buildings HVAC consists of split DX unit ventilators in the classrooms in the older wings and ducted variable air volume air handler unit (AHU) on the newer wing. The library has a 30 ton DX package unit on the roof. The auditorium has two AHUs (chilled and hot water coils). There are also two heating ventilation units (HV) located serving the gym.

There are two chillers and four natural gas boilers providing chilled water (CHW) and space heating hot water (HHW) to the various coils throughout the building.

The facility has an older BMS (Siebel) controlling the AHU, VAVs, chiller and boiler in the new wing and also the unit ventilators (UVs) in the B wing. The school has expressed interest in a newer BMS that can control the other areas of the school.

2.3 Building Occupancy

The school building is open Monday through Friday. The gymnasium and auditorium are used after hours and on weekends for sports and other events. The school is used in the summer for various classes and events. The typical schedule for classes and offices are presented in the table below. During a typical day, there are approximately 800 occupants (staff and students).

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Buena Regional High School	Weekday	6:30 am - 10:00 pm
Buena Regional High School	Weekend	events

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a brick facade. The building has flat roof sections covered with black membrane and gravel that are in good condition. The building has operable double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.



Image 1 – Side of Building



Image 2 – Roof

2.5 On-Site Generation

Buena Regional High School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

Lighting System

Lighting at the building is provided mostly by linear 32 Watt fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Several configurations of fluorescent fixtures are used, including lensed and louvered direct lighting and suspended semi-direct lighting systems.



Image 3 – Classroom T8 Fixtures



Image 4 – Classroom T8 Troffers

The auditorium contains a mixture of metal halide, compact fluorescents (CFLs), incandescent and T8 fixtures.

Lighting control in most spaces is controlled by manual wall switches. Stairwells, corridors, and main lobby areas do not contain any occupancy sensors.

The building's exterior lighting is consists primarily of metal halide that are controlled by photocells or timers.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's lighting equipment.

Chilled Water (CHW) System

Chilled water for the building is provided by two chillers. The chillers provide dedicated chilled water (CHW) for space cooling through fan coils in the "New B Wing" and the "Auditorium". The "New B Wing" CHW system is a 40 ton Trane air-cooled scroll compressor with split condenser and remote evaporator. This system provides CHW to cooling coils located in an air handler (AHU) located on the roof of the New Wing. The Auditorium CHW system consists of a 75 ton air cooled chiller that provides CHW to two AHUs located in the upper storage room adjacent to the auditorium. This system appears to be more than 20 years old. There are no BMS controls for the Auditorium CHW system.

New "B" Wing Chilled Water Distribution

The CHW system for the New "B" Wing is configured in a constant speed primary only loop. The CHW is circulated in the loop via a 3 hp pump located in the Mechanical Room. The chiller is controlled by a Siebel BMS system. The system controls the CHW temperature setpoint and commands the chiller and pumps on or off.



Image 5 – New Wing Chiller

Auditorium Chiller

The CHW system for Auditorium consists of a 75 ton chiller and a CHW pump that supplies chilled water to the dedicated Auditorium AHU.



Image 6 –Auditorium Chiller

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's chilled water equipment.

Heating Hot Water (HHW) System

The hot water heating system consists of four boilers. The Gymnasium has a dedicated 634 MBh Weil McLain non-condensing natural gas boiler which serves the hot water fan coils for the Gymnasium's two Heating and Ventilation (HV) units. The New "B" Wing also has a dedicated 453 MBh Weil McLain non-condensing natural gas boiler providing hot water to the heating coils in the dedicated AHU. The "B" Wing system is controlled by the Siebel BMS system. The rest of the building areas are heated by two 6,522 MBh HB Smith non-condensing natural gas boilers. These boilers provide hot water to unit ventilators located throughout the rest of the building. The HHW from these boilers is circulated by two 20 hp pump motors. The boilers operate in a lead/lag configuration. Both boilers may be required during cold weather. The boilers are original to the building and at the end of their useful life.



Image 7 – Old Boilers



Image 8 – New Wing Boiler

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's heating equipment.

Air Distribution System

Ventilation for the gymnasium is provided by heating ventilating (HV) units that are fed from dedicated boiler.

The system serving the Library is a packaged AC unit with DX cooling as described in a follow on section. That system has a 10 hp supply fan and a 2 hp exhaust fan with library heating provided by the building heating loop. Three main air handling units condition the facility using CHW and HHW coils for conditioning the supply air: One AHU serves the New B Wing and two AHUs serve the Auditorium.

The New B Wing AHU is located on the roof of the New B Wing. The AHU is a single duct unit providing variable-air volume (VAV) flow with terminal reheat. The AHU has a CHW and HHW preheat coil that fractionally modulate with valves to maintain the desired supply temperature. The CHW comes from a dedicated chiller and the HHW comes from a dedicated boiler. The AHU also has an outside air economizer to utilize free cooling when the outside air temperature is lower than the return air temperature. The AHU has a 20 hp supply fan with inlet guide vanes and a 5 hp return fan. The supply fan motor runs at constant speed and the inlet guide vanes are used to modulate the air volume. The inlet vanes and the system flow is controlled by varying the pitch of the vanes. The VAV terminal boxes have dampers that modulate between two ducts (supply and space return air) depending on the supply temperature. The damper modulates the terminal VAV box between a minimum and maximum supply flow.



Image 9 – AHU-1 (New Wing)

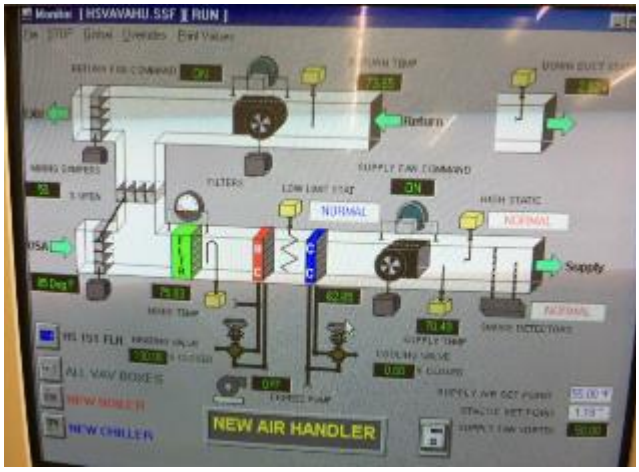


Image 10 – AHU-1 (BMS)

The Auditorium has two single zone AHUs. Each AHU has a 7.5 HP fan motor. The AHUs have both CHW and HHW preheat coils that fractionally modulate with valves to maintain the desired supply temperature. The CHW comes from a dedicated chiller and the HHW comes from the building's main HHW loop.



Image 11 – AHU (Auditorium)



Image 12 – AHU (Auditorium)

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning system equipment.

Direct Expansion Air Conditioning System (DX)

There are approximately 50 split-system air conditioners (ACs) used to condition the classrooms. Most of the condenser units for the systems are located on the roof although a few are located on the sides of the building. Most the systems are configured with the evaporators located inside unit ventilators (UVs) (Nesbitaire). The cooling capacity for these units vary from 2 to 4 tons. The UVs have HHW coils served from the building's main HHW loop.

There is a 30 ton Octagon Air Systems packaged AC unit serving the library. The unit is located on the roof of the library. Cooling for the system is provided by a two scroll compressors and a DX coil. The system has a 10 hp supply fan and a 2 hp exhaust fan. Heating to the heat coils is provided by the building HHW loop.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning equipment.

Building Energy Management System (BEMS)

The HVAC equipment (chiller, AHU, boiler, VAVs) for the New Wing and some of the B Wing unit ventilators (Rooms 130, 129, 128, 127, 231, 230, 228, 227 and 226) are controlled by a Siebel building management system (BMS). The Siebel BMS has DDC control points that control valves, dampers, motors and monitor duct static pressure, temperature and status of equipment. The other areas in the buildings have pneumatic controls which are not tied into the BMS.

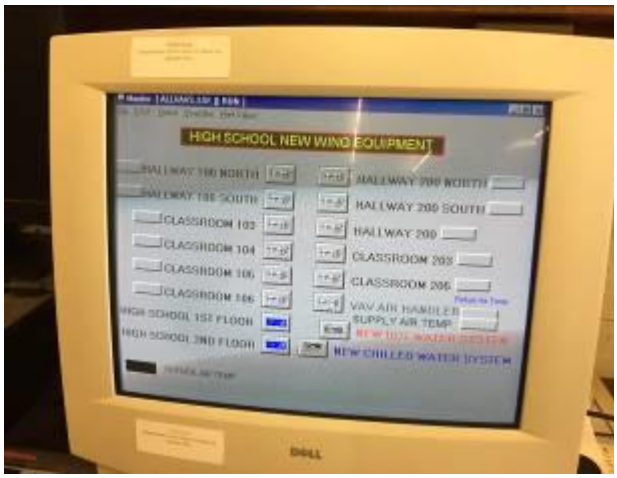


Image 13 – AHU (Auditorium)

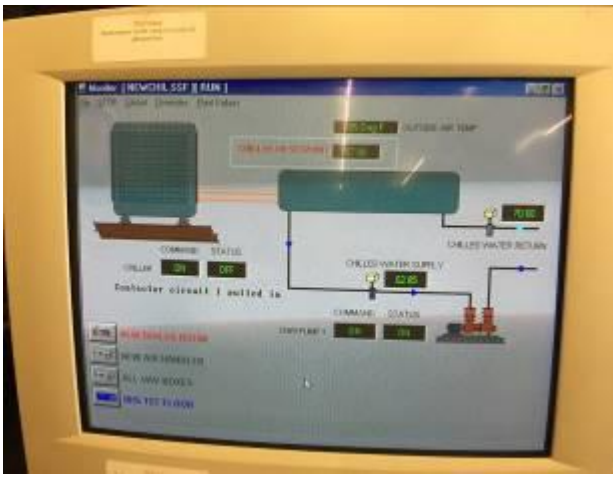


Image 14 – AHU (Auditorium)

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of four non-condensing natural gas boilers with an input rating of 167 MBh and a nominal efficiency of 82.2%. The boilers heat a large storage tank.

The system is controlled by a Barber-Colman controller.



Image 15 - Modular Boilers (DHW)



Image 16 – DHW Storage Tank

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's domestic hot water equipment.

Food Service & Refrigeration

The school has a kitchen that is used to prepare approximately 900 lunches per day for the students and staff. Most of the cooking is done using the gas ovens, steamers and a large stove.

The kitchen has several refrigerators and coolers as well as one walk-in freezer and a walk-in cooler. These appliances appear to be new. Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service and laundry equipment.

Building Plug Load

There are roughly 303 desktop computers throughout the facility. There is no centralized PC power management software installed. There are roughly 33 projectors and in the classrooms and about 43 printers throughout the building.

The facility has five vending machines with vending machine energy misers.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's plug load equipment.

2.7 Water-Using Systems

A sampling of restrooms found that the faucets are rated for 2.2 gpm.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

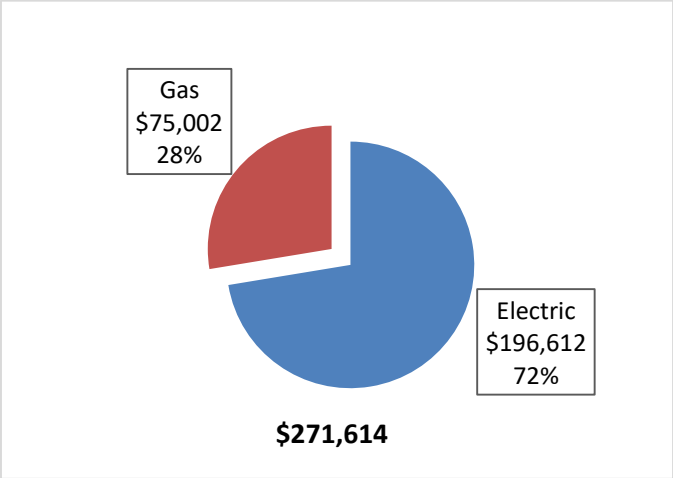
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Buena Regional High School		
Fuel	**Usage**	**Cost**
Electricity	1,263,161 kWh	$196,612
Natural Gas	80,679 Therms	$75,002
Total		**$271,614**

The current annual energy cost for this facility is $271,614 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is delivered by Atlantic City Electric and supplied by Constellation. The average electric cost over the past 12 months was $0.156/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The peak demand varies between 405 and 506 kW with demand charges ranging from $3,097 to $4,919. Electric usage is higher in the summer when there is more AC usage and lower in the winter. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Graph of 12 Months Electric Usage & Demand

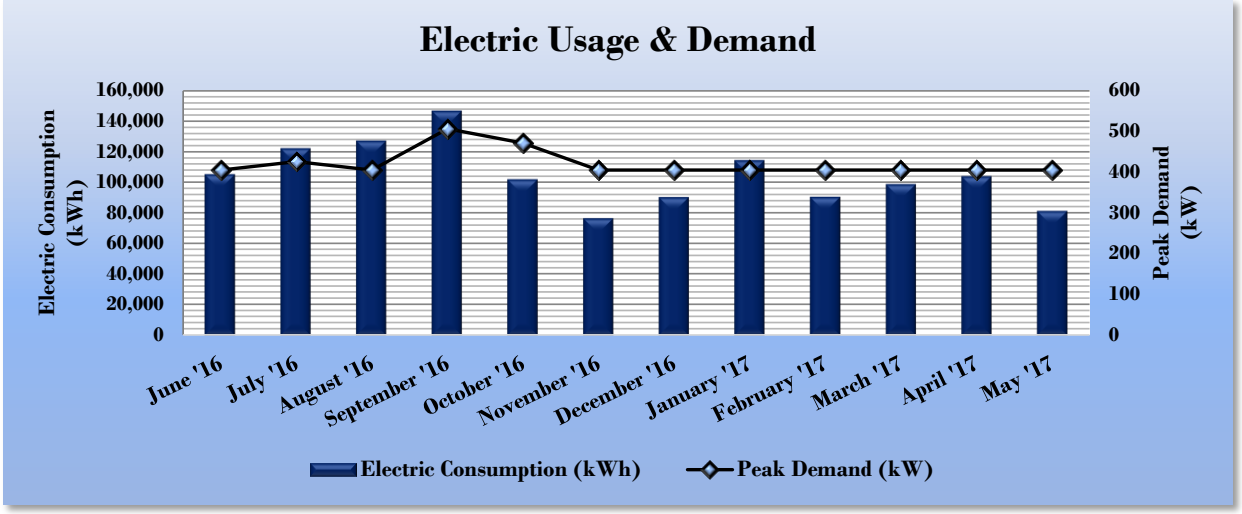


Figure 10 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Buena Regional High School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/24/16	30	105,000	405	$3,207	$15,955
7/25/16	31	121,960	426	$3,369	$18,533
8/24/16	30	126,960	405	$3,119	$18,529
9/26/16	33	146,400	506	$4,919	$22,648
10/25/16	29	101,680	471	$4,022	$16,230
11/21/16	27	76,240	405	$3,219	$12,452
12/21/16	30	90,160	405	$3,577	$14,460
1/26/17	36	114,240	405	$4,289	$17,980
2/22/17	27	90,240	405	$3,216	$14,005
3/23/17	29	98,560	405	$3,454	$15,225
4/27/17	35	103,760	405	$4,169	$16,672
5/23/17	26	81,040	405	$3,097	$12,845
Totals	**363**	**1,256,240**	**506.4**	**$43,656**	**$195,534**
Annual	**365**	**1,263,161**	**506.4**	**$43,897**	**$196,612**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $0.930/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 11 - Graph of 12 Months Natural Gas Usage

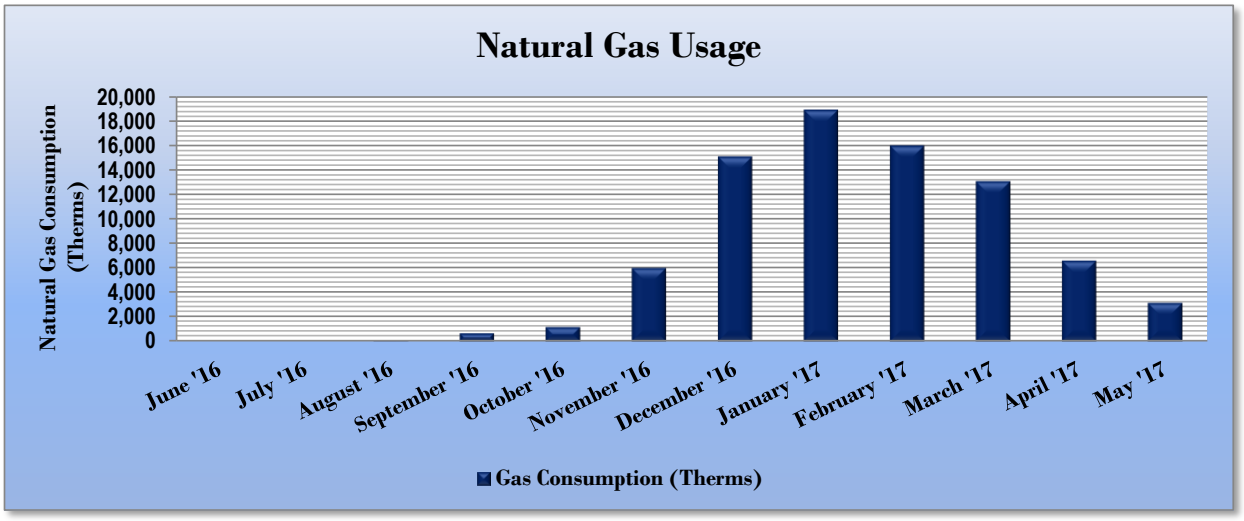


Figure 12 - Table of 12 Months Natural Gas Usage

Gas Billing Data for Buena Regional High School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/23/16	31	0	$29
7/25/16	32	0	$31
8/24/16	30	11	$41
9/30/16	37	654	$643
10/25/16	25	1,173	$1,224
11/21/16	27	5,989	$6,153
12/20/16	29	15,113	$16,873
1/24/17	35	18,920	$17,428
2/22/17	29	16,006	$14,022
3/23/17	29	13,077	$10,631
4/24/17	32	6,596	$5,328
5/23/17	29	3,140	$2,598
Totals	**365**	**80,679**	**$75,002**
Annual	**365**	**80,679**	**$75,002**

3.4 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. Environmental Protection Agency (EPA) through the ENERGY STAR™ program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR Score for select building types.

Energy Use Intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy". Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Buena Regional High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	132.5	141.4
Site Energy Use Intensity (kBtu/ft^2)	74.5	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the Table below:

Figure 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Buena Regional High School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	106.7	141.4
Site Energy Use Intensity (kBtu/ft^2)	66.2	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of **57**.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see **Appendix B: EPA Statement of Energy Performance**.

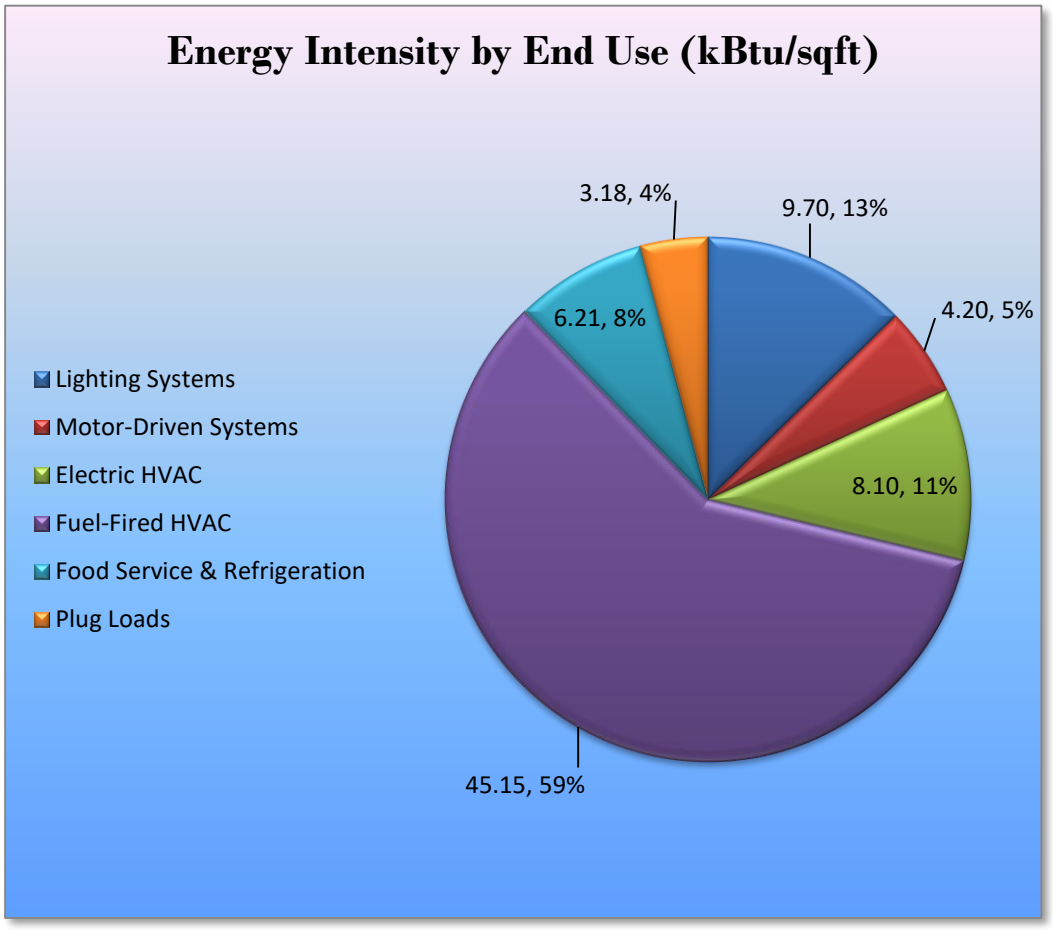
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training is available to help you use Energy Star Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 15 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Buena Regional High School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**263,632**	**49.1**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	64,713	10.8	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Lighting Control Measures		**46,107**	**8.8**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502
Motor Upgrades		**2,161**	**0.5**	**0.0**	**$336.38**	**$5,310.98**	**$0.00**	**$5,310.98**	**15.8**	**2,176**
ECM 6	Premium Efficiency Motors	2,161	0.5	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176
Variable Frequency Drive (VFD) Measures		**20,011**	**5.7**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150
Electric Chiller Replacement		**56,669**	**38.0**	**0.0**	**$8,820.52**	**$73,854.40**	**$6,750.00**	**$67,104.40**	**7.6**	**57,065**
ECM 8	Install High Efficiency Chillers	56,669	38.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065
HVAC System Improvements		**2,143**	**0.0**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086
Plug Load Equipment Control - Vending Machine		**8,059**	**0.0**	**0.0**	**$1,254.42**	**$1,000.00**	**$0.00**	**$1,000.00**	**0.8**	**8,116**
ECM 10	Vending Machine Control	8,059	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116
TOTALS		**398,782**	**102.0**	**16.5**	**$62,223.66**	**$326,075.55**	**$43,455.00**	**$282,620.55**	**4.5**	**403,498**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**263,632**	**49.1**	**0.0**	**$41,034.44**	**$194,971.18**	**$30,675.00**	**$164,296.18**	**4.0**	**265,475**
ECM 1	Install LED Fixtures	64,713	10.8	0.0	$10,072.68	$81,968.52	$9,540.00	$72,428.52	7.2	65,166
ECM 2	Retrofit Fixtures with LED Lamps	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
ECM 3	Install LED Exit Signs	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	41,373	7.8	0.0	$6,439.81	$65,802.05	$6,290.00	$59,512.05	9.2	41,663
Exterior	23,340	3.0	0.0	$3,632.87	$16,166.47	$3,250.00	$12,916.47	3.6	23,503

Measure Description

We recommend replacing the auditorium and gymnasium fixtures containing metal halide (MH) lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	196,422	38.1	0.0	$30,573.17	$111,389.33	$21,135.00	$90,254.33	3.0	197,795
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent and linear fluorescent lamps with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 3: Install LED EXIT Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	2,497	0.2	0.0	$388.60	$1,613.33	$0.00	$1,613.33	4.2	2,514
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing all incandescent or compact fluorescent EXIT signs with LED EXIT signs. LED EXIT signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.1.2 Lighting Control Measures

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**46,107**	**8.8**	**0.0**	**$7,176.61**	**$38,610.00**	**$3,955.00**	**$34,655.00**	**4.8**	**46,430**
ECM 4	Install Occupancy Sensor Lighting Controls	41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928
ECM 5	Install High/Low Lighitng Controls	4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
41,637	8.0	0.0	$6,480.81	$30,510.00	$3,955.00	$26,555.00	4.1	41,928

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in many restrooms, storage rooms, classrooms, offices, and other areas. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 5: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,470	0.8	0.0	$695.80	$8,100.00	$0.00	$8,100.00	11.6	4,502

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are interior corridors, parking lots, and parking garages. We recommend

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. In parking lots and parking garages with significant ambient lighting this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylighting. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.1.3 Motor Upgrades

ECM 6: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,161	0.5	0.0	$336.38	$5,310.98	$0.00	$5,310.98	15.8	2,176

Measure Description

We recommend replacing standard efficiency motors with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type.

Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2012)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more information on existing and proposed motor upgrades.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 19 below.

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**20,011**	**5.7**	**0.0**	**$3,114.65**	**$9,610.15**	**$2,075.00**	**$7,535.15**	**2.4**	**20,150**
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about current motors systems and VFD recommendations.

ECM 7: Install VFD on Variable Air Volume (VAV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
20,011	5.7	0.0	$3,114.65	$9,610.15	$2,075.00	$7,535.15	2.4	20,150

Measure Description

We recommend replacing existing air volume control devices on air handling units (AHUs), such as inlet vanes and variable pitch fan blades, with variable frequency drives (VFDs). Inlet guide vanes and variable pitch fan blades are an inefficient means of controlling the air volume compared to VFDs.

The existing volume control device on the "New Wing" AHU would be removed, or permanently disabled, and the control signal would be redirected to the VFD to determine proper fan motor speed. Energy savings results from more efficient control of motor energy usage when fan motors are operated at partial load. The magnitude of energy savings is based on the estimated amount of time that fan motors would be operated at partial load.

Additional maintenance savings may result from this measure as well, since VFDs are solid state electronic device, which generally requires less maintenance than mechanical air volume control devices.

4.1.5 Electric Chiller Replacement

ECM 8: Install High Efficiency Chillers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
56,669	38.0	0.0	$8,820.52	$73,854.40	$6,750.00	$67,104.40	7.6	57,065

Measure Description

We typically recommend replacing older inefficient electric chillers with new high efficiency chillers. The type of chiller to be installed depends on the magnitude of the cooling load and variability of the cooling load profile. Positive displacement chillers are usually under 600 tons of cooling capacity and centrifugal chillers generally start at 150 tons of cooling capacity. Constant speed chillers should be used to meet cooling loads with little or no variation while variable speed chillers are more efficient for variable cooling load profiles. Water cooled chillers are more efficient than air cooled chillers but require cooling towers and additional pumps to circulate the cooling water. In any given size range variable speed chillers tend to have better partial load efficiency, but worse full load efficiency, than constant speed chillers.

The savings result from the improvement in chiller efficiency and matching the right type of chiller to the cooling load. The energy savings associated with this measure is based on the cooling capacity of the new chiller, the improvement in efficiency compared with the base case equipment, the cooling load profile, and the estimated annual operating hours of the chiller before and after the upgrade. Energy savings are maximized by proper selection of new equipment based on the cooling load profile.

We recommend replacement of the dedicated chiller that serves the Auditorium.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measure upgrades.

4.1.6 HVAC System Upgrades

Our recommendation for HVAC system improvement are summarized in Figure 20 below.

Figure 20 - Summary of HVAC System Improvement ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**2,143**	**0.0**	**16.5**	**$486.63**	**$2,718.84**	**$0.00**	**$2,718.84**	**5.6**	**4,086**
ECM 9	Implement Demand Control Ventilation	2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086

ECM 9: Implement Demand Control Ventilation (DCV)

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,143	0.0	16.5	$486.63	$2,718.84	$0.00	$2,718.84	5.6	4,086

Measure Description

Demand control ventilation (DCV) monitors indoor air CO_2 content to measure room occupancy. This data is used to regulate the amount of outdoor provided to the space for ventilation. In order to ensure adequate air quality, standard ventilation systems often provide outside air based on a space's estimated maximum occupancy. However, during low occupancy periods, the space may be over ventilated. This wastes energy through excessive fan more usage and additional cost to heat and cool the excessive air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels, saving significant amounts of energy. DCV is most suited for facilities where occupancy levels vary significantly hour to hour and day to day.

Energy savings associated with DCV are based on hours of operation, space occupancy, system air flow, outside air reduction, and other factors. Energy savings results from eliminating unnecessary ventilation and space conditioning.

The DCV measure is recommended for the auditorium where there is significant variance in occupancy.

4.1.7 Plug Load Equipment Control - Vending Machines

ECM 10: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
8,059	0.0	0.0	$1,254.42	$1,000.00	$0.00	$1,000.00	0.8	8,116

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

4.2 ECMs Evaluated But Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 21 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**1,895**	**1.4**	**0.0**	**$294.92**	**$66,479.15**	**$0.00**	**$66,479.15**	**225.4**	**1,908**
Install High Efficiency Electric AC	1,895	1.4	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908
Domestic Water Heating Upgrade	**0**	**0.0**	**73.3**	**$681.10**	**$26,145.52**	**$200.00**	**$25,945.52**	**38.1**	**8,578**
Install High Efficiency Gas Water Heater	0	0.0	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578
TOTALS	**1,895**	**1.4**	**73.3**	**$976.01**	**$92,624.67**	**$200.00**	**$92,424.67**	**94.7**	**10,486**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,895	1.4	0.0	$294.92	$66,479.15	$0.00	$66,479.15	225.4	1,908

Measure Description

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

The simple payback for replacing the Octagon Air Systems unit that serves the library exceeds the useful life of the proposed replacement equipment and therefore is not recommended.

Install High Efficiency Gas Water Heater

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	73.3	$681.10	$26,145.52	$200.00	$25,945.52	38.1	8,578

Measure Description

We evaluated replacing the existing modular boilers and storage tank with a high efficiency tank water heater. Improvements in combustion efficiency and reductions in heat losses have improved the overall efficiency of storage water heaters. Energy savings results from using less gas to heat water, due to higher unit efficiency, and fewer run hours to maintain the tank water temperature.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

We evaluated this measure for replacing the boilers assuming the heat capacity of the existing boilers. The payback did not make economic sense, however, it may be possible to downsize the boilers or reconfigure for two instead of four boilers as the DHW heat load may currently be less than initially designed. In order to determine the adequate DHW capacity, a study of the DHW use would need to be completed.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Perform Proper Lighting Maintenance

In order to sustain optimal lighting levels, lighting fixtures should undergo routine maintenance. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust on lamps, fixtures and reflective surfaces. Together, these factors can reduce total illumination by 20% - 60% or more, while operating fixtures continue drawing full power. To limit this reduction, lamps, reflectors and diffusers should be thoroughly cleaned of dirt, dust, oil, and smoke film buildup approximately every 6 – 12 months.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Install Destratification Fans

Allowing air to thermally stratify in spaces with high ceilings results in additional energy consumption by requiring the heating system to heat a volume of space much larger than the actual occupied space. Additional inefficiencies also occur because there are higher temperatures at the ceiling level than at the floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, requiring additional energy consumption by the heating equipment in order to compensate for the accelerated heat transfer.

Destratification fans are specially designed to deliver a columnar, laminar flow of air balancing the air temperature from floor to ceiling. In addition to fuel savings, the use of destratification fans will reduce the recovery time necessary to warm the space after nightly temperature setbacks and will increase the comfort level of the occupants.

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10 °F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Ensure Economizers are Functioning Properly

Economizers, when properly configured, can be used to significantly reduce mechanical cooling. However, if the outdoor thermostat or enthalpy control is malfunctioning or the damper is stuck or improperly adjusted, benefits from the economizer may not be fully realized. As such, periodic inspection and maintenance is required to ensure proper operation. This maintenance should be scheduled with maintenance of the facility's air conditioning system and should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position. A malfunctioning economizer can significantly increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air.

Assess Chillers & Request Tune-Ups

Chillers are responsible for a substantial portion of a commercial building's overall energy usage. When components of a chiller are not optimized, this can quickly result in a noticeable increase in energy bills. Chiller diagnostics can produce a 5% to 10% cost avoidance potential from discovery and implementation of low/no cost optimization strategies.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

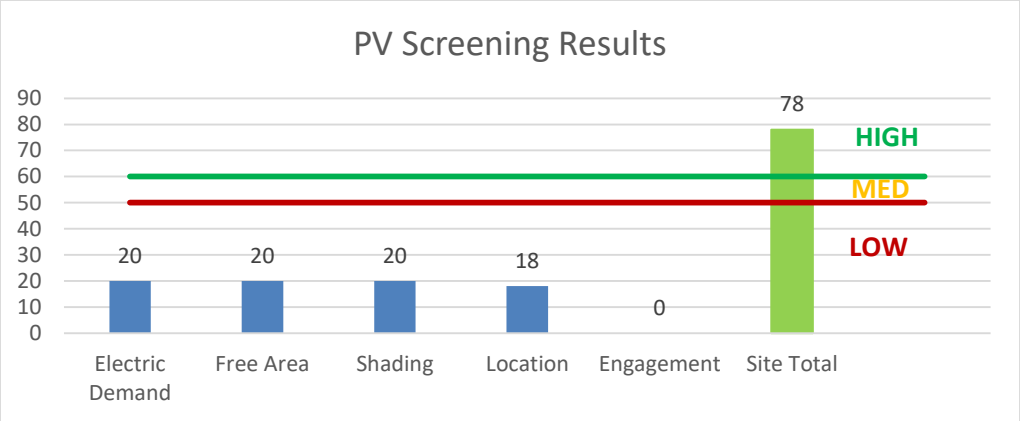
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **High** potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **High** potential for PV at the site. A PV array located on the roof of the buildings may be feasible. If Buena Regional High School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 22 - Photovoltaic Screening



Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.2 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

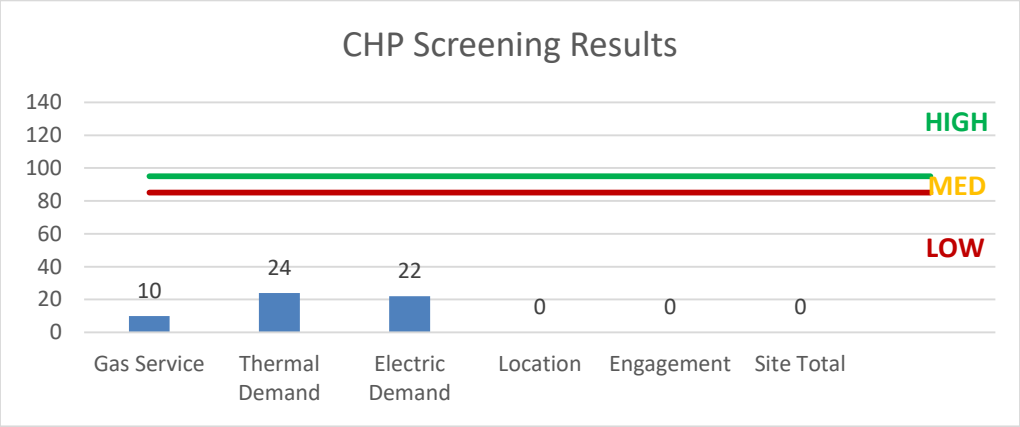
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **Low** potential for installing a cost-effective CHP system.

Lack of gas service, low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 23 - Combined Heat and Power Screening



7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (www.pjm.com/training/trainingmaterial.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion this building is not a good candidate for DR.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x					
ECM 2	Retrofit Fixtures with LED Lamps	x					
ECM 3	Install LED Exit Signs						
ECM 4	Install Occupancy Sensor Lighting Controls	x					
ECM 5	Install High/Low Lighitng Controls						
ECM 6	Premium Efficiency Motors						
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	x					
ECM 8	Install High Efficiency Chillers	x					
ECM 9	Implement Demand Control Ventilation	x					
ECM 10	Vending Machine Control						

SmartStart (SS) is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci

8.1 SmartStart

Overview

The SmartStart (SS) program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB

8.2 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec

8.3 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	25	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	25	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.25	1,322	0.0	$205.82	$897.50	$125.00	3.75
Boiler room	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,023	Relamp	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,023	0.01	47	0.0	$7.30	$31.90	$5.00	3.68
New wing: closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Common room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B103	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B103	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B104	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B104	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
Hallway	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.30	1,594	0.0	$248.17	$1,183.50	$110.00	4.33
Mechanical room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Boiler room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
B105	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B105	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B106	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.49	2,609	0.0	$406.09	$1,442.40	$250.00	2.94
B106	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.07	365	0.0	$56.81	$215.40	$30.00	3.26
B106	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
B106	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
Stairwell	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,116	0.19	1,021	0.0	$158.84	$920.53	$80.00	5.29
2nd floor	2	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	383	0.0	$59.58	$215.11	$0.00	3.61
2nd floor hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.25	1,304	0.0	$203.05	$1,066.50	$90.00	4.81
B205	15	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.62	3,261	0.0	$507.61	$1,668.00	$295.00	2.70
B204 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
B204 office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B203	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,116	0.98	5,218	0.0	$812.18	$2,614.80	$465.00	2.65
Closet	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
2nd floor hallway	2	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	2	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.01	27	0.0	$4.22	$107.51	$0.00	25.48
Stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Stairwell	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.04	222	0.0	$34.63	$192.80	$40.00	4.41
Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.44	2,319	0.0	$360.97	$1,476.00	$160.00	3.65
Hallway	3	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.04	574	0.0	$89.38	$322.67	$0.00	3.61
Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.49	2,609	0.0	$406.09	$1,593.00	$180.00	3.48
B212	18	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	18	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.87	4,592	0.0	$714.80	$2,252.40	$430.00	2.55
B211 office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
B210	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.82	4,337	0.0	$675.09	$2,157.27	$410.00	2.59
B220	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B48	17	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	17	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.82	4,337	0.0	$675.09	$2,157.27	$410.00	2.59
B209	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
office B208	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B207	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B47	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
RR boys x 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Faculty x 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B216	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B215a	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.29	1,557	0.0	$242.38	$761.07	$160.00	2.48
B215b	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	7	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.26	1,363	0.0	$212.08	$665.93	$140.00	2.48
B214	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Stduent council	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
stairwell	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
stairwell	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
B225 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B225 office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
B226	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B227	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B228	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B229	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
B230	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.06	34	0.0	$5.32	$175.50	$30.00	27.37
B231	30	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	Yes	30	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,116	0.41	2,200	0.0	$342.47	$2,256.00	$405.00	5.40
B232 storage	28	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	No	28	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	300	0.32	169	0.0	$26.31	$1,005.20	$140.00	32.88
proejction room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
stairwell	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
stairwell	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
industry room C131	26	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	Yes	26	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,116	0.37	1,975	0.0	$307.35	$1,743.40	$235.00	4.91
kitchen RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.02	122	0.0	$18.94	$71.80	$10.00	3.26
kitchen RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
kitchen RR	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
kitchen RR	32	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	32	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	1.54	8,164	0.0	$1,270.75	$4,124.27	$780.00	2.63
kitchen storage	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	300	0.09	48	0.0	$7.52	$287.20	$40.00	32.88
kitchen hood	5	Incandescent: 60 W	Wall Switch	60	3,023	Relamp	No	5	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	9	3,023	0.17	886	0.0	$137.96	$268.77	$25.00	1.77
office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
cafeteria	64	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	64	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	3.08	16,328	0.0	$2,541.50	$7,978.53	$1,525.00	2.54

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
cafeteria	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
C102 comp lab	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.55	2,899	0.0	$451.21	$1,710.00	$200.00	3.35
C103 comp lab	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.29	1,557	0.0	$242.38	$761.07	$160.00	2.48
C103 comp lab	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
C104 comp lab	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
C104 comp lab	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
C113	15	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.72	3,827	0.0	$595.67	$1,967.00	$370.00	2.68
C112 B	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
C112 B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
C105	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
B112a	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.22	1,168	0.0	$181.78	$570.80	$120.00	2.48
C111	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.96	5,103	0.0	$794.22	$2,442.67	$470.00	2.48
C111 storage	14	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	300	Relamp	Yes	14	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	210	0.20	106	0.0	$16.43	$1,042.60	$140.00	54.95
C106	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
restroom x 2	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.11	574	0.0	$89.27	$292.50	$50.00	2.72
closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.02	122	0.0	$18.94	$71.80	$10.00	3.26
hallway	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.14	725	0.0	$112.80	$832.50	$50.00	6.94
restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
C132	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
exit	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
gym	20	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	20	LED - Fixtures: Low-Bay	Occupancy Sensor	89	2,116	3.06	16,201	0.0	$2,521.70	$28,935.50	$3,070.00	10.26
gym	21	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	21	LED - Fixtures: Low-Bay	Occupancy Sensor	89	2,116	3.21	17,011	0.0	$2,647.79	$30,625.28	$3,255.00	10.34
gym	15	Incandescent: 130 W	Wall Switch	130	3,023	Relamp	Yes	15	LED Screw-In Lamps: LED Screw-In Lamps	Occupancy Sensor	20	2,116	1.14	6,066	0.0	$944.22	$1,346.30	$145.00	1.27
girl's lockeroom	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.55	2,899	0.0	$451.21	$1,710.00	$270.00	3.19

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
coach office	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
girl's lockeroom	4	Incandescent: 130 W	Wall Switch	130	3,023	Relamp	No	4	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	20	3,023	0.29	1,536	0.0	$239.13	$215.01	$20.00	0.82
girl's lockeroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.19	1,032	0.0	$160.68	$451.20	$90.00	2.25
restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.03	172	0.0	$26.78	$75.20	$15.00	2.25
restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
bathroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.06	344	0.0	$53.56	$175.50	$30.00	2.72
bathroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
bathroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.09	46	0.0	$7.09	$234.00	$40.00	27.37
lockeroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.13	688	0.0	$107.12	$351.00	$60.00	2.72
lockeroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.02	111	0.0	$17.31	$96.40	$20.00	4.41
lockeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.06	344	0.0	$53.56	$150.40	$30.00	2.25
lockeroom	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
Auxiliary B	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.33	1,752	0.0	$272.68	$856.20	$180.00	2.48
Auxiliary A	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.33	1,752	0.0	$272.68	$856.20	$180.00	2.48
Auxiliary A	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Athletic training	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	6	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.22	1,168	0.0	$181.78	$570.80	$120.00	2.48
Janitor	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
Boys lockeroom	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.63	3,334	0.0	$518.89	$2,155.50	$335.00	3.51
Boys lockeroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
Coach	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Restroom	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Shower	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.10	516	0.0	$80.34	$225.60	$45.00	2.25

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Shower	10	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	10	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.03	136	0.0	$21.10	$537.53	$0.00	25.48
hallway	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.41	2,174	0.0	$338.41	$1,417.50	$150.00	3.75
hallway	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
greenhouse	9	Incandescent: 60 W	Wall Switch	60	3,023	Relamp	No	9	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	9	3,023	0.30	1,595	0.0	$248.33	$483.78	$45.00	1.77
Restroom x 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
Faculty	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
B113	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.49	2,609	0.0	$406.09	$1,593.00	$180.00	3.48
Hallway	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
B115	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B114 storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	300	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	300	0.11	58	0.0	$9.02	$285.40	$60.00	24.98
B107	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B116	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B108	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.58	2,143	0.0	$333.57	$1,681.60	$310.00	4.11
B117	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B109	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.43	2,296	0.0	$357.40	$1,126.20	$215.00	2.55
B110	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,116	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,481	0.43	1,607	0.0	$250.18	$1,126.20	$215.00	3.64
B112	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
B112	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.13	688	0.0	$107.12	$300.80	$60.00	2.25
Library	48	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	Yes	48	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,116	3.62	19,204	0.0	$2,989.04	$7,792.72	$1,615.00	2.07
B119	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.17	918	0.0	$142.83	$468.00	$80.00	2.72
B120	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.17	918	0.0	$142.83	$468.00	$80.00	2.72
B120	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,116	0.30	1,594	0.0	$248.17	$1,183.50	$180.00	4.04
B221	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B222	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48

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B223a	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B224	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
B223b	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
B223b	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Lobby	9	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	No	9	LED - Linear Tubes: (6) 4' Lamps	Wall Switch	87	3,023	0.53	2,784	0.0	$433.36	$1,208.01	$270.00	2.16
Entrance lobby	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.16	870	0.0	$135.36	$891.00	$60.00	6.14
Auditorium	56	Compact Fluorescent: 19 W	Wall Switch	19	3,023	Relamp	Yes	56	LED Screw-In Lamps: LED screw-in	Occupancy Sensor	13	2,116	0.36	1,886	0.0	$293.58	$4,630.17	$210.00	15.06
Auditorium	18	Metal Halide: (1) 250W Lamp	Wall Switch	295	3,023	Fixture Replacement	Yes	18	LED - Fixtures: Downlight Recessed	Occupancy Sensor	89	2,116	2.75	14,581	0.0	$2,269.53	$5,420.11	$160.00	2.32
Auditorium	10	Metal Halide: (1) 175W Lamp	Wall Switch	215	3,023	Fixture Replacement	Yes	10	LED - Fixtures: Downlight Recessed	Occupancy Sensor	65	2,116	1.11	5,904	0.0	$918.93	$3,251.17	$120.00	3.41
Auditorium	12	Incandescent: Incandescent	Wall Switch	100	3,023	Relamp	Yes	12	LED Screw-In Lamps: LED Screw-In Lamps	Occupancy Sensor	12	2,116	0.72	3,821	0.0	$594.69	$1,185.04	$130.00	1.77
Auditorium	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	9	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Auditorium	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
Stage	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Stage	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.11	574	0.0	$89.27	$292.50	$50.00	2.72
Stage	1	Compact Fluorescent: 13 W	Wall Switch	26	3,023	Relamp	No	1	LED Screw-In Lamps: LED screw-in	Wall Switch	18	3,023	0.01	27	0.0	$4.22	$53.75	$0.00	12.74
A139	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
A wing hall	2	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,023	Relamp	Yes	2	LED - Linear Tubes: (6) 4' Lamps	High/Low Control	87	2,116	0.15	800	0.0	$124.54	$808.45	$60.00	6.01
Main offfice	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.18	973	0.0	$151.49	$475.67	$100.00	2.48
Main offfice	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,023	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,023	0.03	172	0.0	$26.78	$75.20	$15.00	2.25
Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.19	1,015	0.0	$157.92	$949.50	$70.00	5.57
Copy room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Server	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Vice Principal	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	5	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.18	973	0.0	$151.49	$475.67	$100.00	2.48
Open office	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.48	2,551	0.0	$397.11	$1,491.33	$270.00	3.08
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Conference room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
Conference room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
Nurse office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.09	459	0.0	$71.41	$234.00	$40.00	2.72
Nurse office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.15	779	0.0	$121.19	$380.53	$80.00	2.48
Restroom x 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,023	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,023	0.01	56	0.0	$8.66	$48.20	$10.00	4.41
Cellar	13	Incandescent: 135 W	Wall Switch	135	3,023	Relamp	No	13	LED Screw-In Lamps: LED Screw-In Lamps	Wall Switch	20	3,023	0.98	5,185	0.0	$807.07	$698.79	$65.00	0.79
Hallway	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.44	2,319	0.0	$360.97	$1,476.00	$160.00	3.65
Exit	4	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	4	LED Exit Signs: 2 W Lamp	None	6	8,760	0.05	766	0.0	$119.17	$430.22	$0.00	3.61
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Custodian	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Hallway	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.22	1,160	0.0	$180.48	$1,008.00	$80.00	5.14
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Restroom x 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.02	115	0.0	$17.85	$58.50	$10.00	2.72
Attendent booth	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.04	195	0.0	$30.30	$95.13	$20.00	2.48
Custodian	1	Compact Fluorescent: 13 W	Wall Switch	13	3,023	Relamp	No	1	LED Screw-In Lamps: LED screw-in	Wall Switch	9	3,023	0.00	14	0.0	$2.11	$53.75	$0.00	25.48
A149	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.96	5,103	0.0	$794.22	$2,442.67	$470.00	2.48
Store	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	300	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	300	0.04	19	0.0	$3.01	$95.13	$20.00	24.98

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Store film	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.02	11	0.0	$1.77	$58.50	$10.00	27.37
A145	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
A143	24	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	24	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	1.15	6,123	0.0	$953.06	$3,093.20	$585.00	2.63
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.09	487	0.0	$75.74	$287.20	$40.00	3.26
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
Office	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,116	0.19	1,015	0.0	$157.92	$949.50	$70.00	5.57
Hallway	1	Exit Signs: Incandescent	None	25	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	191	0.0	$29.79	$107.56	$0.00	3.61
A142 band	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.58	3,062	0.0	$476.53	$1,681.60	$310.00	2.88
A142 band	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,023	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,023	0.05	243	0.0	$37.87	$143.60	$20.00	3.26
A142 band	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.11	584	0.0	$90.89	$285.40	$60.00	2.48
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,023	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,023	0.04	229	0.0	$35.71	$117.00	$20.00	2.72
A208 office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,023	0.07	389	0.0	$60.59	$190.27	$40.00	2.48
A208 office	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,023	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,116	0.77	4,082	0.0	$635.38	$2,062.13	$390.00	2.63
Exterior Wallpacks	16	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	4,380	Fixture Replacement	No	16	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	24	4,380	0.75	5,742	0.0	$893.77	$6,250.83	$1,600.00	5.20
Exterior Shoebox (1L)	17	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	17	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	1.80	13,808	0.0	$2,149.17	$5,885.15	$850.00	2.34
Exterior Shoebox (2L-1)	3	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	0.32	2,437	0.0	$379.27	$1,038.56	$150.00	2.34
Exterior Shoebox (2L-2)	3	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Daylight Dimming	54	4,380	0.32	2,437	0.0	$379.27	$1,038.56	$150.00	2.34
Wall mounted	5	Metal Halide: (1) 100W Lamp	Daylight Dimming	128	4,380	Fixture Replacement	No	5	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	32	4,380	0.31	2,418	0.0	$376.33	$1,953.39	$500.00	3.86

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Boiler	2	Combustion Air Fan	5.0	89.5%	No	1,289	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Bldg	1	Air Compressor	1.0	85.5%	No	1,460	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C112)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C113)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	unknown	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Condenser Unit 24	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C104)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	C105	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C105)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C106)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	General Office (by Auditorium)	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Nurses Office by Auditorium	1	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SW B-Wing	SW B-Wing Classrooms	9	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SE B-Wing	SE B-Wing Classrooms	23	Supply Fan	0.2	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof above Library	Library	1	Supply Fan	10.0	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above Library	Library	1	Exhaust Fan	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Ceiling	Gym	2	Ventilation Fan	7.5	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-1	1	Chilled Water Pump	3.0	89.5%	No	1,360	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-2	1	Heating Hot Water Pump	1.0	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-3	1	Heating Hot Water Pump	1.0	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	P-4	1	Heating Hot Water Pump	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing - MechRoom	Weil McLain Boiler	1	Combustion Air Fan	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Various	Various areas	21	Exhaust Fan	0.5	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	Kitchen	1	Kitchen Hood Exhaust Fan	0.8	85.5%	No	4,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Combustion Air Fan	0.3	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Heating Hot Water Pump	0.5	85.5%	No	1,289	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Audtorium (2nd Flr Storage)	Auditorium	2	Supply Fan	7.5	84.0%	No	3,391	Yes	91.0%	No		0.53	2,432	0.0	$378.60	$2,262.88	$0.00	5.98
Roof of New Wing	AHU1	1	Supply Fan	20.0	93.0%	No	3,391	Yes	93.0%	Yes	1	5.03	18,089	0.0	$2,815.50	$8,582.03	$1,300.00	2.59
Boiler Room	Bldg Space HHW	2	Heating Hot Water Pump	20.0	93.0%	No	1,289	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof of New Wing	AHU1	1	Return Fan	5.0	93.0%	No	2,745	Yes	89.5%	Yes	1	0.56	1,651	0.0	$256.93	$4,076.22	$775.00	12.85

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	AC-1 (Rm C111)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C111)	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C112)	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C113)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C103)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	unknown	1	Split-System AC	0.75		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Condenser Unit 24	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C103)	1	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C104)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	C105	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-2 (Rm C105)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AC-1 (Rm C106)	1	Split-System AC	4.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	General Office (by Auditorium)	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Nurses Office by Auditorium	1	Split-System AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SW B-Wing	SW B-Wing Classrooms	9	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above SE B-Wing	SE B-Wing Classrooms	23	Split-System AC	3.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof above Library	Library	1	Packaged AC	30.00		Yes	1	Packaged AC	30.00		9.50		No	1.41	1,895	0.0	$294.92	$66,479.15	$0.00	225.42
Side of Bldg	unknown	1	Split-System AC	2.67		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
unknown	unknown	1	Window AC	0.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
back of building near wood shop	unknown	5	Split-System AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
SW side of auditorium	Auditorium AHUs	1	Air-Cooled Reciprocating Chiller	75.00	Yes	1	Air-Cooled Screw Chiller	Variable	75.00	1.24	0.74	37.97	56,669	0.0	$8,820.52	$73,854.40	$6,750.00	7.61
NE side of New Wing	Coils for AHU on New Wing	1	Air-Cooled Reciprocating Chiller	40.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Bldg	2	Non-Condensing Hot Water Boiler	6,522.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
New Wing Mechanical Room	New Wing	1	Non-Condensing Hot Water Boiler	453.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Boiler Room	Gym HV Units	1	Non-Condensing Hot Water Boiler	634.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Domestic Hot Water	4	Non-Condensing Hot Water Boiler	167.00	Yes	4	Condensing Hot Water Boiler	167.00	93.00%	AFUE	0.00	0	73.3	$681.10	$26,145.52	$4,000.00	32.51

Demand Control Ventilation Recommendations

		Recommendation Inputs				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Auditorium	Auditorium AHUs	2	75.00		300.00	0.00	2,143	16.5	$486.63	$2,718.84	$0.00	5.59

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Rm	Bldg	4	Storage Tank Water Heater (≤ 50 Gal)	Yes	4	Storage Tank Water Heater (≤ 50 Gal)	Natural Gas	80.00%	0	0.00	0	0.0	$0.00	$44,141.44	$200.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Low Temp Freezer (-35F to -5F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Low Temp Freezer (-35F to -5F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Refrigerator Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Ice Making Head (≥450 lbs/day), Batch	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Insulated Food Holding Cabinet (3/4 Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Rack Oven (Double)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Various	303	Desktop Computer	270.0	
Various	19	TV/Monitor (32")	200.0	
Various	21	Small Printer	60.0	
Various	16	Medium Printer	120.0	
Various	6	Large Printer	180.0	
Various	33	Projectors	400.0	
Various	12	Microwaves	1,500.0	
Various	3	Sm.Refrigerators	200.0	
Various	10	Lg.Refrigerators	700.0	
Various	3	Toaster Oven	1,500.0	
Various	7	Ceiling Fans	100.0	
Art	1	Kiln	10,000.0	
Art	1	Kiln	10,000.0	

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
VendingArea	5	Refrigerated	Yes	0.00	8,059	0.0	$1,254.42	$1,000.00	$0.00	0.80

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Buena Regional High School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 166,090
Built: 1973

For Year Ending: April 30, 2017
Date Generated: June 11, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Buena Regional High School 125 Weymouth Road Buena, New Jersey 08650	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358232

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
72.8 kBtu/ft²

Source EUI
130.2 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	7,818,825 (65%)
Electric - Grid (kBtu)	4,272,202 (35%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	77.8
National Median Source EUI (kBtu/ft²)	139.1
% Diff from National Median Source EUI	-6%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	889

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer Stamp
(if applicable)

Local Government Energy Audit:
Energy Audit Report



Dr. JP Cleary Elementary School

1501 Central Ave

Minotola, NJ 08341

Buena Regional School District

June 29, 2018

Draft Report by:

TRC Energy Services

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Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate saving are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Dr. JP Cleary Elementary School.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey public schools in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Dr. JP Cleary Elementary School is a one story 56,700 square foot facility comprised of various space types including classrooms, offices, a gymnasium, a media center, a cafeteria, a small commercial kitchen, and various mechanical and storage spaces.

Lighting at Dr. JP Cleary Elementary School consists of aging and inefficient fluorescent lighting as well as some exterior metal halide fixtures. Heating is supplied by two gas-fired hot water boilers feeding water-source heat pumps throughout the building. Cooling is provided by a mixture of split-systems, ductless mini-split units, and water-source heat pumps throughout the building. Domestic hot water is supplied by three gas-fired storage water heaters. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated 11 measures, and recommends 9 priority measures, which represent an opportunity for Dr. JP Cleary Elementary School to reduce annual energy costs by roughly $27,659 and annual greenhouse gas emissions by 188,992 lbs CO_2e. We estimate that if measures were implemented as recommended, the project would pay for itself in 3.9 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Dr. JP Cleary Elementary School's annual energy use by 16%.

Figure 1 – Previous 12 Month Utility Costs

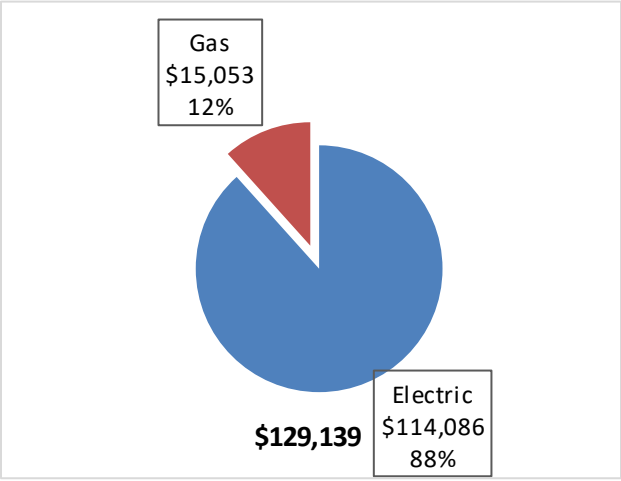
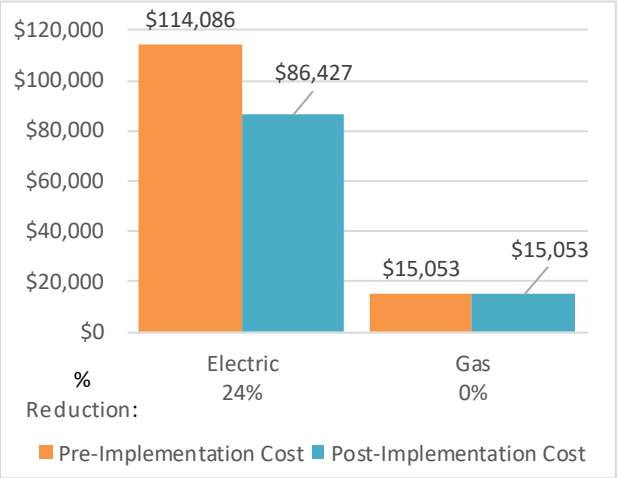


Figure 2 – Potential Post-Implementation Costs



A detailed description of Dr. JP Cleary Elementary School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**79,193**	**19.0**	**0.0**	**$11,671.00**	**$62,345.48**	**$12,490.00**	**$49,855.48**	**4.3**	**79,747**
ECM 1	Install LED Fixtures	Yes	8,054	3.1	0.0	$1,186.87	$14,845.73	$3,800.00	$11,045.73	9.3	8,110
ECM 2	Retrofit Fixtures with LED Lamps	Yes	71,140	16.0	0.0	$10,484.12	$47,499.76	$8,690.00	$38,809.76	3.7	71,637
Lighting Control Measures			**12,102**	**1.8**	**0.0**	**$1,783.57**	**$12,060.00**	**$1,525.00**	**$10,535.00**	**5.9**	**12,187**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	5,342	1.1	0.0	$787.30	$5,810.00	$805.00	$5,005.00	6.4	5,380
ECM 4	Install Daylight Dimming Controls	Yes	4,121	0.3	0.0	$607.28	$3,250.00	$720.00	$2,530.00	4.2	4,150
ECM 5	Install High/Low Lighitng Controls	Yes	2,639	0.4	0.0	$388.98	$3,000.00	$0.00	$3,000.00	7.7	2,658
Motor Upgrades			**1,467**	**0.3**	**0.0**	**$216.27**	**$33,068.40**	**$0.00**	**$33,068.40**	**152.9**	**1,478**
	Premium Efficiency Motors	No	1,467	0.3	0.0	$216.27	$33,068.40	$0.00	$33,068.40	152.9	1,478
Variable Frequency Drive (VFD) Measures			**46,138**	**4.4**	**0.0**	**$6,799.49**	**$17,063.96**	**$1,160.00**	**$15,903.96**	**2.3**	**46,460**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	7,281	1.9	0.0	$1,073.10	$9,448.06	$1,160.00	$8,288.06	7.7	7,332
ECM 7	Install VFDs on Hot Water Pumps	Yes	38,856	2.5	0.0	$5,726.39	$7,615.90	$0.00	$7,615.90	1.3	39,128
Electric Unitary HVAC Measures			**53,004**	**26.5**	**0.0**	**$7,811.37**	**$68,696.94**	**$4,404.68**	**$64,292.27**	**8.2**	**53,374**
	Install High Efficiency Electric AC	No	4,369	5.0	0.0	$643.90	$34,913.10	$2,190.00	$32,723.10	50.8	4,400
ECM 8	Install High Efficiency Heat Pumps	Yes	48,635	21.6	0.0	$7,167.47	$33,783.84	$2,214.68	$31,569.17	4.4	48,975
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$237.54**	**$230.00**	**$0.00**	**$230.00**	**1.0**	**1,623**
ECM 9	Vending Machine Control	Yes	1,612	0.0	0.0	$237.54	$230.00	$0.00	$230.00	1.0	1,623
TOTALS FOR HIGH PRIORITY MEASURES			**187,680**	**46.8**	**0.0**	**$27,659.07**	**$125,483.28**	**$17,389.68**	**$108,093.61**	**3.9**	**188,992**
TOTALS FOR ALL EVALUATED MEASURES			**193,516**	**52.1**	**0.0**	**$28,519.23**	**$193,464.79**	**$19,579.68**	**$173,885.11**	**6.1**	**194,870**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Motor Upgrades generally involve replacing older standard efficiency motors with high efficiency standard (NEMA Premium). Motors replacements generally assume the same size motors, just higher efficiency. Although occasionally additional savings can be achieved by downsizing motors to better meet current load requirements. This measure saves energy by reducing the power used by the motors, due to improved electrical efficiency.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC Energy Services also identified 9 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at Dr. JP Cleary Elementary School include:

- Reduce Air Leakage
- Close Doors and Windows
- Use Window Treatments/Coverings
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Check for and Seal Duct Leakage
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

For details on these Energy Efficient Practices, please refer to section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation for Dr. JP Cleary Elementary School. Based on the configuration of the site and its loads there is a moderate potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	Medium	
System Potential	197	kW DC STC
Electric Generation	148,232	kWh/yr
Displaced Cost	$12,900	/yr
Installed Cost	$768,300	

For details on our evaluation and on-site generation potential, please refer to section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)
- Pay for Performance - Existing Building (P4P)
- Energy Savings Improvement Program (ESIP)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SS incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SS program. More details on this program and others are available in Section 8.

Larger facilities with an interest in a more comprehensive whole building approach to energy conservation should consider participating in the Pay for Performance (P4P) program. Projects eligible for this project program must meet minimum savings requirements. Final incentives are calculated based on actual measured performance achieved at the end of the project. The application process is more involved, and it requires working with a qualified P4P contractor, but the process may result in greater energy savings overall and more lucrative incentives, up to 50% of project's total cost.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.4 for additional information on the ESIP Program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck	Interim Building and Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
Designated Representative			
Walt Loshenko	Maintenance Supervisor	N/A	856-697-8080 ext. 6102
TRC Energy Services			
Alexander Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 24, 2018, TRC Energy Services performed an energy audit at Dr. JP Cleary Elementary School located in Minotola, NJ. TRC Energy Services' team met with Walt Loshenko to review the facility operations and help focus our investigation on specific energy-using systems.

Dr. JP Cleary Elementary School is a one story 56,700 square foot facility comprised of various space types including classrooms, offices, a gymnasium, a media center, a cafeteria, a small commercial kitchen, and various mechanical and storage spaces.

The building was originally constructed in 1958. The last year of major renovations was in 2012.

2.3 Building Occupancy

The school building is open Monday through Friday. The typical schedule is presented in the table below. The entire facility is open for 11 months, and closed during August for repairs and preparation for the following school year. During a typical day, the facility is occupied by approximately 150 staff and 550 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Dr JP Cleary Elementary School	Weekday	6:00 AM to 11:30 PM
Dr JP Cleary Elementary School	Weekend	Closed

2.4 Building Envelope

The building is constructed of concrete block, and structural steel with a brick facade. The building has flat roofs covered with black membrane and stone ballast that is in good condition. The building has double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.





2.5 On-Site Generation

Dr. JP Cleary Elementary School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

Lighting System

Lighting at the facility is provided mostly by linear 32-Watt fluorescent T8 lamps with electronic ballasts as well as some compact fluorescent lamps (CFL). Most of the fixtures are 2-lamp or 3-lamp, 4-foot long troffers with diffusers.

Lighting control in most spaces is provided by occupancy sensors. The occupancy sensors are either wall or ceiling mounted depending on the space layout. Stairwells, elevator lobbies and main lobby areas do not contain any occupancy sensors and are on for approximately 13 hours per day.

The building's exterior lighting consists of metal halide that are controlled by photocells. There are several compact fluorescent fixtures above doorways and in the entry canopy that are on 24 hours per day.



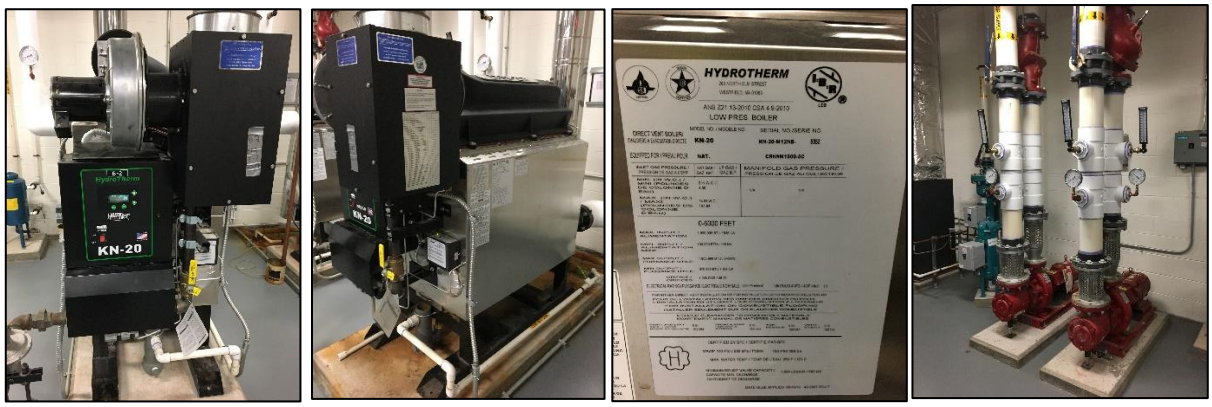





Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's lighting equipment.

Hot Water Heating System

The hot water system consists of two Hydrotherm 1,854 kBtu/hr output, forced draft, fully modulating, condensing boilers. The boilers have a nominal combustion efficiency of 93%. Each boiler has a 0.5 hp forced draft fan. The boilers are configured in a constant flow primary distribution with two distribution pumps which alternate weekly. The distribution pumps are 10 HP each, have an efficiency of 91.7%. Each boiler is supplied by a dedicated 1.5 HP return pump, which only operates when the boilers are running. Hot water is supplied at 180°F when the outside air temperature is below 50°F and the setpoint is reset to 155°F when the outside air is above 65°F. The boilers provide hot water to heat pumps throughout the building.



The boilers operate in a lead/lag configuration. Both boilers may be required during cold weather. The lead boiler is rotated weekly.

The boilers are in good condition and well maintained.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's heating equipment.

Direct Expansion Air Conditioning System (DX)

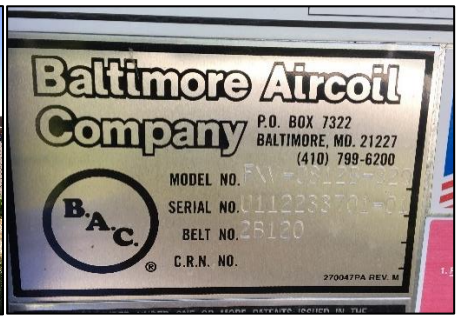
There are 37 water-source heat pump units (WSHPs) of various sizes supplying heating, cooling, and ventilation to most of the building. There are 5 heat pumps located in the boiler room serving the kitchen area (4 tons), cafeteria & teacher's lounge (16 tons), boiler room (2 tons), art room (5 tons), and the adjacent restrooms, janitor room, and storage room (3 tons). On the roof of the building there are 30 heat pumps serving the classrooms (3 tons), and 2 large heat pump units serving the media center (10 tons) and gymnasium (15 tons). As needed, heat is added to the water loop by the boilers or removed with the cooling tower. The WSHPs are constant air volume units with a single 1 hp supply fan and no return fan. All of the WSHPs use direct-expansion (DX) coils. The WSHPs utilize scroll compressors.

The units are controlled by individual thermostats located in zones. The heat pumps are connected to the building EMS and operate based on temperature to maintain the zone space temperature setpoint around 72°F (adjustable by tenants). The units operate between 7:00 AM and 5:00 PM Monday through Friday.



The cooling tower is a BAC model FXV-08123-320 which is located on the north side of the property, and has two 1 HP fans, and a 5 HP condenser water pump. The pump has an Eaton HVX9000 variable frequency drive installed.



There are four classrooms which are not served by heat pumps. Rooms 311, 314, 315, and 316 are cooled by individual split systems, and heated by a shared air handler with hot water coils located in the ceiling of mechanical room 317. The split systems supplying cooling are four identical 7.5-ton York model H5CE090 units with the fan and evaporator located in the ceiling of the room, and the compressor and condensing unit located on the roof. The units are controlled by a thermostat located in the individual rooms.







There are three server rooms in this building which are cooled by ductless mini-split air conditioners. The two smaller server rooms are cooled by two 1-ton Mitsubishi Mr. Slim units, and the main server room is cooled by a 2-ton Mitsubishi Mr. Slim unit. The units are approximately 2 years old and in good condition.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning equipment.

Domestic Hot Water Heating System



The domestic hot water heating system for the facility consists of three A.O. Smith gas fired condensing hot water heaters with an input rating of 300 kBtu/hr each and a nominal efficiency of 94%. Each water heater has a 100 gallon storage tank. Two recirculation pumps distribute 120°F water to the entire site. The recirculation pumps operate continuously.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's domestic hot water equipment.

Food Service & Laundry Equipment

The school has a small kitchen that is used to prepare lunches for the students. Most of the cooking is done using the two convection ovens and the single large stove. There is also a large gas-fired kettle that is used to prepare pasta and soup.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service and laundry equipment.

Refrigeration

The facility has two different storage cold storage areas: a walk-in cooler area and a walk-in freezer area. The cooler area is maintained at a constant temperature of 35°F and freezer area is maintained at a constant -13°F. Cooler area is served by two evaporators and freezer area is served by two evaporators each having a single 1/3 HP fan. There are two 2-ton condensing units with reciprocating compressors connected to evaporators serving the cooler section and the freezer area.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's refrigeration equipment.

Building Plug Load

There are 104 computer work stations throughout the facility. Roughly 95% of the computers are desktop units with LCD monitors. There are also 4 Chromebook charging carts with 30 Chromebooks each.

Additional equipment that contributes to a major portion of the building's plug load includes 19 desk printers, 26 projectors and smartboards, and 7 refrigerators.

There is one refrigerated beverage vending machine located in the teacher's lounge.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's plug load equipment.

2.7 Water-Using Systems

There are 16 restrooms at this facility. A sampling of restrooms found that all of the faucets are rated for 2.0 gpm or lower, the toilets are rated at 2 gallons per flush and the urinals are rated at 1.6 gallons per flush.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

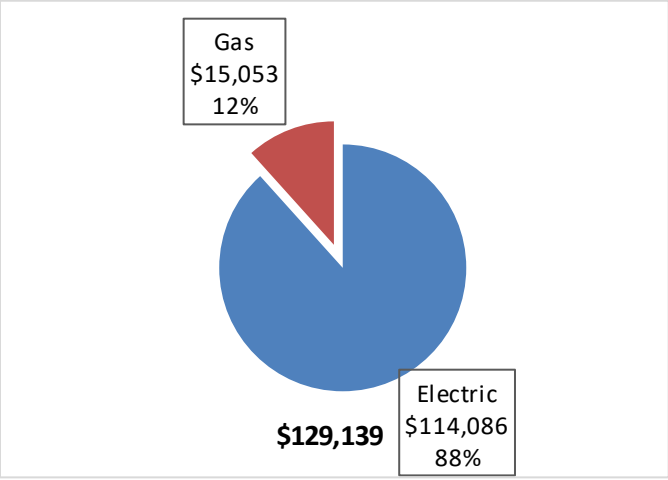
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Dr. JP Cleary Elementary School		
Fuel	**Usage**	**Cost**
Electricity	774,130 kWh	$114,086
Natural Gas	13,531 Therms	$15,053
Total		**$129,139**

The current annual energy cost for this facility is $129,139 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.147/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 9 - Graph of 12 Months Electric Usage & Demand

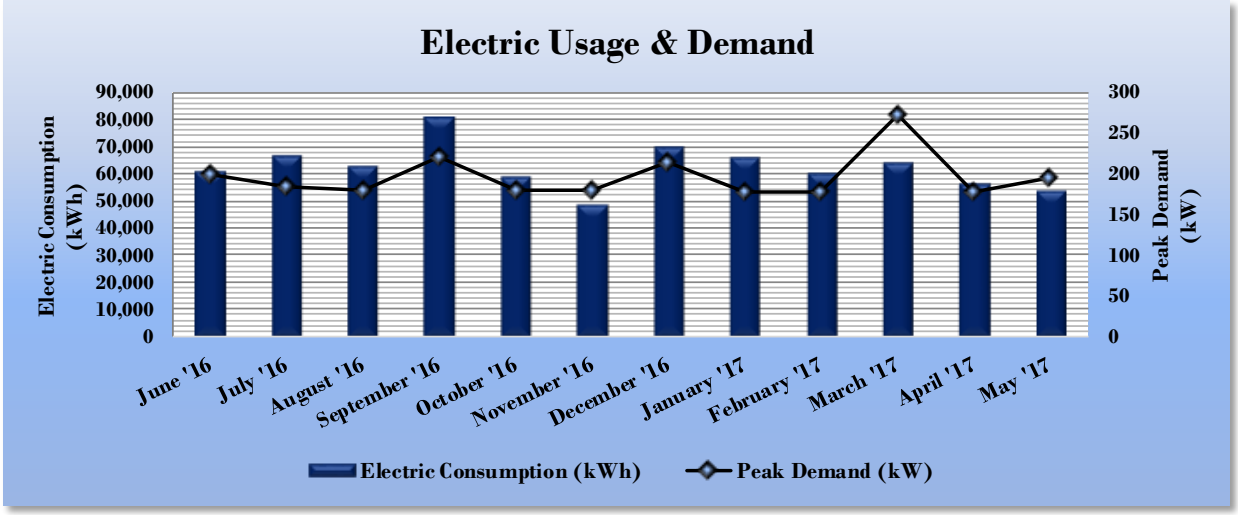


Figure 10 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Dr. JP Cleary Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/27/16	32	60,960	200	$1,685	$9,151
7/28/16	30	66,880	185	$1,463	$9,642
8/25/16	27	62,720	179	$1,295	$8,891
9/28/16	33	80,960	222	$2,218	$12,017
10/27/16	28	58,800	180	$1,536	$8,554
11/23/16	26	48,800	179	$1,424	$7,276
12/27/16	33	70,320	214	$2,138	$10,508
1/26/17	29	66,240	177	$1,564	$9,407
2/22/17	26	60,640	177	$1,407	$8,529
3/24/17	29	64,160	273	$2,406	$10,012
4/27/17	33	56,400	178	$1,783	$8,565
5/26/17	28	53,920	194	$1,657	$8,097
Totals	**354**	**750,800**	**272.8**	**$20,577**	**$110,648**
Annual	**365**	**774,130**	**272.8**	**$21,216**	**$114,086**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $1.112/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 11 - Graph of 12 Months Natural Gas Usage

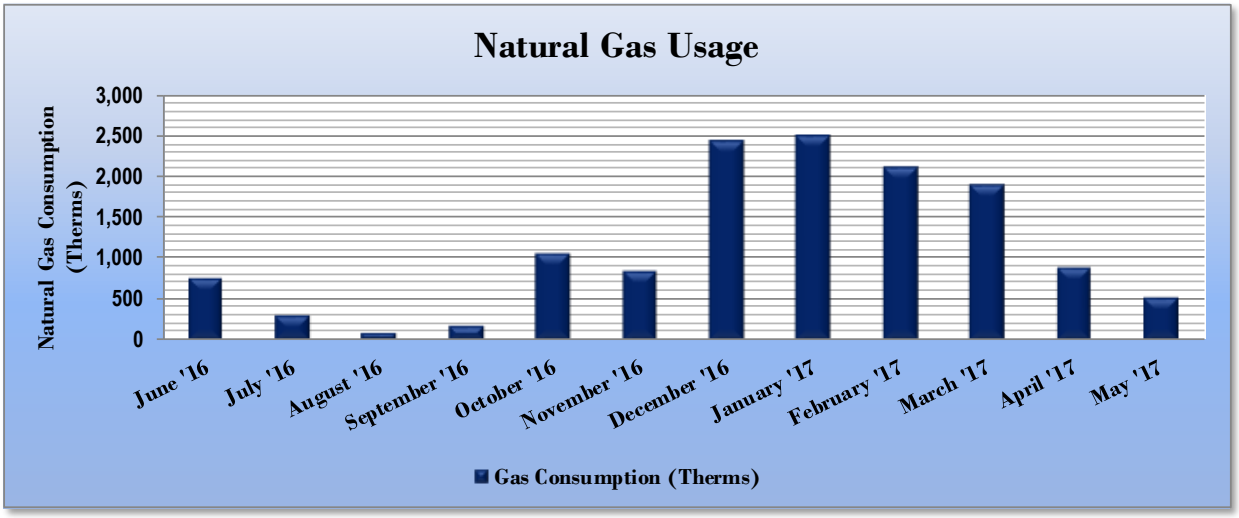


Figure 12 - Table of 12 Months Natural Gas Usage

Gas Billing Data for Dr. JP Cleary Elementary School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/27/16	33	753	$654
7/28/16	31	306	$310
8/25/16	30	93	$75
9/28/16	34	187	$205
10/27/16	29	1,065	$1,118
11/23/16	27	839	$890
12/27/16	34	2,446	$2,758
1/26/17	30	2,509	$3,038
2/22/17	27	2,121	$2,435
3/24/17	30	1,912	$2,085
4/27/17	34	884	$996
5/26/17	29	529	$612
Totals	**368**	**13,642**	**$15,177**
Annual	**365**	**13,531**	**$15,053**

3.4 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. Environmental Protection Agency (EPA) through the ENERGY STAR™ program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR Score for select building types.

Energy Use Intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy". Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Dr. JP Cleary Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	171.3	141.4
Site Energy Use Intensity (kBtu/ft^2)	70.4	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the Table below:

Figure 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Dr. JP Cleary Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	135.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	59.2	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of **43**.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see **Appendix B: EPA Statement of Energy Performance**.

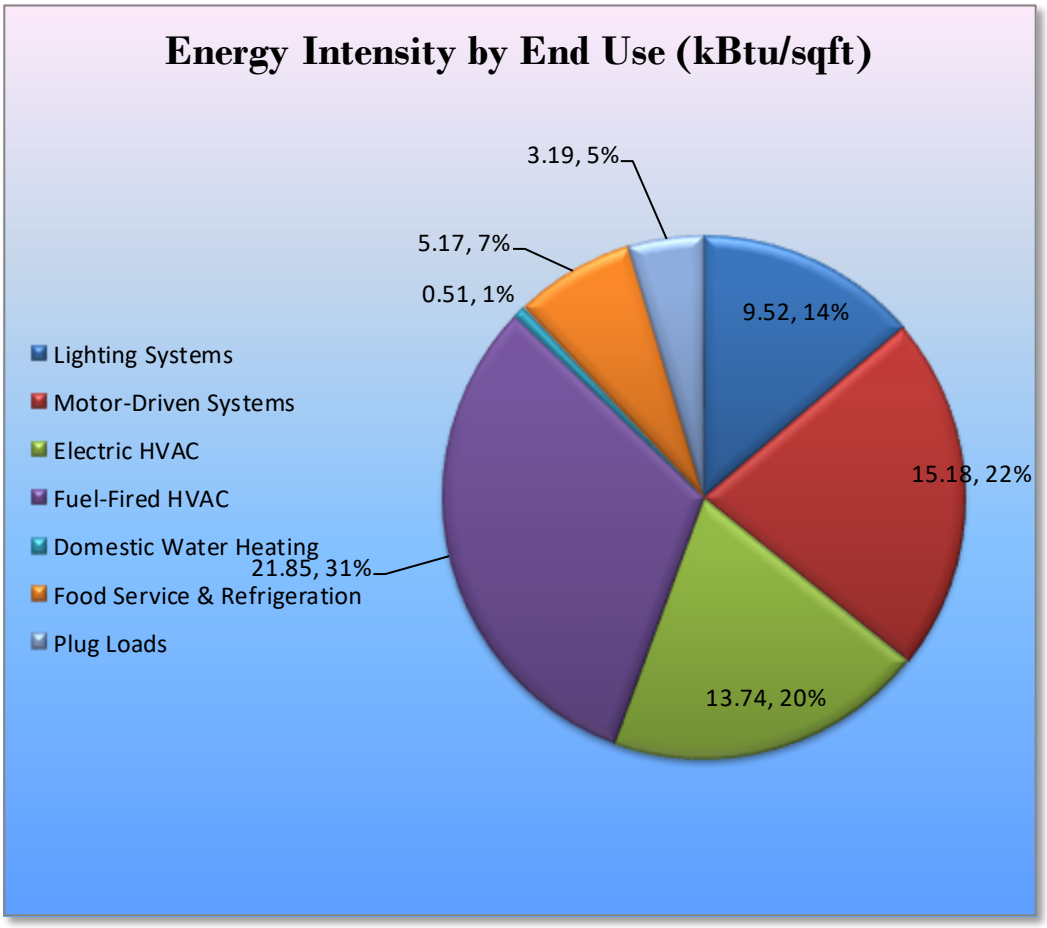
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training is available to help you use Energy Star Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 15 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Dr. JP Cleary Elementary School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**79,193**	**19.0**	**0.0**	**$11,671.00**	**$62,345.48**	**$12,490.00**	**$49,855.48**	**4.3**	**79,747**
ECM 1	Install LED Fixtures	8,054	3.1	0.0	$1,186.87	$14,845.73	$3,800.00	$11,045.73	9.3	8,110
ECM 2	Retrofit Fixtures with LED Lamps	71,140	16.0	0.0	$10,484.12	$47,499.76	$8,690.00	$38,809.76	3.7	71,637
Lighting Control Measures		**12,102**	**1.8**	**0.0**	**$1,783.57**	**$12,060.00**	**$1,525.00**	**$10,535.00**	**5.9**	**12,187**
ECM 3	Install Occupancy Sensor Lighting Controls	5,342	1.1	0.0	$787.30	$5,810.00	$805.00	$5,005.00	6.4	5,380
ECM 4	Install Daylight Dimming Controls	4,121	0.3	0.0	$607.28	$3,250.00	$720.00	$2,530.00	4.2	4,150
ECM 5	Install High/Low Lighitng Controls	2,639	0.4	0.0	$388.98	$3,000.00	$0.00	$3,000.00	7.7	2,658
Variable Frequency Drive (VFD) Measures		**46,138**	**4.4**	**0.0**	**$6,799.49**	**$17,063.96**	**$1,160.00**	**$15,903.96**	**2.3**	**46,460**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	7,281	1.9	0.0	$1,073.10	$9,448.06	$1,160.00	$8,288.06	7.7	7,332
ECM 7	Install VFDs on Hot Water Pumps	38,856	2.5	0.0	$5,726.39	$7,615.90	$0.00	$7,615.90	1.3	39,128
Electric Unitary HVAC Measures		**48,635**	**21.6**	**0.0**	**$7,167.47**	**$33,783.84**	**$2,214.68**	**$31,569.17**	**4.4**	**48,975**
ECM 8	Install High Efficiency Heat Pumps	48,635	21.6	0.0	$7,167.47	$33,783.84	$2,214.68	$31,569.17	4.4	48,975
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$237.54**	**$230.00**	**$0.00**	**$230.00**	**1.0**	**1,623**
ECM 9	Vending Machine Control	1,612	0.0	0.0	$237.54	$230.00	$0.00	$230.00	1.0	1,623
TOTALS		**187,680**	**46.8**	**0.0**	**$27,659.07**	**$125,483.28**	**$17,389.68**	**$108,093.61**	**3.9**	**188,992**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**79,193**	**19.0**	**0.0**	**$11,671.00**	**$62,345.48**	**$12,490.00**	**$49,855.48**	**4.3**	**79,747**
ECM 1	Install LED Fixtures	8,054	3.1	0.0	$1,186.87	$14,845.73	$3,800.00	$11,045.73	9.3	8,110
ECM 2	Retrofit Fixtures with LED Lamps	71,140	16.0	0.0	$10,484.12	$47,499.76	$8,690.00	$38,809.76	3.7	71,637

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	8,054	3.1	0.0	$1,186.87	$14,845.73	$3,800.00	$11,045.73	9.3	8,110

Measure Description

We recommend replacing existing fixtures containing metal halide lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	67,494	15.7	0.0	$9,946.79	$45,870.12	$8,690.00	$37,180.12	3.7	67,966
Exterior	3,646	0.3	0.0	$537.33	$1,629.63	$0.00	$1,629.63	3.0	3,672

Measure Description

We recommend retrofitting existing incandescent or fluorescent lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of fluorescent tubes and more than 10 times longer than many incandescent lamps.

4.1.2 Lighting Control Measures

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**12,102**	**1.8**	**0.0**	**$1,783.57**	**$12,060.00**	**$1,525.00**	**$10,535.00**	**5.9**	**12,187**
ECM 3	Install Occupancy Sensor Lighting Controls	5,342	1.1	0.0	$787.30	$5,810.00	$805.00	$5,005.00	6.4	5,380
ECM 4	Install Daylight Dimming Controls	4,121	0.3	0.0	$607.28	$3,250.00	$720.00	$2,530.00	4.2	4,150
ECM 5	Install High/Low Lighitng Controls	2,639	0.4	0.0	$388.98	$3,000.00	$0.00	$3,000.00	7.7	2,658

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 3: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
5,342	1.1	0.0	$787.30	$5,810.00	$805.00	$5,005.00	6.4	5,380

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in most restrooms, storage rooms, classrooms, offices areas, media center, and kitchen. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install Daylight Dimming Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,121	0.3	0.0	$607.28	$3,250.00	$720.00	$2,530.00	4.2	4,150

Measure Description

We recommend installing daylight dimming controls that use photosensors to reduce electric lighting in areas when ample daylight lighting is present. Photosensor controls are recommended for fixtures that are adjacent to windows that receive lots of sunlight. As sunlight level increase in the room, fixture lighting is decreased or turned off. This measure reduces energy use in spaces where sufficient lighting levels can be met by ambient daylight.

Optimum light levels and the method of dimming should be determined during lighting design. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 5: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,639	0.4	0.0	$388.98	$3,000.00	$0.00	$3,000.00	7.7	2,658

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are stairwells, interior corridors, parking lots, and parking garages.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is

detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 19 below.

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**46,138**	**4.4**	**0.0**	**$6,799.49**	**$17,063.96**	**$1,160.00**	**$15,903.96**	**2.3**	**46,460**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	7,281	1.9	0.0	$1,073.10	$9,448.06	$1,160.00	$8,288.06	7.7	7,332
ECM 7	Install VFDs on Hot Water Pumps	38,856	2.5	0.0	$5,726.39	$7,615.90	$0.00	$7,615.90	1.3	39,128

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about current motors systems and VFD recommendations.

ECM 6: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
7,281	1.9	0.0	$1,073.10	$9,448.06	$1,160.00	$8,288.06	7.7	7,332

Measure Description

We recommend installing variable frequency drives (VFDs) on the heat pump units serving the media center and gymnasium to control supply fan motor speeds to convert a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing will have to be determined during the final project design. The control system should be programmed to maintain the minimum air flow whenever the compressor is operating.

ECM 7: Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
38,856	2.5	0.0	$5,726.39	$7,615.90	$0.00	$7,615.90	1.3	39,128

Measure Description

We recommend installing a variable frequency drives (VFD) to control hot water pumps. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.4 Electric Unitary HVAC Measures

Our recommendations for unitary HVAC measures are summarized in Figure 20 below.

Figure 20 - Summary of Unitary HVAC ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures		**48,635**	**21.6**	**0.0**	**$7,167.47**	**$33,783.84**	**$2,214.68**	**$31,569.17**	**4.4**	**48,975**
ECM 8	Install High Efficiency Heat Pumps	48,635	21.6	0.0	$7,167.47	$33,783.84	$2,214.68	$31,569.17	4.4	48,975

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about existing HVAC equipment and proposed upgrades.

ECM 8: Install High Efficiency Heat Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
48,635	21.6	0.0	$7,167.47	$33,783.84	$2,214.68	$31,569.17	4.4	48,975

Measure Description

We recommend replacing the standard efficiency heat pumps serving the gymnasium, and cafeteria and teacher's lounge, with high efficiency heat pumps. There have been significant improvements in both

compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system and a higher HPSF rating indicates more efficient heating mode. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average heating and cooling loads, and the estimated annual operating hours.

4.1.5 Plug Load Equipment Control - Vending Machines

ECM 9: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,612	0.0	0.0	$237.54	$230.00	$0.00	$230.00	1.0	1,623

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

4.2 ECMs Evaluated But Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 21 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades	**1,467**	**0.3**	**0.0**	**$216.27**	**$33,068.40**	**$0.00**	**$33,068.40**	**152.9**	**1,478**
Premium Efficiency Motors	1,467	0.3	0.0	$216.27	$33,068.40	$0.00	$33,068.40	152.9	1,478
Electric Unitary HVAC Measures	**4,369**	**5.0**	**0.0**	**$643.90**	**$34,913.10**	**$2,190.00**	**$32,723.10**	**50.8**	**4,400**
Install High Efficiency Electric AC	4,369	5.0	0.0	$643.90	$34,913.10	$2,190.00	$32,723.10	50.8	4,400
TOTALS	**5,837**	**5.3**	**0.0**	**$860.16**	**$67,981.50**	**$2,190.00**	**$65,791.50**	**76.5**	**5,877**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,467	0.3	0.0	$216.27	$33,068.40	$0.00	$33,068.40	152.9	1,478

Measure Description

We recommend replacing standard efficiency motors with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2012)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

Due to the long payback period, we do not currently recommend replacing motors with NEMA Premium Efficiency motors.

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,369	5.0	0.0	$643.90	$34,913.10	$2,190.00	$32,723.10	50.8	4,400

Measure Description

We recommend replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older

unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

Due to the long payback period, we do not currently recommend replacing existing split-system air conditioners with new high-efficiency units.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Check for and Seal Duct Leakage

Duct leakage in commercial buildings typically accounts for 5 to 25 percent of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building, significantly increasing cooling and heating costs. By sealing sources of leakage, cooling, heating, and ventilation energy use can be reduced significantly, depending on the severity of air leakage.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

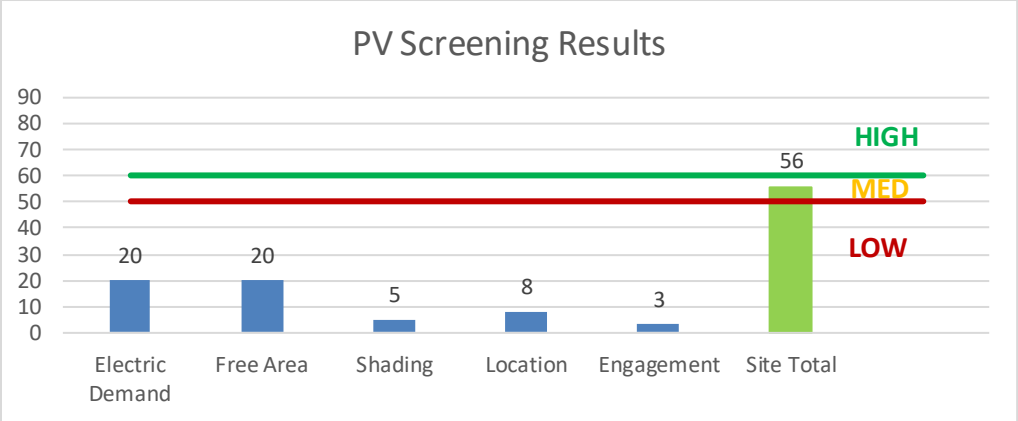
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a Medium potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **Medium** potential for PV at the site. A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If Cleary Elementary School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 22 - Photovoltaic Screening



Potential	Medium	
System Potential	197	kW DC STC
Electric Generation	148,232	kWh/yr
Displaced Cost	$12,900	/yr
Installed Cost	$768,300	

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.6 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

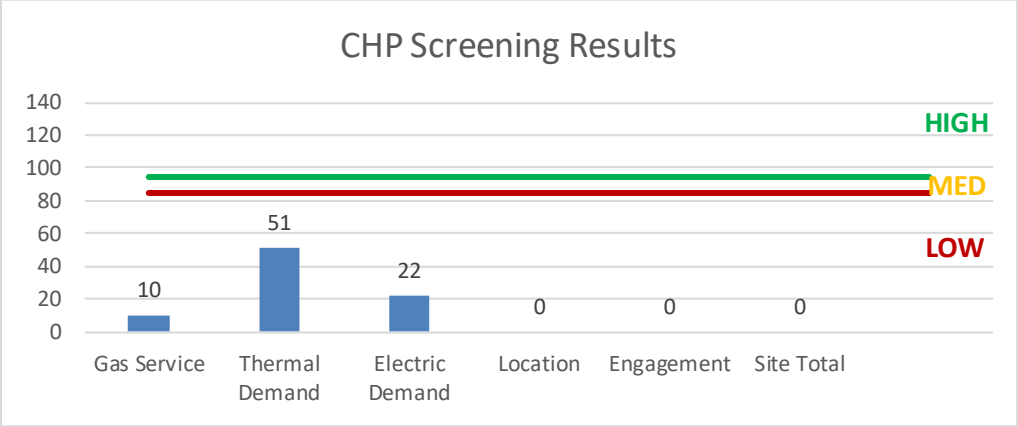
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **Low** potential for installing a cost-effective CHP system.

Lack of gas service, low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the **Low** potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 23 - Combined Heat and Power Screening



7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (www.pjm.com/training/trainingmaterial.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

Due to the lesser operating hours during the peak summer season for this building it is our opinion that this facility is not a good candidate for Demand Response (DR).

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	X			X		
ECM 2	Retrofit Fixtures with LED Lamps	X			X		
ECM 3	Install Occupancy Sensor Lighting Controls	X			X		
ECM 4	Install Daylight Dimming Controls	X			X		
ECM 5	Install High/Low Lighitng Controls				X		
ECM 6	Install VFDs on Constant Volume (CV) HVAC	X			X		
ECM 7	Install VFDs on Hot Water Pumps				X		
ECM 8	Install High Efficiency Heat Pumps	X			X		
ECM 9	Vending Machine Control	X			X		

SmartStart (SS) is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci

8.1 SmartStart

Overview

The SmartStart (SS) program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB

8.2 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in any of the preceding 12 months. Under this program the minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings. P4P is a generally a good option for medium to large sized facilities looking to implement as many measures as possible under a single project in order to achieve deep energy savings. This program has an added benefit of evaluating a broad spectrum of measures that may not otherwise qualify under other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also utilize the P4P program.

Incentives

Incentives are calculated based on estimated and achieved energy savings ranging from $0.18-$0.22/kWh and $1.80-$2.50/therm, capped at the lesser of 50% total project cost, or $1 million per electric account and $1 million per natural gas account, per fiscal year, not to exceed $2 million per project. An incentive of $0.10/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

To participate in the P4B EB program you will need to contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, the Partner will help further evaluate the measures identified in this report through development of the Energy Reduction Plan (ERP), assist you in implementing selected measures, and verify actual savings one year after the installation. At each of these three milestones your Partner will also facilitate securing program incentives.

Approval of the final scope of work is required by the program prior to installation completion. Although installation can be accomplished by a contractor of your choice (some P4P Partners are also contractors) or by internal personnel, the Partner must remain involved to ensure compliance with the program guidelines and requirements.

Detailed program descriptions, instructions for applying, applications and list of Partners can be found at: www.njcleanenergy.com/P4P

8.3 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.13	693	0.0	$102.13	$409.50	$70.00	3.32
Boiler Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
Kitchen	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,200	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	840	0.43	912	0.0	$134.35	$1,396.20	$250.00	8.53
Kitchen	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,200	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,200	0.04	77	0.0	$11.39	$95.13	$20.00	6.60
Kitchen Wash Area	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,200	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.04	91	0.0	$13.42	$117.00	$20.00	7.23
Kitchen Serving Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,200	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	840	0.16	345	0.0	$50.88	$570.80	$95.00	9.35
Kitchen Locker Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Kitchen RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Kitchen Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.08	432	0.0	$63.61	$420.40	$65.00	5.59
Walk-In Refrigerator	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
Walk-In Freezer	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
Cafeteria	25	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,000	Relamp	Yes	25	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	1.20	6,331	0.0	$932.99	$3,258.33	$640.00	2.81
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Faculty Break Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
IDF Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
104 Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.10	359	0.0	$52.85	$225.60	$45.00	3.42
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.06	239	0.0	$35.23	$175.50	$30.00	4.13
105 Janitopr Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Girls RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.06	239	0.0	$35.23	$175.50	$30.00	4.13
CR 109 (Art)	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.44	1,623	0.0	$239.17	$1,141.60	$240.00	3.77
CR 109 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.04	159	0.0	$23.49	$117.00	$20.00	4.13
Faculty Women's RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
111 CST Office	3	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	Yes	3	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Occupancy Sensor	59	2,100	0.08	443	0.0	$65.34	$534.31	$35.00	7.64

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
111 CST Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.08	432	0.0	$63.61	$445.50	$65.00	5.98
111A Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111B Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111C Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111D Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111E Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
111F File/Copy Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111G Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
111H Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Nurse's Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.13	478	0.0	$70.47	$300.80	$60.00	3.42
Nurse's Office RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Nurse's Office RR	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
Nurse's Office Storage Closet	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
Nurse's Office Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
112 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
CST Conf. Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.13	478	0.0	$70.47	$300.80	$60.00	3.42
113 Conf. Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.09	319	0.0	$46.98	$234.00	$40.00	4.13
113B Storage	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
113A Storage	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
116 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
Main Office (117)	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.23	837	0.0	$123.32	$526.40	$105.00	3.42
Main Office Security	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.04	135	0.0	$19.93	$95.13	$20.00	3.77
117B Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.04	159	0.0	$23.49	$117.00	$20.00	4.13
119 Principal's Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
119 Principal's Office	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Occupancy Sensor	84	2,100	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Occupancy Sensor	59	2,100	0.02	61	0.0	$8.97	$88.10	$0.00	9.82

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
120 Principal's Office Closet	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
117C Closet	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,000	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,000	0.02	87	0.0	$12.81	$88.10	$0.00	6.88
Media Center	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.74	3,884	0.0	$572.45	$2,659.50	$410.00	3.93
Media Center	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Janitor Room / Roof Access	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Men's RR 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Men's RR 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 207	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.26	956	0.0	$140.94	$601.60	$120.00	3.42
CR 207 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 209	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.26	956	0.0	$140.94	$601.60	$120.00	3.42
CR 211	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.19	717	0.0	$105.70	$526.50	$90.00	4.13
Computer Lab (210)	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.26	956	0.0	$140.94	$601.60	$120.00	3.42
Tech Ofice (210A)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.09	319	0.0	$46.98	$234.00	$40.00	4.13
Main Server Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.09	319	0.0	$46.98	$234.00	$40.00	4.13
CR 213	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
CR 212	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.15	541	0.0	$79.72	$380.53	$80.00	3.77
Storage 215	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,000	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,000	0.04	193	0.0	$28.47	$95.13	$20.00	2.64
CR 217	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
CR 214 (Music)	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
CR 214 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.04	159	0.0	$23.49	$117.00	$20.00	4.13
CR 222	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.15	541	0.0	$79.72	$380.53	$80.00	3.77
Boys RR	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Occupancy Sensor	84	2,100	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Occupancy Sensor	59	2,100	0.02	61	0.0	$8.97	$88.10	$0.00	9.82
Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
Janitor Closet 218	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Girls RR	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Occupancy Sensor	84	2,100	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Occupancy Sensor	59	2,100	0.02	61	0.0	$8.97	$88.10	$0.00	9.82

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Girls RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.06	239	0.0	$35.23	$150.40	$30.00	3.42
Storage 219	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,000	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.10	506	0.0	$74.64	$460.27	$75.00	5.16
Office 221	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,000	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,000	0.04	193	0.0	$28.47	$95.13	$20.00	2.64
Office 221A RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Gym	30	Linear Fluorescent - T8: 4' T8 (32W) - 6L	Wall Switch	176	3,000	Relamp	Yes	30	LED - Linear Tubes: (6) 4' Lamps	Occupancy Sensor	87	2,100	2.26	11,913	0.0	$1,755.64	$4,906.70	$1,040.00	2.20
Gym	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
225A Gym Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,000	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,000	0.04	193	0.0	$28.47	$95.13	$20.00	2.64
Storage 120	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.08	432	0.0	$63.61	$420.40	$65.00	5.59
Electrical 122	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 121	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
CR 121 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
Storage 123	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,000	0.03	171	0.0	$25.17	$75.20	$15.00	2.39
CR 124	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 126	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 127	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
CR 125	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.33	1,217	0.0	$179.38	$856.20	$180.00	3.77
Faculty Workroom 128	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.19	717	0.0	$105.70	$451.20	$90.00	3.42
Faculty Workroom 128	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.04	159	0.0	$23.49	$117.00	$20.00	4.13
128A IDF	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
CR 301	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.44	1,623	0.0	$239.17	$1,141.60	$240.00	3.77
CR 303	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 305	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 302	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
Boys RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.10	359	0.0	$52.85	$225.60	$45.00	3.42
Boys RR	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Occupancy Sensor	84	2,100	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Occupancy Sensor	59	2,100	0.02	61	0.0	$8.97	$88.10	$0.00	9.82

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Janitor Closet 306	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
Girls RR (308)	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.13	478	0.0	$70.47	$300.80	$60.00	3.42
CR 307	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
Storage 310	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,100	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,100	0.06	239	0.0	$35.23	$175.50	$30.00	4.13
CR 309	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 312	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.29	1,076	0.0	$158.56	$676.80	$135.00	3.42
CR 314	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.39	1,435	0.0	$211.41	$902.40	$180.00	3.42
CR 314	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.08	432	0.0	$63.61	$420.40	$65.00	5.59
CR 314	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 314 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 314 Storage Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 311	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.44	1,623	0.0	$239.17	$1,141.60	$240.00	3.77
CR 311	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.08	432	0.0	$63.61	$420.40	$65.00	5.59
CR 311	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 311 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 311 Storage Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 316	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	2,100	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,100	0.04	135	0.0	$19.93	$95.13	$20.00	3.77
CR 316	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.36	1,315	0.0	$193.79	$827.20	$165.00	3.42
CR 316	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,000	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.08	432	0.0	$63.61	$420.40	$65.00	5.59
CR 316	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 316 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 316 RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
313 M/W Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.02	114	0.0	$16.78	$58.50	$10.00	2.89
CR 315	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,100	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,100	0.19	717	0.0	$105.70	$451.20	$90.00	3.42
CR 315	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mech Room 317	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
Mech Room 317 (Back)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,000	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,000	0.04	228	0.0	$33.56	$117.00	$20.00	2.89
Hallway: Receiving Area	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,380	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,366	0.08	486	0.0	$71.66	$375.50	$30.00	4.82
Hallway: Receiving Area	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway: 100 Corrdior (Main)	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,380	Relamp	Yes	28	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,366	0.77	4,538	0.0	$668.85	$2,438.00	$280.00	3.23
Hallway: 100 Corrdior (Main)	2	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,380	Relamp	No	2	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,380	0.03	196	0.0	$28.87	$176.20	$0.00	6.10
Hallway: 100 Corrdior (Main)	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway: Main Entry Foyer	2	Compact Fluorescent: Screw-In: (18W) - 1L	Wall Switch	18	3,380	Relamp	No	2	LED Screw-In Lamps: Screw-In: (13W) - 1L	Wall Switch	13	3,380	0.01	42	0.0	$6.19	$107.51	$0.00	17.38
Hallway: Main Entry Foyer	1	LED Screw-In Lamps: Screw-In: (9W) - 1L	Wall Switch	9	3,380	None	No	1	LED Screw-In Lamps: Screw-In: (9W) - 1L	Wall Switch	9	3,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway: Main Entry Foyer	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway: Main Entry Foyer	1	Compact Fluorescent: Pin-Style: (42W) - 2L	Wall Switch	84	3,380	Relamp	No	1	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Wall Switch	59	3,380	0.02	98	0.0	$14.44	$88.10	$0.00	6.10
Hallway: Main Entry Foyer	8	Compact Fluorescent: Pin-Style: (56W) - 1L	Wall Switch	56	3,380	Relamp	Yes	8	LED Screw-In Lamps: Pin-Style: (39W) - 1L	High/Low Control	39	2,366	0.15	892	0.0	$131.52	$776.32	$0.00	5.90
Hallway: 300 Corridor	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway: 300 Corridor	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,380	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,366	0.60	3,566	0.0	$525.52	$2,087.00	$220.00	3.55
Hallway: 200 Corridor	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,380	Relamp	Yes	26	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,366	0.71	4,214	0.0	$621.07	$2,321.00	$260.00	3.32
Hallway: 200 Corridor	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exterior Door Lights	12	Compact Fluorescent: Pin-Style: (42W) - 2L	None	84	8,760	Relamp	Yes	12	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Daylight Dimming	59	4,380	0.43	6,600	0.0	$972.74	$4,057.22	$540.00	3.62
Exterior Door Lights	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	20	8,760	None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	20	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Building Lighting	20	Metal Halide: (1) 150W Lamp	Daylight Dimming	190	1,500	Fixture Replacement	No	20	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	57	1,500	1.74	4,589	0.0	$676.22	$7,813.54	$2,000.00	8.60
Parking Lot	18	Metal Halide: (1) 175W Lamp	Daylight Dimming	215	1,500	Fixture Replacement	No	18	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	65	1,500	1.78	4,673	0.0	$688.68	$7,032.19	$1,800.00	7.60
Sign	2	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Daylight Dimming	110	1,500	Relamp	No	2	LED - Linear Tubes: (2) 8' Lamps	Daylight Dimming	72	1,500	0.05	131	0.0	$19.32	$220.00	$0.00	11.39
Canopy Entry	4	Compact Fluorescent: Pin-Style: (42W) - 2L	None	84	8,760	Relamp	Yes	4	LED Screw-In Lamps: Pin-Style: (29W) - 2L	Daylight Dimming	59	4,380	0.14	2,200	0.0	$324.25	$602.41	$180.00	1.30

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Building HW/CHW Distribution	1	Water-Source Heat Pump Circulation Pump	10.0	91.7%	No	5,490	No	91.7%	Yes	1	1.23	19,428	0.0	$2,863.20	$3,807.95	$0.00	1.33
Boiler Room	Building HW/CHW Distribution	1	Water-Source Heat Pump Circulation Pump	10.0	91.7%	No	5,490	No	91.7%	Yes	1	1.23	19,428	0.0	$2,863.20	$3,807.95	$0.00	1.33
Boiler Room	Building HW/CHW Distribution	1	Heating Hot Water Pump	3.0	87.5%	No	3,391	Yes	89.5%	No		0.03	145	0.0	$21.42	$804.84	$0.00	37.57
Boiler Room	Building HW/CHW Distribution	1	Heating Hot Water Pump	3.0	87.5%	No	3,391	Yes	89.5%	No		0.03	145	0.0	$21.42	$804.84	$0.00	37.57
Roof	Classroom HPs	30	Supply Fan	1.0	85.5%	No	5,490	Yes	85.5%	No		0.00	0	0.0	$0.00	$22,401.90	$0.00	0.00
Roof	Media Center HP	1	Supply Fan	3.0	89.5%	No	3,391	No	89.5%	Yes	1	0.41	1,526	0.0	$224.94	$3,007.65	$240.00	12.30
Roof	Gym RTU	1	Supply Fan	10.0	89.5%	No	3,391	Yes	91.7%	Yes	1	1.42	5,423	0.0	$799.25	$5,375.00	$800.00	5.72
Roof	Gym RTU	1	Exhaust Fan	1.5	84.0%	No	3,391	Yes	86.5%	Yes	1	0.23	878	0.0	$129.36	$3,380.15	$120.00	25.20
Boiler Room	Boiler Room HP	1	Supply Fan	0.5	75.0%	No	3,391	Yes	78.2%	No		0.01	52	0.0	$7.63	$505.13	$0.00	66.22
Boiler Room	Art Room HP	1	Supply Fan	1.0	84.0%	No	3,391	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Restrooms, Janitor Closet, Storage Room HP	1	Supply Fan	0.5	75.0%	No	3,391	Yes	78.2%	No		0.01	52	0.0	$7.63	$505.13	$0.00	66.22
Boiler Room	Cafeteria, Teacher's Lounge HP	1	Supply Fan	3.0	89.5%	No	3,391	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Kitchen Area HP	1	Supply Fan	1.0	84.0%	No	3,391	Yes	85.5%	No		0.01	40	0.0	$5.84	$746.73	$0.00	127.87
Cooling Tower	Cooling Tower	2	Cooling Tower Fan	1.0	84.0%	No	3,391	Yes	85.5%	No		0.02	79	0.0	$11.68	$1,493.46	$0.00	127.87
Cooling Tower	Chilled Water Loop	1	Condenser Water Pump	5.0	87.5%	Yes	3,391	Yes	89.5%	No		0.05	242	0.0	$35.70	$921.06	$0.00	25.80
Roof	Whole Building	4	Exhaust Fan	0.3	70.0%	No	2,745	Yes	73.4%	No		0.04	134	0.0	$19.77	$1,823.84	$0.00	92.25
Roof	Kitchen	1	Makeup Air Fan	1.0	84.0%	No	2,745	Yes	85.5%	No		0.01	32	0.0	$4.73	$746.73	$0.00	157.96

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Boiler Room	1	Water Source HP	2.00	30.40	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Art Room	1	Water Source HP	5.00	73.20	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Restrooms, Janitor Closet, Storage Room	1	Water Source HP	3.00	39.90	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Cafeteria, Teacher's Lounge	1	Water Source HP	16.00	211.60	Yes	1	Water Source HP	16.00	211.60	14.00	4.50	No	17.61	14,024	0.0	$2,066.83	$19,769.88	$1,296.00	8.94
Boiler Room	Kitchen Area	1	Water Source HP	4.00	57.70	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Classrooms	30	Water Source HP	3.00	35.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Media Center	1	Water Source HP	10.00	149.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Gym	1	Water Source HP	15.00	170.60	Yes	1	Water Source HP	11.34	170.60	14.00	4.50	No	3.97	34,610	0.0	$5,100.64	$14,013.96	$918.68	2.57
Roof	Server Rooms	2	Ductless Mini-Split AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	CR 311, 312, 315, 316	4	Split-System AC	7.50		Yes	4	Split-System AC	7.50		11.50		No	4.96	4,369	0.0	$643.90	$34,913.10	$2,190.00	50.82
Roof	Server Room	1	Ductless Mini-Split AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Whole Building	1	Condensing Hot Water Boiler	2,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Whole Building	1	Condensing Hot Water Boiler	2,000.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Whole Building	3	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen Area	1	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen Area	1	Cooler (35F to 55F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	0	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	0	Gas Rack Oven (Double)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Electric Steamer	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Door Type (Low Temp)	Natural Gas	Electric	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Whole Building	97	Desktop Computer	150.0	Yes
Whole Building	19	Desk Printer	40.0	Yes
Whole Building	26	Projectors	150.0	Yes
Whole Building	26	Smartboard	50.0	Yes
Whole Building	5	Mini Fridge	153.0	Yes
Whole Building	7	Laptop	45.0	Yes
Whole Building	120	Chromebooks	35.0	Yes
Whole Building	2	Refrigerators	172.0	Yes
Whole Building	3	Photocopier	600.0	Yes
Whole Building	3	Microwave	1,000.0	No
Whole Building	3	Paper Shredder	150.0	Yes
Whole Building	3	Toaster Oven	1,200.0	No
Whole Building	2	Dehumidifier	180.0	No
Kitchen	1	Refrigerated serving table	560.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Teacher's Lounge	1	Refrigerated	Yes	0.00	1,612	0.0	$237.54	$230.00	$0.00	0.97

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

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ENERGY STAR® Score[1]

J.P. Cleary Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 56,700
Built: 1958

For Year Ending: April 30, 2017
Date Generated: June 11, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
J.P. Cleary Elementary School 1501 Central Avenue Minotola, New Jersey 08341	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358236

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
68.9 kBtu/ft²

Source EUI
166.3 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	1,360,882 (35%)
Electric - Grid (kBtu)	2,547,369 (65%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	65.1
National Median Source EUI (kBtu/ft²)	157
% Diff from National Median Source EUI	6%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	355

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer Stamp
(if applicable)

Local Government Energy Audit:
Energy Audit Report



Buena Regional Middle School

175 Weymouth Road

Buena, NJ 08310

Buena Regional School District

June 29, 2018

Draft Report by:

TRC Energy Services

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Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate saving are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Buena Regional Middle School.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey school districts in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Buena Regional Middle School is a 92,335 square foot facility comprised of various space types within a single building, which are connected by hallways. The school building is one floor and includes classrooms, offices, a cafeteria, a gym, a library, a media room, a commercial kitchen, an auditorium, and a mechanical space.

Lighting at Buena Regional Middle School primarily consists of less efficient linear fluorescent lighting and larger central HVAC equipment controlled by a building energy management system. Heating is supplied through hot water produced by natural gas boilers, and cooling is supplied through chilled water produced by an air-cooled chiller. Ventilation is provided by rooftop air-handling units, some of which are part of a variable air volume system with zone reheat. A more thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated and recommends 9 measures which together represent an opportunity for Buena Regional Middle School to reduce annual energy costs by roughly $60,953 and annual greenhouse gas emissions by 371,183 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 3.5 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Buena Regional Middle School's annual energy use by 12%.

Figure 1 – Previous 12 Month Utility Costs

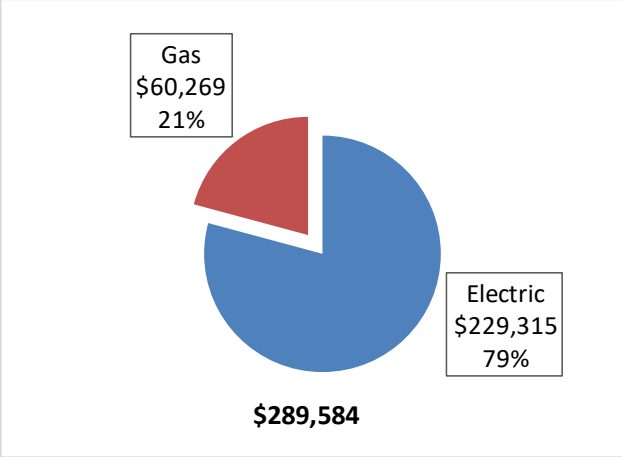
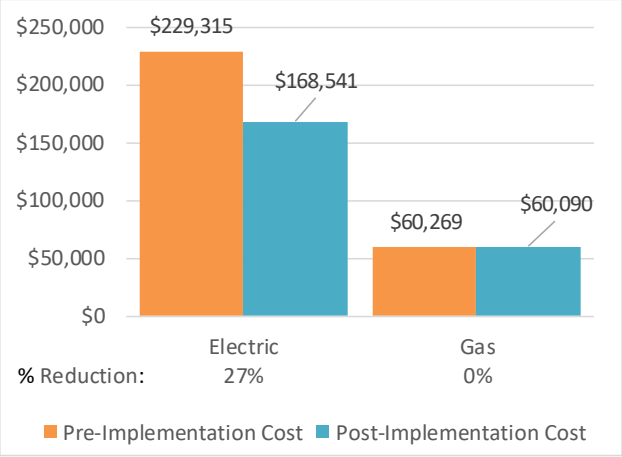


Figure 2 – Potential Post-Implementation Costs



A detailed description of Buena Regional Middle School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**246,303**	**44.0**	**0.0**	**$40,839.74**	**$181,028.52**	**$19,605.00**	**$161,423.52**	**4.0**	**248,025**
ECM 1	Install LED Fixtures	Yes	118,342	19.2	0.0	$19,622.39	$114,059.53	$7,450.00	$106,609.53	5.4	119,169
ECM 2	Retrofit Fixtures with LED Lamps	Yes	124,685	24.6	0.0	$20,674.11	$65,785.88	$12,155.00	$53,630.88	2.6	125,557
ECM 3	Install LED Exit Signs	Yes	3,276	0.2	0.0	$543.24	$1,183.11	$0.00	$1,183.11	2.2	3,299
Lighting Control Measures			**36,117**	**7.1**	**0.0**	**$5,988.66**	**$25,254.00**	**$3,265.00**	**$21,989.00**	**3.7**	**36,370**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	33,286	6.6	0.0	$5,519.19	$21,054.00	$3,265.00	$17,789.00	3.2	33,519
ECM 5	Install High/Low Lighitng Controls	Yes	2,831	0.6	0.0	$469.47	$4,200.00	$0.00	$4,200.00	8.9	2,851
Variable Frequency Drive (VFD) Measures			**78,704**	**25.7**	**0.0**	**$13,049.99**	**$33,481.65**	**$8,000.00**	**$25,481.65**	**2.0**	**79,254**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	78,704	25.7	0.0	$13,049.99	$33,481.65	$8,000.00	$25,481.65	2.0	79,254
Domestic Water Heating Upgrade			**0**	**0.0**	**17.9**	**$178.91**	**$1,529.18**	**$0.00**	**$1,529.18**	**8.5**	**2,092**
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	17.9	$178.91	$1,529.18	$0.00	$1,529.18	8.5	2,092
Food Service Equipment & Refrigeration Measures			**5,404**	**0.4**	**0.0**	**$896.01**	**$4,864.50**	**$150.00**	**$4,714.50**	**5.3**	**5,442**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	2,635	0.3	0.0	$436.97	$1,516.50	$0.00	$1,516.50	3.5	2,654
ECM 9	Refrigeration Controls	Yes	2,768	0.1	0.0	$459.04	$3,348.00	$150.00	$3,198.00	7.0	2,788
TOTALS FOR HIGH PRIORITY MEASURES			**366,528**	**77.4**	**17.9**	**$60,953.31**	**$246,157.85**	**$31,020.00**	**$215,137.85**	**3.5**	**371,183**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measures save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Food Service Equipment & Refrigeration measures generally involve improvements in the efficiency of cooking, food service, dishwashing, and food storage equipment. These measures may include more efficient convection ovens, steamers, ice machines, or refrigeration. These measures save energy by reducing the energy usage with more energy efficient equipment.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlet when not in use.

Energy Efficient Practices

TRC Energy Services also identified 7 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at Buena Regional Middle School include:

- Develop a Lighting Maintenance Schedule
- Perform Routine Motor Maintenance
- Ensure Economizers are Functioning Properly
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation for Buena Regional Middle School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array and a Microturbine CHP system.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	400	kW DC STC
Electric Generation	476,549	kWh/yr
Displaced Cost	$41,460	/yr
Installed Cost	$1,560,000	

Figure 5 – Combined Heat and Power Potential

Potential	High	
System Type	Microturbine	
System Potential	90	kW
Electric Generation	693,260	kWh/yr
Thermal Generation	4,078,000	MBtu/yr
Displaced Cost	$44,479	/yr
Installed Cost	$321,000	

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)
- Energy Savings Improvement Program (ESIP)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program, you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SS incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SS program. More details on this program and others are available in Section 8.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as,

attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.4 for additional information on the ESIP Program.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 6 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck Jr.	Interim Building & Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
TRC Energy Services			
Vish Nimbalkar	Auditor	VNaikNimbalkar@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 10, 2018, TRC Energy Services performed an energy audit at Buena Regional Middle School located in Buena, NJ. TRC Energy Services' team met with Kevin Warren to review the facility operations and help focus our investigation on specific energy-using systems.

Buena Regional Middle School is a 92,335 square foot facility comprised of various space types within a single building, which are connected by hallways. The school building is one floor and includes classrooms, offices, a cafeteria, a gym, a library, a media room, a commercial kitchen, an auditorium, and a mechanical space.

Lighting at Buena Regional Middle School primarily consists of less efficient linear fluorescent lighting and large central HVAC equipment controlled by a building energy management system. Heating is supplied through hot water produced by natural gas boilers, and cooling is supplied through chilled water produced by an air-cooled chiller. Ventilation is provided by rooftop air-handling units, some of which are part of a variable air volume system with zone reheat.

The building was constructed in 2009 and the lighting and mechanical equipment is original.

2.3 Building Occupancy

The school building is open Monday through Friday for classes, after school programs, and occasionally used for athletic or performing arts events. The typical schedule is presented in the table below. The entire facility is used to some extent year round by the community, students, or staff. During a typical day, the facility is occupied by approximately 40 to 45 staff and 425 to 450 students.

Figure 7 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Buena Regional Middle School	Weekday	5:30 AM - 9:00 PM
Buena Regional Middle School	Weekend	Closed

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a stone facade. The building has pitched roof sections covered with asphalt shingles in good condition. There are two areas of recessed white flat roof, where the air handlers are located. The buildings have double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.



Figure 8 - Building Exterior

2.5 Energy-Using Systems

Lighting System

Lighting at the facility is provided mostly by linear 32 Watt fluorescent T8 lamps with electronic ballasts as well as some 4-pin compact fluorescent lamps (CFL). Most of the T8 fixtures are 2-lamp or 3-lamp, 4-foot long troffers with diffusers. The gym has high-bay metal halide lighting, and there are a few inefficient incandescent lighting fixtures in the auditorium.

Lighting control in throughout the school is provided by manual wall switches.

The building's exterior lighting consists primarily of metal halide and compact fluorescent wall-mounted fixtures.



Figure 9 – Lighting System Lamps

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's lighting equipment.

Chilled Water System

The facility is served by a single 350 ton Trane air-cooled rotary screw chiller located in a mechanical yard adjacent to the building. Chilled water is provided at a rated flow of 720 gpm through a primary-secondary pumping system. A 10 hp constant flow primary circuit pump (P-1) operates whenever the chiller is enabled, and a 20 hp variable flow secondary circuit pump (P-2) modulates to meet cooling needs. The chiller is set to be enabled when the outside air temperature is above 50°F, and is set to deliver chilled water to the cooling coils on the six air handlers on the roof at a chilled water supply temperature of 42°F.



Figure 10 – Chilled Water System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's chilled water equipment.

Hot Water Heating System

The hot water system consists of three P-K Thermific 1,700 kBtu/hr output non-condensing boilers (BR1, 2, 3). The boilers have a nominal combustion efficiency of 85%. Hot water is distributed through a primary-secondary pumping configuration. Each boiler has a 2 hp constant flow primary circuit pump (P5, 6, & 7) which operate whenever the associated boiler is called to run. There are two 20 hp variable flow secondary circuit pumps (P3, 4) which operate in a lead/lag fashion to meet the building's heating needs. Hot water is supplied at 140°F, and hot water valves at the air handlers are enabled when the outside air temperature is below 100°F which causes the system to run a majority of the year. The boilers provide hot water to the air handlers and to VAV box reheat coils.

The boilers operate in a lead/lag/standby configuration. Only two boilers are required during cold weather. The boilers are in good condition and well maintained.



Figure 11 – Hot Water Heating System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's heating equipment.

Air Conditioning and Distribution System

There are six roof mounted air handling units (AHU1, 2, 3, 4, 5, 6) that serve the cooling and heating needs of the entire school. The HVAC system is set on an occupied schedule to operate from 5:30 AM to 9:00 PM 5 days per week, and an unoccupied schedule at all other times. Each AHU draws air from its own return air shaft and supplies air to its own air shaft. All AHUs have supply and return fans. Supply fans range from 20 to 60 hp, and return fans range from 10 to 30 hp. AHUs 2, 3, and 5 have VFDs on both supply and return fans, and serve VAV boxes equipped with hot water reheat coils and zone dampers. The other three air handlers are constant volume with hot water reheat. The constant volume supply fans maintain a constant duct static pressure of 1 inch W.G. and the variable volume supply fans maintain between 3 and 3.5 inch W.G of static duct pressure.

The cooling supply air setpoint is 55°F and the heating setpoint is 90°F. AHUs 2, 3, 5 utilize supply air temperature resets to adjust supply air temperature according to outside air conditions. The AHUs serving the gym and auditorium utilize demand control ventilation, monitoring CO2 levels to modulate ventilation according to occupancy. All six air handlers are equipped with economizers.

VAV boxes modulate dampers and hot water reheat valves to meet temperature setpoints, which vary based on occupancy schedules set by the BEMS, including evening setbacks.



Figure 12 – Chilled Water Air Conditioning System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning system equipment.

Building Energy Management System (BEMS)

The facility's HVAC equipment is controlled with a CM3 Building Solutions building energy management system (BEMS). The BEMS aggregates the DDC points from throughout the building. The system is capable of providing occupied and unoccupied schedules for different equipment, alarm and status information, and trends for individual DDC points. The CM3 system does not provide control for the lighting systems.

The BEMS maintains the facility at an occupied space temperature setpoint of 70°F, and an unoccupied temperature between 60°F and 85°F. If during any unoccupied periods the spaces fall below 60°F, the system provides heating until the space maintains a temperature of 65°F for 15 minutes. Similarly, should the temperature go above 85°F, the system provides cooling until the space maintains a temperature of 80°F for 15 minutes.

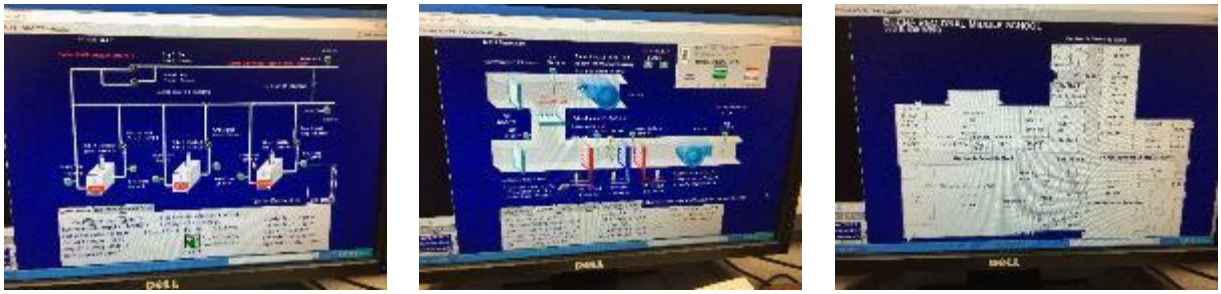


Figure 13 – Building Energy Management System Dashboards

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one AO Smith Genesis gas fired non-condensing hot water heater and associated 750 gallon storage tank with an input rating of 650 kBtu/hr and a nominal efficiency of 83.7%. A recirculation pump distributes water to the entire site. The recirculation pumps operate continuously.



Figure 14 – Domestic Hot Water System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's domestic hot water equipment.

Food Service Equipment

The facility has a commercial kitchen that is used to prepare meals for the students. The convection ovens and combination oven/steam cooker are gas fired. There are also insulated warming ovens to hold prepared food and warming trays to serve food. The school has a single tank low-temperature dish washer.



Figure 15 – Food Service Equipment

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service equipment.

Refrigeration

The kitchen has a walk-in refrigerator and a walk-in freezer that are used to store food prepared for school meals. Both walk-ins have single 3 hp compressor units. The kitchen also has a two large free standing pass-through commercial refrigerators, and a milk cooler. There are also two refrigerated beverage cases in the cafeteria and 4 medium or large standard refrigerators throughout the facility.





Figure 16 – Refrigeration Equipment

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's refrigeration equipment.

Building Plug Load

There are roughly 262 computer work stations throughout the facility. All of the computers are desktop units with LCD monitors. There is no centralized PC power management software installed.

There are roughly 20 printers or printer/copiers and 36 overhead projectors scattered throughout the facility. In addition there are also other appliances such as coffee makers, microwaves, and televisions.

The facility also has a non- refrigerated vending machine equipped with occupancy based controls.






Figure 17 – Plug Load Equipment

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's plug load equipment.

2.6 Water-Using Systems

There are about 20 restrooms at this facility. Faucets are assumed to be rated for 1.5 gpm or higher. The school also has a girls and boys locker room. The locker rooms each have 8 showerheads which are assumed to have flow rates of 2.5 gpm or greater per showerhead.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

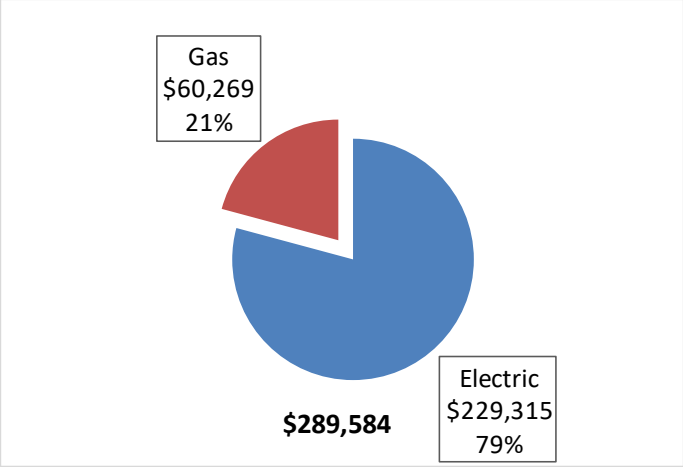
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 18 - Utility Summary

Utility Summary for Buena Regional Middle School		
Fuel	**Usage**	**Cost**
Electricity	1,382,989 kWh	$229,315
Natural Gas	60,191 Therms	$60,269
Total		**$289,584**

The current annual energy cost for this facility is $289,584 as shown in the chart below.

Figure 19 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.166/kWh, which is the blended rate that includes energy supply, distribution, and other charges. Peak electric demand is relatively consistent month to month, but consumption is noticeably lower in winter months than summer months. This is due to reduced use of cooling equipment during that period. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 20 - Graph of 12 Months Electric Usage & Demand

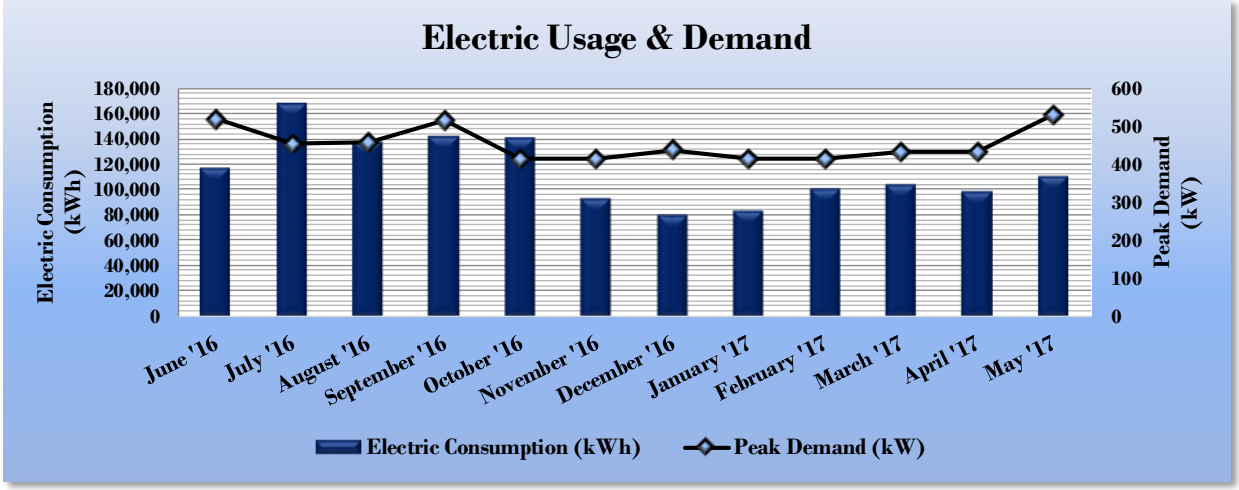


Figure 21 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Buena Regional Middle School						
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost	TRC Estimated Usage?
6/23/16	30	117,200	518	$3,968	$18,287	No
7/25/16	32	168,600	453	$3,700	$24,208	No
8/24/16	30	138,000	458	$3,526	$20,269	No
9/23/16	30	142,600	516	$4,556	$21,849	No
10/24/16	31	141,200	414	$3,781	$20,620	No
11/21/16	28	93,800	414	$3,415	$14,737	No
12/21/16	30	80,000	438	$3,868	$21,075	Yes
1/24/17	34	83,800	414	$4,144	$22,076	Yes
2/22/17	29	100,600	414	$3,533	$15,626	No
3/23/17	29	103,800	432	$3,683	$16,140	No
4/24/17	32	98,800	432	$4,064	$16,029	No
5/23/17	29	110,800	530	$4,519	$17,771	No
Totals	**364**	**1,379,200**	**530**	**$46,757**	**$228,687**	2
Annual	**365**	**1,382,989**	**530**	**$46,885**	**$229,315**	

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $1.001/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below. Consumption noticeably dips in the summer months of August and September as there is less heating occurring during those months; however, because the boilers are used for reheat due to dehumidification, some fuel is still consumed during those months.

Figure 22 - Graph of 12 Months Natural Gas Usage

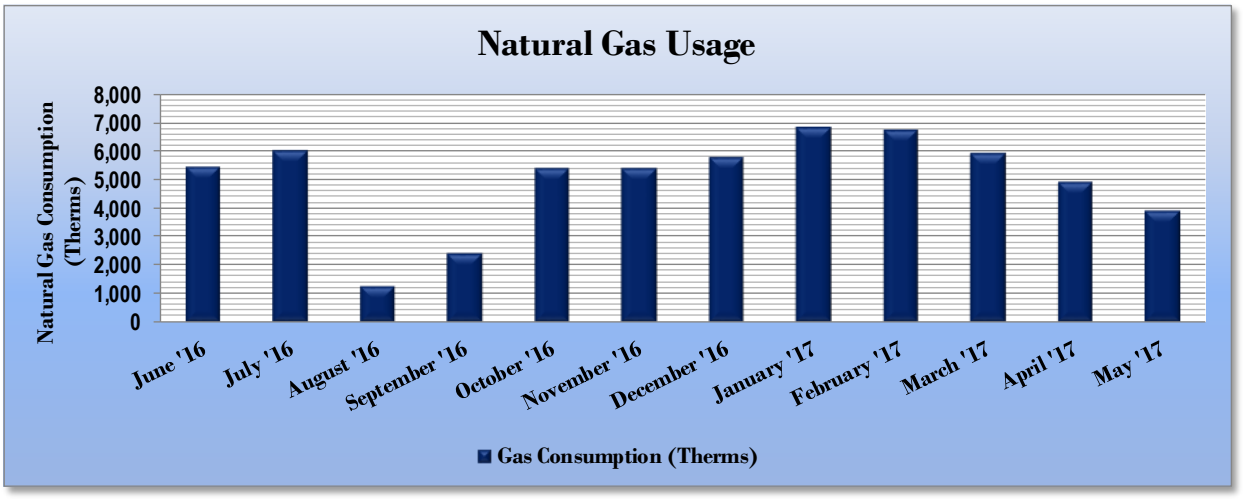


Figure 23 - Table of 12 Months Natural Gas Usage

Gas Billing Data for Buena Regional Middle School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/23/16	31	5,444	$5,063
7/25/16	32	6,050	$5,643
8/25/16	31	1,266	$1,181
9/23/16	29	2,412	$2,252
10/24/16	31	5,387	$5,421
11/21/16	28	5,418	$5,570
12/21/16	30	5,802	$6,490
1/24/17	34	6,863	$6,677
2/22/17	29	6,750	$6,561
3/23/17	29	5,919	$6,394
4/24/17	32	4,950	$5,068
5/23/17	29	3,930	$3,949
Totals	**365**	**60,191**	**$60,269**
Annual	**365**	**60,191**	**$60,269**

3.4 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. Environmental Protection Agency (EPA) through the ENERGY STAR™ program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR Score for select building types.

Energy Use Intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy". Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 24 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Buena Regional Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	228.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	116.3	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the Table below:

Figure 25 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Buena Regional Middle School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	186.2	141.4
Site Energy Use Intensity (kBtu/ft^2)	102.6	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of **11**.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see **Appendix B: EPA Statement of Energy Performance**.

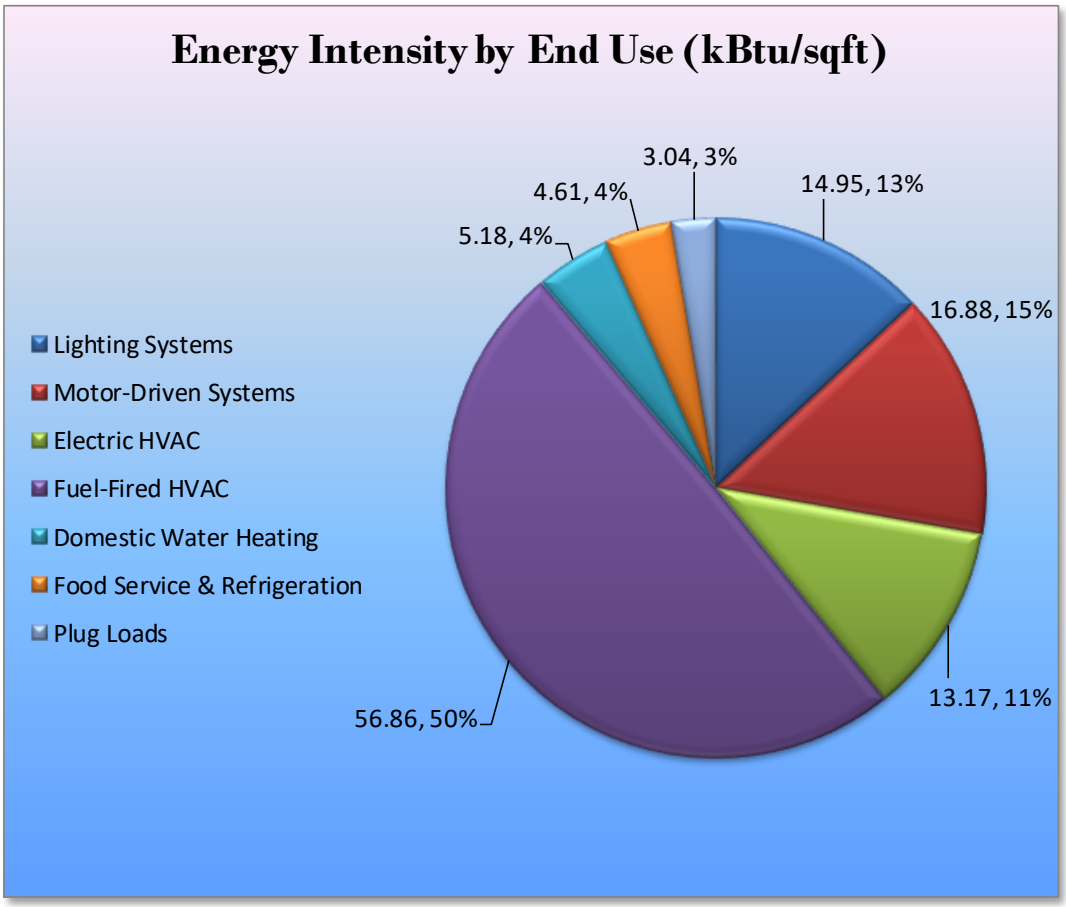
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training is available to help you use Energy Star Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 26 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Buena Regional Middle School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 27 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**246,303**	**44.0**	**0.0**	**$40,839.74**	**$181,028.52**	**$19,605.00**	**$161,423.52**	**4.0**	**248,025**
ECM 1	Install LED Fixtures	118,342	19.2	0.0	$19,622.39	$114,059.53	$7,450.00	$106,609.53	5.4	119,169
ECM 2	Retrofit Fixtures with LED Lamps	124,685	24.6	0.0	$20,674.11	$65,785.88	$12,155.00	$53,630.88	2.6	125,557
ECM 3	Install LED Exit Signs	3,276	0.2	0.0	$543.24	$1,183.11	$0.00	$1,183.11	2.2	3,299
Lighting Control Measures		**36,117**	**7.1**	**0.0**	**$5,988.66**	**$25,254.00**	**$3,265.00**	**$21,989.00**	**3.7**	**36,370**
ECM 4	Install Occupancy Sensor Lighting Controls	33,286	6.6	0.0	$5,519.19	$21,054.00	$3,265.00	$17,789.00	3.2	33,519
ECM 5	Install High/Low Lighitng Controls	2,831	0.6	0.0	$469.47	$4,200.00	$0.00	$4,200.00	8.9	2,851
Variable Frequency Drive (VFD) Measures		**78,704**	**25.7**	**0.0**	**$13,049.99**	**$33,481.65**	**$8,000.00**	**$25,481.65**	**2.0**	**79,254**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	78,704	25.7	0.0	$13,049.99	$33,481.65	$8,000.00	$25,481.65	2.0	79,254
Domestic Water Heating Upgrade		**0**	**0.0**	**17.9**	**$178.91**	**$1,529.18**	**$0.00**	**$1,529.18**	**8.5**	**2,092**
ECM 7	Install Low-Flow Domestic Hot Water Devices	0	0.0	17.9	$178.91	$1,529.18	$0.00	$1,529.18	8.5	2,092
Food Service Equipment & Refrigeration Measures		**5,404**	**0.4**	**0.0**	**$896.01**	**$4,864.50**	**$150.00**	**$4,714.50**	**5.3**	**5,442**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	2,635	0.3	0.0	$436.97	$1,516.50	$0.00	$1,516.50	3.5	2,654
ECM 9	Refrigeration Controls	2,768	0.1	0.0	$459.04	$3,348.00	$150.00	$3,198.00	7.0	2,788
TOTALS		**366,528**	**77.4**	**17.9**	**$60,953.31**	**$246,157.85**	**$31,020.00**	**$215,137.85**	**3.5**	**371,183**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 28 below.

Figure 28 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**246,303**	**44.0**	**0.0**	**$40,839.74**	**$181,028.52**	**$19,605.00**	**$161,423.52**	**4.0**	**248,025**
ECM 1	Install LED Fixtures	118,342	19.2	0.0	$19,622.39	$114,059.53	$7,450.00	$106,609.53	5.4	119,169
ECM 2	Retrofit Fixtures with LED Lamps	124,685	24.6	0.0	$20,674.11	$65,785.88	$12,155.00	$53,630.88	2.6	125,557
ECM 3	Install LED Exit Signs	3,276	0.2	0.0	$543.24	$1,183.11	$0.00	$1,183.11	2.2	3,299

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	56,759	11.2	0.0	$9,411.28	$73,388.72	$3,900.00	$69,488.72	7.4	57,156
Exterior	61,583	8.0	0.0	$10,211.11	$40,670.81	$3,550.00	$37,120.81	3.6	62,013

Measure Description

We recommend replacing exterior pole mounted and wall mounted fixtures containing metal halide lamps with new high performance LED light fixtures. Interior areas recommended for fixture replacement include the gym, wrestling, and auditorium seating areas, where metal halide fixtures are also present. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of metal halide sources.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	122,937	24.3	0.0	$20,384.34	$64,959.06	$12,155.00	$52,804.06	2.6	123,797
Exterior	1,748	0.2	0.0	$289.77	$826.83	$0.00	$826.83	2.9	1,760

Measure Description

We recommend retrofitting existing incandescent, and fluorescent lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 3: Install LED EXIT Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	3,276	0.2	0.0	$543.24	$1,183.11	$0.00	$1,183.11	2.2	3,299
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing all incandescent or compact fluorescent EXIT signs with LED EXIT signs. LED EXIT signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.1.2 Lighting Control Measures

Figure 29 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**36,117**	**7.1**	**0.0**	**$5,988.66**	**$25,254.00**	**$3,265.00**	**$21,989.00**	**3.7**	**36,370**
ECM 4	Install Occupancy Sensor Lighting Controls	33,286	6.6	0.0	$5,519.19	$21,054.00	$3,265.00	$17,789.00	3.2	33,519
ECM 5	Install High/Low Lighitng Controls	2,831	0.6	0.0	$469.47	$4,200.00	$0.00	$4,200.00	8.9	2,851

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
33,286	6.6	0.0	$5,519.19	$21,054.00	$3,265.00	$17,789.00	3.2	33,519

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in classrooms, offices, library, gym, and auditorium. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 5: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,831	0.6	0.0	$469.47	$4,200.00	$0.00	$4,200.00	8.9	2,851

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons, such as hallways. Typical areas for such lighting control are stairwells, interior corridors, parking lots, and parking garages.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is

detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 30 below.

Figure 30 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**78,704**	**25.7**	**0.0**	**$13,049.99**	**$33,481.65**	**$8,000.00**	**$25,481.65**	**2.0**	**79,254**
ECM 6	Install VFDs on Constant Volume (CV) HVAC	78,704	25.7	0.0	$13,049.99	$33,481.65	$8,000.00	$25,481.65	2.0	79,254

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about current motors systems and VFD recommendations.

ECM 6: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
78,704	25.7	0.0	$13,049.99	$33,481.65	$8,000.00	$25,481.65	2.0	79,254

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply fan motor speeds in order to convert constant-volume, single-zone air handling systems into a variable-air-volume (VAV) systems.

Our recommendation pertains to supply and return fans associated with AHU 1, 4, and 6.

A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

VAV systems should not be controlled such that the supply air temperature is raised at the expense of the fan power. A common mistake is to reset the supply air temperature to achieve chiller energy savings, which can lead to additional air flow requirements. Supply air temperature should be kept low, e.g. 55°F, until the minimum fan speed (typically about 50%) is met. At this point, it is efficient to raise the supply

air temperature as the load decreases, but not such that additional air flow and thus fan energy is required.

4.1.4 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 31 below.

Figure 31 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**17.9**	**$178.91**	**$1,529.18**	**$0.00**	**$1,529.18**	**8.5**	**2,092**
ECM 7	Install Low-Flow Domestic Hot Water Devices	0	0.0	17.9	$178.91	$1,529.18	$0.00	$1,529.18	8.5	2,092

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on the facility's existing domestic hot water equipment and recommended system upgrades.

ECM 7: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	17.9	$178.91	$1,529.18	$0.00	$1,529.18	8.5	2,092

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators and low-flow showerheads can reduce hot water usage, relative to standard showerheads and aerators, which saves energy.

Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.1.5 Food Service Equipment & Refrigeration Measures

Food service and refrigeration measures recommendations are summarized in Figure 32 below.

Figure 32 - Summary of Food Service Equipment & Refrigeration ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Food Service Equipment & Refrigeration Measures		**5,404**	**0.4**	**0.0**	**$896.01**	**$4,864.50**	**$150.00**	**$4,714.50**	**5.3**	**5,442**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	2,635	0.3	0.0	$436.97	$1,516.50	$0.00	$1,516.50	3.5	2,654
ECM 9	Refrigeration Controls	2,768	0.1	0.0	$459.04	$3,348.00	$150.00	$3,198.00	7.0	2,788

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing food service and refrigeration and our recommended measures for this category.

ECM 8: Refrigerator/Freezer Case Electrically Commutated Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,635	0.3	0.0	$436.97	$1,516.50	$0.00	$1,516.50	3.5	2,654

Measure Description

We recommend replacing shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in the existing walk-in cooler and freezer. These fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By employing variable-speed technology, EC motors are able to optimize fan usage. Because these motors are brushless and utilize DC power, losses due to friction and phase shifting are eliminated. Savings for this measure take into account both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

ECM 9: Walk-In Cooler and Freezer Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,768	0.1	0.0	$459.04	$3,348.00	$150.00	$3,198.00	7.0	2,788

Measure Description

We recommend the installation of additional controls to optimize the operation of walk-in cooler and freezer located in the kitchen.

Many walk-in coolers and freezers have evaporator fans which run continuously. The measure adds a control system feature to automatically shut off evaporator fans when the cooler's thermostat is not calling for cooling.

Energy savings for each of the control measures account for reduction in compressor and fan operating hours as well as reduction in the refrigeration heat load as appropriate.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Ensure Economizers are Functioning Properly

Economizers, when properly configured, can be used to significantly reduce mechanical cooling. However, if the outdoor thermostat or enthalpy control is malfunctioning or the damper is stuck or improperly adjusted, benefits from the economizer may not be fully realized. As such, periodic inspection and maintenance is required to ensure proper operation. This maintenance should be scheduled with maintenance of the facility's air conditioning system and should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position. A malfunctioning economizer can significantly increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo

yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

Refer to Section 4.1.4 for any low-flow ECM recommendations.

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

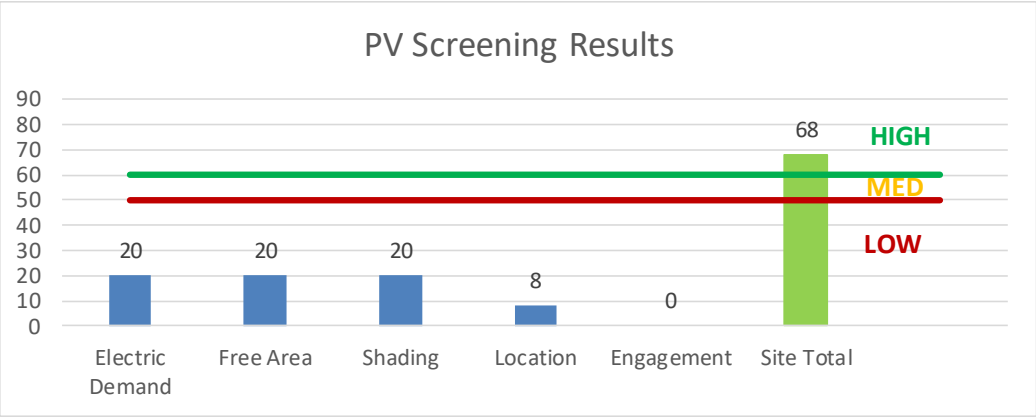
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **High** potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential for PV at the site. A PV array located on the roof of the main building and over the main parking lot may be feasible. If Buena Regional Middle School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 33 - Photovoltaic Screening



Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.3 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

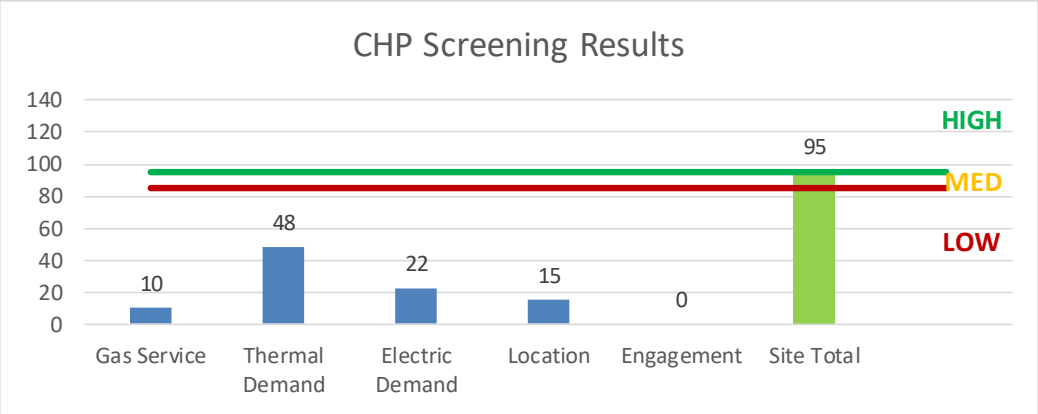
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **High** potential for installing a cost-effective CHP system.

The magnitude, type, and duration of the thermal demand, the coincident electric load, and the ease of interconnection contribute to the potential for CHP at the site. Based on the amount of hot water used throughout the year and the concurrent electric demand a microturbine may be feasible. If Buena Regional Middle School is interested in pursuing the installation of CHP, we recommended a more detailed feasibility study be conducted.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 34 - Combined Heat and Power Screening



Please see Section 8.2 for additional information in the Combined Heat & Power and Fuel Cell Program.

7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (www.pjm.com/training/trainingmaterial.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion, DR is not a viable option for this facility.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 35 for a list of the eligible programs identified for each recommended ECM.

Figure 35 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x					
ECM 2	Retrofit Fixtures with LED Lamps	x					
ECM 3	Install LED Exit Signs						
ECM 4	Install Occupancy Sensor Lighting Controls	x					
ECM 5	Install High/Low Lighitng Controls						
ECM 6	Install VFDs on Constant Volume (CV) HVAC	x					
ECM 7	Install Low-Flow Domestic Hot Water Devices						
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors						
ECM 9	Refrigeration Controls	x					

SmartStart (SS) is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci

8.1 SmartStart

Overview

The SmartStart (SS) program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB

8.2 Combined Heat and Power and Fuel Cell

Overview

The Combined Heat & Power and Fuel Cell (CHP-FC) program can be a significant source of funding if this facility was identified as a good candidate for this type of on-site generation. Please note that the program experienced higher than anticipated participation levels since the beginning of the Fiscal Year 2016 (FY16). On December 11, 2015 the Board issued a notice that the NJCEP will temporarily cease accepting applications for the CHP-FC program. The program is expected to re-open in the coming months.

Incentives

Please check the NJCEP website for details on program availability, incentive levels, and requirements.

How to Participate

Once the program reopens, you will need to work with a qualified developer or consulting firm to complete the CHP-FC Application and have it approved prior to installing any equipment. Once the application is approved the project can be installed.

Information about the CHP-FC program can be found at: www.njcleanenergy.com/CHP

8.3 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure

of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.17	855	0.0	$141.83	$526.50	$90.00	3.08
Boiler Room	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stock Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.22	1,105	0.0	$183.20	$584.00	$100.00	2.64
Room 415	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.05	276	0.0	$45.80	$233.00	$40.00	4.21
Electrical Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.06	328	0.0	$54.37	$175.50	$30.00	2.68
Electrical Room	1	Exit Signs: Incandescent	None	40	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	343	0.0	$56.79	$107.56	$0.00	1.89
cafeteria Hallway	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	25	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,016	0.68	3,453	0.0	$572.51	$2,462.50	$250.00	3.86
cafeteria Hallway	4	Exit Signs: Incandescent	None	40	8,760	Fixture Replacement	No	4	LED Exit Signs: 2 W Lamp	None	6	8,760	0.09	1,370	0.0	$227.17	$430.22	$0.00	1.89
cafeteria	30	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	30	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	1.44	7,293	0.0	$1,209.26	$3,934.00	$740.00	2.64
cafeteria	3	Exit Signs: Incandescent	None	40	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.07	1,028	0.0	$170.38	$322.67	$0.00	1.89
Kitchen	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.21	1,036	0.0	$171.75	$492.00	$95.00	2.31
Kitchen	2	Exit Signs: Incandescent	None	40	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.04	685	0.0	$113.59	$215.11	$0.00	1.89
Kitchen	10	Incandescent: Heating Lamps	Wall Switch	60	2,880	None	No	10	Incandescent: Heating Lamps	Wall Switch	60	2,880	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.41	2,072	0.0	$343.50	$868.00	$170.00	2.03
Kitchen	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,880	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,016	0.03	140	0.0	$23.17	$212.40	$40.00	7.44
Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.05	243	0.0	$40.31	$95.13	$55.00	1.00
Kitchen	1	Exit Signs: Incandescent	None	40	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	343	0.0	$56.79	$107.56	$0.00	1.89
Dish Wash	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,880	0.06	328	0.0	$54.37	$150.40	$30.00	2.21
Janitor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Room 420D	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,880	0.03	164	0.0	$27.18	$75.20	$15.00	2.21
Dry Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,880	0.07	371	0.0	$61.51	$190.27	$40.00	2.44
Kevin's Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.05	276	0.0	$45.80	$233.00	$40.00	4.21
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Teacher's Lounge	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.25	1,243	0.0	$206.10	$567.20	$110.00	2.22
Teacher's Lounge RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room 302	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.74	3,729	0.0	$618.31	$1,585.60	$310.00	2.06
Room 302	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 301	19	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	19	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.78	3,936	0.0	$652.66	$1,660.80	$325.00	2.05
Class Room 301	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 304	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.33	1,657	0.0	$274.80	$717.60	$140.00	2.10
Hallway	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,016	0.57	2,900	0.0	$480.90	$2,028.50	$210.00	3.78
Class Room 306	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.33	1,657	0.0	$274.80	$717.60	$140.00	2.10
Class Room 308	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.37	1,864	0.0	$309.15	$792.80	$155.00	2.06
Class Room 303	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.25	1,243	0.0	$206.10	$567.20	$110.00	2.22
Class Room 305	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.25	1,243	0.0	$206.10	$567.20	$110.00	2.22
Class Room 307	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.25	1,243	0.0	$206.10	$567.20	$110.00	2.22
Courtyard Wallpack	4	Metal Halide: (1) 150W Lamp	Wall Switch	190	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	50	4,380	0.37	2,821	0.0	$467.71	$1,344.00	$400.00	2.02
Courtyard	2	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	4,380	Relamp	No	2	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Wall Switch	38	4,380	0.02	141	0.0	$23.39	$53.50	$0.00	2.29
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Class Room 315	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.05	276	0.0	$45.80	$233.00	$40.00	4.21
Class Room 317	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.45	2,279	0.0	$377.85	$1,097.20	$200.00	2.37
Class Room 310	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 312	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 320	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 322	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 324	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 329	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 327	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,172.40	$215.00	2.32
Class Room 327	1	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	1	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.02	84	0.0	$13.95	$26.75	$35.00	-0.59

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
RR	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.11	552	0.0	$91.60	$504.00	$75.00	4.68
RR	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.11	552	0.0	$91.60	$504.00	$75.00	4.68
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Class Room 317	1	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	1	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.02	84	0.0	$13.95	$26.75	$35.00	-0.59
Guidance 214	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.29	1,459	0.0	$241.85	$840.80	$155.00	2.84
Guidance 214	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.03	138	0.0	$22.90	$58.50	$45.00	0.59
Hallway	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,016	0.57	2,900	0.0	$480.90	$2,028.50	$210.00	3.78
Hallway	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	7	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 212	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 207	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 210	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.66	3,315	0.0	$549.61	$1,319.20	$260.00	1.93
Class Room 210	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 210	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
Class Room 206	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
Class Room 203	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 201	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 202	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.29	1,459	0.0	$241.85	$918.80	$180.00	3.05
Class Room 202	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.04	207	0.0	$34.35	$191.20	$35.00	4.55
RR	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.14	691	0.0	$114.50	$408.50	$70.00	2.96
RR	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.14	691	0.0	$114.50	$408.50	$70.00	2.96
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Server 124	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Class Room 128	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 125	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Class Room 123	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 121	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Hallway	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,016	0.74	3,729	0.0	$618.31	$2,153.60	$270.00	3.05
Hallway	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 116	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.45	2,279	0.0	$377.85	$1,097.20	$200.00	2.37
Class Room 116	2	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	2	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.03	168	0.0	$27.90	$53.50	$35.00	0.66
Class Room 119	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 117	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
Class Room 114	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.05	276	0.0	$45.80	$233.00	$40.00	4.21
Class Room 115	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.49	2,486	0.0	$412.20	$1,018.40	$200.00	1.99
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Class Room 108	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.25	1,243	0.0	$206.10	$567.20	$110.00	2.22
Class Room 106	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.37	1,864	0.0	$309.15	$792.80	$155.00	2.06
Class Room 111	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.33	1,657	0.0	$274.80	$717.60	$140.00	2.10
Class Room 109	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.33	1,657	0.0	$274.80	$717.60	$140.00	2.10
Class Room 107	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.66	3,315	0.0	$549.61	$1,473.20	$275.00	2.18
Class Room 107	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 107	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.03	138	0.0	$22.90	$58.50	$45.00	0.59
Class Room 107B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.04	219	0.0	$36.24	$117.00	$20.00	2.68
Class Room 104 Lab	19	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	19	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.78	3,936	0.0	$652.66	$1,660.80	$325.00	2.05
Class Room 104 Lab	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Class Room 104 A	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.03	138	0.0	$22.90	$174.50	$30.00	6.31
Hallway	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,016	0.52	2,624	0.0	$435.10	$1,911.50	$190.00	3.96
Hallway	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Class Room 102 Music	18	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	18	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.74	3,729	0.0	$618.31	$1,469.60	$290.00	1.91
Class Room 102 Music	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.08	414	0.0	$68.70	$291.50	$50.00	3.52
Class Room 102 Music	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.08	414	0.0	$68.70	$291.50	$50.00	3.52
RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.08	414	0.0	$68.70	$291.50	$50.00	3.52
Locker Room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.27	1,381	0.0	$229.00	$855.00	$135.00	3.14
Locker Room	3	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	3	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.05	252	0.0	$41.85	$80.25	$35.00	1.08
Room 402B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Locker Room	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym	26	Metal Halide: (1) 400W Lamp	Wall Switch	458	2,880	Fixture Replacement	Yes	26	LED - Fixtures: High-Bay	Occupancy Sensor	146	2,016	6.06	30,639	0.0	$5,080.23	$75,535.20	$4,810.00	13.92
Gym	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Wrestling (Aux)	8	Metal Halide: (1) 250W Lamp	Wall Switch	295	2,880	Fixture Replacement	Yes	8	LED - Fixtures: Lo-Bay	Occupancy Sensor	86	2,016	1.23	6,221	0.0	$1,031.55	$2,555.44	$70.00	2.41
Wrestling (Aux)	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.16	829	0.0	$137.40	$467.00	$80.00	2.82
Boys Locker	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.27	1,381	0.0	$229.00	$701.00	$120.00	2.54
Boys Locker	4	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	4	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.07	336	0.0	$55.80	$223.00	$20.00	3.64
Boys Locker	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,880	0.03	164	0.0	$27.18	$75.20	$15.00	2.21
RR	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.08	414	0.0	$68.70	$291.50	$50.00	3.52
RR	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 404	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.16	829	0.0	$137.40	$570.80	$95.00	3.46
Room 404	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.19	972	0.0	$161.24	$380.53	$115.00	1.65
Closet 406	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.04	219	0.0	$36.24	$117.00	$20.00	2.68

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Storage 408	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.04	219	0.0	$36.24	$117.00	$20.00	2.68
Class Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.14	729	0.0	$120.93	$401.40	$80.00	2.66
Class room	8	Incandescent: 1 lamp Incandecent fixture	Wall Switch	100	2,880	Relamp	Yes	8	LED Screw-In Lamps: LED screw-in lamp equivalent	Occupancy Sensor	15	2,016	0.47	2,371	0.0	$393.20	$214.02	$75.00	0.35
Stage	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.27	1,381	0.0	$229.00	$855.00	$135.00	3.14
Stage	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.04	219	0.0	$36.24	$117.00	$20.00	2.68
Seating area	13	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	13	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.22	1,094	0.0	$181.33	$617.75	$35.00	3.21
Seating area	20	Halogen Incandescent: Auditorium Flood Lights	Wall Switch	100	2,880	Relamp	Yes	20	LED Screw-In Lamps: Flood Lamp LED equivalent	Occupancy Sensor	45	2,016	0.90	4,537	0.0	$752.36	$1,273.02	$135.00	1.51
Seating area	6	Metal Halide: (4) 400W Lamp	Wall Switch	1,800	2,880	Fixture Replacement	Yes	6	LED - Fixtures: Auditorium Flood LED equivalent	Occupancy Sensor	146	2,016	6.68	33,739	0.0	$5,594.25	$1,828.08	$35.00	0.32
Control Booth	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,880	0.06	328	0.0	$54.37	$150.40	$30.00	2.21
Auditorium	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Library	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.55	2,762	0.0	$458.00	$1,710.00	$270.00	3.14
Library	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.98	4,972	0.0	$824.41	$2,344.80	$430.00	2.32
Library Lab	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.37	1,864	0.0	$309.15	$792.80	$155.00	2.06
Library	4	Compact Fluorescent: 1 lamp pin fixture	Wall Switch	26	2,880	Relamp	Yes	4	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	19	2,016	0.03	168	0.0	$27.90	$107.00	$35.00	2.58
Library	2	Compact Fluorescent: 4 lamp pin fixture	Wall Switch	104	2,880	Relamp	Yes	2	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	76	2,016	0.07	336	0.0	$55.80	$53.50	$35.00	0.33
Library	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Library	8	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	8	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.13	673	0.0	$111.59	$214.00	$35.00	1.60
Library	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.16	829	0.0	$137.40	$300.80	$95.00	1.50
Library Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.10	486	0.0	$80.62	$306.27	$60.00	3.05
Library Seminar	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.14	729	0.0	$120.93	$285.40	$95.00	1.57
Library Seminar	8	Incandescent: 1 lamp incandecent fixture	Wall Switch	100	2,880	Relamp	Yes	8	LED Screw-In Lamps: LED screw-in lamp equivalent	Occupancy Sensor	15	2,016	0.47	2,371	0.0	$393.20	$484.02	$75.00	1.04
Office 407	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
Office 409	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
Main Lobby	5	Halogen Incandescent: Spot lights	Wall Switch	100	2,880	Relamp	No	5	LED Screw-In Lamps: spotlight LED equivalent	Wall Switch	15	2,880	0.28	1,408	0.0	$233.40	$318.26	$0.00	1.36

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Lobby	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main Lobby	10	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	10	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.17	841	0.0	$139.49	$267.50	$35.00	1.67
Main Lobby	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.21	1,036	0.0	$171.75	$646.00	$110.00	3.12
Main Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.58	2,917	0.0	$483.71	$1,257.60	$260.00	2.06
Main Office Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,880	0.02	109	0.0	$18.12	$58.50	$10.00	2.68
Principal Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.16	829	0.0	$137.40	$416.80	$80.00	2.45
Class Room 1C	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.12	621	0.0	$103.05	$341.60	$65.00	2.68
Class Room 1C	6	Incandescent: 1 lamp incandecent fixture	Wall Switch	100	2,880	Relamp	Yes	8	LED Screw-In Lamps: LED screw-in lamp equivalent	Occupancy Sensor	15	2,016	0.34	1,709	0.0	$283.37	$214.02	$75.00	0.49
Workroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,880	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,016	0.19	972	0.0	$161.24	$650.53	$115.00	3.32
Workroom	2	Compact Fluorescent: 2 lamp pin fixture	Wall Switch	52	2,880	Relamp	Yes	2	LED Screw-In Lamps: 4 pin plug-in LED equivalent	Occupancy Sensor	38	2,016	0.03	168	0.0	$27.90	$53.50	$35.00	0.66
Workroom	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Security Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,880	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,016	0.08	414	0.0	$68.70	$266.40	$50.00	3.15
RR	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.11	552	0.0	$91.60	$350.00	$60.00	3.17
RR	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,880	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,016	0.11	552	0.0	$91.60	$350.00	$60.00	3.17
Exterior	24	Compact Fluorescent: 2 lamp pin fixture	None	26	4,380	Relamp	No	24	LED Screw-In Lamps: 4 pin plug-in LED equivalent	None	19	4,380	0.11	846	0.0	$140.31	$372.05	$0.00	2.65
Exterior	8	Compact Fluorescent: 2 lamp pin fixture	None	52	4,380	Relamp	No	8	LED Screw-In Lamps: 4 pin plug-in LED equivalent	None	38	4,380	0.07	564	0.0	$93.54	$214.02	$0.00	2.29
Exterior	5	Metal Halide: (1) 150W Lamp	None	190	4,380	Fixture Replacement	No	5	LED - Fixtures: Architectural Flood/Spot Luminaire	None	50	4,380	0.46	3,526	0.0	$584.63	$6,124.76	$250.00	10.05
Pole Fixture	11	Metal Halide: (4) 250W Lamp	None	1,200	4,380	Fixture Replacement	No	11	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	None	344	4,380	6.17	47,428	0.0	$7,864.15	$21,482.92	$1,100.00	2.59
Pole Fixture	3	Metal Halide: (2) 250W Lamp	None	600	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	None	172	4,380	0.84	6,468	0.0	$1,072.38	$5,858.98	$300.00	5.18
Wallpacks	15	Metal Halide: (1) 150W Lamp	None	190	4,380	Fixture Replacement	No	15	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	50	4,380	1.38	10,578	0.0	$1,753.90	$5,860.16	$1,500.00	2.49
Exterior	6	Compact Fluorescent: 2 lamp pin fixture	None	52	4,380	Relamp	No	6	LED Screw-In Lamps: 4 pin plug-in LED equivalent	None	38	4,380	0.06	423	0.0	$70.16	$160.51	$0.00	2.29
Exterior	1	Compact Fluorescent: 1 lamp pin fixture	None	26	4,380	Relamp	No	1	LED Screw-In Lamps: 4 pin plug-in LED equivalent	None	19	4,380	0.00	35	0.0	$5.85	$26.75	$0.00	4.58

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Rooftop	Air Handling Units	2	Supply Fan	60.0	93.6%	Yes	1,850	No	93.6%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Air Handling Units	3	Return Fan	30.0	92.4%	Yes	1,850	No	92.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Heating Hot Water System (Primary Circuit)	3	Heating Hot Water Pump	2.0	80.0%	No	1,830	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Heating Hot Water System (Secondary Circuit)	2	Heating Hot Water Pump	20.0	93.0%	Yes	875	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Chilled Water System (Primary Circuit)	1	Chilled Water Pump	10.0	91.7%	No	3,000	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Chilled Water System (Secondary Circuit)	1	Chilled Water Pump	20.0	93.0%	Yes	1,200	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Air Handling Units	1	Return Fan	15.0	91.0%	No	3,000	No	91.0%	Yes	1	3.86	12,266	0.0	$2,033.83	$5,194.45	$1,200.00	1.96
Rooftop	Air Handling Units	2	Supply Fan	20.0	91.0%	No	3,000	No	91.0%	Yes	2	10.28	32,709	0.0	$5,423.55	$12,668.60	$3,200.00	1.75
Rooftop	Air Handling Units	1	Supply Fan	25.0	91.7%	No	3,000	No	91.7%	Yes	1	6.38	20,287	0.0	$3,363.84	$8,002.70	$2,000.00	1.78
Rooftop	Air Handling Units	1	Return Fan	10.0	89.5%	No	3,000	No	89.5%	Yes	1	2.61	8,314	0.0	$1,378.61	$3,807.95	$800.00	2.18
Rooftop	Air Handling Units	1	Return Fan	10.0	89.5%	No	1,850	No	89.5%	Yes	1	2.61	5,127	0.0	$850.14	$3,807.95	$800.00	3.54
Rooftop	Air Handling Units	1	Supply Fan	50.0	93.0%	Yes	1,850	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Kitchen Hood	1	Kitchen Hood Exhaust Fan	2.0	84.0%	No	1,680	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Exhasut Fans	6	Exhaust Fan	0.3	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Exhasut Fans	2	Exhaust Fan	0.3	82.5%	Yes	1,800	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Gym Restrooms	Exhasut Fans	1	Exhaust Fan	0.5	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Janitors Closet	Exhasut Fans	1	Exhaust Fan	0.2	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Exhasut Fans	3	Exhaust Fan	0.2	82.5%	Yes	1,800	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	Exhasut Fans	2	Exhaust Fan	0.2	82.5%	Yes	1,800	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Storage	Exhasut Fans	1	Exhaust Fan	0.0	82.5%	Yes	1,800	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Ceiling	All	3	Electric Resistance Heat		11.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Wall	All	1	Electric Resistance Heat		5.12	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Yard	All	1	Air-Cooled Screw Chiller	350.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	All	3	Non-Condensing Hot Water Boiler	1,700.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	All	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Multiple	6	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	3.4	$33.78	$43.02	$0.00	1.27
Multiple	16	Showerhead	2.50	2.00	0.00	0	10.0	$100.09	$1,428.80	$0.00	14.28
Multiple	8	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	4.5	$45.04	$57.36	$0.00	1.27

Reach-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions					Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Energy Efficient Doors?	Install Door Heater Control?	Install Aluminum Night Covers?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	2	Cooler (35F to 55F)	No	No	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	Yes	No	Yes	0.18	2,249	0.0	$372.93	$2,280.60	$75.00	5.91
Kitchen	1	Medium Temp Freezer (0F to 30F)	Yes	No	Yes	0.26	3,155	0.0	$523.09	$2,583.90	$75.00	4.80

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Stand-Up Refrigerator, Solid Door (>50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Refrigerator Chest	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Convection Oven (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Insulated Food Holding Cabinet (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (Low Temp)	Electric	N/A	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Multiple	36	Overhead Projectors	376.0	No
Multiple	3	46" TV	60.0	Yes
Multiple	262	Desktop Workstations	250.0	Yes
Multiple	5	Printer (S)	910.0	Yes
Multiple	10	Copier/Printer (M)	425.0	Yes
Multiple	6	Copier/Printer (L)	425.0	Yes
Multiple	6	Microwave	700.0	No
Multiple	4	Coffee Maker	780.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	1	Non-Refrigerated	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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11

ENERGY STAR® Score[1]

Buena Regional Middle School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 92,335
Built: 2009

For Year Ending: April 30, 2017
Date Generated: May 28, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Buena Regional Middle School 175 Weymouth Road Buena, New Jersey 08650	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358233

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
117.5 kBtu/ft²

Source EUI
231.9 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	4,795,478 (44%)
Natural Gas (kBtu)	6,051,941 (56%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	78.6
National Median Source EUI (kBtu/ft²)	155.2
% Diff from National Median Source EUI	49%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	853

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer Stamp (if applicable)

Local Government Energy Audit:
Energy Audit Report



Collings Lakes Elementary School

620 Cains Mill Road

Williamstown, NJ 08094

Buena Regional School District

June 29, 2018

Draft Report by:

TRC Energy Services

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Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate saving are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

DRAFT

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Appendix A: Equipment Inventory & Recommendations

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Collings Lakes Elementary School.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey school districts in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Collings Lakes Elementary School is a 32,766 square foot facility comprised primarily of classroom and office space types within a single building. The school building is one floor and includes a multipurpose room, cafeteria, offices, classrooms, a commercial kitchen and mechanical spaces. The building was constructed in 1968.

Lighting at Collings Lakes Elementary School was recently retrofitted in 2014 and primarily consists of LED fixtures, but still has some inefficient incandescent and HID lighting technologies which can be replaced with more efficient LED technology to standardize the lighting throughout the school. HVAC equipment was also recently retrofitted and consists of groundwater source heat pumps, split system heat pumps, and energy recovery ventilators all of which are connected to an energy management system. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated 6 measures which together represent an opportunity for Collings Lakes Elementary School to reduce annual energy costs by roughly $5,013 and annual greenhouse gas emissions by 30,405 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 4.9 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce Collings Lakes Elementary School's annual energy use by 9%.

Figure 1 – Previous 12 Month Utility Costs

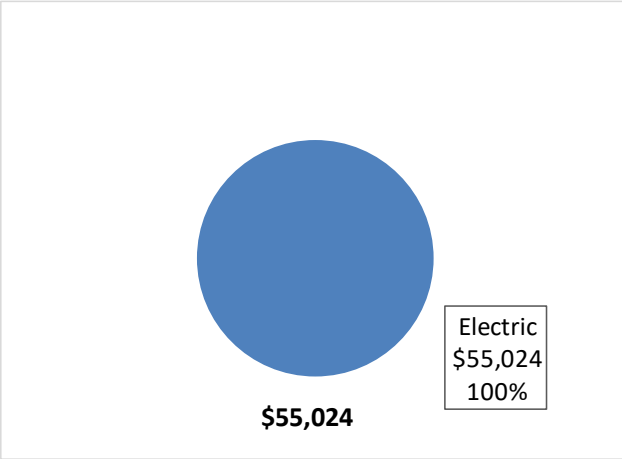
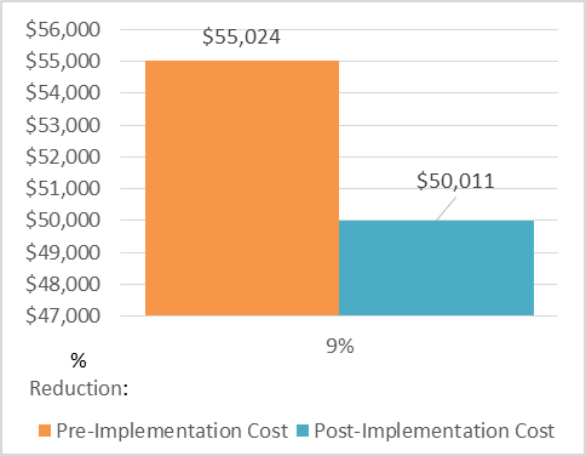


Figure 2 – Potential Post-Implementation Costs



A detailed description of Collings Lakes Elementary School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**23,577**	**3.7**	**0.0**	**$3,914.54**	**$24,824.88**	**$1,952.00**	**$22,872.88**	**5.8**	**23,742**
ECM 1	Install LED Fixtures	Yes	21,567	2.8	0.0	$3,580.80	$23,045.63	$1,500.00	$21,545.63	6.0	21,718
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,010	0.9	0.0	$333.73	$1,779.25	$452.00	$1,327.25	4.0	2,024
Lighting Control Measures			**867**	**0.4**	**0.0**	**$144.02**	**$540.00**	**$70.00**	**$470.00**	**3.3**	**874**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	867	0.4	0.0	$144.02	$540.00	$70.00	$470.00	3.3	874
Domestic Water Heating Upgrade			**2,489**	**0.0**	**0.0**	**$413.17**	**$150.57**	**$0.00**	**$150.57**	**0.4**	**2,506**
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	2,489	0.0	0.0	$413.17	$150.57	$0.00	$150.57	0.4	2,506
Food Service Equipment & Refrigeration Measures			**1,649**	**0.1**	**0.0**	**$273.78**	**$606.60**	**$0.00**	**$606.60**	**2.2**	**1,661**
ECM 5	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,649	0.1	0.0	$273.78	$606.60	$0.00	$606.60	2.2	1,661
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$267.61**	**$230.00**	**$0.00**	**$230.00**	**0.9**	**1,623**
ECM 6	Vending Machine Control	Yes	1,612	0.0	0.0	$267.61	$230.00	$0.00	$230.00	0.9	1,623
TOTALS FOR HIGH PRIORITY MEASURES			**30,194**	**4.2**	**0.0**	**$5,013.13**	**$26,352.05**	**$2,022.00**	**$24,330.05**	**4.9**	**30,405**
TOTALS FOR ALL EVALUATED MEASURES			**30,194**	**4.2**	**0.0**	**$5,013.13**	**$26,352.05**	**$2,022.00**	**$24,330.05**	**4.9**	**30,405**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Food Service Equipment & Refrigeration measures generally involve improvements in the efficiency of cooking, food service, dishwashing, and food storage equipment. These measures may include more efficient convection ovens, steamers, ice machines, or refrigeration. These measures save energy by reducing the energy usage with more energy efficient equipment.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC Energy Services also identified 6 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at Collings Lakes Elementary School include:

- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Clean Evaporator/Condenser Coils on AC Systems
- Perform Proper Water Heater Maintenance
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation for Collings Lakes Elementary School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	80	kW DC STC
Electric Generation	95,310	kWh/yr
Displaced Cost	$8,290	/yr
Installed Cost	$208,000	

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important

because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)
- Direct Install (DI)
- Energy Savings Improvement Program (ESIP)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SS incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SS program. More details on this program and others are available in Section 8.

This facility may also qualify for the Direct Install program which can provide turnkey installation of multiple measures, through an authorized network of participating contractors. This program can provide substantially higher incentives that SmartStart, up to 70% of the cost of selected measures, although measure eligibility will have to be assessed and be verified by the designated DI contractor and, in most cases, they will perform the installation work.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.4 for additional information on the ESIP Program.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck Jr.	Interim Building & Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
TRC Energy Services			
Vish Nimbalkar	Auditor	VNaikNimbalkar@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 11, 2018, TRC Energy Services performed an energy audit at Collings Lakes Elementary School located in Williamstown, NJ. TRC Energy Services' team met with Joe Biluck Jr. to review the facility operations and help focus our investigation on specific energy-using systems.

Collings Lakes Elementary School is a 32,766 square foot facility comprised primarily of classroom and office space types within a single building. The school building is one floor and includes a multipurpose room, cafeteria, offices, classrooms, a commercial kitchen and mechanical spaces.

Lighting at Collings Lakes Elementary School was recently retrofitted in 2014 and primarily consists of LED fixtures, but still has some inefficient incandescent and HID lighting technologies which can be replaced with more efficient LED technology to standardize the lighting throughout the school. HVAC equipment was also recently retrofitted and consists of groundwater source heat pumps, split system heat pumps, and energy recovery ventilators all of which are connected to an energy management system.

The building was constructed in 1968. Four years ago the school went through a major retrofit which upgraded most of the lighting to LEDs, replaced heat pumps, installed energy recovery ventilators, and an EMS.

2.3 Building Occupancy

The school building is open Monday through Friday. The typical schedule is presented in the table below. The entire facility is used from early September to mid-June for student instruction each year. During a typical day, the facility is occupied by approximately 175 to 200 students and 18 to 20 teachers/administrators.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Collings Lakes Elementary School	Weekday	9:30 AM - 4:00 PM
Collings Lakes Elementary School	Weekend	Closed

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a stone facade. The building primarily has a flat roof covered with tar and gravel and is not in the best condition. The building has metal frame double pane windows which are in good condition and show little sign of excessive infiltration when closed.



Figure 7 - Building Envelope

2.5 On-Site Generation

Collings Lakes Elementary School does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

Lighting System

Lighting at the facility is provided mostly by linear LED lamps with electronic ballasts as well as some T-8 linear fluorescent lamps. Most of the fixtures are 1-lamp 4-foot long recessed troffers. Mr. Biluck, the facility's maintenance technician, indicated that the building had a comprehensive LED retrofit about 4 years ago.

There are only a few small areas of the building that are lit with inefficient 60-watt or 100-watt incandescent lamps in ceiling or wall mount fixtures.

Lighting control in most spaces is provided by occupancy sensors. The occupancy sensors are wall mounted. Hallways and the cafeteria areas do not contain any occupancy sensors and are on manual switches.

The building's exterior lighting consists primarily of efficient LED wallpack fixtures, a few Metal Halide wallpacks, and HID pole mount parking fixtures.







Figure 8 - Lighting Systems

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's lighting equipment.

Heating Ventilating and Air Conditioning System

Two 10 ton Trane air source split system heat pumps are used to condition the multipurpose room of the building. Both air handling units are located overhead in the mechanical room, and the condensing units are located on the ground in a gated area on the outside of the building. The units provide a constant air volume, each with a 2 hp supply fan and no return fan. The units utilize a scroll compressor and a direct-expansion (DX) coil. The units each have a 35 kW electric resistance supplemental heating element that is used as needed – typically when the outside air temperature is below 40 °F.

The units are controlled by individual thermostats located in the multipurpose room which are connected to the BEMS. The heat pumps operate when the facility is occupied to maintain the building space temperature setpoint around 72°F. Both heat pumps are reportedly required to maintain the space temperature set point during the summer months.

There are 24 Climatemaster groundwater-source heat pump units (WSHPs) ranging from three to five tons. They supply heating, cooling, and ventilation to other areas of the building. A majority of the units are located in dropped ceiling spaces near the zones they serve. As needed, heat is added to or removed from the water loop by geothermal energy. Water loop circulation is maintained by six pumps which have either a 3 or 5 hp motor. The WSHPs are constant air volume units with either a single 1 or 0.5 hp supply fan and no return fan. A fixed volume of outside air (OSA) is supplied to the WSHPs via four energy recovery ventilators which use exhaust air to precondition the outside air. Each energy recovery unit has a dedicated supply and exhaust fan. Energy recovery supply fans are either 0.75 or 1 hp, and exhaust fans are either 0.5 or 0.75 hp. All of the WSHPs use direct-expansion (DX) coils and utilize scroll compressors.

The units are controlled by individual thermostats located in zones. The heat pumps are connected to the BEMS and operate based on building occupancy to maintain zone space temperature setpoints around 72°F (adjustable by tenants). The units operate between 9:30 AM and 4:00 PM Monday through Friday.





Figure 9 - Heat Pumps

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning equipment.

Building Energy Management System (BEMS)

The majority of the facility systems are controlled with a CM3 Building Solutions building energy management system (BEMS). The BEMS aggregates the DDC points from throughout the building. All of the building zones are DDC. The system is capable of providing occupied and unoccupied schedules for

the HVAC equipment and provides alarm information and the capability to provide trend data. The CM3 system does not provide control for the lighting systems.



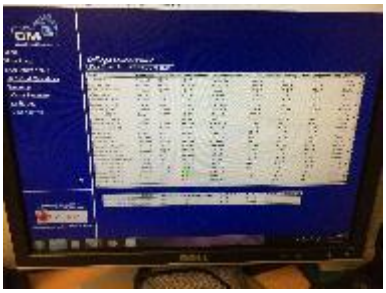


Figure 10 - BEMS Screenshots

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of a single electric storage tank hot water heater with an input rating of 4.5 kW (~15 kBtu/hr). The water heater has a 40 gallon storage tank. A 1/12 hp recirculation pump distributes 120°F water to the entire site. The recirculation pump operates continuously.



Figure 11 - Domestic Hot Water Heater

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's domestic hot water equipment.

Food Service Equipment

The school has an all-electric kitchen that is used to prepare approximately 200 lunches per day for the students and staff. Most of the cooking is done using the four convection ovens and the single large kettle.

There is a conveyor dishwasher that provides hot rinse water.





Figure 12 - Food Service Equipment

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service and laundry equipment.

Refrigeration

The kitchen has a walk-in refrigerator/freezer that is used to store food prepared for school lunches. The walk-in has a single air cooled compressor. The kitchen also has a free standing commercial size refrigerator, minifridge, and milk cooler. There are also two stand up refrigerators in the facility.




Figure 13 - Walk-in refrigerator/freezer

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's refrigeration equipment.

Building Plug Load

There are roughly 45 computer work stations throughout the facility. There is no centralized PC power management software installed. There are also 14 overhead projectors, 10 copiers and printers, and a handful of other miscellaneous appliances such as microwaves, coffee maker, and TVs. The facility also has a refrigerated vending machine.



Figure 14 - Plug Load Equipment

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's plug load equipment.

2.7 Water-Using Systems

There are about 14 restrooms at this facility. All of the faucets are assumed to be rated for 1.5 gpm or higher.

3 SITE ENERGY USE AND COSTS

Utility data for electricity was analyzed to identify opportunities for savings. In addition, data for Electricity was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.3 for additional information.

3.1 Total Cost of Energy

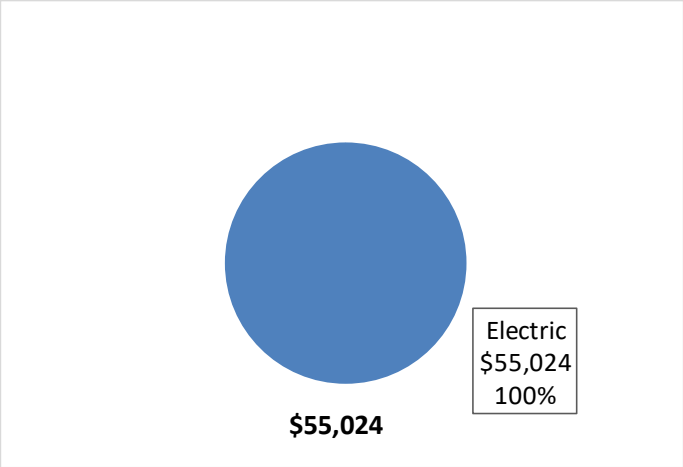
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 15 - Utility Summary

Utility Summary for Collings Lakes Elementary School		
Fuel	**Usage**	**Cost**
Electricity	331,408 kWh	$55,024
Total		**$55,024**

The current annual energy cost for this facility is $55,024 as shown in the chart below.

Figure 16 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.166/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. Winter billing demand does not reflect actual peak demand use but is based on a calculation from the utility, which is why it is so much lower than usage in summer months of July through August.. Summer billing demand appears to be reflective of actual demand use; however, energy and demand use in July was an estimated reading from the utility which explains the high demand for relatively low energy consumption. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 17 - Graph of 12 Months Electric Usage & Demand

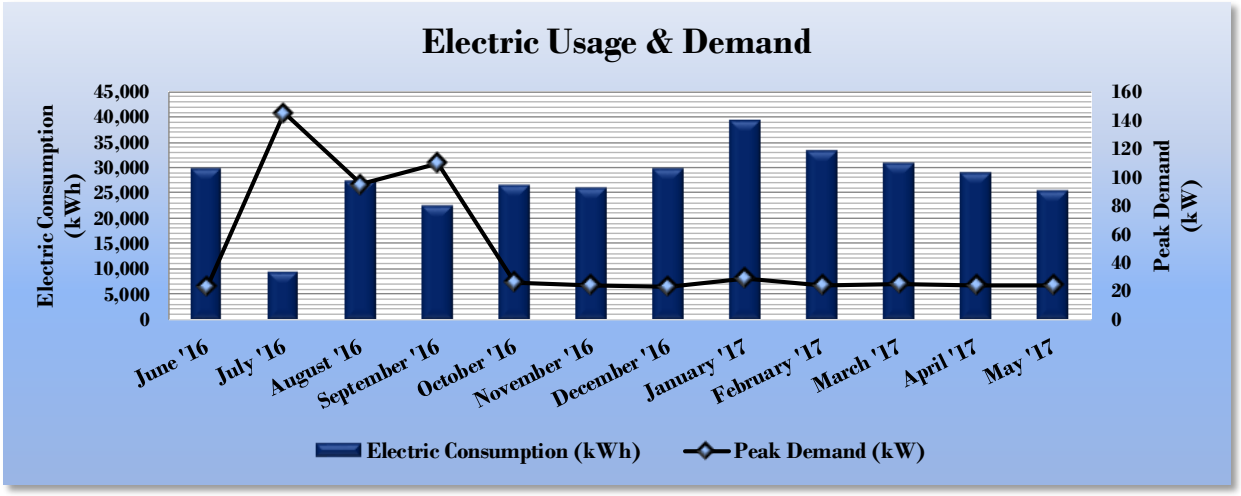


Figure 18 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Collings Lakes Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/23/16	31	30,000	23	$30	$4,981
7/22/16	29	9,500	145	$237	$1,877
8/23/16	32	27,500	95	$171	$4,737
9/22/16	30	22,500	110	$209	$4,038
10/25/16	33	26,500	26	$13	$4,392
11/21/16	27	26,000	24	$34	$4,236
12/20/16	29	30,000	23	$35	$4,877
1/23/17	34	39,500	29	$51	$6,406
2/21/17	29	33,500	24	$36	$5,422
3/21/17	28	31,000	25	$36	$5,024
4/21/17	31	29,000	24	$39	$4,718
5/22/17	31	25,500	24	$39	$4,165
Totals	**364**	**330,500**	**145**	**$930**	**$54,873**
Annual	**365**	**331,408**	**145**	**$932**	**$55,024**

3.3 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. Environmental Protection Agency (EPA) through the ENERGY STAR™ program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR Score for select building types.

Energy Use Intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy". Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 19 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Collings Lakes Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	108.4	141.4
Site Energy Use Intensity (kBtu/ft^2)	34.5	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the Table below:

Figure 20 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Collings Lakes Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	98.8	141.4
Site Energy Use Intensity (kBtu/ft^2)	31.5	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of **90**.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see **Appendix B: EPA Statement of Energy Performance**.

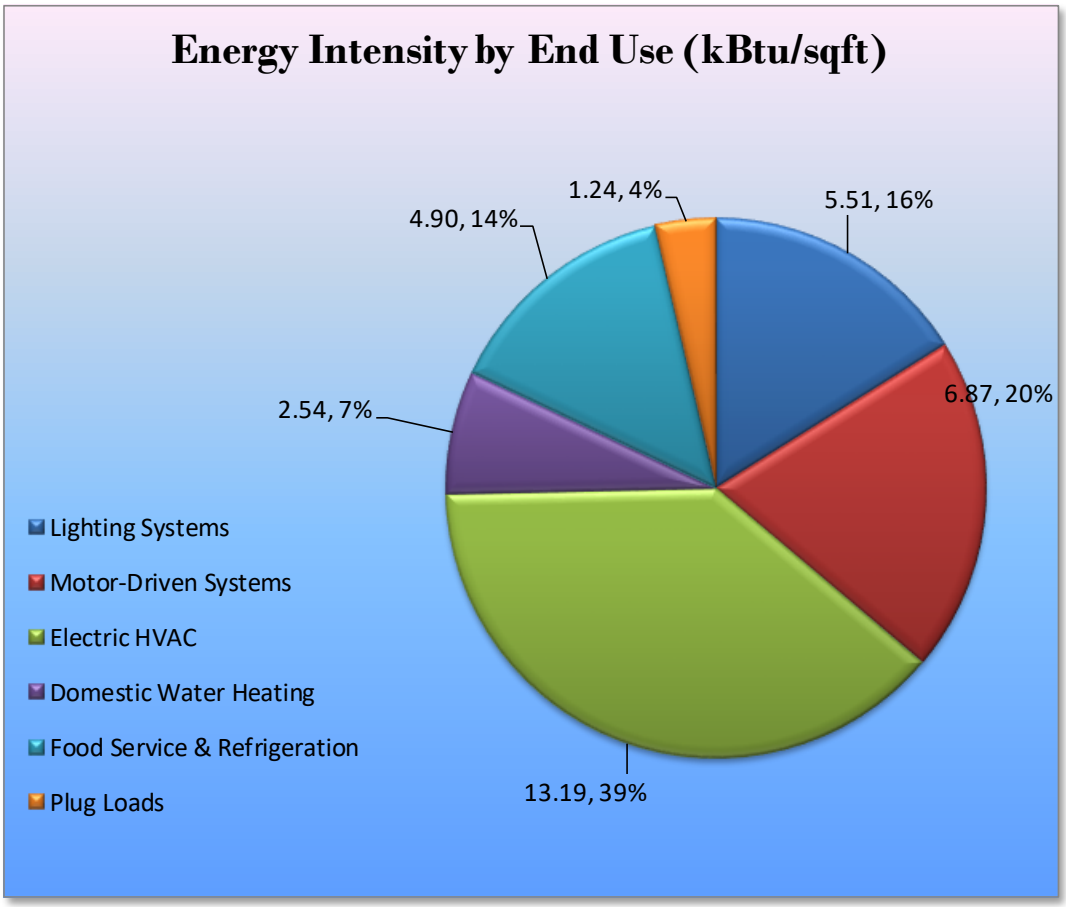
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training is available to help you use Energy Star Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training

3.4 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 21 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Collings Lakes Elementary School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 22 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**23,577**	**3.7**	**0.0**	**$3,914.54**	**$24,824.88**	**$1,952.00**	**$22,872.88**	**5.8**	**23,742**
ECM 1	Install LED Fixtures	21,567	2.8	0.0	$3,580.80	$23,045.63	$1,500.00	$21,545.63	6.0	21,718
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Lighting Control Measures		**867**	**0.4**	**0.0**	**$144.02**	**$540.00**	**$70.00**	**$470.00**	**3.3**	**874**
ECM 3	Install Occupancy Sensor Lighting Controls	867	0.4	0.0	$144.02	$540.00	$70.00	$470.00	3.3	874
Domestic Water Heating Upgrade		**2,489**	**0.0**	**0.0**	**$413.17**	**$150.57**	**$0.00**	**$150.57**	**0.4**	**2,506**
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ECM 5	Refrigerator/Freezer Case Electrically Commutated Motors	1,649	0.1	0.0	$273.78	$606.60	$0.00	$606.60	2.2	1,661
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$267.61**	**$230.00**	**$0.00**	**$230.00**	**0.9**	**1,623**
ECM 6	Vending Machine Control	1,612	0.0	0.0	$267.61	$230.00	$0.00	$230.00	0.9	1,623
TOTALS		**30,194**	**4.2**	**0.0**	**$5,013.13**	**$26,352.05**	**$2,022.00**	**$24,330.05**	**4.9**	**30,405**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 23 below.

Figure 23 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**23,577**	**3.7**	**0.0**	**$3,914.54**	**$24,824.88**	**$1,952.00**	**$22,872.88**	**5.8**	**23,742**
ECM 1	Install LED Fixtures	21,567	2.8	0.0	$3,580.80	$23,045.63	$1,500.00	$21,545.63	6.0	21,718
ECM 2	Retrofit Fixtures with LED Lamps	2,010	0.9	0.0	$333.73	$1,779.25	$452.00	$1,327.25	4.0	2,024

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	21,567	2.8	0.0	$3,580.80	$23,045.63	$1,500.00	$21,545.63	6.0	21,718

Measure Description

We recommend replacing exterior wall mounted and pole mounted fixtures containing HID lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a most HID lighting.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	2,010	0.9	0.0	$333.73	$1,779.25	$452.00	$1,327.25	4.0	2,024
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent and linear fluorescent lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than 10 times longer than many incandescent lamps.

4.1.1 Lighting Control Measures

Figure 24 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**867**	**0.4**	**0.0**	**$144.02**	**$540.00**	**$70.00**	**$470.00**	**3.3**	**874**
ECM 3	Install Occupancy Sensor Lighting Controls	867	0.4	0.0	$144.02	$540.00	$70.00	$470.00	3.3	874

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 3:Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
867	0.4	0.0	$144.02	$540.00	$70.00	$470.00	3.3	874

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in the cafeteria. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large

spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

4.1.2 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 25 below.

Figure 25 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**2,489**	**0.0**	**0.0**	**$413.17**	**$150.57**	**$0.00**	**$150.57**	**0.4**	**2,506**
ECM 4	Install Low-Flow Domestic Hot Water Devices	2,489	0.0	0.0	$413.17	$150.57	$0.00	$150.57	0.4	2,506

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on the facility's existing domestic hot water equipment and recommended system upgrades.

ECM 4: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,489	0.0	0.0	$413.17	$150.57	$0.00	$150.57	0.4	2,506

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators can reduce hot water usage, relative to standard aerators, which saves energy.

Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.1.3 Food Service Equipment & Refrigeration Measures

Food service and refrigeration measures recommendations are summarized in Figure 26 below.

Figure 26 - Summary of Food Service Equipment & Refrigeration ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Food Service Equipment & Refrigeration Measures		**1,649**	**0.1**	**0.0**	**$273.78**	**$606.60**	**$0.00**	**$606.60**	**2.2**	**1,661**
ECM 5	Refrigerator/Freezer Case Electrically Commutated Motors	1,649	0.1	0.0	$273.78	$606.60	$0.00	$606.60	2.2	1,661

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing food service and refrigeration and our recommended measures for this category.

ECM 5: Refrigerator/Freezer Case Electrically Commutated Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,649	0.1	0.0	$273.78	$606.60	$0.00	$606.60	2.2	1,661

Measure Description

We recommend replacing shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in the existing freezer. These fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By employing variable-speed technology, EC motors are able to optimize fan usage. Because these motors are brushless and utilize DC power, losses due to friction and phase shifting are eliminated. Savings for this measure take into account both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

4.1.4 Plug Load Equipment Control - Vending Machines

ECM 6: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,612	0.0	0.0	$267.61	$230.00	$0.00	$230.00	0.9	1,623

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

Refer to Section 4.1.2 for any low-flow ECM recommendations.

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

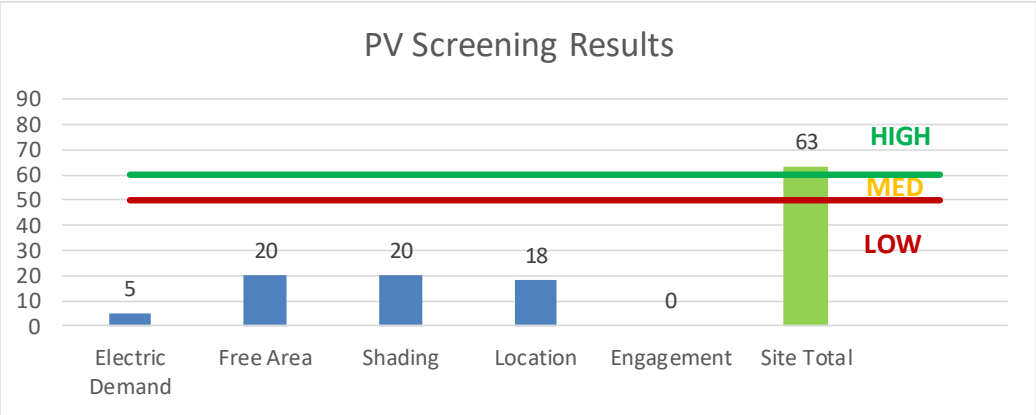
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a High potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **high** potential for PV at the site. A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If Collings Lakes Elementary School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 27 - Photovoltaic Screening



Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.3 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

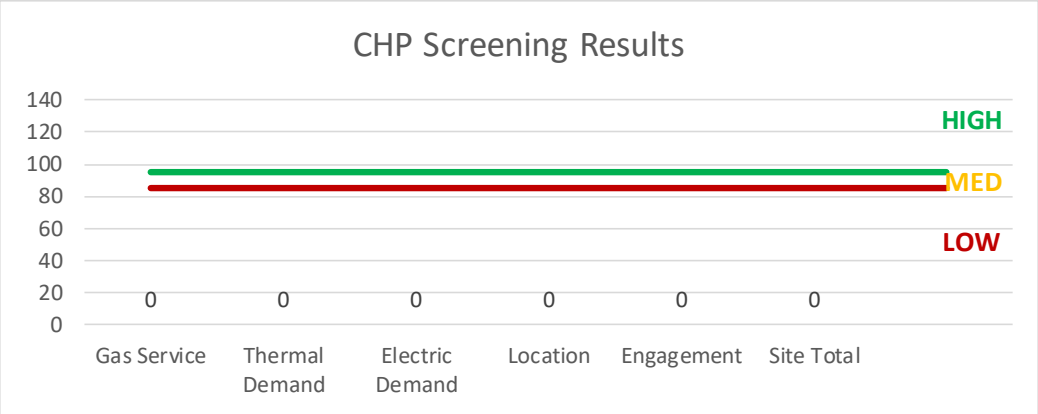
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a Low potential for installing a cost-effective CHP system.

Lack of gas service, low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 28 - Combined Heat and Power Screening


CHP Screening Results
140
120
100
80
60
40
20
0
HIGH
MED
LOW
0
0
0
0
0
0
Gas Service
Thermal Demand
Electric Demand
Location
Engagement
Site Total

7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (www.pjm.com/training/trainingmaterial.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion, DR is not a viable option for this facility.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 29 for a list of the eligible programs identified for each recommended ECM.

Figure 29 - ECM Incentive Program Eligibility

SmartStart (SS) is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci

8.1 SmartStart

Overview

The SmartStart (SS) program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB

8.2 Direct Install

Overview

Direct Install (DI) is a turnkey program available to existing small to medium-sized facilities with a peak electric demand that does not exceed 200 kW for any recent 12-month period. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and provide a clear scope of work for installation of selected measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

The program pays up to **70%** of the total installed cost of eligible measures, up to $125,000 per project. Direct Install participants will also be held to a fiscal year cap of $250,000 per entity.

How to Participate

To participate in the DI program you will need to contact the participating contractor who the region of the state where your facility is located. A complete list of DI program partners is provided on the DI website linked below. The contractor will be paid the measure incentives directly by the program which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps and eligibility, while the remaining 30% of the cost is paid to the contractor by the customer.

Since DI offers a free assessment of eligible measures, DI is also available to small businesses and other commercial facilities too that may not be eligible for the more detailed facility audits provided by LGEA.

Detailed program descriptions and applications can be found at: www.njcleanenergy.com/DI

8.3 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

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Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Office	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conference Room	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Principals Office	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
"Eddy's" Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.04	101	0.0	$16.79	$117.00	$20.00	5.78
Boys RR	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boys RR	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 207	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 209	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Closet	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 211	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 211	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	10	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	10	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 213	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 213 Storage	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 210	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exit	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR 210	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway Exit	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 208	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 208 RR	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 206	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 204	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
202 Mech	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.06	152	0.0	$25.19	$175.50	$30.00	5.78

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Nurse 105	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR 105	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	12	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	12	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway Exit	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office 111	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Break Room	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cafeteria	35	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	35	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
cafeteria Storage	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	1,333	Relamp	No	5	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,333	0.06	134	0.0	$22.26	$179.50	$25.00	6.94
Café	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	None	No	15	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	62	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
kitchen Storage	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	5	Incandescent: 100 Watt	Wall Switch	100	1,333	Relamp	No	5	LED Screw-In Lamps: Lamps over warmers	Wall Switch	15	1,333	0.28	651	0.0	$108.13	$133.75	$125.00	0.08
Kitchen walk-in	4	Incandescent: 60 Watt	Wall Switch	60	1,333	Relamp	No	4	LED Screw-In Lamps: Walk in lights	Wall Switch	9	1,333	0.13	313	0.0	$51.90	$62.00	$80.00	-0.35
RR	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	62	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	13	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	13	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exit	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office 117	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Library	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
301 Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.04	101	0.0	$16.79	$117.00	$20.00	5.78
309 Janitor	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.19	455	0.0	$75.56	$526.50	$90.00	5.78
303 Faculty	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Conf Room 305	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 310	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 312	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 307	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
RR	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Faculty RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.02	51	0.0	$8.40	$58.50	$10.00	5.78
Conf Room 317	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
317 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.02	51	0.0	$8.40	$58.50	$10.00	5.78
Conf Room 319	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conf Room 318	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
318 Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.02	51	0.0	$8.40	$58.50	$10.00	5.78
RR	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.02	51	0.0	$8.40	$58.50	$10.00	5.78
Conf Room 316	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	None	No	14	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	933	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Hallway	17	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	None	No	17	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	40	1,333	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exit	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
309 Mech	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.04	101	0.0	$16.79	$117.00	$20.00	5.78
319 Mech	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,333	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,333	0.04	101	0.0	$16.79	$117.00	$20.00	5.78
Wallpacks	7	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	59	4,380	None	No	7	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	59	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Outdoors	1	Metal Halide: (1) 150W Lamp	None	190	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	30	4,380	0.10	806	0.0	$133.81	$390.68	$100.00	2.17
Pole Lights	9	Mercury Vapor: (1) 400W Lamp	None	455	4,380	LED Retrofit	No	9	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	None	146	4,380	1.82	14,008	0.0	$2,325.74	$17,576.94	$900.00	7.17
Outdoors	3	Metal Halide: (1) 250W Lamp	None	295	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	46	4,380	0.49	3,763	0.0	$624.71	$1,172.03	$300.00	1.40
Pole Lights	2	Mercury Vapor: (2) 400W Lamps	None	910	4,380	LED Retrofit	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	None	292	4,380	0.81	6,226	0.0	$1,033.66	$3,905.99	$200.00	3.59

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical Room	Groundwater HP Supply/Return	2	Water-Source Heat Pump Circulation Pump	3.0	88.5%	No	1,950	No	88.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Groundwater HP Supply/Return	2	Water-Source Heat Pump Circulation Pump	5.0	87.5%	No	2,000	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Groundwater HP Supply/Return	2	Water-Source Heat Pump Circulation Pump	3.0	86.5%	No	2,000	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	14	Supply Fan	1.0	85.5%	No	2,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Multipurpose room	2	Supply Fan	2.0	86.5%	No	2,000	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Toilet and Storage	3	Exhaust Fan	0.2	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Kitchen Hood	1	Exhaust Fan	1.0	85.5%	No	2,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Electric Room	1	Exhaust Fan	0.5	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Toilet	1	Exhaust Fan	0.1	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	3	Supply Fan	0.8	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	1	Supply Fan	1.5	86.5%	No	2,000	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	2	Exhaust Fan	0.8	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	2	Exhaust Fan	0.5	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	1	Makeup Air Fan	0.5	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	10	Supply Fan	0.5	85.5%	No	2,000	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	All	4	Other	0.2	82.5%	No	2,000	No	82.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Multiple	All	12	Groundwater Source HP	4.23	42.80	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Multipurpose Room	2	Split-System Air-Source HP	10.60	54.20	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	10	Groundwater Source HP	3.36	34.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	2	Groundwater Source HP	5.52	57.60	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	4	Electric Resistance Heat		10.24	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	All	4	Electric Resistance Heat		10.24	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multipurpose Room	Multipurpose Room	2	Electric Resistance Heat		119.01	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Closet	All	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Multiple	21	Faucet Aerator (Lavatory)	1.50	1.00	0.00	2,489	0.0	$413.17	$150.57	$0.00	0.36

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Medium Temp Freezer (0F to 30F)	Yes	No	No	0.13	1,649	0.0	$273.78	$606.60	$0.00	2.22

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Stand-Up Refrigerator, Solid Door (≤15 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Multiple	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Novelty Cooler Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Cooler Description	Install Automatic Shutoff Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
kitchen	1	Milk Cooler	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Electric Convection Oven (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Electric Convection Oven (Full Size)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Electric Steamer	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (Low Temp)	Electric	N/A	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Office	5	Printer	40.0	Yes
Office	3	Copier	2.7	Yes
Office	14	Overhead Projector	363.0	No
Office	2	Copier	425.0	Yes
Multiple	45	Desktops	100.0	No
Multiple	2	Microwave	700.0	No
Multiple	2	TV	60.0	No
All	1	Coffee maker	780.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
All	1	Refrigerated	Yes	0.00	1,612	0.0	$267.61	$230.00	$0.00	0.86

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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90

ENERGY STAR® Score[1]

Collings Lakes Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 32,766
Built: 1968

For Year Ending: April 30, 2017
Date Generated: May 23, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Collings Lakes Elementary School 620 Cains Mill Road Williamstown, New Jersey 08094	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358234

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
34.7 kBtu/ft²

Source EUI
109 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	1,137,039 (100%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	56.1
National Median Source EUI (kBtu/ft²)	176.2
% Diff from National Median Source EUI	-38%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	126

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer Stamp
(if applicable)

Local Government Energy Audit:
Energy Audit Report



John C. Milanesi

Elementary School

880 Harding Highway

Buena, NJ 08310

Buena Regional School District

June 29, 2018

Draft Report by:

TRC Energy Services

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Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for John C. Milanesi Elementary School.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey school districts in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

John C. Milanesi Elementary School is a 39,817 square foot facility comprised of various space types such as classrooms, offices, hallways, gymnasium, kitchen, storage closets and a mechanical space. This is a single story facility. The school is mostly occupied between 9:30 AM and 4:30 PM during the weekdays. The school remains closed during the weekends.

Space heating in the building is provided by two gas-fired non-condensing hot water boilers and space cooling is provided by an air-cooled constant speed screw chiller using two air handlers and VAV boxes equipped with reheat. Lighting at the facility primarily consists of 2-foot or 4-foot linear T8 tubes, compact fluorescent lamp fixtures and LED lamps in a few spaces.

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated 12 measures and recommends 9 measures which together represent an opportunity for John C. Milanesi Elementary School to reduce annual energy costs by roughly $21,385 and annual greenhouse gas emissions by 127,709 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 7.0 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce John C. Milanesi Elementary School's annual energy use by 12%.

Figure 1 – Previous 12 Month Utility Costs

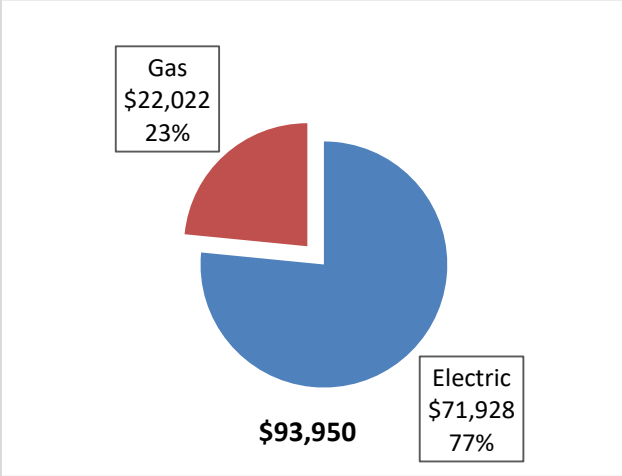
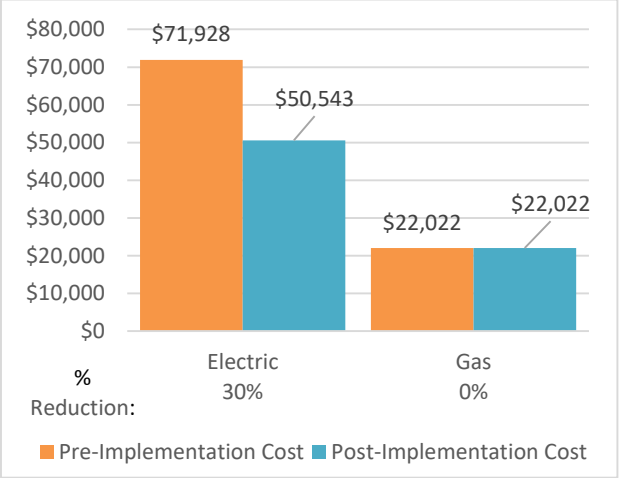


Figure 2 – Potential Post-Implementation Costs



A detailed description of John C. Milanesi Elementary School's existing energy use can be found in Section 3 "Site Energy Use and Costs".

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**41,424**	**14.7**	**0.0**	**$6,984.89**	**$55,160.88**	**$8,225.00**	**$46,935.88**	**6.7**	**41,713**
ECM 1	Install LED Fixtures	Yes	6,752	1.0	0.0	$1,138.53	$13,626.31	$850.00	$12,776.31	11.2	6,799
ECM 2	Retrofit Fixtures with LED Lamps	Yes	34,461	13.7	0.0	$5,810.91	$41,427.01	$7,375.00	$34,052.01	5.9	34,702
ECM 3	Install LED Exit Signs	Yes	210	0.0	0.0	$35.45	$107.56	$0.00	$107.56	3.0	212
Lighting Control Measures			**5,437**	**1.9**	**0.0**	**$916.82**	**$12,008.00**	**$840.00**	**$11,168.00**	**12.2**	**5,475**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	4,653	1.7	0.0	$784.64	$7,408.00	$840.00	$6,568.00	8.4	4,686
	Install High/Low Lighitng Controls	No	784	0.3	0.0	$132.18	$4,600.00	$0.00	$4,600.00	34.8	789
Variable Frequency Drive (VFD) Measures			**33,806**	**6.9**	**0.0**	**$5,700.34**	**$22,819.25**	**$3,200.00**	**$19,619.25**	**3.4**	**34,042**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	21,978	5.2	0.0	$3,706.01	$13,197.15	$3,200.00	$9,997.15	2.7	22,132
ECM 6	Install VFDs on Chilled Water Pumps	Yes	9,326	1.0	0.0	$1,572.48	$3,606.80	$0.00	$3,606.80	2.3	9,391
ECM 7	Install VFDs on Hot Water Pumps	Yes	2,502	0.8	0.0	$421.86	$6,015.30	$0.00	$6,015.30	14.3	2,519
Electric Unitary HVAC Measures			**813**	**0.9**	**0.0**	**$137.07**	**$6,588.48**	**$138.00**	**$6,450.48**	**47.1**	**819**
	Install High Efficiency Electric AC	No	813	0.9	0.0	$137.07	$6,588.48	$138.00	$6,450.48	47.1	819
Electric Chiller Replacement			**45,328**	**33.0**	**0.0**	**$7,643.25**	**$85,318.42**	**$9,000.00**	**$76,318.42**	**10.0**	**45,645**
ECM 8	Install High Efficiency Chillers	Yes	45,328	33.0	0.0	$7,643.25	$85,318.42	$9,000.00	$76,318.42	10.0	45,645
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**180.3**	**$1,860.42**	**$121,629.29**	**$3,711.76**	**$117,917.53**	**63.4**	**21,111**
	Install High Efficiency Hot Water Boilers	No	0	0.0	180.3	$1,860.42	$121,629.29	$3,711.76	$117,917.53	63.4	21,111
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$271.79**	**$230.00**	**$0.00**	**$230.00**	**0.8**	**1,623**
ECM 9	Vending Machine Control	Yes	1,612	0.0	0.0	$271.79	$230.00	$0.00	$230.00	0.8	1,623
TOTALS FOR HIGH PRIORITY MEASURES			**126,823**	**56.3**	**0.0**	**$21,384.90**	**$170,936.55**	**$21,265.00**	**$149,671.55**	**7.0**	**127,709**
TOTALS FOR ALL EVALUATED MEASURES			**128,419**	**57.5**	**180.3**	**$23,514.58**	**$303,754.32**	**$25,114.76**	**$278,639.56**	**11.8**	**150,428**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

Electric Chiller measures generally involve replacing older inefficient hydronic chillers with modern energy efficient systems. New chillers can provide equivalent cooling compared to older chillers at a reduced energy cost. These measures save energy by reducing chiller energy usage, due to improved electrical and heat transfer efficiency.

Gas Heating (HVAC/Process) measures generally involve replacing older inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide equivalent heating compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel demands for heating, due to improved combustion and heat transfer efficiency.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC Energy Services also identified 8 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at John C. Milanesi Elementary School include:

- Ensure Lighting Controls Are Operating Properly
- Perform Routine Motor Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-Site generation for John C. Milanesi Elementary School. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	185	kW DC STC
Electric Generation	220,404	kWh/yr
Displaced Cost	$19,180	/yr
Installed Cost	$481,000	

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)
- Energy Savings Improvement Program (ESIP)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SS incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SS program. More details on this program and others are available in Section 8.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.3 for additional information on the ESIP Program.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state

region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Joe Biluck Jr	Interim Buildings and Grounds Supervisor	jbiluck@buena.k12.nj.us	856-697-0800
Julie Scarborough	Maintenance		
TRC Energy Services			
Alexander Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On May 23, 2018, TRC Energy Services performed an energy audit at John C. Milanesi Elementary School located in Buena, NJ. TRC Energy Services' team met with Julie Scarborough to review the facility operations and help focus our investigation on specific energy-using systems.

Lighting at the facility is provided mostly by 4-foot and 2-foot linear 32 Watt fluorescent T8 lamps with electronic ballasts as well as some LED and CFL lamps. Most of the linear fluorescent fixtures are 2-lamp, 3-lamp or 4-lamp long troffers. Smaller spaces such as closets and restrooms are lit using (60-watt) incandescent lamps, (9-watt) LED lamps and (13-watt) CFL.

The building was constructed in 1958. Lighting control in the school is provided by occupancy sensors and wall switches. The occupancy sensors are either wall or ceiling mounted depending on the space layout. The building's exterior lighting consists of LED lamps in wall packs and CFLs in canopy fixtures. Pole fixtures have 100-watt metal halide or 250-watt high pressure sodium lamps. The exterior lights are controlled by timers.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 100 staff and 450 students.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
John C. Milanesi Elementary School	Weekday	9:30 AM - 4:00 PM
John C. Milanesi Elementary School	Weekend	No operation

2.4 Building Envelope

The building is constructed of concrete block with a brick facade. The building has a pitched roof with asphalt shingles in most areas. The roof over the media center and in a small portion above the janitors' closet have black EPDM membranes. The buildings have double pane windows which are in good condition. The exterior doors are constructed of aluminum and in good condition.



Image 1 Building Envelope

2.5 On-Site Generation

John C. Milanesi Elementary School does not have any on-site electric generation systems currently installed.

2.6 Energy-Using Systems

Lighting System

Lighting at the facility is provided mostly by 4-foot and 2-foot linear 32 Watt fluorescent T8 lamps with electronic ballasts as well as some LED and CFL lamps. Most of the linear fluorescent fixtures are 2-lamp, 3-lamp or 4-lamp long troffers. Smaller spaces such as closets and restrooms are lit using (60-watt) incandescent lamps, (9-watt) LED lamps and (13-watt) CFL.

Lighting control in the school is provided by occupancy sensors and wall switches. The occupancy sensors are either wall or ceiling mounted depending on the space layout. The building's exterior lighting consists of LED lamps in wall packs and CFLs in canopy fixtures. Pole fixtures have 100-watt metal halide or 250-watt high pressure sodium lamps. The exterior lights are controlled by timers.



Image 2 Lighting System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's lighting equipment.

Hot Water Heating System

The hot water system consists of two gas-fired non-condensing HB Smith hot water boilers with output capacities of 4200 MBh and 2855 MBh, both with efficiency ratings of 80%. The hot water from the boiler is circulated throughout the school using three sets of pumps; two 1.5 hp, two 3 hp, and a single 1 hp pump. The boilers provide hot water to radiators and unit ventilators throughout the building, as well as coils within VAV units.

Hot water is supplied at 180°F when the outside air temperature is below 50°F and the setpoint is reset to 155°F when the outside air is above 65°F.

The boilers are 58 years and 45 years old respectively, and have been evaluated for replacement.



Image 3 Hot water heating system

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of facility's heating equipment.

Chilled Water Air Conditioning System (CHW)

The facility is served by a single air-cooled, 100-ton Trane screw chiller producing 40°F chilled water. Chilled water is supplied to the VAV units and air handler unit (AHU) cooling coils by a dedicated pump with a 7.5 hp constant speed motor. Conditioned air is distributed by the AHU across various spaces by a 25 hp supply air fan and 15 hp return air fan. The air handling unit is equipped with VAV boxes with hot and chilled water coils. The chiller is 17 years old and has been evaluated for replacement.



Image 4 Chilled Water System

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning system equipment.

Direct Expansion Air Conditioning System (DX)

Many classrooms and office spaces are cooled using window AC units with capacities ranging from 1 to 2 tons. Most of these window AC units are less than 10 years old and in good condition. The Main office and Principal's office, however, are cooled using 0.75 ton Sanyo split AC units that are 28 years old.

The media center has two rooftop packaged units serving the space. The capacity of these two units are assumed to be 5 tons for analytical purposes. These units are very old and are past their useful life. The space temperatures are controlled using programmable thermostats in the respective zones.



Image 5 Direct Expansion AC system

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's air conditioning equipment.

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one electric and one gas fired hot water heaters with tank capacities of 120 and 100 gallons respectively. The electric water heater is 12 years old and the gas fired unit is 7 years old. Both units were found to be in fair condition.



Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's domestic hot water equipment.

Food Service & Refrigeration

The kitchen has a combination of gas and electric equipment. These include steamers, gas range with 8 burners and gas-fired convection oven. The refrigeration equipment consists of one walk in refrigerator,

stand-up refrigerator and a refrigerator chest. The kitchen also has a commercial dishwasher with an electric booster.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's food service and laundry equipment.

Building Plug Load

There are roughly 50 computer work stations and laptops throughout the facility. Other office plug loads include printers, projectors, smart boards etc. There are a few kitchenette plug loads that include refrigerators, toaster oven, coffee machines and microwave oven. There is no centralized PC power management software installed. There is one refrigerated vending machine in the facility. It is recommended that we install occupancy based controls on the machine.

Please see **Appendix A: Equipment Inventory & Recommendations** for an inventory of the facility's plug load equipment.

2.7 Water-Using Systems

The restroom faucets are rated for 2.2 gpm or lower, the toilets are rated at 1.5 gallons per flush and the urinals are rated at 1 gallons per flush.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

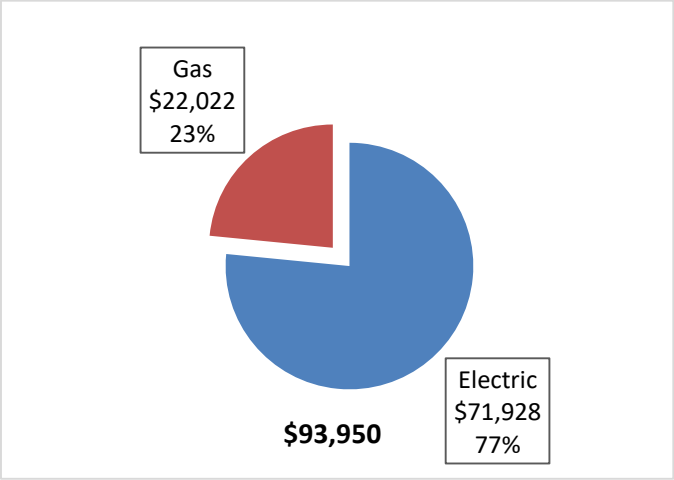
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for John C. Milanesi Elementary School		
Fuel	**Usage**	**Cost**
Electricity	426,569 kWh	$71,928
Natural Gas	21,342 Therms	$22,022
Total		**$93,950**

The current annual energy cost for this facility is $93,950 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost over the past 12 months was $0.169/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The third party electric supply is provided by Constellation. The monthly electricity consumption and peak demand are shown in the chart below. High summer use indicates the seasonal use of cooling systems.

Figure 9 - Graph of 12 Months Electric Usage & Demand

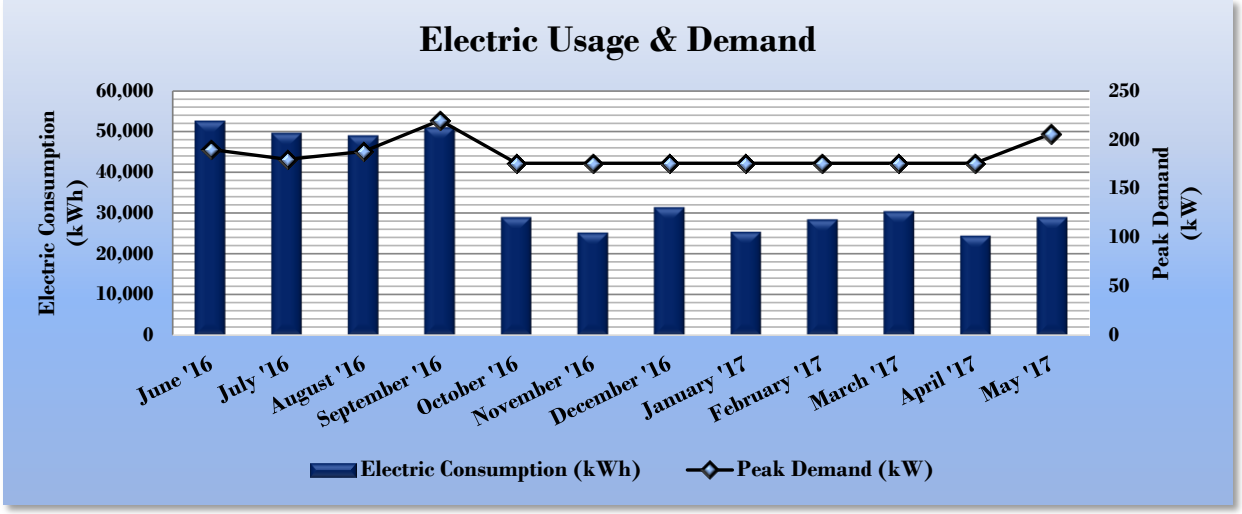


Figure 10 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for John C. Milanesi Elementary School					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/24/16	30	52,600	190		$7,870
7/26/16	32	49,600	180		$7,592
8/25/16	30	49,000	188		$7,437
9/28/16	34	51,000	220		$8,478
10/26/16	28	29,000	176		$5,039
11/23/16	28	25,200	176		$4,604
12/28/16	35	31,400	176		$5,744
1/25/17	28	25,400	176		$4,619
2/23/17	29	28,400	176		$5,018
3/27/17	32	30,400	176		$5,431
4/23/17	27	24,400	176		$4,630
5/24/17	31	29,000	206		$5,269
Totals	**364**	**425,400**	**220**	**$0**	**$71,731**
Annual	**365**	**426,569**	**220**	**$0**	**$71,928**

3.3 Natural Gas Usage

Natural gas is provided by South Jersey Gas. The average gas cost for the past 12 months is $1.032/therm, which is the blended rate used throughout the analyses in this report. The third party gas supply is provided by Direct Energy. The monthly gas consumption is shown in the chart below. Gas is mainly used for space heating at this facility.

Figure 11 - Graph of 12 Months Natural Gas Usage

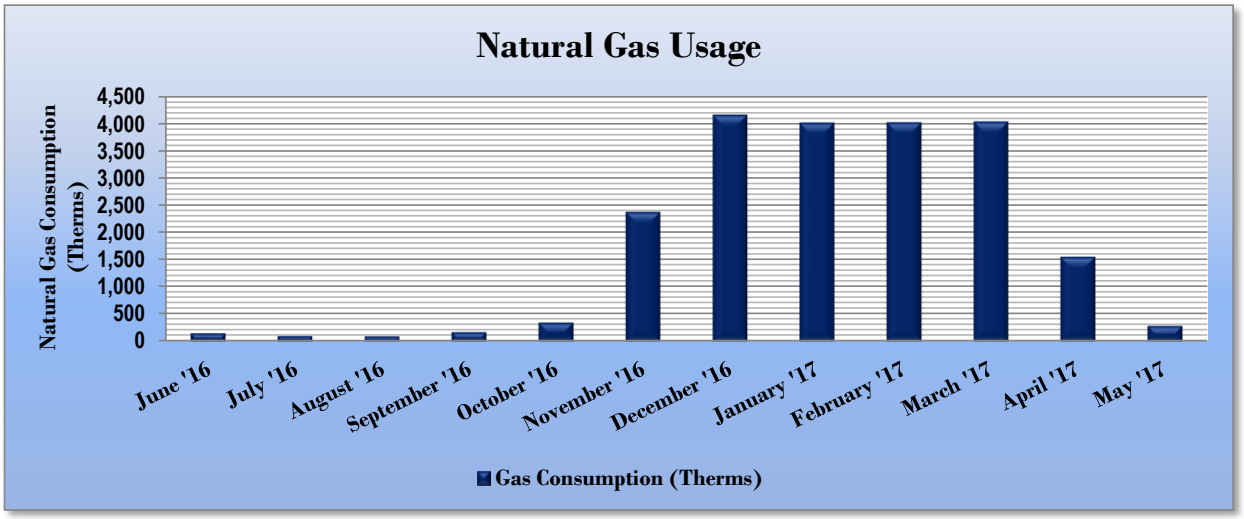


Figure 12 - Table of 12 Months Natural Gas Usage

Gas Billing Data for John C. Milanesi Elementary School			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/24/16	30	150	$164
7/26/16	32	98	$118
8/26/16	31	93	$84
9/28/16	33	171	$185
10/25/16	27	346	$366
11/23/16	29	2,375	$2,377
12/28/16	35	4,155	$4,549
1/25/17	28	4,013	$3,912
2/23/17	29	4,016	$3,915
3/27/17	32	4,034	$4,358
4/26/17	30	1,549	$1,616
5/24/17	28	283	$318
Totals	**364**	**21,284**	**$21,961**
Annual	**365**	**21,342**	**$22,022**

3.4 Benchmarking

This facility was benchmarked using *Portfolio Manager*, an online tool created and managed by the U.S. Environmental Protection Agency (EPA) through the ENERGY STAR™ program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR Score for select building types.

Energy Use Intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy". Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	John C. Milanesi Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	171.1	141.4
Site Energy Use Intensity (kBtu/ft^2)	90.2	58.2

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the Table below:

Figure 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	John C. Milanesi Elementary School	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft^2)	136.9	141.4
Site Energy Use Intensity (kBtu/ft^2)	79.3	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR™ score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of **15.**

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see **Appendix B: EPA Statement of Energy Performance**.

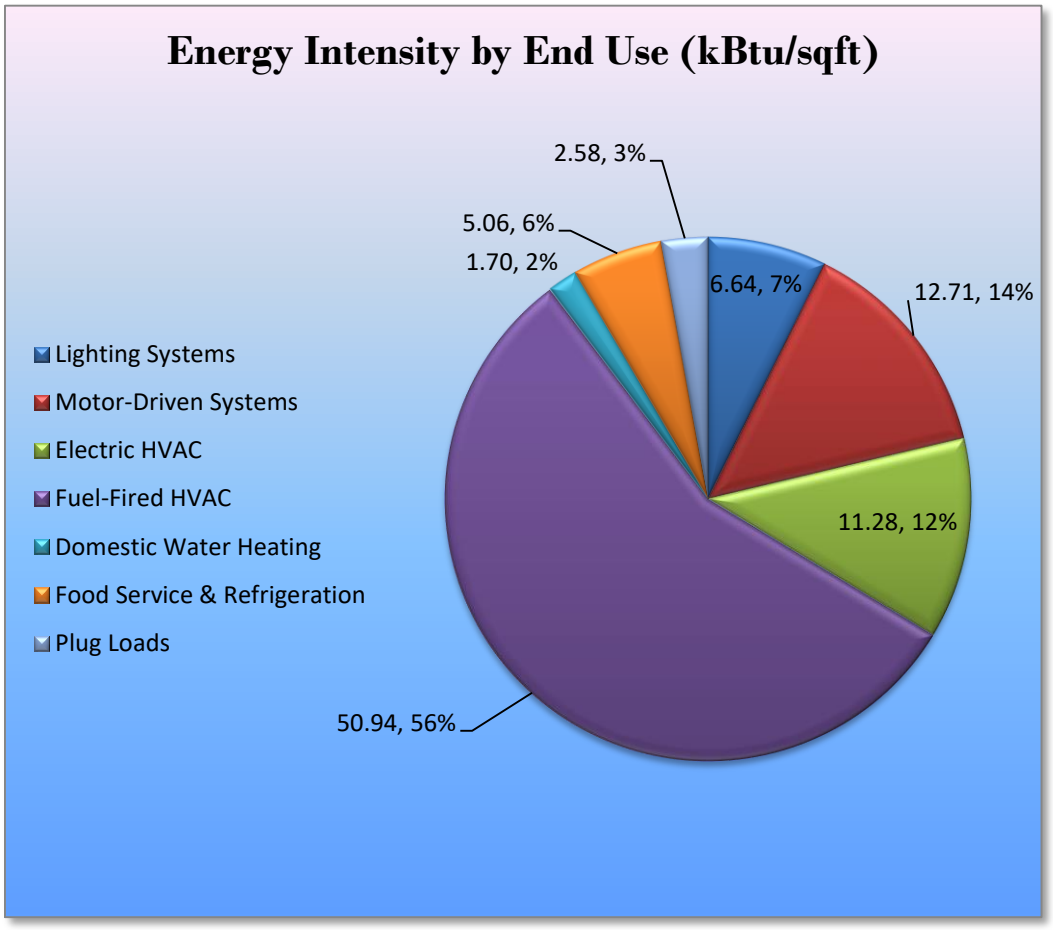
For more information on Energy Star certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training is available to help you use Energy Star Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 15 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the John C. Milanesi Elementary School regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 16 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**41,424**	**14.7**	**0.0**	**$6,984.89**	**$55,160.88**	**$8,225.00**	**$46,935.88**	**6.7**	**41,713**
ECM 1	Install LED Fixtures	6,752	1.0	0.0	$1,138.53	$13,626.31	$850.00	$12,776.31	11.2	6,799
ECM 2	Retrofit Fixtures with LED Lamps	34,461	13.7	0.0	$5,810.91	$41,427.01	$7,375.00	$34,052.01	5.9	34,702
ECM 3	Install LED Exit Signs	210	0.0	0.0	$35.45	$107.56	$0.00	$107.56	3.0	212
Lighting Control Measures		**4,653**	**1.7**	**0.0**	**$784.64**	**$7,408.00**	**$840.00**	**$6,568.00**	**8.4**	**4,686**
ECM 4	Install Occupancy Sensor Lighting Controls	4,653	1.7	0.0	$784.64	$7,408.00	$840.00	$6,568.00	8.4	4,686
Variable Frequency Drive (VFD) Measures		**33,806**	**6.9**	**0.0**	**$5,700.34**	**$22,819.25**	**$3,200.00**	**$19,619.25**	**3.4**	**34,042**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	21,978	5.2	0.0	$3,706.01	$13,197.15	$3,200.00	$9,997.15	2.7	22,132
ECM 6	Install VFDs on Chilled Water Pumps	9,326	1.0	0.0	$1,572.48	$3,606.80	$0.00	$3,606.80	2.3	9,391
ECM 7	Install VFDs on Hot Water Pumps	2,502	0.8	0.0	$421.86	$6,015.30	$0.00	$6,015.30	14.3	2,519
Electric Chiller Replacement		**45,328**	**33.0**	**0.0**	**$7,643.25**	**$85,318.42**	**$9,000.00**	**$76,318.42**	**10.0**	**45,645**
ECM 8	Install High Efficiency Chillers	45,328	33.0	0.0	$7,643.25	$85,318.42	$9,000.00	$76,318.42	10.0	45,645
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$271.79**	**$230.00**	**$0.00**	**$230.00**	**0.8**	**1,623**
ECM 9	Vending Machine Control	1,612	0.0	0.0	$271.79	$230.00	$0.00	$230.00	0.8	1,623
TOTALS		**126,823**	**56.3**	**0.0**	**$21,384.90**	**$170,936.55**	**$21,265.00**	**$149,671.55**	**7.0**	**127,709**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Recommended upgrades to existing lighting fixtures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**41,424**	**14.7**	**0.0**	**$6,984.89**	**$55,160.88**	**$8,225.00**	**$46,935.88**	**6.7**	**41,713**
ECM 1	Install LED Fixtures	6,752	1.0	0.0	$1,138.53	$13,626.31	$850.00	$12,776.31	11.2	6,799
ECM 2	Retrofit Fixtures with LED Lamps	34,461	13.7	0.0	$5,810.91	$41,427.01	$7,375.00	$34,052.01	5.9	34,702
ECM 3	Install LED Exit Signs	210	0.0	0.0	$35.45	$107.56	$0.00	$107.56	3.0	212

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended upgrades for each lighting measure.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	540	0.2	0.0	$91.11	$1,127.00	$50.00	$1,077.00	11.8	544
Exterior	6,212	0.8	0.0	$1,047.42	$12,499.31	$800.00	$11,699.31	11.2	6,255

Measure Description

We recommend replacing exterior fixtures containing HID lamps, including metal halide and high pressure sodium, with new high performance LED light fixtures. Fixtures in the Wash area are also recommended for replacement. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of HID sources.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	34,367	13.7	0.0	$5,794.95	$41,212.00	$7,375.00	$33,837.00	5.8	34,607
Exterior	95	0.0	0.0	$15.95	$215.01	$0.00	$215.01	13.5	95

Measure Description

We recommend retrofitting existing incandescent, compact fluorescent, and linear T8 lamp lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 3: Install LED EXIT Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	210	0.0	0.0	$35.45	$107.56	$0.00	$107.56	3.0	212
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing all incandescent or compact fluorescent EXIT signs with LED EXIT signs. LED EXIT signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.1.2 Lighting Control Measures

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**4,653**	**1.7**	**0.0**	**$784.64**	**$7,408.00**	**$840.00**	**$6,568.00**	**8.4**	**4,686**
ECM 4	Install Occupancy Sensor Lighting Controls	4,653	1.7	0.0	$784.64	$7,408.00	$840.00	$6,568.00	8.4	4,686

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled. Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of the locations and recommended lighting controls upgrades for each lighting measure.

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,653	1.7	0.0	$784.64	$7,408.00	$840.00	$6,568.00	8.4	4,686

Measure Description

We recommend installing occupancy sensors to control lighting fixtures in many restrooms, storage rooms, classrooms and offices areas that are controlled by manual switches. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

4.1.3 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 19 below.

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**33,806**	**6.9**	**0.0**	**$5,700.34**	**$22,819.25**	**$3,200.00**	**$19,619.25**	**3.4**	**34,042**
ECM 5	Install VFDs on Constant Volume (CV) HVAC	21,978	5.2	0.0	$3,706.01	$13,197.15	$3,200.00	$9,997.15	2.7	22,132
ECM 6	Install VFDs on Chilled Water Pumps	9,326	1.0	0.0	$1,572.48	$3,606.80	$0.00	$3,606.80	2.3	9,391
ECM 7	Install VFDs on Hot Water Pumps	2,502	0.8	0.0	$421.86	$6,015.30	$0.00	$6,015.30	14.3	2,519

Please see **Appendix A: Equipment Inventory & Recommendations** for more information about current motors systems and VFD recommendations.

ECM 5: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
21,978	5.2	0.0	$3,706.01	$13,197.15	$3,200.00	$9,997.15	2.7	22,132

Measure Description

We recommend installing variable frequency drives (VFDs) on AHU 1 to control 25 hp supply fan motor and 15 hp return fan motor speeds to convert a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing will have to be determined during the final project design. The control system should be programmed to maintain the minimum air flow whenever the compressor is operating.

ECM 6: Install VFDs on Chilled Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
9,326	1.0	0.0	$1,572.48	$3,606.80	$0.00	$3,606.80	2.3	9,391

Measure Description

We recommend installing a variable frequency drives (VFD) to control the 7.5 hp chilled water pump. This measure requires that chilled water coils be served by 2-way valves and that a differential pressure sensor be installed in the chilled water loop. As the chilled water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as chilled water valves close. The magnitude of energy savings is based on the estimated amount of time that the system operates at reduced loads.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will have to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

ECM 7: Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,502	0.8	0.0	$421.86	$6,015.30	$0.00	$6,015.30	14.3	2,519

Measure Description

We recommend installing a variable frequency drives (VFD) to control the two 3 hp hot water pumps. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.4 Electric Chiller Replacement

ECM 8: Install High Efficiency Chillers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
45,328	33.0	0.0	$7,643.25	$85,318.42	$9,000.00	$76,318.42	10.0	45,645

Measure Description

We recommend replacing older inefficient constant speed 100 ton electric chiller with new high efficiency chillers. The type of chiller to be installed depends on the magnitude of the cooling load and variability of the cooling load profile. Positive displacement chillers are usually under 600 tons of cooling capacity and centrifugal chillers generally start at 150 tons of cooling capacity. Constant speed chillers should be used to meet cooling loads with little or no variation while variable speed chillers are more efficient for variable cooling load profiles. Water cooled chillers are more efficient than air cooled chillers but require cooling towers and additional pumps to circulate the cooling water. In any given size range variable speed chillers tend to have better partial load efficiency, but worse full load efficiency, than constant speed chillers.

The savings result from the improvement in chiller efficiency and matching the right type of chiller to the cooling load. The energy savings associated with this measure is based on the cooling capacity of the new chiller, the improvement in efficiency compared with the base case equipment, the cooling load profile, and the estimated annual operating hours of the chiller before and after the upgrade. Energy savings are maximized by proper selection of new equipment based on the cooling load profile.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measure upgrades.

4.1.5 Plug Load Equipment Control - Vending Machines

ECM 9: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,612	0.0	0.0	$271.79	$230.00	$0.00	$230.00	0.8	1,623

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

4.2 ECMs Evaluated But Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 20 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures	**784**	**0.3**	**0.0**	**$132.18**	**$4,600.00**	**$0.00**	**$4,600.00**	**34.8**	**789**
Install High/Low Lighitng Controls	784	0.3	0.0	$132.18	$4,600.00	$0.00	$4,600.00	34.8	789
Electric Unitary HVAC Measures	**813**	**0.9**	**0.0**	**$137.07**	**$6,588.48**	**$138.00**	**$6,450.48**	**47.1**	**819**
Install High Efficiency Electric AC	813	0.9	0.0	$137.07	$6,588.48	$138.00	$6,450.48	47.1	819
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**180.3**	**$1,860.42**	**$121,629.29**	**$3,711.76**	**$117,917.53**	**63.4**	**21,111**
Install High Efficiency Hot Water Boilers	0	0.0	180.3	$1,860.42	$121,629.29	$3,711.76	$117,917.53	63.4	21,111
TOTALS	**1,597**	**1.2**	**180.3**	**$2,129.67**	**$132,817.77**	**$3,849.76**	**$128,968.01**	**60.6**	**22,719**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
784	0.3	0.0	$132.18	$4,600.00	$0.00	$4,600.00	34.8	789

Measure Description

We evaluated installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are stairwells, interior corridors, parking lots, and parking garages.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Please see **Appendix A: Equipment Inventory & Recommendations** for a detailed list of lighting fixture locations and proposed measures.

Reasons for not Recommending

The simple payback for this control measure, at over 30 years, cannot be justified just on the basis of energy savings alone. However, the site may wish to consider controls for other reasons, including maintenance savings and reliability.

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
813	0.9	0.0	$137.07	$6,588.48	$138.00	$6,450.48	47.1	819

Measure Description

We evaluated replacing older standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. There have been significant improvements in both compressor and fan

motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

The simple payback for replacing the older AC units at this site with new high efficiency units, at over 45 years, exceeds the expected useful life of the equipment and is therefore not recommended on the basis of energy savings alone. However, the site may wish to consider replacement for other reasons, including for maintenance savings and reliability.

Install High Efficiency Hot Water Boilers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	180.3	$1,860.42	$121,629.29	$3,711.76	$117,917.53	63.4	21,111

Measure Description

We evaluated replacing the older inefficient hot water boilers with high efficiency hot water boilers. Significant improvements have been made in combustion technology resulting in increased overall boiler efficiency. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130 °F. Therefore, condensing hydronic boilers were only evaluated when the return water temperature is less than 130°F during most of the operating hours.

Please see **Appendix A: Equipment Inventory & Recommendations** for more details on existing equipment and proposed measures.

Reasons for not Recommending

The simple payback for replacing the existing boilers at this site with new high efficiency boilers, at over 60 years, exceeds the expected useful life of the equipment and is therefore not recommended on the basis of energy savings alone. However, the site may wish to consider replacement for other reasons, including for maintenance savings and reliability.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10 °F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler

can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

6 On-Site Generation Measures

On-site eneration measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

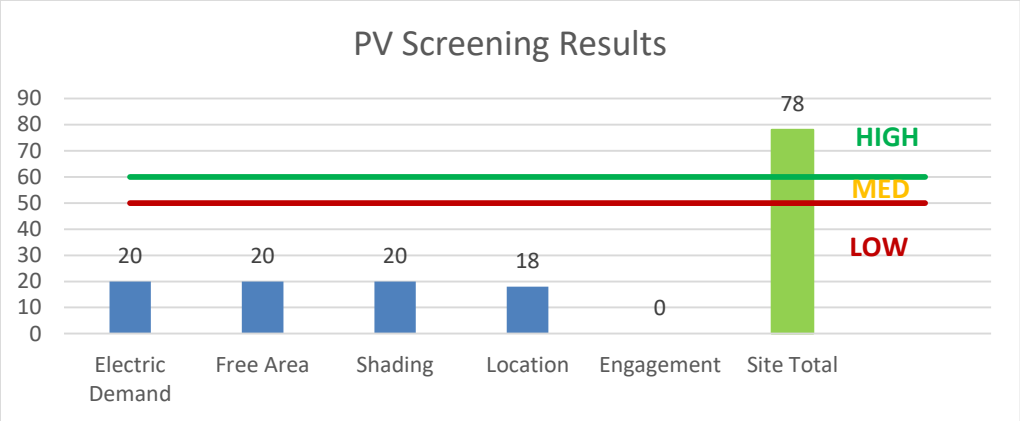
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **High** potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential for PV at the site. A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If John C. Milanesi Elementary School is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 21 - Photovoltaic Screening



Potential	High	
System Potential	185	kW DC STC
Electric Generation	220,404	kWh/yr
Displaced Cost	$19,180	/yr
Installed Cost	$481,000	

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.2 for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

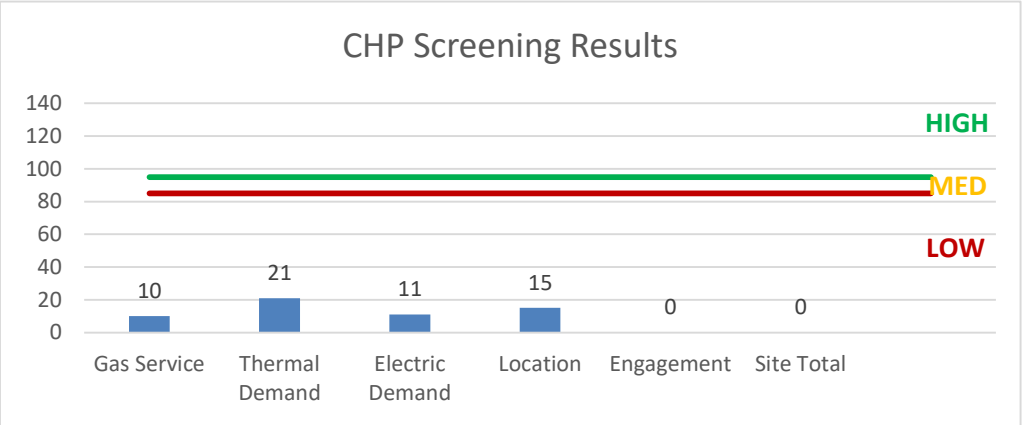
Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **Low** potential for installing a cost-effective CHP system. Low or infrequent thermal load and lack of space near the existing boilers are the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 22 - Combined Heat and Power Screening



7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (www.pjm.com/training/trainingmaterial.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion this school is not a good candidate for demand response program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 23 for a list of the eligible programs identified for each recommended ECM.

Figure 23 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive
ECM 1	Install LED Fixtures	x
ECM 2	Retrofit Fixtures with LED Lamps	x
ECM 3	Install LED Exit Signs	
ECM 4	Install Occupancy Sensor Lighting Controls	x
ECM 5	Install VFDs on Constant Volume (CV) HVAC	x
ECM 6	Install VFDs on Chilled Water Pumps	
ECM 7	Install VFDs on Hot Water Pumps	
ECM 8	Install High Efficiency Chillers	x
ECM 9	Vending Machine Control	

SmartStart (SS) is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci

8.1 SmartStart

Overview

The SmartStart (SS) program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SS prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SS program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one year payback (whichever is less. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB

8.2 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs.

Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC). Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec

8.3 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing. The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.11	322	0.0	$54.25	$351.00	$60.00	5.36
Well Room	1	Incandescent : 1 Lamp	Wall Switch	60	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.03	95	0.0	$16.07	$53.75	$5.00	3.03
Boiler room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.09	247	0.0	$41.59	$234.00	$40.00	4.66
Attic Space - Center	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.11	308	0.0	$51.99	$292.50	$50.00	4.66
Attic Space - Side area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Mech area	5	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	13	1,625	None	No	5	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	13	1,625	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Side Area 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.09	247	0.0	$41.59	$234.00	$40.00	4.66
Side Area 3	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.09	247	0.0	$41.59	$234.00	$40.00	4.66
Custodial room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$3.33	$58.50	$10.00	14.58
Main office	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.25	701	0.0	$118.26	$796.50	$125.00	5.68
Storage closet	1	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	13	520	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	520	0.00	2	0.0	$0.39	$53.75	$0.00	136.69
Principal office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.16	468	0.0	$78.84	$621.00	$95.00	6.67
Principal office restroom	1	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.03	95	0.0	$16.07	$53.75	$5.00	3.03
Guidance office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.11	312	0.0	$52.56	$504.00	$75.00	8.16
Conference room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.27	779	0.0	$131.40	$855.00	$135.00	5.48
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.11	312	0.0	$52.56	$504.00	$75.00	8.16
Nurse's office	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.19	555	0.0	$93.59	$526.50	$90.00	4.66
Nurse's office restroom	1	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.03	95	0.0	$16.07	$53.75	$5.00	3.03
Faculty restroom (2)	2	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	Yes	2	LED Screw-In Lamps: 1 Lamp - screw in	Occupancy Sensor	9	1,138	0.07	201	0.0	$33.84	$223.51	$10.00	6.31
CST Room 202	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,625	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.19	549	0.0	$92.52	$650.53	$115.00	5.79
Music room 204	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,138	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.44	879	0.0	$148.23	$1,141.60	$240.00	6.08
Music restroom	1	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	13	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.00	7	0.0	$1.23	$53.75	$0.00	43.74
Storage 209	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	364	0.05	50	0.0	$8.41	$233.00	$20.00	25.33
Girls restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.05	156	0.0	$26.28	$233.00	$20.00	8.10
Storage 208	2	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	23	1,625	Relamp	Yes	2	LED Screw-In Lamps: 1 Lamp - screw in	Occupancy Sensor	16	1,138	0.02	44	0.0	$7.39	$223.51	$0.00	30.23

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Faculty restroom 211	2	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	18	1,625	Relamp	Yes	2	LED Screw-In Lamps: 1 Lamp - screw in	Occupancy Sensor	13	1,138	0.01	34	0.0	$5.79	$223.51	$0.00	38.63
Copy room 215	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
215 A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.04	123	0.0	$20.80	$117.00	$20.00	4.66
Gym office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
CR 213	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,625	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.58	1,646	0.0	$277.55	$1,411.60	$275.00	4.10
CR 213 restroom	1	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	13	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.00	7	0.0	$1.23	$53.75	$0.00	43.74
Storage 210	1	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	13	520	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	520	0.00	2	0.0	$0.39	$53.75	$0.00	136.69
Library 219	35	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,625	Relamp	Yes	35	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	1.68	4,801	0.0	$809.52	$3,869.67	$770.00	3.83
219A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.05	156	0.0	$26.28	$233.00	$20.00	8.10
Room 221	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,138	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.44	879	0.0	$148.23	$1,141.60	$240.00	6.08
Room 223	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,138	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.26	518	0.0	$87.35	$702.00	$120.00	6.66
220 OT/PT	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,138	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.26	518	0.0	$87.35	$702.00	$120.00	6.66
CR 218	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,138	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.44	879	0.0	$148.23	$1,141.60	$240.00	6.08
CR 216	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,138	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.44	879	0.0	$148.23	$1,141.60	$240.00	6.08
CR 214	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	114	1,138	Relamp	No	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.44	879	0.0	$148.23	$1,141.60	$240.00	6.08
Boys restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.08	234	0.0	$39.42	$445.50	$65.00	9.65
Cafeteria	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.33	935	0.0	$157.68	$972.00	$155.00	5.18
Exit light	1	Exit Signs: Incandescent	None	30	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	242	0.0	$40.77	$107.56	$0.00	2.64
Teachers break room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,200	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	840	0.11	230	0.0	$38.81	$504.00	$75.00	11.05
CR 103	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.66	1,870	0.0	$315.36	$1,674.00	$275.00	4.44
Restroom	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	None	Yes	1	LED Screw-In Lamps: 1 Lamp - screw in	Occupancy Sensor	9	1,138	0.00	5	0.0	$0.85	$116.00	$0.00	136.34
CR 105	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
Restroom	1	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.03	95	0.0	$16.07	$53.75	$5.00	3.03
CR 107	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
Restroom	1	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.03	95	0.0	$16.07	$53.75	$5.00	3.03

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR 109	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
CR 114	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
CR 111	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
CR 116	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,138	0.41	1,169	0.0	$197.10	$1,147.50	$185.00	4.88
CR 118	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,625	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.25	701	0.0	$118.26	$721.20	$125.00	5.04
CR 118	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,625	0.02	54	0.0	$9.14	$63.20	$0.00	6.92
CR 120	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,625	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.25	701	0.0	$118.26	$721.20	$125.00	5.04
CR 120	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,625	0.02	54	0.0	$9.14	$63.20	$0.00	6.92
Restroom 115	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Custpodial closet 117	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$3.33	$58.50	$10.00	14.58
Storage 119	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	364	0.05	50	0.0	$8.41	$233.00	$20.00	25.33
Mechanical room 113	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.09	247	0.0	$41.59	$234.00	$40.00	4.66
Motor lab	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.39	777	0.0	$131.02	$902.40	$180.00	5.51
CR 123	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.45	907	0.0	$152.86	$1,052.80	$210.00	5.51
CR 123 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 123 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
CR 125	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.45	907	0.0	$152.86	$1,052.80	$210.00	5.51
CR 125 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 125 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
CR 127	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.45	907	0.0	$152.86	$1,052.80	$210.00	5.51
CR 127 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 127 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
CR 128	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.45	907	0.0	$152.86	$1,052.80	$210.00	5.51
CR 128 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 128 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
CR 126	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.39	777	0.0	$131.02	$902.40	$180.00	5.51
CR 126	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,625	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.08	234	0.0	$39.42	$150.40	$65.00	2.17
CR 126 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 126 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
CR 124	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,138	Relamp	No	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.39	777	0.0	$131.02	$902.40	$180.00	5.51
CR 124	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,625	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.08	234	0.0	$39.42	$150.40	$65.00	2.17
CR 124 restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.02	62	0.0	$10.40	$58.50	$10.00	4.66
Classroom 124 storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$3.33	$58.50	$10.00	14.58
CR 122	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,625	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,138	0.49	1,403	0.0	$236.52	$1,172.40	$215.00	4.05
Girls restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,625	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.14	411	0.0	$69.39	$555.40	$95.00	6.64
Boys restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	1,625	Relamp	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,138	0.14	411	0.0	$69.39	$555.40	$95.00	6.64
Kitchen restroom	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	None	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen restroom	1	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	18	1,625	Relamp	No	1	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	13	1,625	0.00	10	0.0	$1.70	$53.75	$0.00	31.59
Wash Area	3	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	1,625	Relamp	No	3	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	1,625	0.06	163	0.0	$27.41	$229.60	$60.00	6.19
Servimg Area	8	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	1,625	Relamp	No	8	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	1,625	0.15	434	0.0	$73.11	$612.27	$160.00	6.19
Kitchen hood	6	Incandescent : 1 Lamp - screw in	Wall Switch	60	1,625	Relamp	No	6	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	9	1,625	0.20	572	0.0	$96.42	$322.52	$30.00	3.03
Wash Area	5	Metal Halide: (1) 70W Lamp	Wall Switch	95	1,625	Fixture Replacement	No	5	LED - Fixtures: Ceiling Mount	Wall Switch	29	1,625	0.22	621	0.0	$104.77	$1,127.00	$50.00	10.28
Servimg Area	6	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	12	1,625	None	No	6	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	12	1,625	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Cooking area	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	63	1,625	Relamp	No	4	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	1,625	0.08	217	0.0	$36.55	$306.13	$80.00	6.19
Kitchen storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	520	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	520	0.04	33	0.0	$5.65	$95.13	$20.00	13.31
Freezer	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.04	123	0.0	$20.80	$117.00	$20.00	4.66
Main entry	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,625	0.08	217	0.0	$36.55	$252.80	$0.00	6.92
Display cabinet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,625	0.04	123	0.0	$20.80	$117.00	$20.00	4.66
Bcom hall	19	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	19	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,138	0.48	1,381	0.0	$232.90	$3,000.80	$0.00	12.88
White hall	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,138	0.46	1,325	0.0	$223.38	$2,794.50	$170.00	11.75

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
White hall	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,138	0.27	779	0.0	$131.40	$1,385.00	$100.00	9.78
White hall	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,625	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	1,138	0.15	436	0.0	$73.55	$579.20	$0.00	7.88
Exterior light - Wall pack	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	58	4,380	None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	58	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Entry canopy fixtures	4	Compact Fluorescent: 1 Lamp - screw in	Wall Switch	18	4,380	Relamp	No	4	LED Screw-In Lamps: 1 Lamp - screw in	Wall Switch	13	4,380	0.01	109	0.0	$18.35	$215.01	$0.00	11.72
Ground lights	2	Metal Halide: (1) 100W Lamp	Wall Switch	128	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	38	4,380	0.12	903	0.0	$152.20	$781.35	$200.00	3.82
Parking lots	6	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	295	4,380	Fixture Replacement	No	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	89	4,380	0.81	6,241	0.0	$1,052.33	$11,717.96	$600.00	10.57
All school	16	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	16	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room	Heat Distribution	2	Heating Hot Water Pump	1.5	86.5%	No	1,150	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	Heat Distribution	2	Heating Hot Water Pump	3.0	89.5%	No	1,150	No	89.5%	Yes	2	0.75	2,502	0.0	$421.86	$6,015.30	$0.00	14.26
Boiler room	DHW	1	Other	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room	DHW	1	Other	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room 2	Heat Distribution	2	Heating Hot Water Pump	1.0	85.5%	No	1,150	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mech room	Chiller	1	Chilled Water Pump	7.5	88.5%	No	3,391	No	88.5%	Yes	1	0.95	9,326	0.0	$1,572.48	$3,606.80	$0.00	2.29
Unknown	AHU 1	1	Return Fan	15.0	92.4%	No	3,391	No	92.4%	Yes	1	1.96	7,392	0.0	$1,246.43	$5,194.45	$1,200.00	3.20
Unknown	AHU 1	1	Supply Fan	25.0	93.6%	No	4,067	No	93.6%	Yes	1	3.23	14,586	0.0	$2,459.58	$8,002.70	$2,000.00	2.44
Chiller	fan motors	10	Supply Fan	1.0	85.5%	No	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
AHUs	VAV boxes	12	Supply Fan	0.3	60.0%	Yes	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
AHUs	Whole Building	5	Exhaust Fan	0.3	68.0%	Yes	2,745	No	68.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main office	Main office	1	Split-System AC	0.75		Yes	1	Split-System AC	0.75		14.00		No	0.24	205	0.0	$34.63	$1,122.17	$69.00	30.41
Principals office	Principals office	1	Split-System AC	0.75		Yes	1	Split-System AC	0.75		14.00		No	0.24	205	0.0	$34.63	$1,122.17	$69.00	30.41
Guidance office	Guidance office	1	Window AC	0.67		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conference room	Conference room	1	Window AC	1.19		Yes	1	Window AC	1.19		12.00		No	0.10	84	0.0	$14.20	$1,295.62	$0.00	91.25
Office	Office	1	Window AC	0.67		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Music Room	Music Room	1	Window AC	2.38		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 213	CR 213	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 221	Room 221	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Room 223	Room 223	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Teachers lounge	Teachers lounge	1	Window AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 103	CR 103	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 107	CR 107	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
CR 114	CR 114	1	Window AC	2.38		Yes	1	Window AC	2.80		12.00		No	0.37	318	0.0	$53.61	$3,048.53	$0.00	56.86
CR 116	CR 116	1	Window AC	2.08		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Nurse's office	Nurse's office	1	Window AC	1.19		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Media center	Media center	2	Packaged AC	5.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Grounds	New section	1	Air-Cooled Screw Chiller	100.00	Yes	1	Air-Cooled Centrifugal Chiller	Variable	100.00	1.24	0.74	33.01	45,328	0.0	$7,643.25	$85,318.42	$9,000.00	9.99

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room 1	Boiler room 1	1	Non-Condensing Hot Water Boiler	4,200.00	Yes	1	Non-Condensing Hot Water Boiler	4,200.00	90.00%	Ec	0.00	0	107.3	$1,107.52	$71,968.35	$0.00	64.98
Boiler room 2	Boiler room 2	1	Non-Condensing Hot Water Boiler	2,855.20	Yes	1	Non-Condensing Hot Water Boiler	2,855.20	90.00%	Ec	0.00	0	73.0	$752.90	$49,660.94	$3,711.76	61.03

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler room 1	One half building	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler room 2	Other half building	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Cooler (35F to 55F)	No	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Refrigerator Chest	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Steamer	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Kitchen	2	Gas Convection Oven (Half Size)	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (High Temp)	Electric	N/A	Yes	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
John C Milanesi Elementary School	3	Photo copier	400.0	Yes
John C Milanesi Elementary School	50	Desktop computer	145.0	Yes
John C Milanesi Elementary School	8	Desk printer	60.0	Yes
John C Milanesi Elementary School	1	LCD Tv	100.0	Yes
John C Milanesi Elementary School	13	Laptop	70.0	Yes
John C Milanesi Elementary School	3	Refrigerator	216.0	Yes
John C Milanesi Elementary School	2	Mini fridge	70.0	Yes
John C Milanesi Elementary School	17	Projector	200.0	Yes
John C Milanesi Elementary School	17	Smart board	5.0	Yes
John C Milanesi Elementary School	1	Chest freezer	20.0	Yes
John C Milanesi Elementary School	1	Chest refrigerator	40.0	Yes
John C Milanesi Elementary School	1	Toaster oven	1,200.0	Yes
John C Milanesi Elementary School	2	Microwave	900.0	Yes
John C Milanesi Elementary School	1	Coffee machine	400.0	Yes
John C Milanesi Elementary School	1	Water cooler	500.0	Yes
John C Milanesi Elementary School	5	CRT TV	120.0	Yes
John C Milanesi Elementary School	31	Chrome books	30.0	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Teachers lounge	1	Refrigerated	Yes	0.00	1,612	0.0	$271.79	$230.00	$0.00	0.85

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

John C. Milanesi Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 39,817
Built: 1958

For Year Ending: April 30, 2017
Date Generated: June 11, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
John C. Milanesi Elementary School 880 Harding Highway Buena, New Jersey 08310	Buena Regional School District 914 Main Avenue Richland, NJ 08350 (856) 697-0800	Joe Biluck, Jr. 914 Main Avenue Richland, NJ 08350 (856) 697-0800 jbiluck@buena.k12.nj.us

Property ID: 6358235

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
92.1 kBtu/ft²

Source EUI
173.6 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	2,201,376 (60%)
Electric - Grid (kBtu)	1,465,454 (40%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	65.9
National Median Source EUI (kBtu/ft²)	124.3
% Diff from National Median Source EUI	40%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	280

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer Stamp
(if applicable)

7.4 Direct Install Energy Assessment Tool Reports

Please see the attached documents.

New Jersey Office of Clean Energy
Direct Install Program
Energy Assessment Tool (V3.0d)

General Project Information

Participating Customer:	Buena Board of Ed		**Facility Type:**	Education – Primary School	
Contractor / Project #:	Hutchinson		**HVAC Type:**	AC & Gas Heat	
Facility Name:	Buena RSD-Milanesi ES		**Total Facility Square Footage:**	40,000	
Street Address:	880 Harding Highway		**Avg Weekly Hrs of Operation:**	80	
City / Zip Code:	Buena	08310	**# of Full-Time Employees:**	40	
Is this facility publicly owned?:		Y	**Year Constructed:**	1970	
BOE, MUA or other public entity property?		Y	**Tax Exempt?:**	Y	
			Project Permitting Costs:		

Electric Utility Information

Electric Provider:	Atlantic City Electric	
Service Class:	General Service	
Account #:	55009946553	
Billing Period Start Date:	05/26/18	
Billing Period End Date:	06/27/18	
Billing Period kWh Consumption:	32,000	
Billing Period Total Cost:	$4,867.02	
Total Taxes + Fees on Bill:	$405.08	
Electric - Average Cost ($/kWh):		**$0.139**

Gas Utility Information

Gas Provider:	South Jersey Gas	
Service Class:	General Service	
Account #:	4477230000	
Billing Period Start Date:	05/25/18	
Billing Period End Date:	06/27/18	
Billing Period Therm Consumption:	154	
Billing Period Total Cost:	$153.38	
Total Taxes + Fees on Bill:	$37.24	
Gas - Average Cost ($/Therm):		**$0.755**

Oil Information

Annual Consumption (Gallons):		
Annual Cost:		
Annual Taxes + Fees on Bill:		
Oil - Average Cost ($/Gallon):		**$0.000**

Propane Information

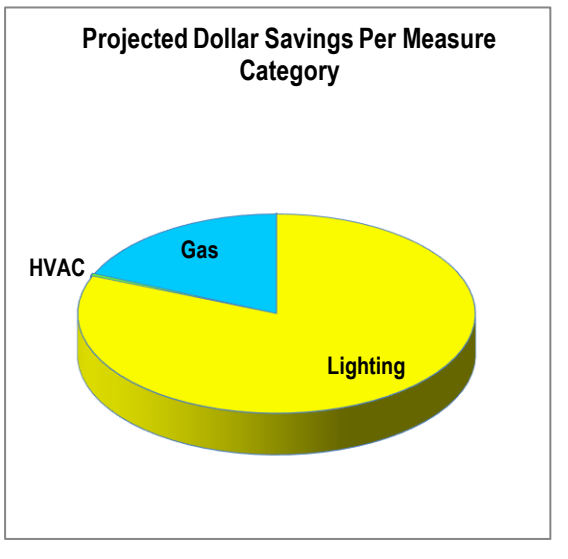
Annual Consumption (Gallons):		
Annual Cost:		
Annual Taxes + Fees on Bill:		
Propane - Average Cost ($/Gallon):		**$0.000**

Project Summary

	Annual Energy Savings	Energy Units	Annual Cost Savings	Total Measure Cost	Estimated Incentive Amount	Total Cost to Customer
Lighting Measures Total:	114,582	kWh	$15,976.88	$53,443.06	$37,410.14	$16,032.92
Motors & VFD Measures Total:	0	kWh	$0.00	$0.00	$0.00	$0.00
HVAC Electric Measures Total:	544	kWh	$75.83	$23,730.00	$16,611.00	$7,119.00
Refrigeration Measures Total:	0	kWh	$0.00	$0.00	$0.00	$0.00
ELECTRIC MEASURES:	**115,126**	**kWh**	**$16,052.71**	**$77,173.06**	**$54,021.14**	**$23,151.92**
GAS MEASURES:	**4,810**	**Therms**	**$3,629.16**	**$2,902.49**	**$2,031.74**	**$870.75**
OIL MEASURES:	**0**	**Gallons**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
TOTAL PROPANE MEASURES:	**0**	**Gallons**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
CONVERSION MEASURES (OIL):	**0**	**Gallons**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
CONVERSION MEASURES GAS:	**0**	**Therms**				
COMBINED PROJECT TOTALS:			**$19,681.87**	**$80,075.55**	**$56,052.89**	**$24,022.67**

SIMPLE PAYBACK (YEARS): **1.22**

PROJECT TRC TEST: **1.81**



Direct Install Energy Assessment Tool (ver. 3.0d)
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7.5 Asbestos Abatement Specs

To be provided once complete.

April 25, 2019

PROJECT MANUAL

FOR

ASBESTOS ABATEMENT

BUENA REGIONAL HIGH SCHOOL
125 WEYMOUTH ROAD
BUENA, NEW JERSEY 08310

Prepared for:

EPIC ENVIRONMENTAL SERVICES, LLC
1930 BROWN ROAD
NEWFIELD, NEW JERSEY 08344

Prepared by:

ATC GROUP SERVICES LLC
THREE TERRI LANE
BROMLEY CORPORATE CENTER
BURLINGTON, NEW JERSEY 08016
(609) 386-8800 FAX (609) 386-7951

ATC PROJECT NUMBER: 378510020

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SECTION 00002 – PROJECT DIRECTORY

OWNER: Buena Regional School District
125 Weymouth Road
Buena, New Jersey 08310
Office (856) 697-2400

JOB SITE: Buena Regional High School
125 Weymouth Road
Buena, New Jersey 08310

ASCM FIRM: ATC Group Services LLC (ASCM # 00098)
Bromley Corporate Center
3 Terri Lane, Suite 4
Burlington, New Jersey 08016
John R. Lutz
Senior Project Manager,
Building Sciences Division
Office (609) 386-8800, Extension 8512
Fax (609) 386-7951

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SECTION 00110 – ABATEMENT SCHEDULE

The following schedule indicates the times for start and completion of this asbestos abatement project as required by the Owner. Contractors shall indicate in their bids their best estimate of the time actually required for the work so that the Owner can adjust this schedule accordingly.

1. Bidding Documents Available: To be determined

2. Bids Received by the Owner: May 14, 2019

3. Owner Awards Contract: To be determined

4. Contractor Files All Necessary Notifications no later than: July 1, 2019

5. Abatement Activities Project Start and Completion Dates: July 15, 2019 to July 26, 2019

Receipt of all Closeout and Record Documentation will be due to ATC ten (10) business days after the completion of work. As indicated in Section 02084, Waste Shipment Records are required to be submitted to the Consultant within 48 hours upon Completion of the Work by the abatement contractor.

By the dates and times stated for completion of abatement, the following tasks shall be accomplished by the Abatement Contractor and verified and agreed upon by the Abatement Contractor and the Consultant.

1. Final air clearance obtained.
2. Containment and equipment and personnel decontamination units removed.
3. All equipment, materials, plastic, tape, nails, etc. removed from the work areas.
4. Building damage resulting from abatement activities documented.
5. Final cleaning of the work areas completed including waste load-out.
6. Substantial completion form submitted.

END OF SECTION 00110

SECTION 00420 – MANIFEST TRACKING LOG

GENERAL

A. Contractor shall provide the Owner with a copy of any applicable manifest form(s) required by local, State and federal regulatory agencies.

1. Manifests shall be fully completed and shall be signed by the Contractor's representative; the Hauler assigned to carry the waste and the disposal site where the waste is deposited.

B. Contractor shall provide copies of any commercial carriers bills of lading generated for shipment of waste from the site.

END OF SECTION 00420

SECTION 01010 – SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Project is identified as Buena Regional High School, Buena, New Jersey.

B. The Scope of Work consists of the removal of all asbestos-containing materials from areas as described in the project manual and indicated on the drawings.

C. Asbestos Abatement Work includes, but is not limited to, all procedures relating to removal of asbestos-containing materials, disposal of asbestos-containing materials and proving all general conditions and temporary facilities and construction controls throughout the course of the abatement contract. ***ASBESTOS REMOVAL OPERATIONS IN THE BOILER ROOM OF THE BUENA REGIONAL HIGH SCHOOL LOCATED AT 15 WEYMOUTH AVANUE IN BUENA, NEW JERSEY ARE SUBJECT TO SUBCHAPTER 8 OCCUPIED BUILDING PROJECT REQUIREMENTS.***

1.02 CONTRACTOR'S DUTIES

A. Contractor's duties include the following:

1. Unless specifically noted, provide and pay for labor, materials and equipment, tools, construction equipment and machinery, utilities required for Abatement (Refer to Section 02081), other facilities and services necessary for proper execution and completion of work.

2. Legally required sales, consumer and use taxes.

3. Secure and pay for required permits, fees and licenses necessary for proper execution and completion of work, as applicable at time of receipt of bids.

4. Give required notices.

5. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities, which bear on performance of work.

6. Promptly submit written notice to Consultant of observed variance of contract documents from legal requirements. Assume responsibility for work known to be contrary to such requirements without notice. Any required procedural variances will be obtained by the ASCM prior to the commencement of asbestos abatement activities.

7. Enforce strict discipline and good order among employees. Employ only persons sufficiently skilled and trained in assigned task.

1.03 DESCRIPTION OF WORK

A. Perform all work in accordance with all applicable Federal, State and local regulations applicable to work of this nature and this project manual. Including but not limited to, Subchapter 8 regulations regarding asbestos removal in occupied buildings**.** The Scope of the work is as follows:

FRIABLE ABATEMENT – SUBCHAPTER 8

1. **Buena High School, Buena, NJ –Boiler Room:**

Remove and properly dispose of ***all*** asbestos-containing boiler packing, breeching and gasket insulation form both boiler units. This abatement shall include the demolition and remove of the boiler units. The work in this area shall be accomplished utilizing wet removal methods in a ***Full Isolation Containment*** with negative air pressure differential and three-stage personnel decontamination units as described in this project manual and indicated on the contract drawings:

Boiler #1: Boiler Packing and Gasket Insulation	approximately 210 SF
Boiler #2: Boiler Packing and Gasket Insulation	approximately 210 SF
Boiler #1&2: Breeching Insulation	approximately 240 SF

The work in this area shall include the removal and proper disposal of all above identified building materials.

The above referenced quantities of asbestos-containing materials is provided for use as general guidance and may ***not*** be all inclusive of actual conditions. The Contractor is required to visit the site to determine the exact locations, quantities and conditions of materials in order to insure complete removal of ***all*** asbestos-containing and/or asbestos-contaminated materials that exists within these areas.

1.04 DRAWING SCHEDULE

A. The following drawings are referred to throughout these documents and are included as part of the Contract Documents.

1. Drawing -1 Buena Regional High School, Buena, NJ – Boiler Room (Subchapter 8)

1.05 CONTRACTOR USE OF PREMISES

A. Confine operations at site to areas permitted by law, ordinances, permits, contract documents and specific designation shown on drawings.

B. Do not unreasonably encumber site with materials or equipment. Staging areas will be located as directed by Owner.

C. Do not load structure with weight that will endanger structure.

D. Assume full responsibility for protection and safekeeping of products stored on premises.

E. Move any stored products which interfere with operations of Owner or other contractors.

F. Obtain and pay for use of additional storage or work areas needed for operations.

1.06 PARTIAL OWNER OCCUPANCY

A. Confine operations at site to areas permitted by law, ordinances, permits, contract documents and specific designation shown on drawings.

B. Work area shall be fully separated from the occupied sections of the building in accordance to NJAC subchapter 8 Regulations for occupied buildings.

C. Contractor shall establish a pathway into and out of the work area that is separate from building occupants.

END OF SECTION 01010

SECTION 01043 – PROJECT COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Daily coordination with the ASCM is required to maintain the project schedule. Notification, along with the reason for change shall be given to the ASCM immediately upon deviation from the schedule.

B. Contractor is responsible for all coordination with any other prime contractors and subcontractors.

C. Contractor shall coordinate all work involving HVAC, plumbing, mechanical, electrical, security alarm disconnect/installation with the Owner's Representative.

D. Administrative and Supervisory Personnel:

1. Jobsite Supervisor: Contractor shall provide a full-time English speaking supervisor onsite at all times during all asbestos related activities who is experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for the building and personnel, disposal procedures, etc. Contractor shall submit evidence that this supervisor has attended an asbestos abatement training course for supervisory personnel, has an asbestos supervisor permit issued by the NJ Department of Labor, has a minimum of three (3) years hands-on experience on asbestos abatement projects, and satisfies additional requirements set forth in 29 CFR 1926.1101[0] for a competent person. The competent person is the Contractor's representative, responsible for compliance with all applicable Federal, State, and local regulations, particularly those relating to asbestos-containing materials.

E. Emergency Plan

1. The Contractor shall develop a contingency plan for emergencies, in case of fire, explosion, accidents, power failure, negative air pressure/filtration system failure, heat related problems, and any other problem which may require modification or bypassing of decontamination. The plan shall include procedures for repair and clean up following temporary breach of containment barriers. This emergency plan shall be approved by the ASCM prior to the Contractor starting any work and must be work area specific.

2. Emergency procedures shall be in written form and prominently posted in the clean change areas and equipment rooms of the worker decontamination areas and inside the work areas themselves. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures. For those non-English speaking employees instructions shall also be printed in the appropriate language.

3. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

a. For non-life-threatening situations employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the workplace to obtain proper medical treatment.

b. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him from the workplace and secure proper medical treatment.

4. Telephone numbers and locations of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01043

SECTION 01091 – DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Throughout the Contract Documents, terms are used that may not be fully understood by all parties. To ensure a complete understanding of the Contract Documents, the following definitions will apply:

1. ***Abatement*** - Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair, demolition and renovation activities.

2. ***Aerosol*** - A system consisting of particles, solid or liquid, suspended in air.

3. ***Aggressive Method*** - Means removal or disturbance of building material by sanding, abrading, grinding or other methods that breaks, crumbles, or disintegrates intact ACM.

4. ***Air Cell*** - Insulation normally used on pipes and ductwork that is comprised of corrugated cardboard, which is made asbestos, combined with cellulose or refractory binders.

5. ***Airlock*** - A serial arrangement of rooms whose doors are spaced a minimum of four (4) feet apart so as to permit ingress or egress through one (1) room without interfering with the next and constructed in such a manner as to prevent or restrict the free flow of air in either direction.

6. ***Air Monitoring*** - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower detectability and specific fiber identification.

7. ***Amended Water*** - Water to which a surfactant has been added.

8. ***Asbestos*** - The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

9. ***Asbestos Containing Material (ACM)*** - Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.

10. ***Asbestos-Containing Waste Materials*** - Any material that is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a work area for disposal.

11. ***Asbestos Hazard Abatement Project*** - The removal, enclosure, or encapsulation of more than 25 square feet of asbestos-containing materials used on any equipment or surface area such as wall, or ceiling area; or the removal or encapsulation, of more than 10 linear feet of asbestos-containing material on covered piping.

12. ***Asbestos Safety Control Monitor (ASCM)*** - A business entity authorized pursuant to N.J.A.C. 5:23-8 to ensure compliance with the Asbestos Hazard Abatement Subcode (Subchapter 8).

13. ***Asbestos Safety Technician (AST)*** - Person certified by New Jersey Department of Community Affairs, hired by the Asbestos Safety Control Monitor who continuously monitors and inspects the asbestos abatement work pursuant to Subchapter 8. This person shall be required to be on the job site during the time the asbestos abatement work is taking place and perform all duties and responsibilities established by Subchapter 8.

14. ***Authorized Personnel*** - The Owner, the Owner's representative, asbestos abatement contractor personnel, asbestos safety control monitor personnel, emergency personnel, or a representative of any Federal, State or local regulatory agency or other personnel under contract for or having jurisdiction over the project.

15. ***Barrier*** - Any surface that seals off the work area to inhibit the movement of fibers.

16. ***Breathing Zone*** - A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

17. ***Building Owner*** - The Owner or his authorized representative.

18. ***Category I Non-Friable Asbestos-Containing Material (ACM)*** - Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

19. ***Category II Non-Friable ACM*** - Any material, excluding Category I non-friable ACM, containing more than l percent asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section l, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

20. ***Ceiling Concentration*** - The concentration of an airborne substance that shall not be exceeded.

21. ***Certificate of Completion*** - The certificate issued by the asbestos safety control monitor signifying that the asbestos hazard abatement work has been completed in conformance with N.J.A.C. 5:23-8.

22. ***Certified Industrial Hygienist - (CIH***) - An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

23. ***Class I Asbestos Work*** - Means activities involving the removal of TSI and surfacing ACM and PACM.

24. ***Class II Asbestos Work*** - Means activities involving the removal of ACM, which is not thermal system insulation, or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

25. ***Class III Asbestos Work*** - Means repair and maintenance operations, where "ACM", including thermal system insulation and surfacing material, is likely to be disturbed.

26. ***Class IV Asbestos Work*** - Means maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

27. ***Clean Room*** - An uncontaminated area or room that is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.

28. ***Competent Person*** - Means in addition to the definition in 29 CFR 1926.32 {f}, one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 {f}: in addition for Class I and Class II work who is specially trained in a training-course which meets the criteria of EPA's Model accreditation Plan (40 CFR 763) for Project Designer or Supervisor, or its equivalent and, for Class II and Class IV work, who is trained in an Operations and Maintenance (O & M) Course developed by the EPA [40 CFR 763.92 {a} {2}].

29. ***Contractor*** - The Asbestos Removal Contractor licensed by the New Jersey Department of Labor.

30. ***Critical Barrier*** - Two individual layers of nominal six (6) mil polyethylene sheeting that completely seal off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between the top of a wall and the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, wall clocks, speaker grilles, floor drains, sink drains, etc.

31. ***Curtained Doorway*** - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three (3) weighted overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of the two outer sheets along one vertical side of the doorway and securing the vertical edge of the middle sheet along the opposite vertical side of the doorway. Other effective designs are permissible.

32. ***Decontamination Enclosure System*** - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.

33. ***Demolition*** - The actual destruction and removal of a building, or part of a building, without intent to renovate, repair, or replace. If it is later decided to retain the building, or part of the building, for future use, the project shall not be considered demolition and the criteria for re-entry shall be 0.01 f/cc.

34. ***Disposal Bag*** - 6 mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

AVOID BREATHING AIRBORNE ASBESTOS FIBERS

AND

ASBESTOS NA 2212, RQ

Each bag shall contain the U.S. DOT Class 9 (miscellaneous) hazardous material label.

Contractor shall also label all disposal bags and/or containers with the name of the waste generator (Owner) and the location from which the waste was generated; all in accordance with the EPA NESHAPS regulation - 40 CFR Part 61, Subpart M.

35. ***Encapsulant*** - A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

36. ***Encapsulation*** - The application of an encapsulant, to asbestos-containing materials, to control the release of asbestos fibers into the air.

37. ***Enclosure*** - The construction of an airtight, impermeable, permanent barrier around asbestos -containing material to control the release of asbestos fibers into the air.

38. ***Equipment Decontamination Enclosure System*** - That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.

39. ***Equipment Room*** - A contaminated area or room that is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

40. ***Facility*** - Any institutional, commercial or industrial structure, installation or building.

41. ***Facility Component*** - Any pipe, duct, boiler, tank, reactor, turbine or furnace at or in a facility or any structural member of a facility.

42. ***Filter*** - A media component used in respirators to remove solid or liquid particles from the inspired air.

43. ***Fixed Object*** - A piece of equipment or furniture in the work area which cannot be removed from the work area.

44. ***Flame-Resistant Polyethylene Sheeting*** - A single polyethylene film in the largest sheet size possible to minimize seams, nominal six (6) mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small scale Fire Test for Flame-Resistant Textiles and Films.

45. ***Friable Asbestos Material*** - Material that contains more than 1% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

46. ***Glove-bag Technique*** - A method with limited applications for removing small amounts of friable asbestos-containing material from piping runs, valves, joints, elbows, and other non-planar surfaces in a contained (plasticized) work area. The glove-bag assembly is a manufactured or fabricated device consisting of a glove-bag (typically constructed of 6-mil transparent polyethylene plastic), two inward projecting sleeves, an internal tool

pouch, and an attached, labeled receptacle for asbestos waste. The glove-bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glove-bag technique must be highly trained, experienced and skilled in this method.

47. ***Glove-bag Work Area Enclosure (Localized Isolation)*** - The enclosure that defines the work area for glove-bag activity.

48. ***HVAC*** - Heating, ventilation and air conditioning system.

49. ***HEPA Filter*** - A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

50. ***HEPA Filter Vacuum Collection Equipment (or vacuum cleaner)*** - High efficiency particulate air (absolute) filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

51. ***High-Efficiency Filter*** - A filter which removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

52. ***Movable Object*** - A piece of equipment or furniture in the work area, which can be removed from the work area.

53. ***Negative Pressure*** - Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

54. ***Negative Pressure Respirator*** - A respirator in which the air pressure inside the respiratory -inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

55. ***Negative Pressure Ventilation System*** - A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

56. ***Occupied Building*** - A building or structure where occupancy is permitted in certain areas outside of the required containment during an asbestos hazard abatement project.

57. ***Operations and Maintenance Activity*** - Corrective action not intended as asbestos abatement. The amount of friable asbestos containing material that can be abated per year per project is 25 square feet or less or, if covering piping, 10 linear feet or less.

58. ***Outside Air*** - The air outside buildings and structures.

59. ***Personal Monitoring*** - Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

60. ***Plasticize*** - To cover floors and walls with plastic sheeting as herein specified.

61. ***Prior Experience*** - Experience required of the contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project

size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

62. ***Protection Factor*** - The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

63. ***Regulated Asbestos-Containing Material (RACM)*** - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

64. ***Removal*** - The stripping of any asbestos containing materials from surfaces or components of a facility.

65. ***Removal Encapsulant*** - A penetrating encapsulant specifically designed for removal of asbestos materials rather than for the locking down of remaining microscopic fibers.

66. ***Renovation*** - Altering in any way one or more facility components. Operations in which load -supporting structural members are wrecked or taken out are excluded.

67. ***Repair*** - Means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

68. ***Respirator*** - A device designed to protect the wearer from the inhalation of harmful atmospheres.

69. ***Shower Room*** - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

70. ***Staging Area*** - Either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

71. ***Separation Barrier*** - A solid wall constructed to isolate the clean and/or occupied areas of a building from the work area and to support the polyethylene sheeting. Separation Barriers are of rigid construction consisting of normal 2”x4” wood or metal studs spaced 16” on center and covered with a minimum of 1/2” plywood or gypsum board. All seams are caulked airtight before two individual layers of 6 mil polyethylene sheeting are applied to both sides.

72. ***Strip*** - To take off friable asbestos materials from any part of the facility.

73. ***Structural Member*** - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load -supporting member, such as ceilings and non-load supporting walls.

74. ***Surfacing Material*** - Means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

75. ***Surfactant*** - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

76. ***Thermal System Insulation (TSI)*** - Means ACM applied to pipes, fittings, boilers, breeching, tanks and ducts or other structural components to prevent heat loss or gain.

77. ***Unoccupied Building*** - A building or structure where no occupancy is permitted in any area of the building throughout the entire during of an asbestos hazard abatement project.

78. ***Visible Emissions*** - Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

79. ***Waste Shipment Record (WSR)*** - Waste handling and disposal record, or manifest, which documents the proper handling and disposal of asbestos-containing waste materials. Document shall be in compliance with EPA Regulation 40 CFR, Part 61, Subpart M (NESHAPS).

80. ***Waste Transfer Airlock*** - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.

81. ***Water Column (W.C.)*** - A unit of measurement for pressure differential.

82. ***Wet Cleaning*** - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

83. ***Work Area*** - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area, which has been sealed, plasticized, and equipped with a decontamination enclosure system.

84. ***Worker Decontamination Enclosure*** - A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways. This system is used for all worker entrances and exists to and from the work area and for equipment pass out for small jobs.

B. Abbreviations used throughout the Contract Documents are defined as follows:

1. ACGIH - American Conference of Governmental
Industrial Hygienists
6500 Glenway Avenue Building D-5
Cincinnati, Ohio 45211

2. AIA - American Institute of Architects
1735 New York Ave. NW
Washington, DC 20006
202/626-7474

3. AIHA - American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250
Fairfax, VA 22031

4. ANSI - American National Standards Institute
   1430 Broadway
   New York, NY 10018
   212/354-3300

5. ASHRAE - American Society for Heating,
   Refrigerating and Air Conditioning Engineers
   1791 Tullie Circle NE
   Atlanta, GA 30329
   404/636-8400

6. ASTM - American Society for Testing and Materials
   1916 Race Street
   Philadelphia, PA 19103
   215/299-5400

7. CFR - Code of Federal Regulations
   Available from Government Printing Office;
   Washington, DC 20402 (usually first published in Federal Register)

8. EPA - Environmental Protection Agency
   401 M St., SW;
   Washington, DC 20460
   202/382-3949

9. NBS-National Bureau of Standards (U.S. Dept. of Commerce)
   Gaithersburg, MD 20234
   301/921-1000

10. NESHAPS - The National Emission Standards for
    Hazardous Air Pollutants (40 CFR Part 61)

11. NIOSH - The National Institute for Occupational Safety and Health
    Building J.N.E. Room 3007
    Atlanta, Ga. 30333

12. NVLAP - National Voluntary Laboratory
    Accreditation Program
    Gaithersberg, MD 20234
    (301) 921-1000

13. OSHA - The Occupational Safety and Health
    Administration
    200 Constitution Avenue
    Washington, D.C. 20210

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01091

SECTION 01092 – CODES AND REGULATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification.

B. Notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.

1.02 CODES AND REGULATIONS

A. Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

B. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site.

C. Neither the Contractor, nor any subcontractor for any part of the contract work, shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety.

D. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations.

E. The Contractor shall hold the Owner, Owner's Field Representative or his designee, Asbestos Safety Technician (AST) harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

1.03 FEDERAL REQUIREMENTS

A. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), including but not limited to:

General Industry
29 CFR 1910

Access to Employee Exposure and Medical Records
29 CFR 1910.20

Respiratory Protection
29 CFR 1910.134

Asbestos Standard
29 CFR 1926.1001

Construction Industry - Entire Standard
29 CFR 1926

Training
29 CFR 1926.21

Housekeeping
29 CFR 1926.25

Sanitation
29 CFR 1926.51

Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.55

Ventilation
29 CFR 1926.57

Hazard Communication
29 CFR 1926.59

Accident Prevention Signs and Tags
29 CFR 1926.200

Lockout and Tagging of Circuits
29 CFR 1926.417

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules
29 CFR 1926.1101

B. U.S. Department of Transportation

Hazardous Substances
49 CFR 171 through 179

C. U.S. Environmental Protection Agency (EPA) including but not limited to:

National Emission Standard for Hazardous Air Pollutants (NESHAPS)
National Emission Standard for Asbestos
40 CFR 61, Sub-part A, and Sub-part M (Revised Sub-part B)

Training Requirements of (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice
40 CFR 763, Sub-part E, Appendix C

The Residential Lead-Based Paint Hazardous Reduction Act of 1992
Final Renovation, Repair and Painting Rule in Section 402 (c) (3) of the Toxics Substance Control Act

1.04 STATE REQUIREMENTS

State of New Jersey
Department of Community Affairs NJAC 5:23-8
Department of Health NJAC 8:60
Department of Labor NJAC 12:120
Department of Environmental Protection

1.05 LOCAL REQUIREMENTS

Abide by all local requirements, which govern asbestos abatement work; hauling and disposal of asbestos waste materials; fire protection; electrical work and plumbing work.

1.06 OTHER REQUIREMENTS: Abide by other applicable regulations and standards, including, but not limited to;

A. National Fire Protection Codes

B. National Electrical Code

C. BOCA Building Codes / 1996

D. ICC/IMC Mechanical Codes / 1996

E. WSSC Plumbing and Gas Fitting Regulations [Latest Edition]

1.07 STANDARDS

A. ANSI Z9.2-79: Fundamentals Governing the Design and Operations of Local Exhaust Systems Publication

B. ANSI Z88.2-80: Practices for Respiratory Protection Publication

C. ASTM E849: Safety and Health Requirements Relating to Occupational Exposure

D. NFPA 49: Recommended Practices and Guides / Hazardous Chemicals Data

E. NFPA 101: Life Safety Code

F. NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.08 FEDERAL NOTIFICATION

U.S. Environmental Protection Agency
Send written notification as required by U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAPS Contact at least 10 working days prior to beginning any work on asbestos-containing materials. Send notification to the following address; send copies to Owner's Field Representative or his designee and Asbestos Safety Control Monitor (ASCM).

REGION II:
Asbestos NESHAPS Contact
Division of Enforcement & Compliance Assistance
Asbestos Removal – 21st Floor
290 Broadway
New York, NY 10007-1866

Information specified by the regulation in the notification sent to the NESHAPS Contact such as but not limited to:

Name and address of owner or operator.
Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components.

Location of the facility being demolished or renovated.
Scheduled starting and completion dates of demolition or renovation. Nature of planned demolition or renovation and method(s) to be used. Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61 Subpart M).

Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

1.09 STATE AND LOCAL AGENCIES

A. Send written notification as required by state and local agencies prior to beginning any work on asbestos-containing materials. Send notification to the State of New Jersey Department of Health, Department of Labor, and Department of Environmental Protection, as well as any local regulatory authority requiring such; send copies to Owner's Field Representative or his designee and ASCM.

B. Post "Asbestos Danger" signs before beginning removal project at entrances and exits from the work site to inform the public in the immediate vicinity. Keep such signs posted until the contractor receives the written notice of final air monitoring results.

C. Notify all other agencies as necessary to comply with existing regulations.

1.10 PERMITS

Ensure landfill, which will receive waste from this project, has permit conditions, which allow acceptance of asbestos waste.

1.11 LICENSES

A. Contractor, and subcontractors, must maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract. This includes licenses for conducting asbestos related work in the State of New Jersey.

B. Maintain two (2) copies of applicable federal, state and local regulations above. Post one copy of each at the job site. Keep on file in contractor's office one copy of each.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01092

SECTION 01300 – SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. It is the intent of this section to show the submittals required of the Contractor, after award of contract and throughout the entire project duration. Additional submittals required by the Contractor may be identified in the specific Project Manual sections.

1.2 CONTRACTOR'S PROJECT SUBMITTALS

A. The following information shall be submitted at the pre-construction meeting prior to any mobilization activity. Submittals shall be organized and number as follows in a bound book or binder.

1. Copies of notifications required by federal, state and local regulations together with proof of timely transmittal to each agency requiring the notification.

2. Copies of current valid permits required by state and local regulations.

3. A copy of all State and Local licenses and permits necessary to carry out the work of this contract.

4. Bar chart indicating location, times, dates, and type of work to be performed for each location.

5. A plan for preparation of work site, if different from the contract drawings, including:

   a. Location and layout of decontamination chamber.
   b. Location of waste decontamination unit.
   c. Location of dumpster.
   d. Location of negative air filtration units, number of units to be used and calculations used to determine number of units.

6. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance and procedures to be used for access by medical personnel (examples: first aid squad and physician).

7. Copies of the project notification forwarded to the Owner, General Contractor (if applicable), Fire Department, Police Department and any other person, company and/or agency in compliance with OSHA 1926.1101 {d}.

8. Telephone numbers and locations of emergency response personnel.

9. Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

10. Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

11. Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet asbestos-containing materials to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M).

12. Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant, encapsulating material, strippable coatings, spray cement, polyethylene sheet and chemical solvent mastic remover proposed for use on the project. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

13. Evidence of suitability and compatibility of encapsulants/sealants with proposed finish materials.

14. Description of personnel protective clothing to be used.

15. Manufacturer's product information for each component of the respiratory assembly to be used, including NIOSH and MSHA Certifications for each component. Including complete operating and maintenance instructions for all components and systems as a whole.

16. Level of respiratory protection intended for each operation required by the project. Including airborne asbestos fiber count data to substantiate the selection of intended respiratory protection.

17. Respiratory Protection Program (RPP) manual including written approval from an industrial hygienist in accordance with 29 CFR 1926.55.

18. Documentation of fit testing program conducted by the Contractor.

19. Copy of state or local license for waste hauler, if required. If not required, state such in submittal package.

20. Name and address of landfill where asbestos-containing waste materials are to be buried. Include contact person and telephone number. Copy of state and/or local license and/or permit for landfill, if required. If not required, state such in submittal package.

21. OSHA air monitoring results (supplied by Contractor's testing laboratory) from most recent asbestos abatement project.

22. Name and qualifications of Contractor's testing laboratory including AIHA accreditation, and proof of NIOSH PAT and EPA bulk quality Assurance Proficiency for approval by the Owner.

23. Delineation of responsibility of work site supervision, names, resumes, and home telephone numbers and a copy of a valid supervisor permit issued by the New Jersey Department of Labor.

24. Report from medical examination conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area. Submit, at a minimum, for each worker the following:

    a. Name and Social Security Number

b. Physicians written opinion from examining physician including, at a minimum the following:

   i. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
   ii. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
   iii. Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

c. Copy of information that was provided to physician in compliance with 29 CFR 1926.1101.

d. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

END OF SECTION 01300

SECTION 01410 – AIR MONITORING - ASBESTOS SAFETY CONTROL MONITOR (ASCM)

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air monitoring carried out by the ASCM to verify that the building beyond the work area and the outside environment remain uncontaminated.

B. Establishing airborne fiber levels both inside and outside the work area as action levels.

C. Action required by the Contractor if an action level is met or exceeded.

1.02 WORK BY OTHERS

Air monitoring required by OSHA to be conducted by the employer is the Contractor's responsibility and is not covered in this section.

1.03 RELATED SECTIONS

Section 01714 - Work Area Clearance: air monitoring required.

1.04 AIR MONITORING

A. The purpose of the air monitoring by the ASCM will be to detect faults in the work area isolation such as:

1. Contamination of the building outside of the work area with airborne asbestos fibers,

2. Failure of air filtration devices or rupture in the negative pressure system,

3. Contamination of the exterior of the building with airborne asbestos fibers.

B. Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Asbestos Safety Technician (AST).

C. The AST will monitor airborne fiber counts in the work area to detect levels which may significantly challenge the ability of the work area isolation procedures.

D. Work area clearance to determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the AST will sample and analyze air per Section 01714.

E. Air sampling during abatement:

1. The AST will conduct air monitoring in areas adjacent to the work area throughout the abatement and decontamination phases. A minimum of three (3) samples will be taken per shift. One (1) of the samples will be taken within the clean room of the decontamination chamber and the remaining two (2) samples will be taken in areas adjacent to critical barriers.

F. Air sampling shall be performed as follows:

1. At a minimum, one (1) sample at the beginning of each work shift, one (1) every four (4) hours thereafter shall be collected and analyzed. The maximum turn-around time for analysis of the samples shall be four (4) hours from the start of the sampling period. Air samples shall be taken in areas where the greatest potential for fiber migration exists. In addition to the requirements noted above, air samples shall be taken at the entrance(s) to the work area and any other interior spaces from which make-up air is drawn. Additional samples shall be taken for all areas such as stairwells, communicating shafts, elevators, plenums, ducts that pass through the work area and which are in service, and unusual room and building configurations. If air levels exceed the permitted fiber count, the applicable requirements of the contingency plan shall be followed.

G. The AST will conduct air monitoring throughout the course of the project.

1.05 STOP ACTION LEVELS

A. Maintain an average airborne count in the work area of less than 0.1 fibers per cubic centimeter, TWA. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts.

B. If any air sample taken outside of the work area exceeds 0.01 f/cc, or if any air sample taken inside the clean room of the decontamination facility area exceeds 0.02 f/cc, immediately stop all work. Decontaminate the affected area in accordance with Section 01520. Follow all protective measures as outlined in other sections of this Specification.

C. The Contractor shall be responsible for costs for all additional air monitoring and clearance testing required due to the contamination.

1.06 FIBERS COUNTED

A. The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts. "Airborne Fibers" referred to above include all fibers regardless of composition as counted in the NIOSH 7400A Procedures.

B. If elevated fiber concentrations are detected outside the work area, these results may also be confirmed via TEM analysis. In the event that TEM analysis results confirm that the asbestos fiber concentration has exceeded the limits stated above, the contractor shall be responsible for the cost of the TEM testing as well.

C. Transmission Electron Microscopy which may be utilized for this purpose will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

1.07 AIR SAMPLES

A. The number and volume of air samples taken by AST will be as required to document acceptable execution of the work and to ensure compliance with Federal, State and local regulations. Sample volumes collected may vary depending upon site conditions and the analytical method used.

B. Additional samples may be taken at the discretion of the AST or his designee. If airborne fiber counts exceed allowed limits additional samples will be taken as necessary to monitor fiber levels.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 PERSONAL MONITORING

THE CONTRACTOR SHALL PROVIDE FOR AIR MONITORING AS REQUIRED TO MEET OSHA REQUIREMENTS FOR MAINTENANCE OF TIME WEIGHTED AVERAGE (TWA) FIBER COUNTS FOR TYPES OF RESPIRATORY PROTECTION PROVIDED.

END OF SECTION 01410

SECTION 01503 – TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

B. Coordinate all temporary connections with the AST, so that there is no disruption to ongoing building operations.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide new or used materials and equipment that are undamaged and in serviceable condition.

B. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2.02 SCAFFOLDING

A. Provide all scaffolding, ladders and/or staging, bracing, etc. as necessary to accomplish the work of this contract.

B. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions (29 CFR 1926/1910) and any and all other applicable Federal, State and local regulations. Whenever there is a conflict or overlap of the above referenced provisions and/or regulations the most stringent shall apply.

C. Provide certification from a State of New Jersey registered Professional Engineer that all scaffolding erected meets all recognized standards and is sufficient to support the weight of the intended load; this shall include, but is not limited to, all planking, equipment and workers. At a minimum all scaffolding, platforms and components shall be capable of supporting without failure 4 times the maximum intended load, plus an allowance for impact.

D. Equip rungs of all metal ladders, etc. with an abrasive non-slip surface.

E. Provide a nonskid surface on all scaffold surfaces subject to foot traffic.

F. In addition to the items indicated above the Contractor shall provide all necessary safety equipment, training and procedures associated with OSHA approved fall protection for all workers, Owner's representative or his agent and the Consultant and his technician.

2.03 WATER SERVICE

A. All connections to the Owner's water system shall be in accordance with all applicable State and local plumbing codes. All connections shall be coordinated with the Owner to ensure they do not interfere with ongoing building operations.

B. No water valves may be shut or other effect caused to the water system, which affect the ongoing building operations without specific written permission of the Owner's Field Representative or his designee.

C. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment.

D. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit.

E. Hot water may be secured from the building hot water system provided backflow protection is installed at point of connection. If hot water is not available from the building system, or is inadequate in terms of temperature needs, provide UL rated electric hot water heater of sufficient capacity that hot water is available for all needed use of the Decontamination Unit shower.

2.04 ELECTRICAL SERVICE

A. Comply with applicable OSHA, NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

B. Provide service to a temporary sub-panel exterior to the work area. Sub-panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

C. Provide identification warning signs at power outlets, which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets.

D. Dry type transformers shall be made available where required to provide voltages necessary for work operations.

E. Provide all circuit breakers in the sub-panel equipped with ground fault circuit interrupters, reset button and pilot light.

F. Use only hard-service grounded extension cords. Use single lengths or use waterproof connectors to connect separate lengths of electric cords.

G. Provide general service exterior incandescent lamps of wattage required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations.

H. Do not use any electrical equipment which is not properly equipped with fully operational, undamaged ground pin.

I. Provide emergency generator(s) of minimum capacity to continuously run all HEPA filtered fan units, if there is any indication that the building power supply would be interrupted. Ensure generator(s) is (are) continuously available on-site, but in all cases can be made operational within no more than one (1) hour of power interruption.

2.05 TEMPORARY HEAT

A. Temporary Heat is not required for this project.

2.06 FIRST AID

A. Comply with governing regulations and recognized recommendations within the construction industry.

2.07 FIRE EXTINGUISHERS

A. Provide type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.

B. Ensure fire extinguishers are provided in numbers sufficient for the work and materials utilized on each specific project. The minimum number of extinguishers for projects of any size are:

- Each office and/or materials storage area(s) One (1) – Type "A"
- Each decontamination unit: One (1) – 10 LB ABC
- Each contained work area/regulated area: One (1) – 10 LB ABC

C. Inspect each fire extinguisher to ensure that it is fully charged and has a current inspection tag in accordance with NFPA guidelines.

PART 3 EXECUTION

3.01 SCAFFOLDING (Not Applicable)

3.02 INSTALLATION OF TEMPORARY SERVICES & FACILITIES (Not Applicable)

3.03 WATER SERVICE

A. Water connection (without charge) to Owner's existing potable water system is limited to one 3/4" pipe-size connection, and a maximum flow of 10 gpm each to hot and cold water supply.

B. Supply hot and cold running water to the Decontamination Unit.

C. Maintain hose connections, outlet valves and any other water service connections in leak-proof condition.

3.04 ELECTRICAL SERVICE

A. Provide a weatherproof grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period.

B. Utilize only licensed electrician for constructing sub-panel, hooking up sub-panel to Owner's source and de-energizing circuits in the work area. All other electrical tasks performed herein must be either performed directly by the licensed electrician or under the direct supervision of a licensed electrician and/or by persons in a manner approved by a licensed electrician.

C. Provide circuits of adequate size and proper characteristics for each use.

D. Temporary Wiring in the work area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance.

E. Provide GFI protected distribution panel with overload-protected disconnect switch (circuit breaker) for each temporary circuit located at the power distribution center. Locate distribution center outside of work area.

F. Locate all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuit to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from the temporary electrical panel described above.

1. Lockout power to the Work Area by switching off all breakers serving power or lighting circuit in the Work Area. Label breakers with tape over breakers with the notation "DANGER circuit being worked on". Sign and date label. Lock panels and have key under the control of Contractor's Superintendent.

2. Lockout power through the Work Area whenever possible by switching off breakers serving these circuits. Label breakers with tape over breakers with the notation "DANGER circuit being worked on". Sign and date label. Lock panels and have key under the control of Contractor's Superintendent. If circuits cannot be shut down for any reason, label at intervals not exceeding 4' with tags reading "DANGER live electrical circuit. Electrocution Hazard."

G. Provide sufficient branch circuits as required by the work. All branch circuits are to originate at the temporary electrical panel. At minimum provide the following:

1. One circuit for each HEPA filtered fan unit.
2. Provide separate 110-120 volt, 20-amp circuit for each 4-gang outlet (4 outlets per circuit). For power tools and task lighting, provide one temporary 4-gang outlet in the following locations:

a. One outlet per 2500 square feet of work area.
b. One outlet at each decontamination unit, located in the equipment room.
c. 110-1220 volt 20 amp branch circuits with 4-gang outlet for the Owner's exclusive use for conducting air sampling during the work as follows:
i) One in each work area.
ii) One at the clean side of the decontamination unit.
iii) One at the exhaust location of the HEPA filtered fan units.

3.05 TEMPORARY LIGHTING

A. In all areas under Contractor's control, provide sufficient temporary lighting to ensure proper workmanship and safety of movement and egress; by combined use of daylight, general lighting, and portable plug-in task lighting. Do not use existing building lighting. All lighting is to be provided from the temporary electrical panel described above. Provide lighting as required to supply a 100 foot candle minimum light level at all areas where abatement or inspection occurs. The Owner's Representative or his designee or the AST may at any time require the Contractor to provide 100 foot candle level at any point in the Contractor's control for any inspection purpose deemed necessary by them.

3.06 SANITARY FACILITIES

A. Use of the Owner's toilet facilities will be permitted, so long as these facilities are properly cleaned and maintained on a daily basis at the end of each shift in a condition acceptable to the Owner.

B. At substantial completion, restore these facilities to the condition prevalent at the time of initial use.

3.07 FIRE EXTINGUISHERS

A. Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers" and requirements of 29 CFR 1926, Subpart F, OSHA Construction Industry Fire Protection and Prevention regulations.

B. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area in Equipment Room and one outside Work Area in Clean Room.

END OF SECTION 01503

SECTION 01513 – PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the set-up and operation of negative air filtration equipment required during asbestos abatement. The primary function of negative air filtration equipment is to create negative air pressure inside the work area to prohibit the spread of contamination to uncontaminated areas.

1.03 QUALITY ASSURANCE

A. Monitor pressure differential across Decontamination Unit, or other location with a differential pressure meter equipped with a strip chart recorder or data-logger/printer assembly. Meter shall be equipped with a warning buzzer, which will sound if pressure differential drops below **0.03"** of water.

B. Provide HEPA filtered fan units, which pass visual inspection by the Owner's Consultant for all parameters defined in this section and which pass a quantitative challenge test at the work site. Use portable velometer to determine air-moving capacity of each unit. Any unit showing more than 0.3% of the intake reading at the exhaust side shall be considered defective and shall not be approved for use until the problem is corrected. The Owner's Consultant shall label all approved units, utilizing indelible ink, with a unique number and date. This challenge test shall not substitute for the requirement that each filter be certified by the manufacturer to meet specified criteria.

PART 2 PRODUCTS

2.01 HEPA FILTERED FAN UNITS

A. Cabinet shall be factory sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance. Access to and replacement of all air filters shall be from intake end.

B. Rate capacity of fan according to usable air-moving capacity under actual operating conditions.

C. The final filter shall be the HEPA type. The filter media must be completely sealed on all edges with a structurally rigid frame.

D. A continuous fully intact gasket, as provided by the manufacturer, shall be located between the filter and the filter housing to form a tight seal.

E. Performance of every HEPA filter shall be in accordance with Federal Standard Number 209G and ASHRAE Standard 52-87.

F. Each filter shall be marked with the name of the manufacturer, serial number, airflow rating, efficiency and resistance, and the direction of test airflow.

G. Two stages of pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter.

H. Each unit shall be equipped with a Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge shall be available at the job site at all times, indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at that point.

I. A warning light is required to indicate excessive pressure drop across the filters (i.e., filter overloading).

J. Electrical components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL).

K. Each unit shall be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet shall be grounded.

2.02 PRESSURE DIFFERENTIAL METER

A. Pressure differential meter shall be recommended by its manufacturer for the intended purpose and shall have sufficient accuracy and resolution (minimum 0.005" H_2O) to perform as specified herein.

B. Meter shall be of the digital type and have an integral continuous chart recording device (or be attached to one, which is compatible with manufacturer's specification) which has equal accuracy and resolution to the meter.

C. Meter shall have initial and periodic calibrations in accordance with the manufacturer's recommendations. Record of such shall be with the meter at all times.

D. Meter shall be equipped with zero adjustment for both the meter and chart recorder.

PART 3 EXECUTION

3.01 PRESSURE DIFFERENTIAL

A. Provide a fully operational differential pressure and air circulation system within the work area, maintaining a continuous negative pressure differential between work area enclosure and adjacent area of building of at least 0.05" H_2O or greater.

B. Before disturbance of any ACM, demonstrate to the Owner's Consultant the adequacy of pressure differential and air flow by use of a pressure differential meter(s) and smoke tubes or bombs. Perform these at location(s) directed by the Owner's Consultant, upon commencement of the project and daily thereafter.

C. Provide continuous monitoring and recording of the pressure differential between the work area and the building outside of the work area with the meter as defined in paragraph 2.02. Ensure chart recorder pen or other marking device and chart advance are fully operational, such that chart can be easily read.

D. Check zero of meter and recorder each time chart is restarted by removing tubing to work area from the back of the instrument. Ensure that the low-pressure alarm is functional at this check. Do not perform abatement without meter and recorder in compliance with all provisions herein, unless specifically authorized by the AST.

E. Any apparent tampering with the meter, zero setting, or recorder will be grounds for removing the Project Superintendent from the job for its duration, at the discretion of the Owner.

3.02 PREPARATION OF THE WORK AREA

A. Provide fully operational HEPA filtered fan units supplying a minimum of one air change every 15 minutes (4 air changes per hour), or as otherwise specified in Section 01010.

B. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

C. Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible.

D. Place end of unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be securely sealed with tape or other approved method.

E. Vent to outside (exterior) of the building, unless authorized in writing by the ASCM.

F. Locate auxiliary makeup air inlets as far as possible from the exhaust unit(s), off the floor (preferably near the ceiling), and away from barriers that separate the work area from occupied clean areas.

G. Cover with flaps to reseal automatically if the negative pressure system should shut down for any reason. Spray flap and area around opening with spray adhesive so that flap seals if it closes.

3.03 START UP OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATING SYSTEM

A. Each unit shall be serviced by a dedicated circuit in the Contractor's electrical subpanel of capacity recommended by the manufacturer.

B. Before any asbestos-containing material is wetted or removed, and after the work area has been prepared, the decontamination facility set up, and the HEPA filtered fan unit(s) installed, start the unit(s) (one at a time) to demonstrate the system.

C. Proper operation of the system will exhibit, the following:

- Plastic barriers and sheeting move lightly in toward work area,
- Curtain of decontamination units move lightly in toward work area,
- There is a noticeable movement of air through the decontamination unit.
- Use smoke tubes to demonstrate a positive motion of air.
- Use a differential pressure meter to demonstrate a pressure difference of at least 0.05" H_2O across every barrier separating the Work Area from the balance of the building or outside.

D. Modify the system as necessary to successfully demonstrate the above.

3.04 USE OF SYSTEM DURING ABATEMENT OPERATIONS

A. Start HEPA filtered fan units before beginning work.

B. Do not begin abatement work or any work deemed contaminated work; such as, but not limited to opening a wall or ceiling space which is contaminated with asbestos fibers; until the operation of the Pressure Differential and Air Circulation System is inspected and approved in writing by the Owner's Consultant.

C. After abatement work has begun; run units continuously to maintain a constant negative pressure until decontamination of the work area is complete.

D. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.

E. Do not shut down system during encapsulating procedures.

F. Start abatement work at a location farthest from the exhaust units and proceed toward them.

G. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and exhaust units are operating again.

H. At completion of abatement work, allow exhaust units to run as specified under Section 01711, to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the work area with clean makeup air.

3.05 DISMANTLING THE SYSTEM

A. When a final inspection and the results of final air tests indicate that the area has met the work area clearance criteria of Section 01714, the exhaust units may be removed from the work area.

B. Before removal from the work area, remove and properly dispose of pre-filter, and seal intake to the machine with 6 mil polyethylene to prevent environmental contamination from the filters. The machine shall be cleaned and wrapped with 6-mil polyethylene prior to removing from the work area.

END OF SECTION 01513

SECTION 01520 – BUILDING CONTINGENCY OPERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the responsibilities of the owner, contractor and asbestos safety control monitor for the safe performance of asbestos abatement activities conducted in occupied facilities.

1.02 NOTIFICATIONS

A. The building owner shall notify building occupants prior to the commencement of the asbestos abatement project. The building owner shall outline in writing that the building will be shut down for the duration of the asbestos abatement project and no occupancy shall be allowed.

1.03 CONTINGENCY PLAN

Contingency plan during abatement shall be implemented as described below. These are the minimum requirements that shall be enforced by Asbestos Safety Control Monitors. These requirements shall not limit the Asbestos Safety Control Monitors from instituting additional requirements, if necessary, for the protection of the building systems.

A. If the pressure differential drops below 0.05 inches w.c; the following procedures shall be implemented:

1. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the pressure loss.

2. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to reestablish an acceptable pressure differential:

B. If the pressure differential drops below 0.02 inches w.c., the following procedures shall be implemented:

1. The contractor shall cease abatement activity in the work area.

2. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls and determine the source of the pressure loss.

3. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operational of additional exhaust units or other necessary measures to reestablish an acceptable pressure differential.

4. Abatement activities shall not be permitted in any area unless a pressure differential of 0.05 inches w.c. or greater is reestablished.

END OF SECTION 01520

SECTION 01526 – TEMPORARY ENCLOSURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing of all labor and materials necessary to construct temporary enclosures for asbestos abatement. Before work area preparation proceeds, the Contractor and AST shall document existing damage to finishes in area of the work.

B. After the completion of all work area preparation activities, the Contractor shall request a pre-commencement inspection by the Asbestos Safety Technician. No asbestos removal work shall begin until the AST and a representative of the New Jersey Department of Community Affairs (DCA) has completed the pre-commencement inspection.

PART 2 PRODUCTS

2.01 POLYETHYLENE SHEET

A. A single polyethylene film in the largest sheet size possible to minimize seams, nominal 6.0 mils thick clear, frosted, or black.

B. Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films for all work to be done where hot pipes or equipment are present or where there is a potential for fire.

2.02 SPRAY PLASTIC

A. Spray plastic which is formulated to adhere to surfaces and peel off cleanly at the completion of the work may be used if approved by the Owner and ASCM.

B. Damages to finish caused by application or removal of the spray plastic must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.03 DUCT TAPE

A. Provide duct tape in 2" to 4" widths as appropriate, with an adhesive which is formulated to aggressively stick to sheet polyethylene and the surface to which it is applied.

B. Damages to building finishes caused by application or removal of the duct tape must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.04 SPRAY ADHESIVE

A. Provide spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

B. Damages to finish caused by application or removal of the spray cement must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.05 LUMBER

A. Provide wood stud framing or in lengths appropriate for wall construction. All lumber required for exterior construction shall also be exterior grade. An approved substitution for wood studs would be comparable metal studs in lengths appropriate for wall construction.

B. Provide plywood sheathing (1/2" thick) or comparable gypsum board sheathing (1/2" thick) to be used at all locations called for in the project manual and indicated on the drawings. This may include, but not limited to, separation barriers, exhaust manifolds and personnel and waste/equipment decontamination units.

PART 3 EXECUTION

3.01 GENERAL

A. The Owner will be responsible for deactivate and lockout Ventilating Systems or any other system bringing air into or out of the work area.

B. Confirm the shut down and lock out all heating, cooling and air conditioning system (HVAC) components that supply or pass through the work area. Seal all intake and exhaust vents in the work area with duct tape and two (2) individual layers of 6-mil polyethylene. Also seal any seams in system components that pass through work area. Remove all HVAC system filters and place in labeled 6 mil polyethylene bags for staging and eventual disposal as asbestos contaminated waste.

C. Isolation conditions for abatement project require that the work area be physically separated from non-work areas by separation barriers consisting of wood studs and plywood covered with two (2) individual layers of 6 mil polyethylene sheeting. The polyethylene shall overlap at the seams. All penetrations around conduits, pipes, ducts or other openings between the work area and adjacent spaces shall be sealed, using materials determined to be suitable in accordance with the applicable subcode. In buildings required by the Uniform Construction Code to be of noncombustible construction, all materials used to construct separation barriers shall meet the Uniform Construction Code, building subcode requirements for that building and all plastics used shall be flame resistant. A separate means of egress for abatement personnel, materials and equipment shall be maintained. Adequate fire evacuation routes shall exist for all building occupants at all times.

D. Completely isolate the work area from the outside and other parts of the building by installing isolation barriers, to prevent asbestos-containing dust or debris from passing beyond the isolated area. If requested by the AST, furnish plastic sheeting in black as a visual barrier.

E. Should the area beyond the work area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, those areas shall be isolated and cleaned in accordance with the procedures indicated in a contingency plan submitted by the Contractor to the satisfaction of the AST, at no additional cost to Owner.

F. Place all tools, ladders, staging, etc. necessary for the work in the area to be isolated prior to erection of plastic sheeting temporary enclosure.

G. The Owner will remove all removable furniture, equipment and supplies that are designated as non-contaminated.

H. Pre-clean all remaining movable objects within the work area using HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an un-contaminated location as determined by the Owner. All objects shall be returned to the original areas after completion and approval of the final air monitoring.

I. Pre-clean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grilles or gratings where access may be difficult but contamination significant. Also pay particular attention to wall, floor and ceiling penetrations behind fixed items. After pre-cleaning, enclose fixed objects in two (2) individual layers of 6 mil polyethylene sheeting and seal securely in place with duct tape.

J. Lockout all power and equipment within or passing through the Work Area by switching off all breakers serving power or lighting circuits in work area. Lock and tag cover of panel such that power is not restored inadvertently by others. Contractor shall draw power from outside the work area and connect to a ground fault interrupter.

K. In the event that all electric power and/or equipment originating from within or passing through the Work Area cannot be shut down and locked and tagged out, the Contractor shall isolate these components as follows:

1. Electrical Panels / Mechanical Equipment: Isolate active electric panels and mechanical equipment from the remainder of the work area by an enclosure constructed in a manner similar to the separation barriers. Vent equipment as necessary to allow for proper operation and prevent overheating. Identify the active electrical panels and/or mechanical equipment with caution tape or warning signs indicating active/live operating electrical equipment.

2. Electrical Conduit: Isolate active electrical conduit from the remainder of the work area with 2 individual layers of 6 mil polyethylene sheeting and duct tape. Identify the active conduit with caution tape or warning signs indicating active/live operating electrical equipment.

3. In addition to the isolation procedures indicated above, the Contractor shall provide on-site safety orientation training for all workers, covering the exact locations and dangers of working around active electrical components and/or equipment.

4. The use of water shall be minimized while working around any active electrical components and/or equipment. All electrical components and equipment shall be properly decontaminated utilizing HEPA vacuuming and wet wipe techniques were feasible, at the completion of the asbestos abatement project.

3.02 EMERGENCY EXITS

A. Arrange exit doors so that it is secure from outside the Work Area but permits exiting from the Work Area.

B. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1" wide. Hang a razor knife on a string beside outline. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" thick. Establish emergency kick-out panels for workers to exit the work area (where applicable).

C. Utilize existing emergency lighting signs, if this can be accomplished in keeping with OSHA lockout requirements and is approved by the Contractor’s licensed electrician.

3.03 CONTROL ACCESS

A. Isolate the Work Area to prevent entry by building occupants into Work Area or surrounding controlled areas.

B. Lock all doors into Work Area, or, if doors cannot be locked, chain shut when work is not in progress. Cover any signs that direct emergency exiting, either outside or inside of the Work Area, to locked doors. Provide Owner with a minimum of two keys to any locks installed.

C. Do not obstruct doors required for emergency exits from Work Area or from building.

D. Construct partitions or closures across any opening into Work Area.

E. Replace passage sets on doors required for exiting from Work Area with temporary locksets for duration of the project. Use entry type locksets that are key lockable from one side and always operable from inside. After meeting release criteria set forth in Section 01714 Work Area Clearance reinstall original passage sets and adjust for proper operation.

F. Arrange Work Area so that the only access into Work Area is through lockable doors to personnel and equipment decontamination units. If necessary, install temporary doors with entrance type lock sets that are key lockable from the outside and always unlocked and operable from the inside. Provide a minimum of two keys to the Owner's Field Representative or his designee.

3.04 WARNING SIGNS

A. Contractor shall supply and post caution signs meeting the requirements of OSHA 29 CFR 1926.1101 (k) (6) at any location and approaches to a location where airborne concentrations of asbestos exceed or may likely exceed the permissible exposure level (PEL) as per OSHA or ambient background levels as per Subchapter 8. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures.

B. Additional warning signs shall be posted on all exterior entrances to the building as required by state and local statutes.

3.05 CRITICAL BARRIERS

A. Completely separate the Work Area from other portions of the building, and the outside by sealing all openings by installing critical barriers consisting of at least two securely attached individual sheets of 6 mil polyethylene sheeting and duct tape. The closure assembly and materials shall comply with applicable State and local building and fire codes.

B. Should a critical barrier be free-standing, the plastic shall be adequately supported by wood stud framing or comparable metal stud framing and be of two (2) individual layers of 6 mil polyethylene sheeting.

C. Ventilation openings (supply, return & exhaust grilles; ducts and any other potential leakage points to HVAC systems), windows, doorways, elevator openings, corridor entrances, floor drains and any other openings between the work area and uncontaminated areas must be sealed with two (2) independently attached layers 6 mil polyethylene sheeting and duct tape for the critical barrier(s).

D. Completely seal all openings within the isolation area to prevent the spread of contamination with a minimum of two (2) individual layers of 6 mil polyethylene sheeting and duct tape. Fire rated expandable foam may be used for irregular penetrations and may be left in place upon completion of abatement work, if approved in writing by the ASCM.

E. Individually seal all lighting fixtures, clocks, speakers, alarm system components (unless otherwise specified), thermostats and other fixed mechanical components with two individual layers of 6 mil polyethylene sheeting, taped securely in place with duct tape. Ensure lighting circuits are deactivated prior to sealing to avoid melting or burning of the polyethylene sheeting.

F. Maintain seal until all work including Project Decontamination is completed.

G. Thoroughly pre-clean all surfaces to which critical barriers or other seals are applied. Where required to properly isolate the work area or if specified in Section 01010, perform surgical removal of asbestos from any surface covered with ACM to which a barrier is to be applied.

3.06 ADDITIONAL CONTROLS

A. Provide Worker Protection per Section 01560

B. Provide Respiratory Protection per Section 01562

C. Provide pressure differential and air circulation system per Section 01513

D. Provide decontamination chambers per Section 01563.

3.07. WORK AREA PREPARATION

A. Contractor shall HEPA vacuum and/or wet wipe all surfaces within the regulated work area (Initial Cleaning).

B. Pre-clean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grilles or gratings where access may be difficult but contamination significant. Also pay particular attention to wall, floor and ceiling penetrations behind fixed items. After pre-cleaning, enclose fixed objects in one (1) layers of 6 mil polyethylene sheeting and seal securely in place with duct tape.

C. Confirm the shut down and lock out all heating, cooling and air conditioning system (HVAC) components that supply or pass through the work area. Seal all intake and exhaust vents in the work area with duct tape and two (2) individual layers of 6-mil polyethylene. Also seal any seams in system components that pass through work area.

D. Completely separate the Work Area from other portions of the building, and the outside by first installing Occupancy Separation Barriers and sealing all openings with critical barriers. The closure assembly and materials shall comply with applicable State and local building and fire codes.

E. Demarcate the work area by installing asbestos warning signs meeting the requirements of OSHA 29 CFR 1926.1101 (k) (6) at any location and approaches to a location where airborne concentrations of asbestos exceed or may likely exceed the permissible exposure level (PEL) as per OSHA. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures. Only personnel essential to the project shall be permitted inside the demarcated areas.

F. All carpeted floors throughout the building that may be impacted by any phase of the asbestos abatement work (i.e. mobilization, waste removal, etc.) shall be first covered with one (1) layer of rosin paper then one (1) layer of reinforced polyethylene. The reinforced polyethylene shall then be covered with one (1) layer Masonite sheeting or approved equal.

G. Floor inside the work area shall be covered with two (2) individual layers of nominal 6 mil (minimum) polyethylene sheeting. Additional layers of sheeting may be utilized as drop cloths to aid in clean-up of bulk materials.

H. The first layer of floor sheeting shall extend at least 12" up the sidewalls and the second layer of floor sheeting shall extend at least 24" up the sidewalls of the work area. Form a sharp right angle bends at junction of wall and floor so that there is no radius that could be stepped on causing the wall attachment to pull loose. Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the

3.08 STOP WORK

If the Critical Barrier fails or is breached in any manner stop work immediately. Do not start work until authorized in writing by the Owner’s designated representative.

3.09 EXTENSION OF WORK AREA

If a Separation or Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, or if air sampling indicates airborne fiber concentrations in clean areas in excess of 0.01 f/cc. Then affected area shall be added to the Work Area, enclose it as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

3.10 CONTAINMENT APPROVAL

Do not begin abatement work or any work deemed contaminated work; such as, but not limited to; opening a wall or ceiling space which is contaminated with asbestos fibers, until the work area is inspected and approved in writing by the on-site AST.

3.11 ALTERNATE METHODS OF ENCLOSURE

A. Alternate methods of containing the Work Area may be submitted to the ASCM for approval in accordance with procedures set forth in Section 01601 Materials and Equipment.

B. Do not proceed with any such method(s) without prior written approval of the ASCM.

END OF SECTION 01526

SECTION 01560 – WORKER PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

1.02 RELATED SECTIONS

Section 01562: Respiratory Protection

1.03 WORKER TRAINING

A. Train all workers in accordance with 29 CFR 1926 in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.

B. All workers and supervisors must be licensed by the State of New Jersey Department of Labor.

C. Provide State of New Jersey approved training and licensing, as required by State of New Jersey Departments of Labor and Health.

D. Train all workers and supervisors in potential job hazards and safety requirements other than asbestos, including, but not limited to: electrical; heat stress; slips, trips & falls; ladders, scaffolding & working surfaces; fire; power tools; noise; chemical exposures; sanitation; material handling; demolition; housekeeping; first aid; personal protective equipment; signs; etc.

E. Provide OSHA approved safety training and procedures associated with fall protection and equipment use, including but not limited to, full body harness and lanyards.

1.04 MEDICAL EXAMINATIONS

A. Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8-hour time weighted average.

B. In the absence of specific airborne fiber exposure data, provide medical examination for all workers who will enter the work area for any reason.

C. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926.

D. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

PART 2 EQUIPMENT

2.01 PROTECTIVE CLOTHING

A. Provide disposable total body coveralls with attached hood or separate head covers, in sizes appropriate for all members of the work crew and authorized visitors, and require that all persons in the work area wear them.

B. Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Dispose of boots as asbestos contaminated waste at the end of the work. Disposable foot covers may be provided in lieu of disposing of work shoes where permitted by site conditions.

C. Provide head protection (hard hats) as required by OSHA for all workers, and provide spares for use by others. Thoroughly clean and decontaminate hats before removing them from work area at the end of the work or dispose of them as contaminated waste.

D. Provide eye protection (e.g. safety glasses, goggles, face shield) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury.

E. Provide work gloves as required by OSHA for all workers of various sizes and types, depending on task. Do not remove gloves from work area until disposed of as asbestos contaminated waste.

2.02 ADDITIONAL PROTECTIVE EQUIPMENT

A. Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner's Consultant, Owner's Field Representative or his designee and other authorized representatives who may inspect the job site.

B. In all situations were required by OSHA Regulations the Contractor shall provide proper OSHA approved fall protection equipment, including but not limited to, full body harnesses equipped with adequate lanyards for all workers, the Owner's Consultant, Owner's Field Representative or his designee and other authorized representatives who may inspect the job site. Contractor shall also provide all necessary safety training and procedures as required by OSHA associated with the use of fall protection equipment and shall insure that all fall protection equipment is properly worn and utilized at all times by all persons while in the contained asbestos work area with no exceptions.

C. Provide these items in sufficient quantity, such that these persons can properly and safely perform their duties within the contained asbestos work area.

PART 3 EXECUTION

3.01 GENERAL

A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work.

B. Ensure workers use the protective equipment and clothing provided.

C. Ensure workers adhere to proper decontamination procedures.

D. The following procedures are minimums to be adhered to regardless of fiber count in the work area.

3.02 DECONTAMINATION PROCEDURES

Require all workers to adhere to the following applicable personal decontamination procedures whenever they leave the work area as a minimum:

A. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room, and dispose of as contaminated waste.

B. Still wearing respirators, proceed to showers. Showering is mandatory, unless noted otherwise.

C. Thoroughly wet body from neck down.

D. Wet hair as thoroughly as possible without wetting the respirator filters if using an air purifying type respirator.

E. Take a deep breathe, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respiratory and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breathe.

F. Dispose of wet filters from air purifying respirator.

G. Carefully wash face piece of respirator inside and out. Shower completely with soap and water.

H. Rinse thoroughly.

I. Rinse shower room walls and floor prior to exit.

J. Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

3.03 ACTIVITY WITHIN WORK AREA

Strictly prohibit workers from eating, drinking, smoking, chewing gum or tobacco while within the work area. In order to perform any of these functions, workers must exit the work area, following the required decontamination procedures on each occasion.

END OF SECTION 01560

SECTION 01562 – RESPIRATORY PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contractor shall instruct and train each worker involved in asbestos abatement activities on proper respirator use and require that each worker wear a respirator, properly fitted on the face, in the work area from the start of any operation which may cause airborne asbestos fibers until the work area is completely decontaminated.

B. Use respiratory protection appropriate for the fiber level concentration encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

1.02 STANDARDS

A. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

B. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134. 29 CFR 1926.

C. CGA - Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air".

D. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992.

E. NIOSH - National Institute for Occupational Safety and Health

F. MSHA - Mine Safety and Health Administration

1.03 AIR QUALITY FOR SUPPLIED AIR RESPIRATORY SYSTEMS

A. Provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade D.

B. When a Type "C" supplied air respiratory system is required by the work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in work area(s), routing of air lines to work area(s) from compressor.

PART 2 EQUIPMENT

2.01 NEGATIVE PRESSURE – AIR PURIFYING RESPIRATORS

A. Half face or full face type respirators. Equip full-face respirators with a nose cup or other anti-fogging device.

B. HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z228.2 (1992).

C. A chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

D. Single use, disposable, or quarter face respirators are strictly prohibited for asbestos abatement work.

2.02 POWERED AIR PURIFYING RESPIRATORS

A. Provide full-face piece, connecting hose, blower unit, and a battery pack by same manufacturer that has been certified by NIOSH/MSHA.

B. Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists, including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z228.2 (1980).

2.03 SUPPLIED AIR RESPIRATOR SYSTEMS

A. Provide equipment capable of producing air of the quality and volume required by the above referenced standards applied to the job site conditions and crew size.

B. Provide full-face piece and hose by same manufacturer that has been certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure.

C. In atmospheres that contain sufficient oxygen (greater than or equal to 19.5% oxygen) provide a pressure-demand full-face piece supplied air respirator equipped with an emergency backup HEPA filter.

D. In atmospheres that are oxygen deficient (less than 19.5% oxygen) provide a pressure-demand full-face piece self-contained breathing apparatus (SCBA).

E. Provide a reservoir of compressed air located outside the work area which will automatically maintain a continuous uninterruptible source of air automatically available to each connected face piece and hose assembly in the event of compressor shutdown, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the back-up air supply to allow a minimum escape time of one-half hour times the number of connections available to the work area.

F. Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and work procedures in use, in all parts of the work area and at the compressor. Perform field test with all equipment running, prior to beginning abatement, to ensure audibility. Connect alarm to warn of:

Compressor shut down or other fault requiring use of backup air supply,
Carbon Monoxide (CO) levels in excess of 5 PPM/V.

G. Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sounded if any of the following occur:

Carbon Monoxide (CO) concentrations exceed 5 PPM/v in the airline between the filter bank and backup air supply.

Compressor temperature exceeds normal operating range.

H. Provide a compressor driven by an electric motor. Insure that electrical supply available at the work site is adequate to energize motor.

I. Locate compressor outside of building in location that will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

J. Locate air intake remotely from any source of automobile or other engine exhaust or any other source of toxic or irritating gases, vapors, fumes, dust, etc.

K. Provide an after cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

L. Configure system to permit the recharging of 1/2 hour 2260 PSI SCBA cylinders, if utilized.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with ANSI Z88.2 - 1992 (or more current edition, if published) "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926.

B. Require that respiratory protection is used at all time when there is any possibility of disturbance of asbestos-containing materials or when asbestos exposures are anticipated to exceed OSHA's Permissible Exposure Limit.

C. At a minimum, a negative pressure air purifying respirator with a tight-fitting "rubber" face-piece and HEPA filtered cartridges shall be used whenever friable asbestos containing materials are present, but work activities will not disturb the asbestos.

D. At a minimum, for glove bag, non-friable and dust control removal procedures, a negative pressure air purifying respirator with a tight-fitting "rubber" face-piece and HEPA filtered cartridges shall be used whenever asbestos-containing materials will be disturbed.

E. At a minimum, a powered air purifying respirator (PAPR) with a tight fitting face-piece and HEPA filtered cartridges or higher level respirator devices, shall be used whenever friable asbestos-containing materials will be disturbed.

F. Type "C" respirator assembly operating in pressure demand mode with a positive pressure which is equipped with a tight fitting full-face piece and an emergency backup HEPA filter, shall be used whenever asbestos-containing fireproofing materials are exposed or will be disturbed. Type "C" respirator shall be used at all times while asbestos-containing fireproofing materials are being disturbed.

G. Require that a respirator be worn by anyone in a work area at all times, regardless of activity.

3.02 FIT TESTING

A. Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a qualified Industrial Hygienist.

B. Fit types of respirator to be actually worn by each individual.

C. Allow an individual to use only those respirators for which he has been trained and fit.

D. On at least a Monthly Basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube according to the Protocol in CFR 1926.1101, or preferably, with a quantitative fit testing device.

E. Each time an air-purifying respirator is put on, it must be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1992).

F. All fit testing shall be done in accordance with Appendix C of 29 CFR 1926.1101.

3.03 TYPE OF RESPIRATORY PROTECTION REQUIRED

A. Respiratory protection, which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below 0.01 f/cc, is the minimum level of protection allowed.

3.04 PERMISSIBLE EXPOSURE LIMIT (PEL)

A. Asbestos

1. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed the current OSHA PEL or the Contractor's internal standard, whichever is more stringent.

2. For the purpose of determining respirator type, protection factors shall be applied to a maximum concentration of 0.01 f/cc inside the mask. Therefore, the maximum use concentration for a half-face negative pressure respirator shall be 0.1 f/cc and for a PAPR shall be 0.5 f/cc.

3. For determining fiber concentrations for personnel exposure monitoring, NIOSH Method 7400 for PCM analysis shall be employed.

B. Perform sufficient personal air monitoring on employees during this project to accurately determine both TWA and short term exposures to asbestos and other contaminants which might be encountered so that OSHA compliance can be demonstrated and so that employees can be adequately protected from harmful exposures.

3.05 NEGATIVE PRESSURE RESPIRATORS (half or full facemask):

A. Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the workday.

B. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the work area.

C. Store respirators and filters at the job site in a clean environment and protect totally from exposure to asbestos when not in use.

D. Ensure that if any chemical cartridge or combination cartridge is utilized, air monitoring has been performed to ensure the adequacy of protection factors. Utilize only full-face respirators for chemical exposures, which can cause eye irritation.

3.06 POWERED AIR PURIFYING RESPIRATORS (half or full face mask):

A. Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Ensure each employee with a PAPR has readily available and uses a flow measuring device, as supplied by the manufacturer, to assist in determining adequacy of flow, if such a device is recommended by the manufacturer.

B. Require that HEPA elements in filter cartridges be protected from wetting during showering.

C. Require entire exterior housing of respirator including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords to be washed each time a worker leaves the work area.

D. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use. Require employees to properly exit the work area immediately, if PAPR flow decreases due to low battery or any other purpose, and not to re-enter until the cause of decreased flow is determined and remedied.

3.07 TYPE "C" RESPIRATORY PROTECTION

A. Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation.

B. Assign an individual trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring.

3.09 RESPIRATORY PROTECTION PROGRAM

A. If requested by the Owner's Field Representative or his designee, submit a Respiratory Protection Program, indicating type of respiratory protection proposed for each portion of the work.

B. Demonstrate to the Owner's Consultant compliance with the program and/or any requirements herein at any time requested.

END OF SECTION 01562

SECTION 01563 – DECONTAMINATION UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for personnel and equipment decontamination facilities.

1. Personnel Decontamination Unit: A serial arrangement of connected rooms or spaces including, Changing Room, Shower Room, Equipment Room, arranged such that all persons must pass through each for entry into and exiting from the work area for any purpose. Personnel Decontamination Unit is the only means of ingress and egress for the work area.

2. Equipment Decontamination Unit: A room or space consisting of a Wash Room, arranged such that all oversized equipment and containers of waste must pass through during the decontamination procedure when being removed from the work area.

1.02 RELATED SECTIONS

Section 01503: Temporary Facilities; connection of decontamination facilities to building systems such as water.

PART 2 PRODUCTS

2.01 PLASTIC SHEET AND ACCESSORIES

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mils thick, as indicated, clear, frosted, or black as indicated.

1. Where plastic sheet is the only separation between the work area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick as indicated, frosted or black as indicated.

B. Duct tape in 2" or 3" widths as appropriate, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

C. Spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

2.02 SHOWER

A. One piece waterproof shower pan, with rigid, impervious, waterproof walls. Structurally support as necessary for stability.

B. Factory made shower head producing a spray of water which can be adjusted for spray size and intensity. Arrange so that control of water temperature, flow rate, and shut off is from inside shower.

C. Cascaded filter units attached to drain lines from showers with disposable filter elements as indicated below.

Primary Filter - Pass no particles larger than 20 microns
Secondary Filter - Pass no particles larger than 1 micron

D. Heavy bronze angle type hose bib with wheel handle, vacuum breaker, and 3/4" National Standard male hose outlet.

2.03 SUMP PUMP

Provide totally submersible waterproof sump pump with integral float switch of proper size for application. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.

PART 3 EXECUTION

3.01 CONSTRUCTION OF DECONTAMINATION UNIT

A. Air tight walls and ceiling using two (2) layers of polyethylene sheeting, at least 6 mil in thickness. Attach to existing building components or a temporary framework.

B. Use 2 layers (minimum) of 6 mil, polyethylene sheeting to cover floors in the Equipment, Shower (underneath shower pan), and Changing Rooms.

C. Provide an additional layer in the Equipment Room for every shift change expected.

D. Roll one layer of plastic from Equipment Room into Work Area after each shift change. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

E. Fabricate doors from three (3) overlapping sheets of polyethylene with openings a minimum of four feet (4') wide. Configure so that sheeting overlaps adjacent surfaces. Weight sheets at bottoms as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel.

F. If the decontamination unit is located outside the building it shall be constructed with a minimum 1/2 inch plywood on the walls and ceiling with polyethylene sheeting, at least 6 mil in thickness covering the top of the unit. The decontamination unit door shall be louvered and be lockable.

G. Visual barriers of opaque polyethylene sheeting at least 6 mil in thickness so that work privacy is maintained and work procedures are not visible to building occupants.

H. Provide electrical sub-panel at Changing Room to accommodate all removal equipment. Power sub-panel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in shower room to a ground-fault circuit protection device.

I. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100 foot candles.

3.01.1 CHANGING ROOM (CLEAN ROOM)

A. Physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Changing Room and the rest of the building.

C. Locate so that access to Work Area from Changing Room is through Shower Room.

D. Separate Changing room from the building by a three (3) sheet polyethylene flapped doorway, fabricated of 6-mil polyethylene.

E. Do not allow asbestos contaminated items to enter this room. Require Workers to enter this room either from outside the area dressed in street clothes, or naked from the showers.

F. An existing room may be utilized as the Changing Room if it is suitably located and approved by the Owner. Protect all surfaces of room with sheet polyethylene as set forth in Section 01526 Temporary Enclosures.

G. Maintain changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room.

H. Damp wipe all surfaces with a disinfectant solution twice after each shift change or more often if indicated or requested by the AST.

I. Provide a continuously adequate supply of disposable bath towels.

J. Post information for all emergency phone numbers and procedures.

3.01.2 SHOWER ROOM

A. A completely water tight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Shower Room and the rest of the building. The Contractor shall under no circumstances be permitted to utilize a prefabricated shower unit that does not maintain the required minimum doorway opening of four feet (4') wide.

C. Separate this room from the Changing and Equipment Rooms with three (3) sheet polyethylene flapped doorways, fabricated of 6-mil polyethylene.

D. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

E. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance.

F. All wastewater shall be contained and pumped back into the work area for adding to asbestos-containing materials before disposal or solidified using an approved polymer to prevent leaks or accidental spills within the facility or during transport for disposal to an approved landfill. Wastewater may also be filtered down to five (5.0) microns and disposed of in a sanitary drain with written approval from the local authority having jurisdiction.

3.01.3 EQUIPMENT ROOM

A. Work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Equipment Room and the rest of the building.

C. Separate this room from the Shower Room and the work area with three (3) sheet polyethylene flapped doorways, fabricated of 6-mil polyethylene.

D. If the airborne asbestos level in the work area is expected to be high, add an intermediate cleaning space between the Equipment room and the Work area.

E. Repair and replace damaged floor sections as required.

3.02 DECONTAMINATION SEQUENCE

A. Before leaving the work area, remove all gross contamination and debris from overalls and feet.

B. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment. Disposable coveralls are placed in a bag for disposal with other material.

C. Decontamination procedures shall be followed by all individuals leaving the work area.

D. After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

3.03 WASTE/EQUIPMENT DECONTAMINATION SEQUENCE

A. All properly containerized waste shall be moved from the work area through the decontamination units. All equipment shall likewise be passed through these units after proper decontamination.

B. All equipment and containers of waste shall be washed down before being passed into the decontamination units.

C. Contractor shall take all equipment or material from the work area through the Decontamination Units according to the following procedures:

1. There shall be, at a minimum, three (3) workers involved this process. One (1) worker inside the work area, one (1) worker inside the waste decontamination unit and one (1) worker in the clean area outside the unit. All three workers shall be wearing protective clothing and respiratory equipment.

2. Thoroughly wet-clean contaminated equipment or sealed polyethylene bags and pass into waste decontamination unit in the wash down station.

3. Once inside the unit, wet clean bags and/or equipment and double bag all bags of waste material.

4. When cleaning or double bagging is complete, pass items to outside worker. At no time is a worker from an uncontaminated area to enter the enclosure when a removal worker is inside or vice versa.

5. The outside worker shall then take waste containers directly from the waste decontamination unit to the secure waste dumpster. Transportation to the waste dumpster shall be in accordance with the provisions set forth in Section 02084.

6. When passing items through the Decontamination Unit, only one (1) doorway shall be open at a time.

D. The waste decontamination unit shall be completely sealed at all times when waste removal operations are not being conducted.

3.04 CLEANING OF DECONTAMINATION UNITS

A. Clean debris and residue from inside of Decontamination Unit on a daily basis.

B. Damp wipe all surfaces after each shift change.

C. If the Changing Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire decontamination unit and erect a new decontamination unit. Use the former Changing Room as an inner section of the new Equipment Room.

3.05 SIGNS

A. Post an approximately 20 inch by 14 inch manufactured caution sign at each Decontamination Unit entrance as required by 29 CFR 1926.

B. Post an approximately 10 inch by 14 inch manufactured sign at each Decontamination Unit entrance to each work area displaying the following legend:

Asbestos Work Area

No Food, Beverages or Tobacco Permitted

All Persons Shall Don Protective
Clothing and Equipment Before
Entering the Work Area

All Persons Shall Shower Immediately
After Leaving Work Area and Before
Entering the Changing Area

END OF SECTION 01563

SECTION 01601 – MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements governing the Contractor's selection of products.

B. Administrative procedures for handling requests for substitutions made after award of the Contract.

1.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

B. Schedule delivery to minimize long-term storage at the site and overcrowding of construction spaces.

C. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

D. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

E. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

F. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

G. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

H. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.03 PROCEDURES

A. Requests for changes in the products, materials, equipment and methods of construction required by the contract documents are considered requests for "substitutions", and are subject to the requirements specified herein. Following are not considered as substitutions:

1. Revisions to the contract documents, where requested by the Owner's Representative or his designee are considered as "changes" not substitutions.

2. Specified Contractor options on products and construction methods included in the contract documents are not subject to the requirements for substitutions as herein specified.

3. Except as otherwise provided in the contract documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

1.04 QUALITY ASSURANCE

A. To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

B. Compatibility of products selected for installation is a basic requirement of product selection and shall be the sole responsibility of the contractor.

C. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, whether or not the products previously selected were also contractor options.

1.05 SUBMITTALS

A. Submit 3 copies of each request for substitution or selection. In each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation showing compliance with the requirements for substitutions.

B. Within one week of receipt of the Contractor's request for substitution, the Owner's Representative or his designee will request additional information or documentation as may be needed for evaluation of the request.

C. Within 2 weeks of receipt of the request, or within one week of receipt of the requested additional information or documentation, whichever is later, the Owner's Representative or his designee will notify the Contractor of either the acceptance or rejection of the proposed substitution.

PART 2 PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE

A. Requirements for individual products are indicated in the contract documents; compliance with these requirements is in itself a contract requirement.

B. Where some particular product or device is specified by brand name or manufacturer it is to be considered a standard.

C. If approved equal, items of other manufacturer than those mentioned may be used, unless specifically noted otherwise for purposes of standardization.

D. Any substitution must receive the written approval of the Owner's Representative or his designee.

2.02 SUBSTITUTIONS

A. The Contractor's request for a substitution will be received and considered when extensive revisions to the contract documents are not required, and one or more of the following conditions are met.

1. Request is directly related to an "or equal" clause or similar language in the contract documents.

2. Specified product or method cannot be provided within the Contract time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

3. Specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

4. Substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting of offsetting responsibilities the Owner may be required to bear.

5. Specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

6. Specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

7. Specified product or method cannot receive a warranty as required by the contract documents and where the Contractor certifies that the proposed substitution includes the required warranty.

B. Requests for substitutions shall include all related information and including the effect of requested substitution (if any), on; cost, schedule, appearance, performance, or other considerations.

2.03 GENERAL PRODUCT REQUIREMENTS

A. Provide products that comply with the requirements of the contract documents that are undamaged and, unless otherwise indicated, unused at the time of installation.

B. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

C. Where they are available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

D. Where, because of the nature of its application, the Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard, domestically produced products for which the manufacturer has published assurances that the products and its parts are likely to be available to the Owner at a later date.

PART 3 EXECUTION

3:01 INSTALLATION OF PRODUCTS

A. Except as otherwise indicated in individual sections of these specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated.

B. Anchor each product securely in place, accurately located and aligned with other work, such that the entire assembly is straight, plumb and/or level, as appropriate and is installed is a workmanlike manner.

END OF SECTION 01601

SECTION 01701 – PROJECT CLOSE-OUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Close-out procedures

B. Project Record Documents

C. Warranties

D. Final Cleaning

1.02 Related Sections

A. Section 01711 - Project Decontamination

B. Section 01714 - Work Area Clearance

1.03 CLOSE-OUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, that Work has been inspected and that Work is completed in accordance with the Contract Documents and ready for inspection by the Owner's Representative or his designee.

B. Remove all temporary facilities, tools and accessories installed for the project and restore to original condition all permanent facilities used for temporary facilities.

C. Obtain and submit releases enabling Owner's full unrestricted use of the site and access to services and utilities. This includes but is not limited to, Certificate of Occupancy as required by the enforcing agency having jurisdiction.

D. Submit specific warranties, bonds and guarantees.

E. Complete final cleaning requirements.

F. Touch up and otherwise repair and restore marred exposed finishes to original condition.

G. Conduct a final inspection with the Owner's Consultant, Owner's Representative or his designee and Contractor's Representatives to examine condition of remaining surfaces.

1.04 RECORD DOCUMENT SUBMITTALS

A. Specific requirements for additional record documents are indicated in Section 01300 of these specifications.

B. Maintain a record set of blue or black line white- prints of contract drawings and shop drawings in a clean, undamaged condition. Mark-up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown.

C. Mark record sets with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.

D. Note related change-order number where applicable.

E. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set.

F. Maintain one complete copy of the drawings, specifications and addenda, and one copy of other written construction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in comparison with the text of the specifications and modifications as issued.

G. Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information.

1.05 WARRANTIES

A. Provide duplicate copies of all specified warranties, bonds and guarantees.

B. At completion of the work of this project, and before final payment is approved for payment; an Officer of the Corporation of the Contractor shall issue a notarized corporate certification that all abatement has been completed in accordance with all aspects of this Project Manual. This certification shall also apply to any areas that may have been contaminated by the Contractor during the course of abatement.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

3.01 FINAL CLEANING

A. Provide final cleaning of the Work at the time indicated. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program.

B. Complete all cleaning operations before requesting inspection by the Owner's Representative or his designee for certification of substantial completion.

C. Clean transparent materials, affected by the work including mirrors and window/door glass, to a polished condition, removing substances which are noticeably vision-obscuring materials. Replace broken glass and damaged transparent materials.

D. Mop, or use other appropriate method to clean, all floors to a level of cleanliness ready to accept wax or other finish by Owner.

E. Clean exposed hard-surfaced finishes affected by the work, to a dirt-free condition, free of dust, stains, films and similar distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

F. Vacuum clean with HEPA vacuum carpeted surfaces and similar soft surfaces and/or professionally clean to remove staining caused by work of this contract. Prior to HEPA vacuuming, steam clean any carpeting, which became wet during the asbestos abatement process.

G. Clean plumbing fixtures affected by the work to a sanitary condition, free of stains including those resulting from water exposure.

H. Replace all HVAC Filters using materials supplied by Owner or clean non-replaceable filters after minimum of one day of operation of HVAC equipment.

I. Clean light fixtures and lamps that have been affected by the work so as to function with full efficiency. Replace lamps where damaged by abatement activities.

J. Clean project site (yard and grounds), including landscaped areas, of litter and foreign substances left during the course of the work. Sweep paved areas which have been affected by the work to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits left by the work. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface where they have been disturbed by the work.

K. Except as otherwise indicated or requested by the Owner's Representative or his designee, remove temporary protection devices and facilities that were installed during the course of the work to protect previously completed work.

L. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems, onto ground or otherwise release at or onto Owner's property.

END OF SECTION 01701

SECTION 01711 – PROJECT DECONTAMINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work of this section includes the decontamination of air in the Work Area that has been, or may have been contaminated by the elevated airborne asbestos fiber levels generated during abatement activities.

B. Cleaning, decontamination, and removal of temporary facilities installed prior to abatement work.

C. Cleaning, and decontamination of all surfaces (ceiling, walls, floor) of the Work Area, and all furniture or equipment in the Work Area.

1.02 RELATED SECTIONS

A. Section 02081 Removal of Asbestos Containing Materials

B. Section 01714 Work Area Clearance

PART 2 PRODUCTS

2.01 MATERIALS

Encapsulating sealant to be applied after removal of all visible asbestos-containing material shall be Foster 32-60 as manufactured by H.B. Fuller or Serpiflex Shield as manufactured by International Protective Coatings Corp. or approved equal and as indicated by the manufacturer to be compatible with the replacement materials. Sealant shall be tinted in accordance with Subchapter 8 when applied and shall be separate and distinct from the underlying substrate when dry.

PART 3 EXECUTION

3.01 START OF WORK

A. At the start of work in this section the following shall be in place:

1. 6 mil polyethylene sheeting on floors;

2. Critical Barriers which form the sole barrier between the work area and other portions of the building or the outside;

3. Two layers of 6 mil polyethylene sheeting over lighting fixtures, electrical components and wiring, clocks, ventilation openings, doorways, convectors, outlets and other openings;

4. Decontamination Units for personnel and waste/equipment in operating condition;

5. Fully operational pressure differential and air circulation system.

3.02 INITIAL CLEANING

A. Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, ladders and/or staging by use of damp-cleaning and mopping, and a High Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.)

B. Do not perform dry dusting or dry sweeping.

C. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste.

D. Continue this cleaning until there is no visible debris from removed materials or residue on polyethylene sheeting or other surfaces.

E. Utilize a leaf blower in all portions of the work area, in the same manner as if performing aggressive air sampling, to dislodge any asbestos particles that may not have yet been cleaned.

F. Perform cleaning by methods described above to clean any asbestos which has been dislodged by leaf blower.

G. Allow sufficient time for the HEPA filtered fan units to clean air and remove airborne asbestos fibers and dry all work area surfaces. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period.

H. Maintain pressure differential and air circulation system in operation for the entire period.

I. Request a Pre-Sealant visual inspection of work area by from the AST. Criteria for acceptable conditions during this inspection shall be that the area is found to be free of suspect asbestos containing materials and visible dusts or debris of any kind and/or source.

J. As soon as the AST approves cleaning of the work area, spray all exposed surfaces with lockdown encapsulating sealant. Take care spraying sealant to ensure it does not leak behind barriers or otherwise mar building finishes/surfaces.

K. Allow sufficient time for sealant and all work area surfaces to fully dry before removing all remaining primary barrier sheeting, leaving only the critical barriers, decontamination units and fully operational pressure differential and air circulation system.

L. Removal all filters in air handling system(s) and dispose of as asbestos-containing waste in accordance with requirements of Section 02084.

3.03 SECOND CLEANING

A. Carry out a detailed cleaning of all surfaces in the work area in the same manner as the first cleaning immediately after removal of primary barrier layers. This cleaning is being applied to existing room surfaces and critical barriers. Critical barriers shall remain intact and shall be repaired as necessary or at the direction of the AST.

B. Allow sufficient time for all work area surfaces to fully dry and for AFD units to clean the air and remove airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential and air circulation system in operation for the entire period.

3.04 FINAL CLEANING

A. Contractor shall carry out a final cleaning of all surfaces in the work area in the same manner as the previous cleaning.

3.05 VISUAL INSPECTION

A. After final cleaning and all surfaces in the work area are fully dry, the Contractor and AST shall perform a complete visual inspection of the entire work area. This inspection shall including, but is not limited to, the decontamination unit, all polyethylene sheeting, seals over ventilation openings,

doorways, windows, and other openings; for dust and debris of any kind from any source, residue on surfaces, or other matter. If deemed necessary by the AST, utilize a leaf blower (provided by the Contractor) during this inspection process to see if any dust or debris is dislodged.

B. If any such dust, debris, residue, or other matter of any kind is observed repeat final cleaning and continue decontamination procedure until visual inspection is approved by the AST. Additional cleaning shall be performed at no additional cost to the Owner.

3.06 FINAL AIR SAMPLING

A. After the work area is found to be visually clean and all surfaces are fully dry, air sampling shall be conducted by the AST and analyzed in accordance with the procedure for Transmission Electron Microscopy (TEM) set forth in Section 01714.

B. If Release Criteria is not met, repeat Final Cleaning and continue decontamination procedure from that point.

C. If Release Criteria is met, proceed with completion of the Work.

3.07 COMPLETION OF ABATEMENT WORK

A. Shutdown and remove the Pressure Differential and Air Circulation System. Seal AFD units with 6 mil polyethylene sheet and duct tape to form an airtight seal at intake and exhaust ends before removing units from the work area.

B. Remove all critical barriers and critical barrier sheeting.

C. Remove decontamination units.

D. Remove all equipment, materials, debris from the work site.

E. Dispose of all asbestos-containing waste material as specified in Section 02084 and provide receipts and chain of custody forms documenting proper disposal.

F. Re-inspect all surfaces and finishes and re-clean as needed to remove all signs of stains, water marks, duct tape and spray glue residue, smudges, smears and other visible marks. All interior finishes and surfaces shall be left in a condition suitable for application of wax or polish by the Owner. Glass surfaces shall be left sparkling clean.

G. Small quantities of residual material found upon removal of the plastic sheeting shall be removed with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the AST, are observed then the entire area affected shall be decontaminated as specified herein for the Final Cleaning.

H. Repair or replace all interior finishes damaged during the course of asbestos abatement work.

I. Fulfill Project Closeout Requirements of Section 01701.

3.08 FINAL INSPECTION

The AST and a DCA representative shall perform a final inspection within 48 hours after the removal of critical barriers to ensure the absence of any visible signs of asbestos and asbestos-contaminated material.

3.09 CERTIFICATE OF COMPLETION

The AST only shall issue a certificate of completion for asbestos abatement after the final inspection. The Certificate of Completion shall be issued only if:

1. All information is complete;

2. Final inspection reveals no visible evidence of asbestos-containing material;

3. All requirements of Subchapter 8 - Asbestos Hazard Abatement Subcode have been met;

4. Final air monitoring levels in accordance with Section 01714 – Work Area Clearance.

END OF SECTION 01711

SECTION 01714 – WORK AREA CLEARANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

This section describes work performed by the AST to measure post-abatement fiber levels.

1.02 CONTRACTOR RELEASE CRITERIA

The Work is Complete when the work area has passed Visual Inspection and airborne fiber levels have been reduced to the level specified in items 1.06 or 1.07 of this Section.

1.03 AIR MONITORING

A. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, AST will secure samples and analyze them according to the following procedures.

B. Fibers Counted: "Fibers" referred to in this section shall be either all fibers as counted in accordance with NIOSH Method 7400A.

1.04 AGGRESSIVE SAMPLING

A. Before sampling pumps are started the exhaust from forced air equipment (such as a leaf blower with at least 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of work area volume.

B. One fan capable of creating a minimum air velocity of 500 feet per minute shall be utilized for each 10,000 cubic feet of work area. Stationary fans shall be placed in locations, which will not interfere with air monitoring equipment. Fans shall be directed toward the ceiling and shall operate continuously for the entire sampling period.

C. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors or vents.

D. After air-sampling pumps have been shut off, fans will be shut off.

E. The use of leaf blowers and fans shall be restricted to general occupancy areas that are contained, and they shall not be used in any space with an open dirt, sand or gravel floor.

1.05 SCHEDULE OF AIR SAMPLES

A. The number and volume of air samples taken and analytical methods used by the AST will be in accordance with one of the following schedules in compliance with State and Federal regulations. Sample volumes given may vary depending upon the analytical instruments used.

1.06 TRANSMISSION ELECTRON MICROSCOPY (TEM)

A. In each homogenous work area to be cleared by TEM, after completion of all cleaning work, the samples will be taken and analyzed as follows:

Location Sampled	Number of Samples	Filter Media	Acceptance Level (structures/cc)	Minimum Volume	Rate (LPM)
Each Work Area	5	0.8 µ MCE	70	1,200 (25 mm filter)	2 to 15
Outside Work Area	5	0.8 µ MCE	70	1,200 (25 mm filter)	2 to 15
Field Blank	3	0.8 µ MCE	0	N/A	N/A

B. Fibers on each filter will be counted and measured using the AHERA procedures. The laboratory used shall be approved by the American Industrial Hygiene Association (AIHA).

C. Decontamination of the work site is complete when every work area sample is less than or equal to the applicable Acceptance Level (70 s/cc). If any sample is above the Acceptance Level (70 s/cc), then the decontamination is incomplete and re-cleaning is required.

1.07 FAILED CLEARANCE TESTING

A. If the Release Criteria conditions are not achieved, decontamination is incomplete and the cleaning procedures of Section 01711 shall be repeated at no additional cost to the Owner.

B. The Contractor will be financially responsible for all subsequent analysis costs (daily and clearance) and related technician costs required as a result of failed clearance testing.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01714

SECTION 02081 – REMOVAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of ACM

B. Cleaning of Surfaces Previously Covered by ACM

C. Encapsulants

1.02 RELATED WORK

A. Section 01526 - Temporary Enclosures

B. Section 01513 - Pressure Differential and Air Circulation System

C. Section 01560 - Worker Protection

D. Section 01562 - Respiratory Protection

E. Section 01563 - Decontamination Units

F. Section 01711 - Project Decontamination

G. Section 02084 - Disposal of Asbestos-Containing waste.

PART 2 PRODUCTS

2.01 AMENDED WATER

A. Provide water to which a surfactant has been added.

B. Use a mixture of surfactant and water which results in wetting of the asbestos containing material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2.02 ENCAPSULANTING SEALANTS

A. An encapsulating sealant shall be applied to all surfaces including those from which asbestos was removed, so as to lock down any microscopic fibers that may remain. See Section 01711.

2.03 POLYETHYLENE SHEETING

A. Polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black as indicated.

B. Flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick, frosted or black as indicated.

2.04 CHEMICAL MASTIC SOLVENTS (Not Applicable)

2.05 MISCELLANEOUS MATERIALS

A. Duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

B. Spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

C. Provide 6 mil thick leak-tight polyethylene bags labeled as indicated in Section 02084.

PART 3 EXECUTION

3.01 PRE-COMMENCEMENT INSPECTION

A. The work area shall be prepared for abatement by isolating the area from the balance of the building, establishing a negative pressure enclosure, complete with decontamination units, temporary electrical and water connections and other temporary facilities as specified in each of the other section of this specification.

B. Upon completion of preparation, Contractor shall request the AST to perform an inspection of the work area to verify that all isolation and engineering controls are in places and functioning as specified.

C. Repair, install or otherwise correct any deficiencies noted during the inspection and obtain written notification from the AST that the area has been found acceptable for abatement.

3.02 WET REMOVAL METHOD

A. Thoroughly wet asbestos-containing materials to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant.

B. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for the amended water or removal encapsulant to penetrate material thoroughly.

C. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.

D. Perforate outer covering of any installation which has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant, or where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

F. Mist the work area continuously with amended water or removal encapsulant whenever necessary to reduce airborne fiber levels.

G. Remove saturated asbestos-containing material in small sections from all areas. As it is removed, pack material while still wet into disposal bags.

H. Evacuate air from disposal bags with a HEPA filtered vacuum cleaner. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit.

J. Asbestos-containing material shall be disposed of as specified in Section 02084.

3.03 LOCK-DOWN ENCAPSULATION

A. Upon completion of removal and cleaning of surfaces, have surfaces visually inspected by the AST. When surfaces have passed the visual inspection, they shall be sprayed with an approved lock-down encapsulant (sealant).

3.04 AIR FILTRATION SYSTEM

A. If necessary in order to meet work area fiber level specified in Section 01410, provide HEPA filtered fan units, one for each remediation activity, in addition to those required by section 01513, in the vicinity of the work. Arrange so that exhaust is into the work area oriented in a direction away from the work. Extend a 12" diameter flexible non-collapsing duct from the intake end to a point no more than 4'-0 from any removal or brushing activity.

3.05 AIRBORNE FIBER COUNTS

A. Use work procedures that result in an 8 hour Time Weighted Average (TWA) airborne fiber count less than that indicated in Section 01410 Test Laboratory - Air Monitoring Services".

B. If airborne fiber counts exceed this level immediately mist the area with amended water to lower fiber counts and revise work procedures to maintain airborne fiber levels within the required limit.

END OF SECTION 02081

SECTION 02084 – DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disposal of Asbestos-Containing Materials.

B. Packaging of asbestos-containing waste materials.

1.02 SUBMITTALS

Chain of Custody form and form of waste manifest proposed.

1.03 DISPOSAL

A. Asbestos-containing waste material and debris which is packaged in accordance with the provision of this Specification, classified as Waste ID No. 27 non-hazardous industrial waste, may be disposed of at designated sanitary landfills when certain precautions are taken.

1. Notice to Appropriate Environmental Protection Agency regional office.

2. Notice and Permit from Appropriate State and/or Local Agencies.

3. See Section 01092 for Agency Locations and Codes.

B. The Contractor shall send a notification of intent to dispose of asbestos to the New Jersey Department of Environmental Protection at least ten (10) days prior to actual disposal.

C. The waste hauler must possess a valid solid waste transporter registration issued by the New Jersey Department of Environmental Protection. The vehicle used to transport the waste container shall also be registered by the New Jersey Department of Environmental Protection.

D. The landfill designated must be registered by the New Jersey Department of Environmental Protection to accept Waste ID No. 27.

E. The specific landfill facility chosen must be one designated by the New Jersey Department of Environmental Protection as the recipient facility for the community in which the removal project is located. The waste can also be taken to a landfill out of state provided approval is granted by the ASCM

PART 2 PRODUCTS

2.01 DISPOSAL BAGS

A. Provide 6 mil thick leak-tight polyethylene bags labeled with four labels with text as follows:

1. First Label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

2. Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR
ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

3. Third Label: Provide in accordance with U.S. Department of Transportation regulation on hazardous waste marking. 49 CFR Parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised October 1, 1992:

For Amosite/Chrysotile Mixture
RQ Waste Asbestos Mixture
9, NA 2212,111

For Chrysotile
9, NA, 2212,111

4. Fourth Label:

NAME OF GENERATOR
NAME OF CONTRACTOR
CONTRACTOR'S REMOVAL LICENSE NUMBER
DATE BAG WAS SEALED

2.02 LABELS

A. If waste components are wrapped with polyethylene or if fiberboard drums are utilized, labels shall be attached to each in accordance with paragraph 2.01, A, 1-4 of this section.

PART 3 EXECUTION

3.01 GENERAL

A. All waste shall be maintained in an adequately wet condition until sealed in air and leak tight containers.

B. All waste material shall be containerized in one (1) of the following methods.

1. Two (2) 6 mil disposal bags.
2. Two (2) 6 mil disposal bags and burlap bags or cardboard boxes. (Sharp objects)
3. Wrapped with two (2) layers of 6-mil polyethylene.

Any material which may compromise the integrity of the disposal bag shall first be placed into a cardboard box, burlap or nylon bag before placement into two (2) 6 mil polyethylene disposal bags.

C. Carefully load containerized waste on enclosed trucks, dumpsters, or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. The Contractor shall cover both the floor and sidewalls of the enclosed truck, dumpster or other appropriate vehicle for transport with two (2) individual sheets of 6 mil polyethylene

D. Do not store disposal-bagged material outside of the work area. Take bags from the work area directly to a secure and sealed truck or lockable dumpster.

E. Do not transport disposal-bagged materials on open trucks.

F. Advise the landfill operator, at least ten (10) days in advance of transport, of the quantity of material to be delivered.

G. At the burial site, sealed plastic bags shall be carefully unloaded from the truck. If bags are broken or damaged, leave in the truck and clean entire truck and contents using procedures set forth in section 01711 Project Decontamination.

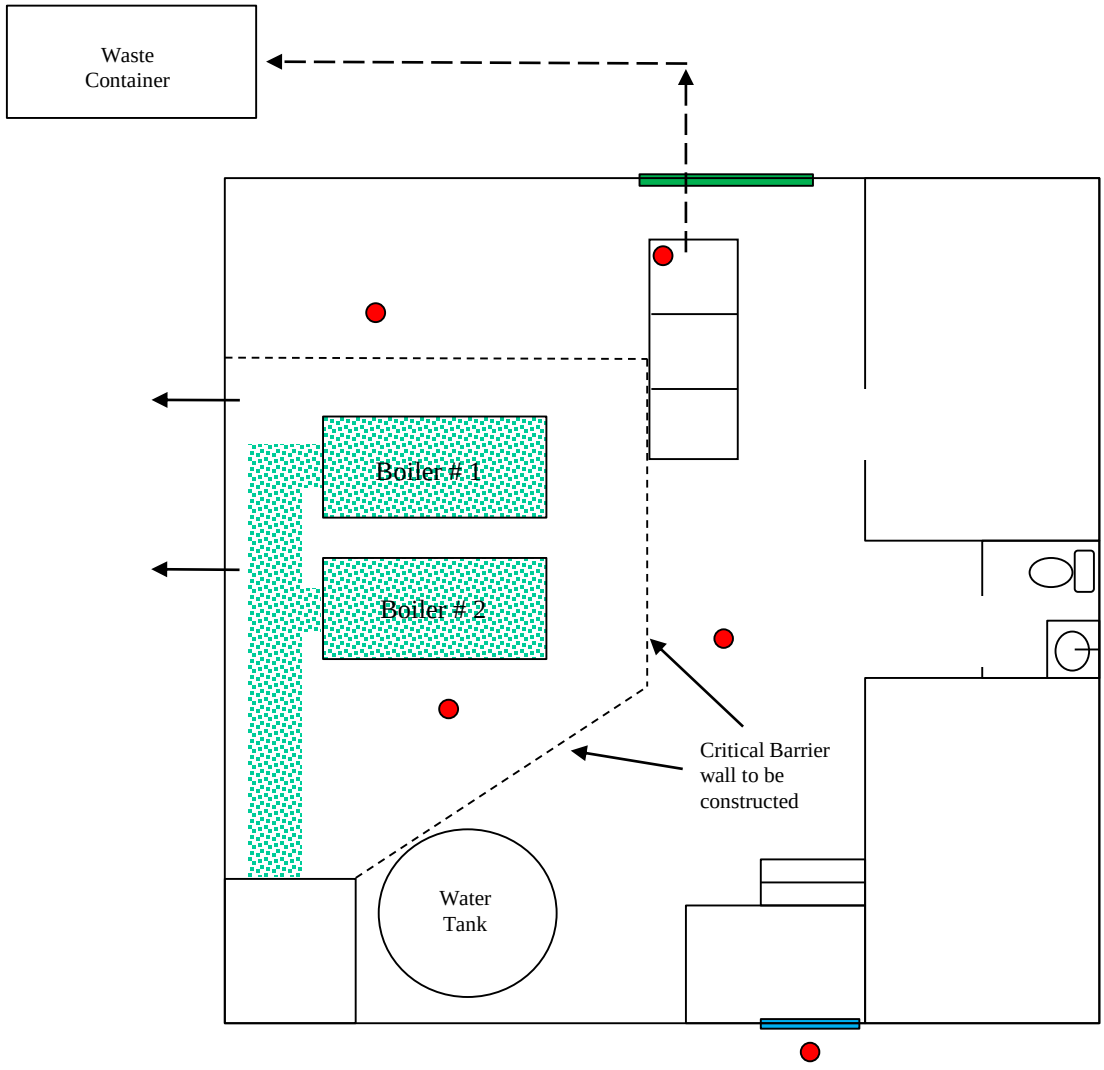
H. Ensure asbestos waste storage and disposal complies with all aspects of Federal, State and local asbestos regulation, particularly regarding time periods for removing waste from project site and interim storage.

I. Retain manifests from landfill for materials disposed of. The manifests shall be signed by the hauler and landfill operator and shall indicate the amount of material being disposed and the location where the waste was generated.

J. No later than 10 days after disposal of each load submit copy of waste manifest, chain or custody form, and landfill receipt to the Owner's Representative or his designee.

END OF SECTION 02084

APPENDIX A



= Asbestos Abatement Full Containment Work Area

= Proposed Air Sample Location

= Three Stage Decontamination Unit

= Waste Removal Route & Contractor Entrance / Exit

= AFD Exhaust at Window

= Separation Barrier to be Installed at this Location

= Lockable Separation Barrier to be Installed at Exterior Doorway

= Asbestos Boiler & Breeching Insulation to be Removed

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PROJECT NO: 3785100020	**DATE:** 04/25/19
CLIENT: Epic Environmental Inc.	**SCALE:** Not to Scale
COPIED FROM: Field Sketch	

FIGURE 1: BOILER ROOM

ASBESTOS ABATEMENT

BUENA REGIONAL HIGH SCHOOL
125 WEYMOUTH ROAD
BUENA, NEW JERSEY

April 25, 2019

PROJECT MANUAL

FOR

ASBESTOS ABATEMENT

MILANESI ELEMENTARY SCHOOL
880 HARDING HIGHWAY
BUENA, NEW JERSEY 08310

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ATC PROJECT NUMBER: 3785100019

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SECTION 00002 – PROJECT DIRECTORY

OWNER: Buena Regional School Dirtrict
125 Weymouth Road
Buena, New Jersey 08310
Office (856) 697-2400

JOB SITE: Milanesi Elementary School
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Buena, New Jersey 08310

ASCM FIRM: ATC Group Services LLC (ASCM # 00098)
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SECTION 00110 – ABATEMENT SCHEDULE

The following schedule indicates the times for start and completion of this asbestos abatement project as required by the Owner. Contractors shall indicate in their bids their best estimate of the time actually required for the work so that the Owner can adjust this schedule accordingly.

1. Bidding Documents Available: To be determined

2. Bids Received by the Owner: May 14, 2019

3. Owner Awards Contract: To be determined

4. Contractor Files All Necessary Notifications no later than: July 22, 2019

5. Abatement Activities Project Start and Completion Dates: August 5, 2019 to August 14, 2019

Receipt of all Closeout and Record Documentation will be due to ATC ten (10) business days after the completion of work. As indicated in Section 02084, Waste Shipment Records are required to be submitted to the Consultant within 48 hours upon Completion of the Work by the abatement contractor.

By the dates and times stated for completion of abatement, the following tasks shall be accomplished by the Abatement Contractor and verified and agreed upon by the Abatement Contractor and the Consultant.

1. Final air clearance obtained.
2. Containment and equipment and personnel decontamination units removed.
3. All equipment, materials, plastic, tape, nails, etc. removed from the work areas.
4. Building damage resulting from abatement activities documented.
5. Final cleaning of the work areas completed including waste load-out.
6. Substantial completion form submitted.

END OF SECTION 00110

SECTION 00420 – MANIFEST TRACKING LOG

GENERAL

A. Contractor shall provide the Owner with a copy of any applicable manifest form(s) required by local, State and federal regulatory agencies.

1. Manifests shall be fully completed and shall be signed by the Contractor's representative; the Hauler assigned to carry the waste and the disposal site where the waste is deposited.

B. Contractor shall provide copies of any commercial carriers bills of lading generated for shipment of waste from the site.

END OF SECTION 00420

SECTION 01010 – SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Project is identified as Milanesi Elementary School, Buena, New Jersey.

B. The Scope of Work consists of the removal of all asbestos-containing materials from areas as described in the project manual and indicated on the drawings.

C. Asbestos Abatement Work includes, but is not limited to, all procedures relating to removal of asbestos-containing materials, disposal of asbestos-containing materials and proving all general conditions and temporary facilities and construction controls throughout the course of the abatement contract. ***ASBESTOS REMOVAL OPERATIONS IN THE BOILER ROOM # 106 OF THE MILANESI ELEMENTARY SCHOOL LOCATED ON 880 HARDING HIGHWAY IN BUENA, NEW JERSEY ARE SUBJECT TO SUBCHAPTER 8 UNOCCUPIED BUILDING PROJECT REQUIREMENTS.***

1.02 CONTRACTOR'S DUTIES

A. Contractor's duties include the following:

1. Unless specifically noted, provide and pay for labor, materials and equipment, tools, construction equipment and machinery, utilities required for Abatement (Refer to Section 02081), other facilities and services necessary for proper execution and completion of work.

2. Legally required sales, consumer and use taxes.

3. Secure and pay for required permits, fees and licenses necessary for proper execution and completion of work, as applicable at time of receipt of bids.

4. Give required notices.

5. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities, which bear on performance of work.

6. Promptly submit written notice to Consultant of observed variance of contract documents from legal requirements. Assume responsibility for work known to be contrary to such requirements without notice. Any required procedural variances will be obtained by the ASCM prior to the commencement of asbestos abatement activities.

7. Enforce strict discipline and good order among employees. Employ only persons sufficiently skilled and trained in assigned task.

1.03 DESCRIPTION OF WORK

A. Perform all work in accordance with all applicable Federal, State and local regulations applicable to work of this nature and this project manual. Including but not limited to, Subchapter 8 regulations regarding asbestos removal in unoccupied buildings**.** The Scope of the work is as follows:

FRIABLE ABATEMENT – SUBCHAPTER 8

1. **Milanesi Elementary School, Bridgeton, NJ – Boiler Room # 106:**

Remove and properly dispose of ***all*** asbestos-containing boiler, pipe fittings, and breeching insulation. This abatement shall include the demolition and remove of the boiler unit. The work in this area shall be accomplished utilizing wet removal methods in a ***Full Isolation Containment*** with negative air pressure differential and three-stage personnel decontamination units as described in this project manual and indicated on the contract drawings:

Boiler Insulation	approximately 200 SF
Breeching Insulation	approximately 120 SF
Pipe Fitting Insulation	approximately 74 fittings

The work in this area shall include the removal and proper disposal of all above identified building materials.

The above referenced quantities of asbestos-containing materials is provided for use as general guidance and may ***not*** be all inclusive of actual conditions. The Contractor is required to visit the site to determine the exact locations, quantities and conditions of materials in order to insure complete removal of ***all*** asbestos-containing and/or asbestos-contaminated materials that exists within these areas.

1.04 DRAWING SCHEDULE

A. The following drawings are referred to throughout these documents and are included as part of the Contract Documents.

1. Drawing -1 Milanesi Elementary School – Boiler Room # 106 (Subchapter 8)

1.05 CONTRACTOR USE OF PREMISES

A. Confine operations at site to areas permitted by law, ordinances, permits, contract documents and specific designation shown on drawings.

B. Do not unreasonably encumber site with materials or equipment. Staging areas will be located as directed by Owner.

C. Do not load structure with weight that will endanger structure.

D. Assume full responsibility for protection and safekeeping of products stored on premises.

E. Move any stored products which interfere with operations of Owner or other contractors.

F. Obtain and pay for use of additional storage or work areas needed for operations.

1.06 PARTIAL OWNER OCCUPANCY – (NOT APPLICABLE FOR THIS PROJECT)

1.07 CONCURRENT CONSTRUCTION – (NOT APPLICABLE FOR THIS PROJECT)

END OF SECTION 01010

SECTION 01043 – PROJECT COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Daily coordination with the ASCM is required to maintain the project schedule. Notification, along with the reason for change shall be given to the ASCM immediately upon deviation from the schedule.

B. Contractor is responsible for all coordination with any other prime contractors and subcontractors.

C. Contractor shall coordinate all work involving HVAC, plumbing, mechanical, electrical, security alarm disconnect/installation with the Owner's Representative.

D. Administrative and Supervisory Personnel:

1. Jobsite Supervisor: Contractor shall provide a full-time English speaking supervisor onsite at all times during all asbestos related activities who is experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for the building and personnel, disposal procedures, etc. Contractor shall submit evidence that this supervisor has attended an asbestos abatement training course for supervisory personnel, has an asbestos supervisor permit issued by the NJ Department of Labor, has a minimum of three (3) years hands-on experience on asbestos abatement projects, and satisfies additional requirements set forth in 29 CFR 1926.1101[0] for a competent person. The competent person is the Contractor's representative, responsible for compliance with all applicable Federal, State, and local regulations, particularly those relating to asbestos-containing materials.

E. Emergency Plan

1. The Contractor shall develop a contingency plan for emergencies, in case of fire, explosion, accidents, power failure, negative air pressure/filtration system failure, heat related problems, and any other problem which may require modification or bypassing of decontamination. The plan shall include procedures for repair and clean up following temporary breach of containment barriers. This emergency plan shall be approved by the ASCM prior to the Contractor starting any work and must be work area specific.

2. Emergency procedures shall be in written form and prominently posted in the clean change areas and equipment rooms of the worker decontamination areas and inside the work areas themselves. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures. For those non-English speaking employees instructions shall also be printed in the appropriate language.

3. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

a. For non-life-threatening situations employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the workplace to obtain proper medical treatment.

b. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him from the workplace and secure proper medical treatment.

4. Telephone numbers and locations of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01043

SECTION 01091 – DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Throughout the Contract Documents, terms are used that may not be fully understood by all parties. To ensure a complete understanding of the Contract Documents, the following definitions will apply:

1. ***Abatement*** - Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair, demolition and renovation activities.

2. ***Aerosol*** - A system consisting of particles, solid or liquid, suspended in air.

3. ***Aggressive Method*** - Means removal or disturbance of building material by sanding, abrading, grinding or other methods that breaks, crumbles, or disintegrates intact ACM.

4. ***Air Cell*** - Insulation normally used on pipes and ductwork that is comprised of corrugated cardboard, which is made asbestos, combined with cellulose or refractory binders.

5. ***Airlock*** - A serial arrangement of rooms whose doors are spaced a minimum of four (4) feet apart so as to permit ingress or egress through one (1) room without interfering with the next and constructed in such a manner as to prevent or restrict the free flow of air in either direction.

6. ***Air Monitoring*** - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower detectability and specific fiber identification.

7. ***Amended Water*** - Water to which a surfactant has been added.

8. ***Asbestos*** - The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

9. ***Asbestos Containing Material (ACM)*** - Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.

10. ***Asbestos-Containing Waste Materials*** - Any material that is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a work area for disposal.

11. ***Asbestos Hazard Abatement Project*** - The removal, enclosure, or encapsulation of more than 25 square feet of asbestos-containing materials used on any equipment or surface area such as wall, or ceiling area; or the removal or encapsulation, of more than 10 linear feet of asbestos-containing material on covered piping.

12. ***Asbestos Safety Control Monitor (ASCM)*** - A business entity authorized pursuant to N.J.A.C. 5:23-8 to ensure compliance with the Asbestos Hazard Abatement Subcode (Subchapter 8).

13. ***Asbestos Safety Technician (AST)*** - Person certified by New Jersey Department of Community Affairs, hired by the Asbestos Safety Control Monitor who continuously monitors and inspects the asbestos abatement work pursuant to Subchapter 8. This person shall be required to be on the job site during the time the asbestos abatement work is taking place and perform all duties and responsibilities established by Subchapter 8.

14. ***Authorized Personnel*** - The Owner, the Owner's representative, asbestos abatement contractor personnel, asbestos safety control monitor personnel, emergency personnel, or a representative of any Federal, State or local regulatory agency or other personnel under contract for or having jurisdiction over the project.

15. ***Barrier*** - Any surface that seals off the work area to inhibit the movement of fibers.

16. ***Breathing Zone*** - A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

17. ***Building Owner*** - The Owner or his authorized representative.

18. ***Category I Non-Friable Asbestos-Containing Material (ACM)*** - Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

19. ***Category II Non-Friable ACM*** - Any material, excluding Category I non-friable ACM, containing more than l percent asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section l, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

20. ***Ceiling Concentration*** - The concentration of an airborne substance that shall not be exceeded.

21. ***Certificate of Completion*** - The certificate issued by the asbestos safety control monitor signifying that the asbestos hazard abatement work has been completed in conformance with N.J.A.C. 5:23-8.

22. ***Certified Industrial Hygienist - (CIH***) - An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

23. ***Class I Asbestos Work*** - Means activities involving the removal of TSI and surfacing ACM and PACM.

24. ***Class II Asbestos Work*** - Means activities involving the removal of ACM, which is not thermal system insulation, or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

25. ***Class III Asbestos Work*** - Means repair and maintenance operations, where "ACM", including thermal system insulation and surfacing material, is likely to be disturbed.

26. ***Class IV Asbestos Work*** - Means maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

27. ***Clean Room*** - An uncontaminated area or room that is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.

28. ***Competent Person*** - Means in addition to the definition in 29 CFR 1926.32 {f}, one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 {f}: in addition for Class I and Class II work who is specially trained in a training-course which meets the criteria of EPA's Model accreditation Plan (40 CFR 763) for Project Designer or Supervisor, or its equivalent and, for Class II and Class IV work, who is trained in an Operations and Maintenance (O & M) Course developed by the EPA [40 CFR 763.92 {a} {2}].

29. ***Contractor*** - The Asbestos Removal Contractor licensed by the New Jersey Department of Labor.

30. ***Critical Barrier*** - Two individual layers of nominal six (6) mil polyethylene sheeting that completely seal off the work area to prevent the distribution of fibers to the surrounding area, such as the opening between the top of a wall and the underside of ceiling construction, electrical outlets, non-removable lights, HVAC systems, windows, doorways, entranceways, ducts, grilles, grates, diffusers, wall clocks, speaker grilles, floor drains, sink drains, etc.

31. ***Curtained Doorway*** - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing three (3) weighted overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of the two outer sheets along one vertical side of the doorway and securing the vertical edge of the middle sheet along the opposite vertical side of the doorway. Other effective designs are permissible.

32. ***Decontamination Enclosure System*** - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.

33. ***Demolition*** - The actual destruction and removal of a building, or part of a building, without intent to renovate, repair, or replace. If it is later decided to retain the building, or part of the building, for future use, the project shall not be considered demolition and the criteria for re-entry shall be 0.01 f/cc.

34. ***Disposal Bag*** - 6 mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

AVOID BREATHING AIRBORNE ASBESTOS FIBERS

AND

ASBESTOS NA 2212, RQ

Each bag shall contain the U.S. DOT Class 9 (miscellaneous) hazardous material label.

Contractor shall also label all disposal bags and/or containers with the name of the waste generator (Owner) and the location from which the waste was generated; all in accordance with the EPA NESHAPS regulation - 40 CFR Part 61, Subpart M.

35. ***Encapsulant*** - A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

36. ***Encapsulation*** - The application of an encapsulant, to asbestos-containing materials, to control the release of asbestos fibers into the air.

37. ***Enclosure*** - The construction of an airtight, impermeable, permanent barrier around asbestos -containing material to control the release of asbestos fibers into the air.

38. ***Equipment Decontamination Enclosure System*** - That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.

39. ***Equipment Room*** - A contaminated area or room that is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

40. ***Facility*** - Any institutional, commercial or industrial structure, installation or building.

41. ***Facility Component*** - Any pipe, duct, boiler, tank, reactor, turbine or furnace at or in a facility or any structural member of a facility.

42. ***Filter*** - A media component used in respirators to remove solid or liquid particles from the inspired air.

43. ***Fixed Object*** - A piece of equipment or furniture in the work area which cannot be removed from the work area.

44. ***Flame-Resistant Polyethylene Sheeting*** - A single polyethylene film in the largest sheet size possible to minimize seams, nominal six (6) mil thick, conforming to requirements set forth by the National Fire Protection Association Standard 701, Small scale Fire Test for Flame-Resistant Textiles and Films.

45. ***Friable Asbestos Material*** - Material that contains more than 1% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

46. ***Glove-bag Technique*** - A method with limited applications for removing small amounts of friable asbestos-containing material from piping runs, valves, joints, elbows, and other non-planar surfaces in a contained (plasticized) work area. The glove-bag assembly is a manufactured or fabricated device consisting of a glove-bag (typically constructed of 6-mil transparent polyethylene plastic), two inward projecting sleeves, an internal tool

pouch, and an attached, labeled receptacle for asbestos waste. The glove-bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glove-bag technique must be highly trained, experienced and skilled in this method.

47. ***Glove-bag Work Area Enclosure (Localized Isolation)*** - The enclosure that defines the work area for glove-bag activity.

48. ***HVAC*** - Heating, ventilation and air conditioning system.

49. ***HEPA Filter*** - A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.

50. ***HEPA Filter Vacuum Collection Equipment (or vacuum cleaner)*** - High efficiency particulate air (absolute) filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

51. ***High-Efficiency Filter*** - A filter which removes from air 99.97% or more of monodisperse dioctyl phthalate (DOP) particles having a mean particle diameter of 0.3 micrometer.

52. ***Movable Object*** - A piece of equipment or furniture in the work area, which can be removed from the work area.

53. ***Negative Pressure*** - Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

54. ***Negative Pressure Respirator*** - A respirator in which the air pressure inside the respiratory -inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

55. ***Negative Pressure Ventilation System*** - A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

56. ***Occupied Building*** - A building or structure where occupancy is permitted in certain areas outside of the required containment during an asbestos hazard abatement project.

57. ***Operations and Maintenance Activity*** - Corrective action not intended as asbestos abatement. The amount of friable asbestos containing material that can be abated per year per project is 25 square feet or less or, if covering piping, 10 linear feet or less.

58. ***Outside Air*** - The air outside buildings and structures.

59. ***Personal Monitoring*** - Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

60. ***Plasticize*** - To cover floors and walls with plastic sheeting as herein specified.

61. ***Prior Experience*** - Experience required of the contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project

size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

62. ***Protection Factor*** - The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

63. ***Regulated Asbestos-Containing Material (RACM)*** - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

64. ***Removal*** - The stripping of any asbestos containing materials from surfaces or components of a facility.

65. ***Removal Encapsulant*** - A penetrating encapsulant specifically designed for removal of asbestos materials rather than for the locking down of remaining microscopic fibers.

66. ***Renovation*** - Altering in any way one or more facility components. Operations in which load -supporting structural members are wrecked or taken out are excluded.

67. ***Repair*** - Means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

68. ***Respirator*** - A device designed to protect the wearer from the inhalation of harmful atmospheres.

69. ***Shower Room*** - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

70. ***Staging Area*** - Either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

71. ***Separation Barrier*** - A solid wall constructed to isolate the clean and/or occupied areas of a building from the work area and to support the polyethylene sheeting. Separation Barriers are of rigid construction consisting of normal 2”x4” wood or metal studs spaced 16” on center and covered with a minimum of 1/2” plywood or gypsum board. All seams are caulked airtight before two individual layers of 6 mil polyethylene sheeting are applied to both sides.

72. ***Strip*** - To take off friable asbestos materials from any part of the facility.

73. ***Structural Member*** - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load -supporting member, such as ceilings and non-load supporting walls.

74. ***Surfacing Material*** - Means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

75. ***Surfactant*** - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

76. ***Thermal System Insulation (TSI)*** - Means ACM applied to pipes, fittings, boilers, breeching, tanks and ducts or other structural components to prevent heat loss or gain.

77. ***Unoccupied Building*** - A building or structure where no occupancy is permitted in any area of the building throughout the entire during of an asbestos hazard abatement project.

78. ***Visible Emissions*** - Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

79. ***Waste Shipment Record (WSR)*** - Waste handling and disposal record, or manifest, which documents the proper handling and disposal of asbestos-containing waste materials. Document shall be in compliance with EPA Regulation 40 CFR, Part 61, Subpart M (NESHAPS).

80. ***Waste Transfer Airlock*** - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.

81. ***Water Column (W.C.)*** - A unit of measurement for pressure differential.

82. ***Wet Cleaning*** - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

83. ***Work Area*** - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area, which has been sealed, plasticized, and equipped with a decontamination enclosure system.

84. ***Worker Decontamination Enclosure*** - A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways. This system is used for all worker entrances and exists to and from the work area and for equipment pass out for small jobs.

B. Abbreviations used throughout the Contract Documents are defined as follows:

1. ACGIH - American Conference of Governmental
Industrial Hygienists
6500 Glenway Avenue Building D-5
Cincinnati, Ohio 45211

2. AIA - American Institute of Architects
1735 New York Ave. NW
Washington, DC 20006
202/626-7474

3. AIHA - American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250
Fairfax, VA 22031

4. ANSI - American National Standards Institute
   1430 Broadway
   New York, NY 10018
   212/354-3300

5. ASHRAE - American Society for Heating,
   Refrigerating and Air Conditioning Engineers
   1791 Tullie Circle NE
   Atlanta, GA 30329
   404/636-8400

6. ASTM - American Society for Testing and Materials
   1916 Race Street
   Philadelphia, PA 19103
   215/299-5400

7. CFR - Code of Federal Regulations
   Available from Government Printing Office;
   Washington, DC 20402 (usually first published in Federal Register)

8. EPA - Environmental Protection Agency
   401 M St., SW;
   Washington, DC 20460
   202/382-3949

9. NBS-National Bureau of Standards (U.S. Dept. of Commerce)
   Gaithersburg, MD 20234
   301/921-1000

10. NESHAPS - The National Emission Standards for
    Hazardous Air Pollutants (40 CFR Part 61)

11. NIOSH - The National Institute for Occupational Safety and Health
    Building J.N.E. Room 3007
    Atlanta, Ga. 30333

12. NVLAP - National Voluntary Laboratory
    Accreditation Program
    Gaithersberg, MD 20234
    (301) 921-1000

13. OSHA - The Occupational Safety and Health
    Administration
    200 Constitution Avenue
    Washington, D.C. 20210

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01091

SECTION 01092 – CODES AND REGULATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification.

B. Notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.

1.02 CODES AND REGULATIONS

A. Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

B. The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site.

C. Neither the Contractor, nor any subcontractor for any part of the contract work, shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety.

D. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations.

E. The Contractor shall hold the Owner, Owner's Field Representative or his designee, Asbestos Safety Technician (AST) harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

1.03 FEDERAL REQUIREMENTS

A. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), including but not limited to:

General Industry
29 CFR 1910

Access to Employee Exposure and Medical Records
29 CFR 1910.20

Respiratory Protection
29 CFR 1910.134

Asbestos Standard
29 CFR 1926.1001

Construction Industry - Entire Standard
29 CFR 1926

Training
29 CFR 1926.21

Housekeeping
29 CFR 1926.25

Sanitation
29 CFR 1926.51

Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.55

Ventilation
29 CFR 1926.57

Hazard Communication
29 CFR 1926.59

Accident Prevention Signs and Tags
29 CFR 1926.200

Lockout and Tagging of Circuits
29 CFR 1926.417

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules
29 CFR 1926.1101

B. U.S. Department of Transportation

Hazardous Substances
49 CFR 171 through 179

C. U.S. Environmental Protection Agency (EPA) including but not limited to:

National Emission Standard for Hazardous Air Pollutants (NESHAPS)
National Emission Standard for Asbestos
40 CFR 61, Sub-part A, and Sub-part M (Revised Sub-part B)

Training Requirements of (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice
40 CFR 763, Sub-part E, Appendix C

The Residential Lead-Based Paint Hazardous Reduction Act of 1992
Final Renovation, Repair and Painting Rule in Section 402 (c) (3) of the Toxics Substance Control Act

1.04 STATE REQUIREMENTS

State of New Jersey
Department of Community Affairs NJAC 5:23-8
Department of Health NJAC 8:60
Department of Labor NJAC 12:120
Department of Environmental Protection

1.05 LOCAL REQUIREMENTS

Abide by all local requirements, which govern asbestos abatement work; hauling and disposal of asbestos waste materials; fire protection; electrical work and plumbing work.

1.06 OTHER REQUIREMENTS: Abide by other applicable regulations and standards, including, but not limited to;

A. National Fire Protection Codes

B. National Electrical Code

C. BOCA Building Codes / 1996

D. ICC/IMC Mechanical Codes / 1996

E. WSSC Plumbing and Gas Fitting Regulations [Latest Edition]

1.07 STANDARDS

A. ANSI Z9.2-79: Fundamentals Governing the Design and Operations of Local Exhaust Systems Publication

B. ANSI Z88.2-80: Practices for Respiratory Protection Publication

C. ASTM E849: Safety and Health Requirements Relating to Occupational Exposure

D. NFPA 49: Recommended Practices and Guides / Hazardous Chemicals Data

E. NFPA 101: Life Safety Code

F. NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.08 FEDERAL NOTIFICATION

U.S. Environmental Protection Agency
Send written notification as required by U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAPS Contact at least 10 working days prior to beginning any work on asbestos-containing materials. Send notification to the following address; send copies to Owner's Field Representative or his designee and Asbestos Safety Control Monitor (ASCM).

REGION II:
Asbestos NESHAPS Contact
Division of Enforcement & Compliance Assistance
Asbestos Removal – 21st Floor
290 Broadway
New York, NY 10007-1866

Information specified by the regulation in the notification sent to the NESHAPS Contact such as but not limited to:

Name and address of owner or operator.
Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components.

Location of the facility being demolished or renovated.
Scheduled starting and completion dates of demolition or renovation. Nature of planned demolition or renovation and method(s) to be used. Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61 Subpart M).

Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

1.09 STATE AND LOCAL AGENCIES

A. Send written notification as required by state and local agencies prior to beginning any work on asbestos-containing materials. Send notification to the State of New Jersey Department of Health, Department of Labor, and Department of Environmental Protection, as well as any local regulatory authority requiring such; send copies to Owner's Field Representative or his designee and ASCM.

B. Post "Asbestos Danger" signs before beginning removal project at entrances and exits from the work site to inform the public in the immediate vicinity. Keep such signs posted until the contractor receives the written notice of final air monitoring results.

C. Notify all other agencies as necessary to comply with existing regulations.

1.10 PERMITS

Ensure landfill, which will receive waste from this project, has permit conditions, which allow acceptance of asbestos waste.

1.11 LICENSES

A. Contractor, and subcontractors, must maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract. This includes licenses for conducting asbestos related work in the State of New Jersey.

B. Maintain two (2) copies of applicable federal, state and local regulations above. Post one copy of each at the job site. Keep on file in contractor's office one copy of each.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01092

SECTION 01300 – SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. It is the intent of this section to show the submittals required of the Contractor, after award of contract and throughout the entire project duration. Additional submittals required by the Contractor may be identified in the specific Project Manual sections.

1.2 CONTRACTOR'S PROJECT SUBMITTALS

A. The following information shall be submitted at the pre-construction meeting prior to any mobilization activity. Submittals shall be organized and number as follows in a bound book or binder.

1. Copies of notifications required by federal, state and local regulations together with proof of timely transmittal to each agency requiring the notification.

2. Copies of current valid permits required by state and local regulations.

3. A copy of all State and Local licenses and permits necessary to carry out the work of this contract.

4. Bar chart indicating location, times, dates, and type of work to be performed for each location.

5. A plan for preparation of work site, if different from the contract drawings, including:

   a. Location and layout of decontamination chamber.
   b. Location of waste decontamination unit.
   c. Location of dumpster.
   d. Location of negative air filtration units, number of units to be used and calculations used to determine number of units.

6. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance and procedures to be used for access by medical personnel (examples: first aid squad and physician).

7. Copies of the project notification forwarded to the Owner, General Contractor (if applicable), Fire Department, Police Department and any other person, company and/or agency in compliance with OSHA 1926.1101 {d}.

8. Telephone numbers and locations of emergency response personnel.

9. Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

10. Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

11. Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet asbestos-containing materials to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M).

12. Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant, encapsulating material, strippable coatings, spray cement, polyethylene sheet and chemical solvent mastic remover proposed for use on the project. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

13. Evidence of suitability and compatibility of encapsulants/sealants with proposed finish materials.

14. Description of personnel protective clothing to be used.

15. Manufacturer's product information for each component of the respiratory assembly to be used, including NIOSH and MSHA Certifications for each component. Including complete operating and maintenance instructions for all components and systems as a whole.

16. Level of respiratory protection intended for each operation required by the project. Including airborne asbestos fiber count data to substantiate the selection of intended respiratory protection.

17. Respiratory Protection Program (RPP) manual including written approval from an industrial hygienist in accordance with 29 CFR 1926.55.

18. Documentation of fit testing program conducted by the Contractor.

19. Copy of state or local license for waste hauler, if required. If not required, state such in submittal package.

20. Name and address of landfill where asbestos-containing waste materials are to be buried. Include contact person and telephone number. Copy of state and/or local license and/or permit for landfill, if required. If not required, state such in submittal package.

21. OSHA air monitoring results (supplied by Contractor's testing laboratory) from most recent asbestos abatement project.

22. Name and qualifications of Contractor's testing laboratory including AIHA accreditation, and proof of NIOSH PAT and EPA bulk quality Assurance Proficiency for approval by the Owner.

23. Delineation of responsibility of work site supervision, names, resumes, and home telephone numbers and a copy of a valid supervisor permit issued by the New Jersey Department of Labor.

24. Report from medical examination conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area. Submit, at a minimum, for each worker the following:

    a. Name and Social Security Number

b. Physicians written opinion from examining physician including, at a minimum the following:

   i. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
   ii. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
   iii. Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

c. Copy of information that was provided to physician in compliance with 29 CFR 1926.1101.

d. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

END OF SECTION 01300

SECTION 01410 – AIR MONITORING - ASBESTOS SAFETY CONTROL MONITOR (ASCM)

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air monitoring carried out by the ASCM to verify that the building beyond the work area and the outside environment remain uncontaminated.

B. Establishing airborne fiber levels both inside and outside the work area as action levels.

C. Action required by the Contractor if an action level is met or exceeded.

1.02 WORK BY OTHERS

Air monitoring required by OSHA to be conducted by the employer is the Contractor's responsibility and is not covered in this section.

1.03 RELATED SECTIONS

Section 01714 - Work Area Clearance: air monitoring required.

1.04 AIR MONITORING

A. The purpose of the air monitoring by the ASCM will be to detect faults in the work area isolation such as:

1. Contamination of the building outside of the work area with airborne asbestos fibers,

2. Failure of air filtration devices or rupture in the negative pressure system,

3. Contamination of the exterior of the building with airborne asbestos fibers.

B. Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Asbestos Safety Technician (AST).

C. The AST will monitor airborne fiber counts in the work area to detect levels which may significantly challenge the ability of the work area isolation procedures.

D. Work area clearance to determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the AST will sample and analyze air per Section 01714.

E. Air sampling during abatement:

1. The AST will conduct air monitoring in areas adjacent to the work area throughout the abatement and decontamination phases. A minimum of three (3) samples will be taken per shift. One (1) of the samples will be taken within the clean room of the decontamination chamber and the remaining two (2) samples will be taken in areas adjacent to critical barriers.

F. Air sampling shall be performed as follows:

1. At a minimum, one (1) sample at the beginning of each work shift, one (1) every four (4) hours thereafter shall be collected and analyzed. The maximum turn-around time for analysis of the samples shall be twenty-four (24) hours from the start of the sampling period. Air samples shall be taken in areas where the greatest potential for fiber migration exists. In addition to the requirements noted above, air samples shall be taken at the entrance(s) to the work area and any other interior spaces from which make-up air is drawn. Additional samples shall be taken for all areas such as stairwells, communicating shafts, elevators, plenums, ducts that pass through the work area and which are in service, and unusual room and building configurations. If air levels exceed the permitted fiber count, the applicable requirements of the contingency plan shall be followed.

G. The AST will conduct air monitoring throughout the course of the project.

1.05 STOP ACTION LEVELS

A. Maintain an average airborne count in the work area of less than 0.1 fibers per cubic centimeter, TWA. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts.

B. If any air sample taken outside of the work area exceeds 0.01 f/cc, or if any air sample taken inside the clean room of the decontamination facility area exceeds 0.02 f/cc, immediately stop all work. Decontaminate the affected area in accordance with Section 01520. Follow all protective measures as outlined in other sections of this Specification.

C. The Contractor shall be responsible for costs for all additional air monitoring and clearance testing required due to the contamination.

1.06 FIBERS COUNTED

A. The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts. "Airborne Fibers" referred to above include all fibers regardless of composition as counted in the NIOSH 7400A Procedures.

B. If elevated fiber concentrations are detected outside the work area, these results may also be confirmed via TEM analysis. In the event that TEM analysis results confirm that the asbestos fiber concentration has exceeded the limits stated above, the contractor shall be responsible for the cost of the TEM testing as well.

C. Transmission Electron Microscopy which may be utilized for this purpose will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

1.07 AIR SAMPLES

A. The number and volume of air samples taken by AST will be as required to document acceptable execution of the work and to ensure compliance with Federal, State and local regulations. Sample volumes collected may vary depending upon site conditions and the analytical method used.

B. Additional samples may be taken at the discretion of the AST or his designee. If airborne fiber counts exceed allowed limits additional samples will be taken as necessary to monitor fiber levels.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 PERSONAL MONITORING

THE CONTRACTOR SHALL PROVIDE FOR AIR MONITORING AS REQUIRED TO MEET OSHA REQUIREMENTS FOR MAINTENANCE OF TIME WEIGHTED AVERAGE (TWA) FIBER COUNTS FOR TYPES OF RESPIRATORY PROTECTION PROVIDED.

END OF SECTION 01410

SECTION 01503 – TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

B. Coordinate all temporary connections with the AST, so that there is no disruption to ongoing building operations.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide new or used materials and equipment that are undamaged and in serviceable condition.

B. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2.02 SCAFFOLDING

A. Provide all scaffolding, ladders and/or staging, bracing, etc. as necessary to accomplish the work of this contract.

B. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions (29 CFR 1926/1910) and any and all other applicable Federal, State and local regulations. Whenever there is a conflict or overlap of the above referenced provisions and/or regulations the most stringent shall apply.

C. Provide certification from a State of New Jersey registered Professional Engineer that all scaffolding erected meets all recognized standards and is sufficient to support the weight of the intended load; this shall include, but is not limited to, all planking, equipment and workers. At a minimum all scaffolding, platforms and components shall be capable of supporting without failure 4 times the maximum intended load, plus an allowance for impact.

D. Equip rungs of all metal ladders, etc. with an abrasive non-slip surface.

E. Provide a nonskid surface on all scaffold surfaces subject to foot traffic.

F. In addition to the items indicated above the Contractor shall provide all necessary safety equipment, training and procedures associated with OSHA approved fall protection for all workers, Owner's representative or his agent and the Consultant and his technician.

2.03 WATER SERVICE

A. All connections to the Owner's water system shall be in accordance with all applicable State and local plumbing codes. All connections shall be coordinated with the Owner to ensure they do not interfere with ongoing building operations.

B. No water valves may be shut or other effect caused to the water system, which affect the ongoing building operations without specific written permission of the Owner's Field Representative or his designee.

C. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment.

D. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit.

E. Hot water may be secured from the building hot water system provided backflow protection is installed at point of connection. If hot water is not available from the building system, or is inadequate in terms of temperature needs, provide UL rated electric hot water heater of sufficient capacity that hot water is available for all needed use of the Decontamination Unit shower.

2.04 ELECTRICAL SERVICE

A. Comply with applicable OSHA, NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

B. Provide service to a temporary sub-panel exterior to the work area. Sub-panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

C. Provide identification warning signs at power outlets, which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets.

D. Dry type transformers shall be made available where required to provide voltages necessary for work operations.

E. Provide all circuit breakers in the sub-panel equipped with ground fault circuit interrupters, reset button and pilot light.

F. Use only hard-service grounded extension cords. Use single lengths or use waterproof connectors to connect separate lengths of electric cords.

G. Provide general service exterior incandescent lamps of wattage required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations.

H. Do not use any electrical equipment which is not properly equipped with fully operational, undamaged ground pin.

I. Provide emergency generator(s) of minimum capacity to continuously run all HEPA filtered fan units, if there is any indication that the building power supply would be interrupted. Ensure generator(s) is (are) continuously available on-site, but in all cases can be made operational within no more than one (1) hour of power interruption.

2.05 TEMPORARY HEAT

A. Temporary Heat is not required for this project.

2.06 FIRST AID

A. Comply with governing regulations and recognized recommendations within the construction industry.

2.07 FIRE EXTINGUISHERS

A. Provide type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.

B. Ensure fire extinguishers are provided in numbers sufficient for the work and materials utilized on each specific project. The minimum number of extinguishers for projects of any size are:

- Each office and/or materials storage area(s) One (1) – Type "A"
- Each decontamination unit: One (1) – 10 LB ABC
- Each contained work area/regulated area: One (1) – 10 LB ABC

C. Inspect each fire extinguisher to ensure that it is fully charged and has a current inspection tag in accordance with NFPA guidelines.

PART 3 EXECUTION

3.01 SCAFFOLDING (Not Applicable)

3.02 INSTALLATION OF TEMPORARY SERVICES & FACILITIES (Not Applicable)

3.03 WATER SERVICE

A. Water connection (without charge) to Owner's existing potable water system is limited to one 3/4" pipe-size connection, and a maximum flow of 10 gpm each to hot and cold water supply.

B. Supply hot and cold running water to the Decontamination Unit.

C. Maintain hose connections, outlet valves and any other water service connections in leak-proof condition.

3.04 ELECTRICAL SERVICE

A. Provide a weatherproof grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period.

B. Utilize only licensed electrician for constructing sub-panel, hooking up sub-panel to Owner's source and de-energizing circuits in the work area. All other electrical tasks performed herein must be either performed directly by the licensed electrician or under the direct supervision of a licensed electrician and/or by persons in a manner approved by a licensed electrician.

C. Provide circuits of adequate size and proper characteristics for each use.

D. Temporary Wiring in the work area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance.

E. Provide GFI protected distribution panel with overload-protected disconnect switch (circuit breaker) for each temporary circuit located at the power distribution center. Locate distribution center outside of work area.

F. Locate all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuit to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from the temporary electrical panel described above.

1. Lockout power to the Work Area by switching off all breakers serving power or lighting circuit in the Work Area. Label breakers with tape over breakers with the notation "DANGER circuit being worked on". Sign and date label. Lock panels and have key under the control of Contractor's Superintendent.

2. Lockout power through the Work Area whenever possible by switching off breakers serving these circuits. Label breakers with tape over breakers with the notation "DANGER circuit being worked on". Sign and date label. Lock panels and have key under the control of Contractor's Superintendent. If circuits cannot be shut down for any reason, label at intervals not exceeding 4' with tags reading "DANGER live electrical circuit. Electrocution Hazard."

G. Provide sufficient branch circuits as required by the work. All branch circuits are to originate at the temporary electrical panel. At minimum provide the following:

1. One circuit for each HEPA filtered fan unit.
2. Provide separate 110-120 volt, 20-amp circuit for each 4-gang outlet (4 outlets per circuit). For power tools and task lighting, provide one temporary 4-gang outlet in the following locations:

a. One outlet per 2500 square feet of work area.
b. One outlet at each decontamination unit, located in the equipment room.
c. 110-1220 volt 20 amp branch circuits with 4-gang outlet for the Owner's exclusive use for conducting air sampling during the work as follows:
i) One in each work area.
ii) One at the clean side of the decontamination unit.
iii) One at the exhaust location of the HEPA filtered fan units.

3.05 TEMPORARY LIGHTING

A. In all areas under Contractor's control, provide sufficient temporary lighting to ensure proper workmanship and safety of movement and egress; by combined use of daylight, general lighting, and portable plug-in task lighting. Do not use existing building lighting. All lighting is to be provided from the temporary electrical panel described above. Provide lighting as required to supply a 100 foot candle minimum light level at all areas where abatement or inspection occurs. The Owner's Representative or his designee or the AST may at any time require the Contractor to provide 100 foot candle level at any point in the Contractor's control for any inspection purpose deemed necessary by them.

3.06 SANITARY FACILITIES

A. Use of the Owner's toilet facilities will be permitted, so long as these facilities are properly cleaned and maintained on a daily basis at the end of each shift in a condition acceptable to the Owner.

B. At substantial completion, restore these facilities to the condition prevalent at the time of initial use.

3.07 FIRE EXTINGUISHERS

A. Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers" and requirements of 29 CFR 1926, Subpart F, OSHA Construction Industry Fire Protection and Prevention regulations.

B. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area in Equipment Room and one outside Work Area in Clean Room.

END OF SECTION 01503

SECTION 01513 – PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the set-up and operation of negative air filtration equipment required during asbestos abatement. The primary function of negative air filtration equipment is to create negative air pressure inside the work area to prohibit the spread of contamination to uncontaminated areas.

1.03 QUALITY ASSURANCE

A. Monitor pressure differential across Decontamination Unit, or other location with a differential pressure meter equipped with a strip chart recorder or data-logger/printer assembly. Meter shall be equipped with a warning buzzer, which will sound if pressure differential drops below **0.03"** of water.

B. Provide HEPA filtered fan units, which pass visual inspection by the Owner's Consultant for all parameters defined in this section and which pass a quantitative challenge test at the work site. Use portable velometer to determine air-moving capacity of each unit. Any unit showing more than 0.3% of the intake reading at the exhaust side shall be considered defective and shall not be approved for use until the problem is corrected. The Owner's Consultant shall label all approved units, utilizing indelible ink, with a unique number and date. This challenge test shall not substitute for the requirement that each filter be certified by the manufacturer to meet specified criteria.

PART 2 PRODUCTS

2.01 HEPA FILTERED FAN UNITS

A. Cabinet shall be factory sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance. Access to and replacement of all air filters shall be from intake end.

B. Rate capacity of fan according to usable air-moving capacity under actual operating conditions.

C. The final filter shall be the HEPA type. The filter media must be completely sealed on all edges with a structurally rigid frame.

D. A continuous fully intact gasket, as provided by the manufacturer, shall be located between the filter and the filter housing to form a tight seal.

E. Performance of every HEPA filter shall be in accordance with Federal Standard Number 209G and ASHRAE Standard 52-87.

F. Each filter shall be marked with the name of the manufacturer, serial number, airflow rating, efficiency and resistance, and the direction of test airflow.

G. Two stages of pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter.

H. Each unit shall be equipped with a Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge shall be available at the job site at all times, indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at that point.

I. A warning light is required to indicate excessive pressure drop across the filters (i.e., filter overloading).

J. Electrical components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL).

K. Each unit shall be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet shall be grounded.

2.02 PRESSURE DIFFERENTIAL METER

A. Pressure differential meter shall be recommended by its manufacturer for the intended purpose and shall have sufficient accuracy and resolution (minimum 0.005" H_2O) to perform as specified herein.

B. Meter shall be of the digital type and have an integral continuous chart recording device (or be attached to one, which is compatible with manufacturer's specification) which has equal accuracy and resolution to the meter.

C. Meter shall have initial and periodic calibrations in accordance with the manufacturer's recommendations. Record of such shall be with the meter at all times.

D. Meter shall be equipped with zero adjustment for both the meter and chart recorder.

PART 3 EXECUTION

3.01 PRESSURE DIFFERENTIAL

A. Provide a fully operational differential pressure and air circulation system within the work area, maintaining a continuous negative pressure differential between work area enclosure and adjacent area of building of at least 0.03" H_2O or greater.

B. Before disturbance of any ACM, demonstrate to the Owner's Consultant the adequacy of pressure differential and air flow by use of a pressure differential meter(s) and smoke tubes or bombs. Perform these at location(s) directed by the Owner's Consultant, upon commencement of the project and daily thereafter.

C. Provide continuous monitoring and recording of the pressure differential between the work area and the building outside of the work area with the meter as defined in paragraph 2.02. Ensure chart recorder pen or other marking device and chart advance are fully operational, such that chart can be easily read.

D. Check zero of meter and recorder each time chart is restarted by removing tubing to work area from the back of the instrument. Ensure that the low-pressure alarm is functional at this check. Do not perform abatement without meter and recorder in compliance with all provisions herein, unless specifically authorized by the AST.

E. Any apparent tampering with the meter, zero setting, or recorder will be grounds for removing the Project Superintendent from the job for its duration, at the discretion of the Owner.

3.02 PREPARATION OF THE WORK AREA

A. Provide fully operational HEPA filtered fan units supplying a minimum of one air change every 15 minutes (4 air changes per hour), or as otherwise specified in Section 01010.

B. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

C. Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible.

D. Place end of unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be securely sealed with tape or other approved method.

E. Vent to outside (exterior) of the building, unless authorized in writing by the ASCM.

F. Locate auxiliary makeup air inlets as far as possible from the exhaust unit(s), off the floor (preferably near the ceiling), and away from barriers that separate the work area from occupied clean areas.

G. Cover with flaps to reseal automatically if the negative pressure system should shut down for any reason. Spray flap and area around opening with spray adhesive so that flap seals if it closes.

3.03 START UP OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATING SYSTEM

A. Each unit shall be serviced by a dedicated circuit in the Contractor's electrical subpanel of capacity recommended by the manufacturer.

B. Before any asbestos-containing material is wetted or removed, and after the work area has been prepared, the decontamination facility set up, and the HEPA filtered fan unit(s) installed, start the unit(s) (one at a time) to demonstrate the system.

C. Proper operation of the system will exhibit, the following:

- Plastic barriers and sheeting move lightly in toward work area,
- Curtain of decontamination units move lightly in toward work area,
- There is a noticeable movement of air through the decontamination unit.
- Use smoke tubes to demonstrate a positive motion of air.
- Use a differential pressure meter to demonstrate a pressure difference of at least 0.03" H_2O across every barrier separating the Work Area from the balance of the building or outside.

D. Modify the system as necessary to successfully demonstrate the above.

3.04 USE OF SYSTEM DURING ABATEMENT OPERATIONS

A. Start HEPA filtered fan units before beginning work.

B. Do not begin abatement work or any work deemed contaminated work; such as, but not limited to opening a wall or ceiling space which is contaminated with asbestos fibers; until the operation of the Pressure Differential and Air Circulation System is inspected and approved in writing by the Owner's Consultant.

C. After abatement work has begun; run units continuously to maintain a constant negative pressure until decontamination of the work area is complete.

D. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.

E. Do not shut down system during encapsulating procedures.

F. Start abatement work at a location farthest from the exhaust units and proceed toward them.

G. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and exhaust units are operating again.

H. At completion of abatement work, allow exhaust units to run as specified under Section 01711, to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the work area with clean makeup air.

3.05 DISMANTLING THE SYSTEM

A. When a final inspection and the results of final air tests indicate that the area has met the work area clearance criteria of Section 01714, the exhaust units may be removed from the work area.

B. Before removal from the work area, remove and properly dispose of pre-filter, and seal intake to the machine with 6 mil polyethylene to prevent environmental contamination from the filters. The machine shall be cleaned and wrapped with 6-mil polyethylene prior to removing from the work area.

END OF SECTION 01513

SECTION 01520 – BUILDING CONTINGENCY OPERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the responsibilities of the owner, contractor and asbestos safety control monitor for the safe performance of asbestos abatement activities conducted in occupied facilities.

1.02 NOTIFICATIONS

A. The building owner shall notify building occupants prior to the commencement of the asbestos abatement project. The building owner shall outline in writing that the building will be shut down for the duration of the asbestos abatement project and no occupancy shall be allowed.

1.03 CONTINGENCY PLAN

Contingency plan during abatement shall be implemented as described below. These are the minimum requirements that shall be enforced by Asbestos Safety Control Monitors. These requirements shall not limit the Asbestos Safety Control Monitors from instituting additional requirements, if necessary, for the protection of the building systems.

A. If the pressure differential drops below 0.03 inches w.c; the following procedures shall be implemented:

1. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the pressure loss.

2. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to reestablish an acceptable pressure differential:

B. If the pressure differential drops below 0.01 inches w.c., the following procedures shall be implemented:

1. The contractor shall cease abatement activity in the work area.

2. The asbestos safety technician and the contractor supervisor shall investigate and evaluate the engineering controls and determine the source of the pressure loss.

3. The contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operational of additional exhaust units or other necessary measures to reestablish an acceptable pressure differential.

4. Abatement activities shall not be permitted in any area unless a pressure differential of 0.03 inches w.c. or greater is reestablished.

END OF SECTION 01520

SECTION 01526 – TEMPORARY ENCLOSURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing of all labor and materials necessary to construct temporary enclosures for asbestos abatement. Before work area preparation proceeds, the Contractor and AST shall document existing damage to finishes in area of the work.

B. After the completion of all work area preparation activities, the Contractor shall request a pre-commencement inspection by the Asbestos Safety Technician. No asbestos removal work shall begin until the AST and a representative of the New Jersey Department of Community Affairs (DCA) has completed the pre-commencement inspection.

PART 2 PRODUCTS

2.01 POLYETHYLENE SHEET

A. A single polyethylene film in the largest sheet size possible to minimize seams, nominal 6.0 mils thick clear, frosted, or black.

B. Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films for all work to be done where hot pipes or equipment are present or where there is a potential for fire.

2.02 SPRAY PLASTIC

A. Spray plastic which is formulated to adhere to surfaces and peel off cleanly at the completion of the work may be used if approved by the Owner and ASCM.

B. Damages to finish caused by application or removal of the spray plastic must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.03 DUCT TAPE

A. Provide duct tape in 2" to 4" widths as appropriate, with an adhesive which is formulated to aggressively stick to sheet polyethylene and the surface to which it is applied.

B. Damages to building finishes caused by application or removal of the duct tape must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.04 SPRAY ADHESIVE

A. Provide spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

B. Damages to finish caused by application or removal of the spray cement must be repaired and refinished to the satisfaction of the Owner at no additional cost to the Owner.

2.05 LUMBER

A. Provide wood stud framing or in lengths appropriate for wall construction. All lumber required for exterior construction shall also be exterior grade. An approved substitution for wood studs would be comparable metal studs in lengths appropriate for wall construction.

B. Provide plywood sheathing (1/2" thick) or comparable gypsum board sheathing (1/2" thick) to be used at all locations called for in the project manual and indicated on the drawings. This may include, but not limited to, separation barriers, exhaust manifolds and personnel and waste/equipment decontamination units.

PART 3 EXECUTION

3.01 GENERAL

A. The Owner will be responsible for deactivate and lockout Ventilating Systems or any other system bringing air into or out of the work area.

B. Confirm the shut down and lock out all heating, cooling and air conditioning system (HVAC) components that supply or pass through the work area. Seal all intake and exhaust vents in the work area with duct tape and two (2) individual layers of 6-mil polyethylene. Also seal any seams in system components that pass through work area. Remove all HVAC system filters and place in labeled 6 mil polyethylene bags for staging and eventual disposal as asbestos contaminated waste.

C. Isolation conditions for abatement project require that the work area be physically separated from non-work areas by critical barriers consisting of wood studs covered with two (2) individual layers of 6 mil polyethylene sheeting. The polyethylene shall overlap at the seams. All penetrations around conduits, pipes, ducts or other openings between the work area and adjacent spaces shall be sealed, using materials determined to be suitable in accordance with the applicable subcode. In buildings required by the Uniform Construction Code to be of noncombustible construction, all materials used to construct separation barriers shall meet the Uniform Construction Code, building subcode requirements for that building and all plastics used shall be flame resistant. A separate means of egress for abatement personnel, materials and equipment shall be maintained. Adequate fire evacuation routes shall exist for all building occupants at all times.

D. Completely isolate the work area from the outside and other parts of the building by installing isolation barriers, to prevent asbestos-containing dust or debris from passing beyond the isolated area. If requested by the AST, furnish plastic sheeting in black as a visual barrier.

E. Should the area beyond the work area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, those areas shall be isolated and cleaned in accordance with the procedures indicated in a contingency plan submitted by the Contractor to the satisfaction of the AST, at no additional cost to Owner.

F. Place all tools, ladders, staging, etc. necessary for the work in the area to be isolated prior to erection of plastic sheeting temporary enclosure.

G. The Owner will remove all removable furniture, equipment and supplies that are designated as non-contaminated.

H. Pre-clean all remaining movable objects within the work area using HEPA filtered vacuum and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an un-contaminated location as determined by the Owner. All objects shall be returned to the original areas after completion and approval of the final air monitoring.

I. Pre-clean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grilles or gratings where access may be difficult but contamination significant. Also pay particular attention to wall, floor and ceiling penetrations behind fixed items. After pre-cleaning, enclose fixed objects in two (2) individual layers of 6 mil polyethylene sheeting and seal securely in place with duct tape.

J. Lockout all power and equipment within or passing through the Work Area by switching off all breakers serving power or lighting circuits in work area. Lock and tag cover of panel such that power is not restored inadvertently by others. Contractor shall draw power from outside the work area and connect to a ground fault interrupter.

K. In the event that all electric power and/or equipment originating from within or passing through the Work Area cannot be shut down and locked and tagged out, the Contractor shall isolate these components as follows:

1. Electrical Panels / Mechanical Equipment: Isolate active electric panels and mechanical equipment from the remainder of the work area by an enclosure constructed in a manner similar to the separation barriers. Vent equipment as necessary to allow for proper operation and prevent overheating. Identify the active electrical panels and/or mechanical equipment with caution tape or warning signs indicating active/live operating electrical equipment.

2. Electrical Conduit: Isolate active electrical conduit from the remainder of the work area with 2 individual layers of 6 mil polyethylene sheeting and duct tape. Identify the active conduit with caution tape or warning signs indicating active/live operating electrical equipment.

3. In addition to the isolation procedures indicated above, the Contractor shall provide on-site safety orientation training for all workers, covering the exact locations and dangers of working around active electrical components and/or equipment.

4. The use of water shall be minimized while working around any active electrical components and/or equipment. All electrical components and equipment shall be properly decontaminated utilizing HEPA vacuuming and wet wipe techniques were feasible, at the completion of the asbestos abatement project.

3.02 EMERGENCY EXITS

A. Arrange exit doors so that it is secure from outside the Work Area but permits exiting from the Work Area.

B. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1" wide. Hang a razor knife on a string beside outline. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" thick. Establish emergency kick-out panels for workers to exit the work area (where applicable).

C. Utilize existing emergency lighting signs, if this can be accomplished in keeping with OSHA lockout requirements and is approved by the Contractor’s licensed electrician.

3.03 CONTROL ACCESS

A. Isolate the Work Area to prevent entry by building occupants into Work Area or surrounding controlled areas.

B. Lock all doors into Work Area, or, if doors cannot be locked, chain shut when work is not in progress. Cover any signs that direct emergency exiting, either outside or inside of the Work Area, to locked doors. Provide Owner with a minimum of two keys to any locks installed.

C. Do not obstruct doors required for emergency exits from Work Area or from building.

D. Construct partitions or closures across any opening into Work Area.

E. Replace passage sets on doors required for exiting from Work Area with temporary locksets for duration of the project. Use entry type locksets that are key lockable from one side and always operable from inside. After meeting release criteria set forth in Section 01714 Work Area Clearance reinstall original passage sets and adjust for proper operation.

F. Arrange Work Area so that the only access into Work Area is through lockable doors to personnel and equipment decontamination units. If necessary, install temporary doors with entrance type lock sets that are key lockable from the outside and always unlocked and operable from the inside. Provide a minimum of two keys to the Owner's Field Representative or his designee.

3.04 WARNING SIGNS

A. Contractor shall supply and post caution signs meeting the requirements of OSHA 29 CFR 1926.1101 (k) (6) at any location and approaches to a location where airborne concentrations of asbestos exceed or may likely exceed the permissible exposure level (PEL) as per OSHA or ambient background levels as per Subchapter 8. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures.

B. Additional warning signs shall be posted on all exterior entrances to the building as required by state and local statutes.

3.05 CRITICAL BARRIERS

A. Completely separate the Work Area from other portions of the building, and the outside by sealing all openings by installing critical barriers consisting of at least two securely attached individual sheets of 6 mil polyethylene sheeting and duct tape. The closure assembly and materials shall comply with applicable State and local building and fire codes.

B. Should a critical barrier be free-standing, the plastic shall be adequately supported by wood stud framing or comparable metal stud framing and be of two (2) individual layers of 6 mil polyethylene sheeting.

C. Ventilation openings (supply, return & exhaust grilles; ducts and any other potential leakage points to HVAC systems), windows, doorways, elevator openings, corridor entrances, floor drains and any other openings between the work area and uncontaminated areas must be sealed with two (2) independently attached layers 6 mil polyethylene sheeting and duct tape for the critical barrier(s).

D. Completely seal all openings within the isolation area to prevent the spread of contamination with a minimum of two (2) individual layers of 6 mil polyethylene sheeting and duct tape. Fire rated expandable foam may be used for irregular penetrations and may be left in place upon completion of abatement work, if approved in writing by the ASCM.

E. Individually seal all lighting fixtures, clocks, speakers, alarm system components (unless otherwise specified), thermostats and other fixed mechanical components with two individual layers of 6 mil polyethylene sheeting, taped securely in place with duct tape. Ensure lighting circuits are deactivated prior to sealing to avoid melting or burning of the polyethylene sheeting.

F. Maintain seal until all work including Project Decontamination is completed.

G. Thoroughly pre-clean all surfaces to which critical barriers or other seals are applied. Where required to properly isolate the work area or if specified in Section 01010, perform surgical removal of asbestos from any surface covered with ACM to which a barrier is to be applied.

3.06 ADDITIONAL CONTROLS

A. Provide Worker Protection per Section 01560

B. Provide Respiratory Protection per Section 01562

C. Provide pressure differential and air circulation system per Section 01513

D. Provide decontamination chambers per Section 01563.

3.07. WORK AREA PREPARATION

A. Contractor shall HEPA vacuum and/or wet wipe all surfaces within the regulated work area (Initial Cleaning).

B. Pre-clean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grilles or gratings where access may be difficult but contamination significant. Also pay particular attention to wall, floor and ceiling penetrations behind fixed items. After pre-cleaning, enclose fixed objects in one (1) layers of 6 mil polyethylene sheeting and seal securely in place with duct tape.

C. Confirm the shut down and lock out all heating, cooling and air conditioning system (HVAC) components that supply or pass through the work area. Seal all intake and exhaust vents in the work area with duct tape and two (2) individual layers of 6-mil polyethylene. Also seal any seams in system components that pass through work area.

D. Completely separate the Work Area from other portions of the building, and the outside by first installing Occupancy Separation Barriers and sealing all openings with critical barriers. The closure assembly and materials shall comply with applicable State and local building and fire codes.

E. Demarcate the work area by installing asbestos warning signs meeting the requirements of OSHA 29 CFR 1926.1101 (k) (6) at any location and approaches to a location where airborne concentrations of asbestos exceed or may likely exceed the permissible exposure level (PEL) as per OSHA. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures. Only personnel essential to the project shall be permitted inside the demarcated areas.

F. All carpeted floors throughout the building that may be impacted by any phase of the asbestos abatement work (i.e. mobilization, waste removal, etc.) shall be first covered with one (1) layer of rosin paper then one (1) layer of reinforced polyethylene. The reinforced polyethylene shall then be covered with one (1) layer Masonite sheeting or approved equal.

G. Floor inside the work area shall be covered with two (2) individual layers of nominal 6 mil (minimum) polyethylene sheeting. Additional layers of sheeting may be utilized as drop cloths to aid in clean-up of bulk materials.

H. The first layer of floor sheeting shall extend at least 12" up the sidewalls and the second layer of floor sheeting shall extend at least 24" up the sidewalls of the work area. Form a sharp right angle bends at junction of wall and floor so that there is no radius that could be stepped on causing the wall attachment to pull loose. Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the

3.08 STOP WORK

If the Critical Barrier fails or is breached in any manner stop work immediately. Do not start work until authorized in writing by the Owner’s designated representative.

3.09 EXTENSION OF WORK AREA

If a Separation or Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, or if air sampling indicates airborne fiber concentrations in clean areas in excess of 0.01 f/cc. Then affected area shall be added to the Work Area, enclose it as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

3.10 CONTAINMENT APPROVAL

Do not begin abatement work or any work deemed contaminated work; such as, but not limited to; opening a wall or ceiling space which is contaminated with asbestos fibers, until the work area is inspected and approved in writing by the on-site AST.

3.11 ALTERNATE METHODS OF ENCLOSURE

A. Alternate methods of containing the Work Area may be submitted to the ASCM for approval in accordance with procedures set forth in Section 01601 Materials and Equipment.

B. Do not proceed with any such method(s) without prior written approval of the ASCM.

END OF SECTION 01526

SECTION 01560 – WORKER PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

1.02 RELATED SECTIONS

Section 01562: Respiratory Protection

1.03 WORKER TRAINING

A. Train all workers in accordance with 29 CFR 1926 in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.

B. All workers and supervisors must be licensed by the State of New Jersey Department of Labor.

C. Provide State of New Jersey approved training and licensing, as required by State of New Jersey Departments of Labor and Health.

D. Train all workers and supervisors in potential job hazards and safety requirements other than asbestos, including, but not limited to: electrical; heat stress; slips, trips & falls; ladders, scaffolding & working surfaces; fire; power tools; noise; chemical exposures; sanitation; material handling; demolition; housekeeping; first aid; personal protective equipment; signs; etc.

E. Provide OSHA approved safety training and procedures associated with fall protection and equipment use, including but not limited to, full body harness and lanyards.

1.04 MEDICAL EXAMINATIONS

A. Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8-hour time weighted average.

B. In the absence of specific airborne fiber exposure data, provide medical examination for all workers who will enter the work area for any reason.

C. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926.

D. In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

PART 2 EQUIPMENT

2.01 PROTECTIVE CLOTHING

A. Provide disposable total body coveralls with attached hood or separate head covers, in sizes appropriate for all members of the work crew and authorized visitors, and require that all persons in the work area wear them.

B. Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Dispose of boots as asbestos contaminated waste at the end of the work. Disposable foot covers may be provided in lieu of disposing of work shoes where permitted by site conditions.

C. Provide head protection (hard hats) as required by OSHA for all workers, and provide spares for use by others. Thoroughly clean and decontaminate hats before removing them from work area at the end of the work or dispose of them as contaminated waste.

D. Provide eye protection (e.g. safety glasses, goggles, face shield) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury.

E. Provide work gloves as required by OSHA for all workers of various sizes and types, depending on task. Do not remove gloves from work area until disposed of as asbestos contaminated waste.

2.02 ADDITIONAL PROTECTIVE EQUIPMENT

A. Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner's Consultant, Owner's Field Representative or his designee and other authorized representatives who may inspect the job site.

B. In all situations were required by OSHA Regulations the Contractor shall provide proper OSHA approved fall protection equipment, including but not limited to, full body harnesses equipped with adequate lanyards for all workers, the Owner's Consultant, Owner's Field Representative or his designee and other authorized representatives who may inspect the job site. Contractor shall also provide all necessary safety training and procedures as required by OSHA associated with the use of fall protection equipment and shall insure that all fall protection equipment is properly worn and utilized at all times by all persons while in the contained asbestos work area with no exceptions.

C. Provide these items in sufficient quantity, such that these persons can properly and safely perform their duties within the contained asbestos work area.

PART 3 EXECUTION

3.01 GENERAL

A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work.

B. Ensure workers use the protective equipment and clothing provided.

C. Ensure workers adhere to proper decontamination procedures.

D. The following procedures are minimums to be adhered to regardless of fiber count in the work area.

3.02 DECONTAMINATION PROCEDURES

Require all workers to adhere to the following applicable personal decontamination procedures whenever they leave the work area as a minimum:

A. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room, and dispose of as contaminated waste.

B. Still wearing respirators, proceed to showers. Showering is mandatory, unless noted otherwise.

C. Thoroughly wet body from neck down.

D. Wet hair as thoroughly as possible without wetting the respirator filters if using an air purifying type respirator.

E. Take a deep breathe, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respiratory and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breathe.

F. Dispose of wet filters from air purifying respirator.

G. Carefully wash face piece of respirator inside and out. Shower completely with soap and water.

H. Rinse thoroughly.

I. Rinse shower room walls and floor prior to exit.

J. Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

3.03 ACTIVITY WITHIN WORK AREA

Strictly prohibit workers from eating, drinking, smoking, chewing gum or tobacco while within the work area. In order to perform any of these functions, workers must exit the work area, following the required decontamination procedures on each occasion.

END OF SECTION 01560

SECTION 01562 – RESPIRATORY PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contractor shall instruct and train each worker involved in asbestos abatement activities on proper respirator use and require that each worker wear a respirator, properly fitted on the face, in the work area from the start of any operation which may cause airborne asbestos fibers until the work area is completely decontaminated.

B. Use respiratory protection appropriate for the fiber level concentration encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

1.02 STANDARDS

A. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

B. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134. 29 CFR 1926.

C. CGA - Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air".

D. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992.

E. NIOSH - National Institute for Occupational Safety and Health

F. MSHA - Mine Safety and Health Administration

1.03 AIR QUALITY FOR SUPPLIED AIR RESPIRATORY SYSTEMS

A. Provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade D.

B. When a Type "C" supplied air respiratory system is required by the work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in work area(s), routing of air lines to work area(s) from compressor.

PART 2 EQUIPMENT

2.01 NEGATIVE PRESSURE – AIR PURIFYING RESPIRATORS

A. Half face or full face type respirators. Equip full-face respirators with a nose cup or other anti-fogging device.

B. HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z228.2 (1992).

C. A chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

D. Single use, disposable, or quarter face respirators are strictly prohibited for asbestos abatement work.

2.02 POWERED AIR PURIFYING RESPIRATORS

A. Provide full-face piece, connecting hose, blower unit, and a battery pack by same manufacturer that has been certified by NIOSH/MSHA.

B. Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists, including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z228.2 (1980).

2.03 SUPPLIED AIR RESPIRATOR SYSTEMS

A. Provide equipment capable of producing air of the quality and volume required by the above referenced standards applied to the job site conditions and crew size.

B. Provide full-face piece and hose by same manufacturer that has been certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure.

C. In atmospheres that contain sufficient oxygen (greater than or equal to 19.5% oxygen) provide a pressure-demand full-face piece supplied air respirator equipped with an emergency backup HEPA filter.

D. In atmospheres that are oxygen deficient (less than 19.5% oxygen) provide a pressure-demand full-face piece self-contained breathing apparatus (SCBA).

E. Provide a reservoir of compressed air located outside the work area which will automatically maintain a continuous uninterruptible source of air automatically available to each connected face piece and hose assembly in the event of compressor shutdown, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the back-up air supply to allow a minimum escape time of one-half hour times the number of connections available to the work area.

F. Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and work procedures in use, in all parts of the work area and at the compressor. Perform field test with all equipment running, prior to beginning abatement, to ensure audibility. Connect alarm to warn of:

Compressor shut down or other fault requiring use of backup air supply,
Carbon Monoxide (CO) levels in excess of 5 PPM/V.

G. Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sounded if any of the following occur:

Carbon Monoxide (CO) concentrations exceed 5 PPM/v in the airline between the filter bank and backup air supply.

Compressor temperature exceeds normal operating range.

H. Provide a compressor driven by an electric motor. Insure that electrical supply available at the work site is adequate to energize motor.

I. Locate compressor outside of building in location that will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

J. Locate air intake remotely from any source of automobile or other engine exhaust or any other source of toxic or irritating gases, vapors, fumes, dust, etc.

K. Provide an after cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

L. Configure system to permit the recharging of 1/2 hour 2260 PSI SCBA cylinders, if utilized.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with ANSI Z88.2 - 1992 (or more current edition, if published) "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926.

B. Require that respiratory protection is used at all time when there is any possibility of disturbance of asbestos-containing materials or when asbestos exposures are anticipated to exceed OSHA's Permissible Exposure Limit.

C. At a minimum, a negative pressure air purifying respirator with a tight-fitting "rubber" face-piece and HEPA filtered cartridges shall be used whenever friable asbestos containing materials are present, but work activities will not disturb the asbestos.

D. At a minimum, for glove bag, non-friable and dust control removal procedures, a negative pressure air purifying respirator with a tight-fitting "rubber" face-piece and HEPA filtered cartridges shall be used whenever asbestos-containing materials will be disturbed.

E. At a minimum, a powered air purifying respirator (PAPR) with a tight fitting face-piece and HEPA filtered cartridges or higher level respirator devices, shall be used whenever friable asbestos-containing materials will be disturbed.

F. Type "C" respirator assembly operating in pressure demand mode with a positive pressure which is equipped with a tight fitting full-face piece and an emergency backup HEPA filter, shall be used whenever asbestos-containing fireproofing materials are exposed or will be disturbed. Type "C" respirator shall be used at all times while asbestos-containing fireproofing materials are being disturbed.

G. Require that a respirator be worn by anyone in a work area at all times, regardless of activity.

3.02 FIT TESTING

A. Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a qualified Industrial Hygienist.

B. Fit types of respirator to be actually worn by each individual.

C. Allow an individual to use only those respirators for which he has been trained and fit.

D. On at least a Monthly Basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube according to the Protocol in CFR 1926.1101, or preferably, with a quantitative fit testing device.

E. Each time an air-purifying respirator is put on, it must be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1992).

F. All fit testing shall be done in accordance with Appendix C of 29 CFR 1926.1101.

3.03 TYPE OF RESPIRATORY PROTECTION REQUIRED

A. Respiratory protection, which supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below 0.01 f/cc, is the minimum level of protection allowed.

3.04 PERMISSIBLE EXPOSURE LIMIT (PEL)

A. Asbestos

1. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed the current OSHA PEL or the Contractor's internal standard, whichever is more stringent.

2. For the purpose of determining respirator type, protection factors shall be applied to a maximum concentration of 0.01 f/cc inside the mask. Therefore, the maximum use concentration for a half-face negative pressure respirator shall be 0.1 f/cc and for a PAPR shall be 0.5 f/cc.

3. For determining fiber concentrations for personnel exposure monitoring, NIOSH Method 7400 for PCM analysis shall be employed.

B. Perform sufficient personal air monitoring on employees during this project to accurately determine both TWA and short term exposures to asbestos and other contaminants which might be encountered so that OSHA compliance can be demonstrated and so that employees can be adequately protected from harmful exposures.

3.05 NEGATIVE PRESSURE RESPIRATORS (half or full facemask):

A. Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the workday.

B. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the work area.

C. Store respirators and filters at the job site in a clean environment and protect totally from exposure to asbestos when not in use.

D. Ensure that if any chemical cartridge or combination cartridge is utilized, air monitoring has been performed to ensure the adequacy of protection factors. Utilize only full-face respirators for chemical exposures, which can cause eye irritation.

3.06 POWERED AIR PURIFYING RESPIRATORS (half or full face mask):

A. Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Ensure each employee with a PAPR has readily available and uses a flow measuring device, as supplied by the manufacturer, to assist in determining adequacy of flow, if such a device is recommended by the manufacturer.

B. Require that HEPA elements in filter cartridges be protected from wetting during showering.

C. Require entire exterior housing of respirator including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords to be washed each time a worker leaves the work area.

D. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use. Require employees to properly exit the work area immediately, if PAPR flow decreases due to low battery or any other purpose, and not to re-enter until the cause of decreased flow is determined and remedied.

3.07 TYPE "C" RESPIRATORY PROTECTION

A. Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation.

B. Assign an individual trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring.

3.09 RESPIRATORY PROTECTION PROGRAM

A. If requested by the Owner's Field Representative or his designee, submit a Respiratory Protection Program, indicating type of respiratory protection proposed for each portion of the work.

B. Demonstrate to the Owner's Consultant compliance with the program and/or any requirements herein at any time requested.

END OF SECTION 01562

SECTION 01563 – DECONTAMINATION UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for personnel and equipment decontamination facilities.

1. Personnel Decontamination Unit: A serial arrangement of connected rooms or spaces including, Changing Room, Shower Room, Equipment Room, arranged such that all persons must pass through each for entry into and exiting from the work area for any purpose. Personnel Decontamination Unit is the only means of ingress and egress for the work area.

2. Equipment Decontamination Unit: A room or space consisting of a Wash Room, arranged such that all oversized equipment and containers of waste must pass through during the decontamination procedure when being removed from the work area.

1.02 RELATED SECTIONS

Section 01503: Temporary Facilities; connection of decontamination facilities to building systems such as water.

PART 2 PRODUCTS

2.01 PLASTIC SHEET AND ACCESSORIES

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mils thick, as indicated, clear, frosted, or black as indicated.

1. Where plastic sheet is the only separation between the work area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick as indicated, frosted or black as indicated.

B. Duct tape in 2" or 3" widths as appropriate, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

C. Spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

2.02 SHOWER

A. One piece waterproof shower pan, with rigid, impervious, waterproof walls. Structurally support as necessary for stability.

B. Factory made shower head producing a spray of water which can be adjusted for spray size and intensity. Arrange so that control of water temperature, flow rate, and shut off is from inside shower.

C. Cascaded filter units attached to drain lines from showers with disposable filter elements as indicated below.

Primary Filter - Pass no particles larger than 20 microns
Secondary Filter - Pass no particles larger than 1 micron

D. Heavy bronze angle type hose bib with wheel handle, vacuum breaker, and 3/4" National Standard male hose outlet.

2.03 SUMP PUMP

Provide totally submersible waterproof sump pump with integral float switch of proper size for application. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.

PART 3 EXECUTION

3.01 CONSTRUCTION OF DECONTAMINATION UNIT

A. Air tight walls and ceiling using two (2) layers of polyethylene sheeting, at least 6 mil in thickness. Attach to existing building components or a temporary framework.

B. Use 2 layers (minimum) of 6 mil, polyethylene sheeting to cover floors in the Equipment, Shower (underneath shower pan), and Changing Rooms.

C. Provide an additional layer in the Equipment Room for every shift change expected.

D. Roll one layer of plastic from Equipment Room into Work Area after each shift change. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

E. Fabricate doors from three (3) overlapping sheets of polyethylene with openings a minimum of four feet (4') wide. Configure so that sheeting overlaps adjacent surfaces. Weight sheets at bottoms as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel.

F. As the decontamination unit is located outside the building it shall be constructed with a minimum 1/2 inch plywood on the walls and ceiling with polyethylene sheeting, at least 6 mil in thickness covering the top of the unit. The decontamination unit door shall be louvered and be lockable.

G. Visual barriers of opaque polyethylene sheeting at least 6 mil in thickness so that work privacy is maintained and work procedures are not visible to building occupants.

H. Provide electrical sub-panel at Changing Room to accommodate all removal equipment. Power sub-panel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in shower room to a ground-fault circuit protection device.

I. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100 foot candles.

3.01.1 CHANGING ROOM (CLEAN ROOM)

A. Physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Changing Room and the rest of the building.

C. Locate so that access to Work Area from Changing Room is through Shower Room.

D. Separate Changing room from the building by a three (3) sheet polyethylene flapped doorway, fabricated of 6-mil polyethylene.

E. Do not allow asbestos contaminated items to enter this room. Require Workers to enter this room either from outside the area dressed in street clothes, or naked from the showers.

F. An existing room may be utilized as the Changing Room if it is suitably located and approved by the Owner. Protect all surfaces of room with sheet polyethylene as set forth in Section 01526 Temporary Enclosures.

G. Maintain changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room.

H. Damp wipe all surfaces with a disinfectant solution twice after each shift change or more often if indicated or requested by the AST.

I. Provide a continuously adequate supply of disposable bath towels.

J. Post information for all emergency phone numbers and procedures.

3.01.2 SHOWER ROOM

A. A completely water tight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Shower Room and the rest of the building. The Contractor shall under no circumstances be permitted to utilize a prefabricated shower unit that does not maintain the required minimum doorway opening of four feet (4') wide.

C. Separate this room from the Changing and Equipment Rooms with three (3) sheet polyethylene flapped doorways, fabricated of 6-mil polyethylene.

D. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

E. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance.

F. All wastewater shall be contained and pumped back into the work area for adding to asbestos-containing materials before disposal or solidified using an approved polymer to prevent leaks or accidental spills within the facility or during transport for disposal to an approved landfill. Wastewater may also be filtered down to five (5.0) microns and disposed of in a sanitary drain with written approval from the local authority having jurisdiction.

3.01.3 EQUIPMENT ROOM

A. Work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

B. Construct using framing and two (2) individual layers of polyethylene sheeting, at least 6 mil in thickness, to provide an airtight isolation barrier between the Equipment Room and the rest of the building.

C. Separate this room from the Shower Room and the work area with three (3) sheet polyethylene flapped doorways, fabricated of 6-mil polyethylene.

D. If the airborne asbestos level in the work area is expected to be high, add an intermediate cleaning space between the Equipment room and the Work area.

E. Repair and replace damaged floor sections as required.

3.02 DECONTAMINATION SEQUENCE

A. Before leaving the work area, remove all gross contamination and debris from overalls and feet.

B. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment. Disposable coveralls are placed in a bag for disposal with other material.

C. Decontamination procedures shall be followed by all individuals leaving the work area.

D. After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

3.03 WASTE/EQUIPMENT DECONTAMINATION SEQUENCE

A. All properly containerized waste shall be moved from the work area through the decontamination units. All equipment shall likewise be passed through these units after proper decontamination.

B. All equipment and containers of waste shall be washed down before being passed into the decontamination units.

C. Contractor shall take all equipment or material from the work area through the Decontamination Units according to the following procedures:

1. There shall be, at a minimum, three (3) workers involved this process. One (1) worker inside the work area, one (1) worker inside the waste decontamination unit and one (1) worker in the clean area outside the unit. All three workers shall be wearing protective clothing and respiratory equipment.

2. Thoroughly wet-clean contaminated equipment or sealed polyethylene bags and pass into waste decontamination unit in the wash down station.

3. Once inside the unit, wet clean bags and/or equipment and double bag all bags of waste material.

4. When cleaning or double bagging is complete, pass items to outside worker. At no time is a worker from an uncontaminated area to enter the enclosure when a removal worker is inside or vice versa.

5. The outside worker shall then take waste containers directly from the waste decontamination unit to the secure waste dumpster. Transportation to the waste dumpster shall be in accordance with the provisions set fourth in Section 02084.

6. When passing items through the Decontamination Unit, only one (1) doorway shall be open at a time.

D. The waste decontamination unit shall be completely sealed at all times when waste removal operations are not being conducted.

3.04 CLEANING OF DECONTAMINATION UNITS

A. Clean debris and residue from inside of Decontamination Unit on a daily basis.

B. Damp wipe all surfaces after each shift change.

C. If the Changing Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire decontamination unit and erect a new decontamination unit. Use the former Changing Room as an inner section of the new Equipment Room.

3.05 SIGNS

A. Post an approximately 20 inch by 14 inch manufactured caution sign at each Decontamination Unit entrance as required by 29 CFR 1926.

B. Post an approximately 10 inch by 14 inch manufactured sign at each Decontamination Unit entrance to each work area displaying the following legend:

Asbestos Work Area

No Food, Beverages or Tobacco Permitted

All Persons Shall Don Protective
Clothing and Equipment Before
Entering the Work Area

All Persons Shall Shower Immediately
After Leaving Work Area and Before
Entering the Changing Area

END OF SECTION 01563

SECTION 01601 – MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements governing the Contractor's selection of products.

B. Administrative procedures for handling requests for substitutions made after award of the Contract.

1.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

B. Schedule delivery to minimize long-term storage at the site and overcrowding of construction spaces.

C. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

D. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

E. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

F. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

G. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

H. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.03 PROCEDURES

A. Requests for changes in the products, materials, equipment and methods of construction required by the contract documents are considered requests for "substitutions", and are subject to the requirements specified herein. Following are not considered as substitutions:

1. Revisions to the contract documents, where requested by the Owner's Representative or his designee are considered as "changes" not substitutions.

2. Specified Contractor options on products and construction methods included in the contract documents are not subject to the requirements for substitutions as herein specified.

3. Except as otherwise provided in the contract documents, the Contractor's determination of and compliance with governing regulations and orders as issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders.

1.04 QUALITY ASSURANCE

A. To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work.

B. Compatibility of products selected for installation is a basic requirement of product selection and shall be the sole responsibility of the contractor.

C. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, whether or not the products previously selected were also contractor options.

1.05 SUBMITTALS

A. Submit 3 copies of each request for substitution or selection. In each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation showing compliance with the requirements for substitutions.

B. Within one week of receipt of the Contractor's request for substitution, the Owner's Representative or his designee will request additional information or documentation as may be needed for evaluation of the request.

C. Within 2 weeks of receipt of the request, or within one week of receipt of the requested additional information or documentation, whichever is later, the Owner's Representative or his designee will notify the Contractor of either the acceptance or rejection of the proposed substitution.

PART 2 PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCE

A. Requirements for individual products are indicated in the contract documents; compliance with these requirements is in itself a contract requirement.

B. Where some particular product or device is specified by brand name or manufacturer it is to be considered a standard.

C. If approved equal, items of other manufacturer than those mentioned may be used, unless specifically noted otherwise for purposes of standardization.

D. Any substitution must receive the written approval of the Owner's Representative or his designee.

2.02 SUBSTITUTIONS

A. The Contractor's request for a substitution will be received and considered when extensive revisions to the contract documents are not required, and one or more of the following conditions are met.

1. Request is directly related to an "or equal" clause or similar language in the contract documents.

2. Specified product or method cannot be provided within the Contract time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

3. Specified product or method cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

4. Substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting of offsetting responsibilities the Owner may be required to bear.

5. Specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.

6. Specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

7. Specified product or method cannot receive a warranty as required by the contract documents and where the Contractor certifies that the proposed substitution includes the required warranty.

B. Requests for substitutions shall include all related information and including the effect of requested substitution (if any), on; cost, schedule, appearance, performance, or other considerations.

2.03 GENERAL PRODUCT REQUIREMENTS

A. Provide products that comply with the requirements of the contract documents that are undamaged and, unless otherwise indicated, unused at the time of installation.

B. Provide products that are complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

C. Where they are available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

D. Where, because of the nature of its application, the Owner is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard, domestically produced products for which the manufacturer has published assurances that the products and its parts are likely to be available to the Owner at a later date.

PART 3 EXECUTION

3:01 INSTALLATION OF PRODUCTS

A. Except as otherwise indicated in individual sections of these specifications, comply with the manufacturer's instructions and recommendations for installation of the products in the applications indicated.

B. Anchor each product securely in place, accurately located and aligned with other work, such that the entire assembly is straight, plumb and/or level, as appropriate and is installed is a workmanlike manner.

END OF SECTION 01601

SECTION 01701 – PROJECT CLOSE-OUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Close-out procedures

B. Project Record Documents

C. Warranties

D. Final Cleaning

1.02 Related Sections

A. Section 01711 - Project Decontamination

B. Section 01714 - Work Area Clearance

1.03 CLOSE-OUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, that Work has been inspected and that Work is completed in accordance with the Contract Documents and ready for inspection by the Owner's Representative or his designee.

B. Remove all temporary facilities, tools and accessories installed for the project and restore to original condition all permanent facilities used for temporary facilities.

C. Obtain and submit releases enabling Owner's full unrestricted use of the site and access to services and utilities. This includes but is not limited to, Certificate of Occupancy as required by the enforcing agency having jurisdiction.

D. Submit specific warranties, bonds and guarantees.

E. Complete final cleaning requirements.

F. Touch up and otherwise repair and restore marred exposed finishes to original condition.

G. Conduct a final inspection with the Owner's Consultant, Owner's Representative or his designee and Contractor's Representatives to examine condition of remaining surfaces.

1.04 RECORD DOCUMENT SUBMITTALS

A. Specific requirements for additional record documents are indicated in Section 01300 of these specifications.

B. Maintain a record set of blue or black line white- prints of contract drawings and shop drawings in a clean, undamaged condition. Mark-up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown.

C. Mark record sets with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.

D. Note related change-order number where applicable.

E. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set.

F. Maintain one complete copy of the drawings, specifications and addenda, and one copy of other written construction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in comparison with the text of the specifications and modifications as issued.

G. Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information.

1.05 WARRANTIES

A. Provide duplicate copies of all specified warranties, bonds and guarantees.

B. At completion of the work of this project, and before final payment is approved for payment; an Officer of the Corporation of the Contractor shall issue a notarized corporate certification that all abatement has been completed in accordance with all aspects of this Project Manual. This certification shall also apply to any areas that may have been contaminated by the Contractor during the course of abatement.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

3.01 FINAL CLEANING

A. Provide final cleaning of the Work at the time indicated. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program.

B. Complete all cleaning operations before requesting inspection by the Owner's Representative or his designee for certification of substantial completion.

C. Clean transparent materials, affected by the work including mirrors and window/door glass, to a polished condition, removing substances which are noticeably vision-obscuring materials. Replace broken glass and damaged transparent materials.

D. Mop, or use other appropriate method to clean, all floors to a level of cleanliness ready to accept wax or other finish by Owner.

E. Clean exposed hard-surfaced finishes affected by the work, to a dirt-free condition, free of dust, stains, films and similar distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.

F. Vacuum clean with HEPA vacuum carpeted surfaces and similar soft surfaces and/or professionally clean to remove staining caused by work of this contract. Prior to HEPA vacuuming, steam clean any carpeting, which became wet during the asbestos abatement process.

G. Clean plumbing fixtures affected by the work to a sanitary condition, free of stains including those resulting from water exposure.

H. Replace all HVAC Filters using materials supplied by Owner or clean non-replaceable filters after minimum of one day of operation of HVAC equipment.

I. Clean light fixtures and lamps that have been affected by the work so as to function with full efficiency. Replace lamps where damaged by abatement activities.

J. Clean project site (yard and grounds), including landscaped areas, of litter and foreign substances left during the course of the work. Sweep paved areas which have been affected by the work to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits left by the work. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface where they have been disturbed by the work.

K. Except as otherwise indicated or requested by the Owner's Representative or his designee, remove temporary protection devices and facilities that were installed during the course of the work to protect previously completed work.

L. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems, onto ground or otherwise release at or onto Owner's property.

END OF SECTION 01701

SECTION 01711 – PROJECT DECONTAMINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work of this section includes the decontamination of air in the Work Area that has been, or may have been contaminated by the elevated airborne asbestos fiber levels generated during abatement activities.

B. Cleaning, decontamination, and removal of temporary facilities installed prior to abatement work.

C. Cleaning, and decontamination of all surfaces (ceiling, walls, floor) of the Work Area, and all furniture or equipment in the Work Area.

1.02 RELATED SECTIONS

A. Section 02081 Removal of Asbestos Containing Materials

B. Section 01714 Work Area Clearance

PART 2 PRODUCTS

2.01 MATERIALS

Encapsulating sealant to be applied after removal of all visible asbestos-containing material shall be Foster 32-60 as manufactured by H.B. Fuller or Serpiflex Shield as manufactured by International Protective Coatings Corp. or approved equal and as indicated by the manufacturer to be compatible with the replacement materials. Sealant shall be tinted in accordance with Subchapter 8 when applied and shall be separate and distinct from the underlying substrate when dry.

PART 3 EXECUTION

3.01 START OF WORK

A. At the start of work in this section the following shall be in place:

1. 6 mil polyethylene sheeting on floors;

2. Critical Barriers which form the sole barrier between the work area and other portions of the building or the outside;

3. Two layers of 6 mil polyethylene sheeting over lighting fixtures, electrical components and wiring, clocks, ventilation openings, doorways, convectors, outlets and other openings;

4. Decontamination Units for personnel and waste/equipment in operating condition;

5. Fully operational pressure differential and air circulation system.

3.02 INITIAL CLEANING

A. Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, ladders and/or staging by use of damp-cleaning and mopping, and a High Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.)

B. Do not perform dry dusting or dry sweeping.

C. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste.

D. Continue this cleaning until there is no visible debris from removed materials or residue on polyethylene sheeting or other surfaces.

E. Utilize a leaf blower in all portions of the work area, in the same manner as if performing aggressive air sampling, to dislodge any asbestos particles that may not have yet been cleaned.

F. Perform cleaning by methods described above to clean any asbestos which has been dislodged by leaf blower.

G. Allow sufficient time for the HEPA filtered fan units to clean air and remove airborne asbestos fibers and dry all work area surfaces. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period.

H. Maintain pressure differential and air circulation system in operation for the entire period.

I. Request a Pre-Sealant visual inspection of work area by from the AST. Criteria for acceptable conditions during this inspection shall be that the area is found to be free of suspect asbestos containing materials and visible dusts or debris of any kind and/or source.

J. As soon as the AST approves cleaning of the work area, spray all exposed surfaces with lockdown encapsulating sealant. Take care spraying sealant to ensure it does not leak behind barriers or otherwise mar building finishes/surfaces.

K. Allow sufficient time for sealant and all work area surfaces to fully dry before removing all remaining primary barrier sheeting, leaving only the critical barriers, decontamination units and fully operational pressure differential and air circulation system.

L. Removal all filters in air handling system(s) and dispose of as asbestos-containing waste in accordance with requirements of Section 02084.

3.03 SECOND CLEANING

A. Carry out a detailed cleaning of all surfaces in the work area in the same manner as the first cleaning immediately after removal of primary barrier layers. This cleaning is being applied to existing room surfaces and critical barriers. Critical barriers shall remain intact and shall be repaired as necessary or at the direction of the AST.

B. Allow sufficient time for all work area surfaces to fully dry and for AFD units to clean the air and remove airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential and air circulation system in operation for the entire period.

3.04 FINAL CLEANING

A. Contractor shall carry out a final cleaning of all surfaces in the work area in the same manner as the previous cleaning.

3.05 VISUAL INSPECTION

A. After final cleaning and all surfaces in the work area are fully dry, the Contractor and AST shall perform a complete visual inspection of the entire work area. This inspection shall including, but is not limited to, the decontamination unit, all polyethylene sheeting, seals over ventilation openings,

doorways, windows, and other openings; for dust and debris of any kind from any source, residue on surfaces, or other matter. If deemed necessary by the AST, utilize a leaf blower (provided by the Contractor) during this inspection process to see if any dust or debris is dislodged.

B. If any such dust, debris, residue, or other matter of any kind is observed repeat final cleaning and continue decontamination procedure until visual inspection is approved by the AST. Additional cleaning shall be performed at no additional cost to the Owner.

3.06 FINAL AIR SAMPLING

A. After the work area is found to be visually clean and all surfaces are fully dry, air sampling shall be conducted by the AST and analyzed in accordance with the procedure for Transmission Electron Microscopy (TEM) set forth in Section 01714.

B. If Release Criteria is not met, repeat Final Cleaning and continue decontamination procedure from that point.

C. If Release Criteria is met, proceed with completion of the Work.

3.07 COMPLETION OF ABATEMENT WORK

A. Shutdown and remove the Pressure Differential and Air Circulation System. Seal AFD units with 6 mil polyethylene sheet and duct tape to form an airtight seal at intake and exhaust ends before removing units from the work area.

B. Remove all critical barriers and critical barrier sheeting.

C. Remove decontamination units.

D. Remove all equipment, materials, debris from the work site.

E. Dispose of all asbestos-containing waste material as specified in Section 02084 and provide receipts and chain of custody forms documenting proper disposal.

F. Re-inspect all surfaces and finishes and re-clean as needed to remove all signs of stains, water marks, duct tape and spray glue residue, smudges, smears and other visible marks. All interior finishes and surfaces shall be left in a condition suitable for application of wax or polish by the Owner. Glass surfaces shall be left sparkling clean.

G. Small quantities of residual material found upon removal of the plastic sheeting shall be removed with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the AST, are observed then the entire area affected shall be decontaminated as specified herein for the Final Cleaning.

H. Repair or replace all interior finishes damaged during the course of asbestos abatement work.

I. Fulfill Project Closeout Requirements of Section 01701.

3.08 FINAL INSPECTION

The AST and a DCA representative shall perform a final inspection within 48 hours after the removal of critical barriers to ensure the absence of any visible signs of asbestos and asbestos-contaminated material.

3.09 CERTIFICATE OF COMPLETION

The AST only shall issue a certificate of completion for asbestos abatement after the final inspection. The Certificate of Completion shall be issued only if:

1. All information is complete;

2. Final inspection reveals no visible evidence of asbestos-containing material;

3. All requirements of Subchapter 8 - Asbestos Hazard Abatement Subcode have been met;

4. Final air monitoring levels in accordance with Section 01714 – Work Area Clearance.

END OF SECTION 01711

SECTION 01714 – WORK AREA CLEARANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

This section describes work performed by the AST to measure post-abatement fiber levels.

1.02 CONTRACTOR RELEASE CRITERIA

The Work is Complete when the work area has passed Visual Inspection and airborne fiber levels have been reduced to the level specified in items 1.06 or 1.07 of this Section.

1.03 AIR MONITORING

A. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, AST will secure samples and analyze them according to the following procedures.

B. Fibers Counted: "Fibers" referred to in this section shall be either all fibers as counted in accordance with NIOSH Method 7400A.

1.04 AGGRESSIVE SAMPLING

A. Before sampling pumps are started the exhaust from forced air equipment (such as a leaf blower with at least 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of work area volume.

B. One fan capable of creating a minimum air velocity of 500 feet per minute shall be utilized for each 10,000 cubic feet of work area. Stationary fans shall be placed in locations, which will not interfere with air monitoring equipment. Fans shall be directed toward the ceiling and shall operate continuously for the entire sampling period.

C. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors or vents.

D. After air-sampling pumps have been shut off, fans will be shut off.

E. The use of leaf blowers and fans shall be restricted to general occupancy areas that are contained, and they shall not be used in any space with an open dirt, sand or gravel floor.

1.05 SCHEDULE OF AIR SAMPLES

A. The number and volume of air samples taken and analytical methods used by the AST will be in accordance with one of the following schedules in compliance with State and Federal regulations. Sample volumes given may vary depending upon the analytical instruments used.

1.06 TRANSMISSION ELECTRON MICROSCOPY (TEM)

A. In each homogenous work area to be cleared by TEM, after completion of all cleaning work, the samples will be taken and analyzed as follows:

Location Sampled	Number of Samples	Filter Media	Acceptance Level (structures/cc)	Minimum Volume	Rate (LPM)
Each Work Area	5	0.8 µ MCE	70	1,200 (25 mm filter)	2 to 15
Outside Work Area	5	0.8 µ MCE	70	1,200 (25 mm filter)	2 to 15
Field Blank	3	0.8 µ MCE	0	N/A	N/A

B. Fibers on each filter will be counted and measured using the AHERA procedures. The laboratory used shall be approved by the American Industrial Hygiene Association (AIHA).

C. Decontamination of the work site is complete when every work area sample is less than or equal to the applicable Acceptance Level (70 s/cc). If any sample is above the Acceptance Level (70 s/cc), then the decontamination is incomplete and re-cleaning is required.

1.07 FAILED CLEARANCE TESTING

A. If the Release Criteria conditions are not achieved, decontamination is incomplete and the cleaning procedures of Section 01711 shall be repeated at no additional cost to the Owner.

B. The Contractor will be financially responsible for all subsequent analysis costs (daily and clearance) and related technician costs required as a result of failed clearance testing.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01714

SECTION 02081 – REMOVAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of ACM

B. Cleaning of Surfaces Previously Covered by ACM

C. Encapsulants

1.02 RELATED WORK

A. Section 01526 - Temporary Enclosures

B. Section 01513 - Pressure Differential and Air Circulation System

C. Section 01560 - Worker Protection

D. Section 01562 - Respiratory Protection

E. Section 01563 - Decontamination Units

F. Section 01711 - Project Decontamination

G. Section 02084 - Disposal of Asbestos-Containing waste.

PART 2 PRODUCTS

2.01 AMENDED WATER

A. Provide water to which a surfactant has been added.

B. Use a mixture of surfactant and water which results in wetting of the asbestos containing material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2.02 ENCAPSULANTING SEALANTS

A. An encapsulating sealant shall be applied to all surfaces including those from which asbestos was removed, so as to lock down any microscopic fibers that may remain. See Section 01711.

2.03 POLYETHYLENE SHEETING

A. Polyethylene film in the largest sheet size possible to minimize seams, 6 mil thick, clear, frosted, or black as indicated.

B. Flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick, frosted or black as indicated.

2.04 CHEMICAL MASTIC SOLVENTS (Not Applicable)

2.05 MISCELLANEOUS MATERIALS

A. Duct or vinyl tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

B. Spray adhesive which is specifically formulated to stick tenaciously to sheet polyethylene.

C. Provide 6 mil thick leak-tight polyethylene bags labeled as indicated in Section 02084.

PART 3 EXECUTION

3.01 PRE-COMMENCEMENT INSPECTION

A. Each work area shall be prepared for abatement by isolating the area from the balance of the building, establishing a negative pressure enclosure, complete with decontamination units, temporary electrical and water connections and other temporary facilities as specified in each of the other section of this specification.

B. Upon completion of preparation, Contractor shall request the AST to perform an inspection of the work area to verify that all isolation and engineering controls are in places and functioning as specified.

C. Repair, install or otherwise correct any deficiencies noted during the inspection and obtain written notification from the AST that the area has been found acceptable for abatement.

3.02 WET REMOVAL METHOD

A. Thoroughly wet asbestos-containing materials to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant.

B. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for the amended water or removal encapsulant to penetrate material thoroughly.

C. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.

D. Perforate outer covering of any installation, which has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant, or where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

F. Mist the work area continuously with amended water or removal encapsulant whenever necessary to reduce airborne fiber levels.

G. Remove saturated asbestos-containing material in small sections from all areas. As it is removed, pack material while still wet into disposal bags.

H. Evacuate air from disposal bags with a HEPA filtered vacuum cleaner. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit.

J. Asbestos-containing material shall be disposed of as specified in Section 02084.

3.03 LOCK-DOWN ENCAPSULATION

A. Upon completion of removal and cleaning of surfaces, have surfaces visually inspected by the AST. When surfaces have passed the visual inspection, they shall be sprayed with an approved lock-down encapsulant (sealant).

3.04 AIR FILTRATION SYSTEM

A. If necessary in order to meet work area fiber level specified in Section 01410, provide HEPA filtered fan units, one for each remediation activity, in addition to those required by section 01513, in the vicinity of the work. Arrange so that exhaust is into the work area oriented in a direction away from the work. Extend a 12" diameter flexible non-collapsing duct from the intake end to a point no more than 4'-0 from any removal or brushing activity.

3.05 AIRBORNE FIBER COUNTS

A. Use work procedures that result in an 8 hour Time Weighted Average (TWA) airborne fiber count less than that indicated in Section 01410 Test Laboratory - Air Monitoring Services".

B. If airborne fiber counts exceed this level immediately mist the area with amended water to lower fiber counts and revise work procedures to maintain airborne fiber levels within the required limit.

END OF SECTION 02081

SECTION 02084 – DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disposal of Asbestos-Containing Materials.

B. Packaging of asbestos-containing waste materials.

1.02 SUBMITTALS

Chain of Custody form and form of waste manifest proposed.

1.03 DISPOSAL

A. Asbestos-containing waste material and debris which is packaged in accordance with the provision of this Specification, classified as Waste ID No. 27 non-hazardous industrial waste, may be disposed of at designated sanitary landfills when certain precautions are taken.

1. Notice to Appropriate Environmental Protection Agency regional office.

2. Notice and Permit from Appropriate State and/or Local Agencies.

3. See Section 01092 for Agency Locations and Codes.

B. The Contractor shall send a notification of intent to dispose of asbestos to the New Jersey Department of Environmental Protection at least ten (10) days prior to actual disposal.

C. The waste hauler must possess a valid solid waste transporter registration issued by the New Jersey Department of Environmental Protection. The vehicle used to transport the waste container shall also be registered by the New Jersey Department of Environmental Protection.

D. The landfill designated must be registered by the New Jersey Department of Environmental Protection to accept Waste ID No. 27.

E. The specific landfill facility chosen must be one designated by the New Jersey Department of Environmental Protection as the recipient facility for the community in which the removal project is located. The waste can also be taken to a landfill out of state provided approval is granted by the ASCM

PART 2 PRODUCTS

2.01 DISPOSAL BAGS

A. Provide 6 mil thick leak-tight polyethylene bags labeled with four labels with text as follows:

1. First Label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

2. Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR
ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

3. Third Label: Provide in accordance with U.S. Department of Transportation regulation on hazardous waste marking. 49 CFR Parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised October 1, 1992:

For Amosite/Chrysotile Mixture
RQ Waste Asbestos Mixture
9, NA 2212,111

For Chrysotile
9, NA, 2212,111

4. Fourth Label:

NAME OF GENERATOR
NAME OF CONTRACTOR
CONTRACTOR'S REMOVAL LICENSE NUMBER
DATE BAG WAS SEALED

2.02 LABELS

A. If waste components are wrapped with polyethylene or if fiberboard drums are utilized, labels shall be attached to each in accordance with paragraph 2.01, A, 1-4 of this section.

PART 3 EXECUTION

3.01 GENERAL

A. All waste shall be maintained in an adequately wet condition until sealed in air and leak tight containers.

B. All waste material shall be containerized in one (1) of the following methods.

1. Two (2) 6 mil disposal bags.
2. Two (2) 6 mil disposal bags and burlap bags or cardboard boxes. (Sharp objects)
3. Wrapped with two (2) layers of 6-mil polyethylene.

Any material which may compromise the integrity of the disposal bag shall first be placed into a cardboard box, burlap or nylon bag before placement into two (2) 6 mil polyethylene disposal bags.

C. Carefully load containerized waste on enclosed trucks, dumpsters, or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. The Contractor shall cover both the floor and sidewalls of the enclosed truck, dumpster or other appropriate vehicle for transport with two (2) individual sheets of 6 mil polyethylene

D. Do not store disposal-bagged material outside of the work area. Take bags from the work area directly to a secure and sealed truck or lockable dumpster.

E. Do not transport disposal-bagged materials on open trucks.

F. Advise the landfill operator, at least ten (10) days in advance of transport, of the quantity of material to be delivered.

G. At the burial site, sealed plastic bags shall be carefully unloaded from the truck. If bags are broken or damaged, leave in the truck and clean entire truck and contents using procedures set forth in section 01711 Project Decontamination.

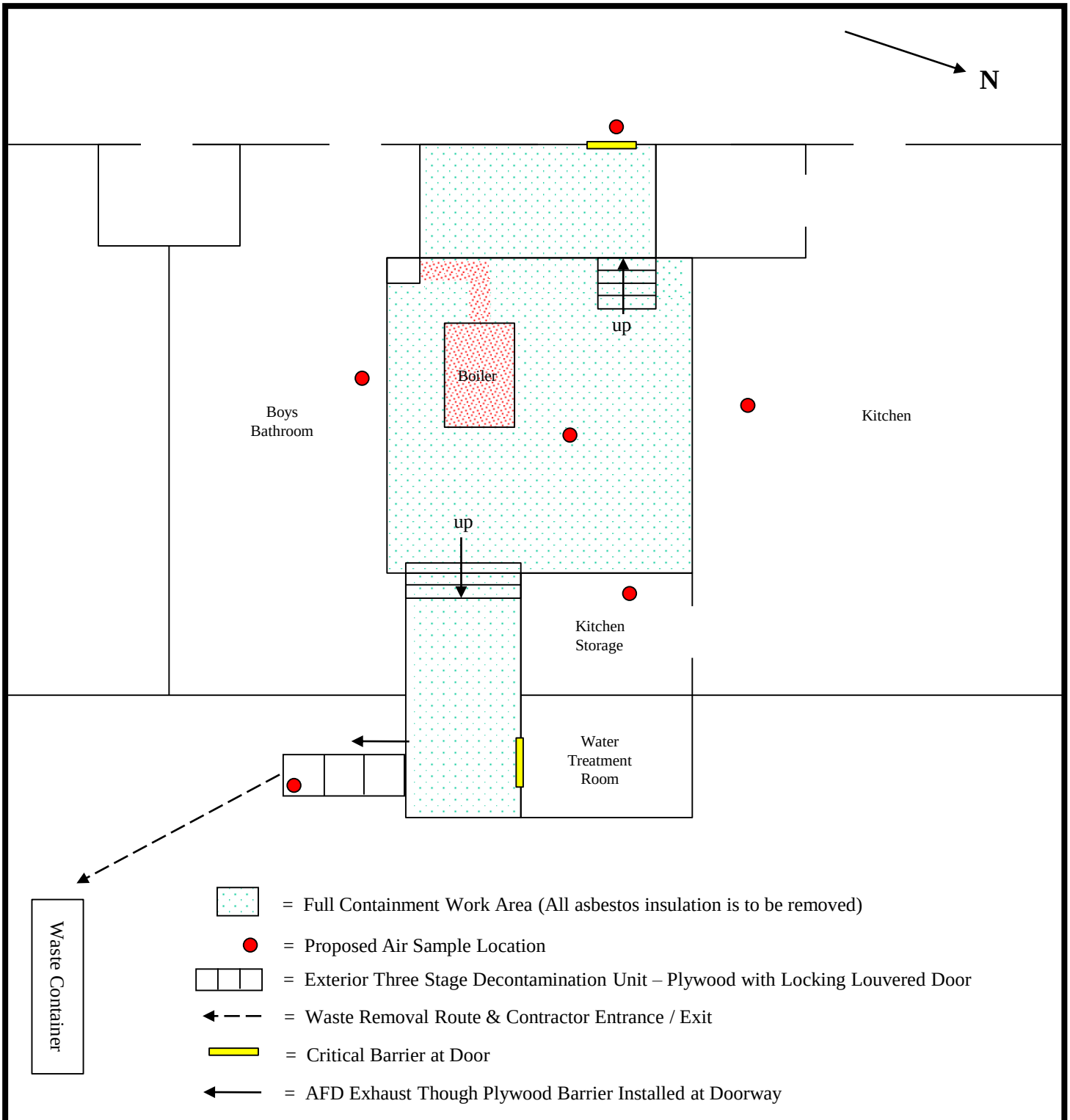
H. Ensure asbestos waste storage and disposal complies with all aspects of Federal, State and local asbestos regulation, particularly regarding time periods for removing waste from project site and interim storage.

I. Retain manifests from landfill for materials disposed of. The manifests shall be signed by the hauler and landfill operator and shall indicate the amount of material being disposed and the location where the waste was generated.

J. No later than 10 days after disposal of each load submit copy of waste manifest, chain or custody form, and landfill receipt to the Owner's Representative or his designee.

END OF SECTION 02084

APPENDIX A



ATC GROUP SERVICES LLC

3 Terri Lane, Suite 4
Burlington, NJ, 08016
(609) 386-8800

PROJECT NO: 3785100019 | **DATE:** 4/25/2019

CLIENT: Epic Environmental Inc. | **SCALE:** Not to Scale

COPIED FROM: Field Sketch

FIGURE 1: Boiler Room # 106

ASBESTOS ABATEMENT

MILANESI ELEMENTARY SCHOOL
880 HARDING HIGHWAY
BUENA, NEW JERSEY

7.6 Roof Scans

See attached documentation.

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
Fax: (609) 387-4334

INFRARED FLAT ROOF MOISTURE SURVEY

for

Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA

at

Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

March 20, 2019

Our Job Number: 19-3172.5

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
Fax: (609) 387-4334

March 20, 2019

Sam Ringelberg
Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA 23230

RE: INFRARED FLAT ROOF MOISTURE SURVEY REPORT
OUR JOB NUMBER: 19-3172.5

Dear Mr. Ringelberg:

Here is our completed report in hard copy and electronic format for the Infrared Flat Roof Moisture Survey performed for Schneider Electric USA, Inc. at the Buena Regional School District, Buena Regional High School facility located at125 Weymouth Road in Buena, NJ on March 13, 2019.

Thank you for this opportunity to serve you. If you have any questions or if we can be of further assistance, please feel free to call.

Very truly yours,

Robert K. Weigle
Level III
Infraspection Institute Certified Infrared Thermographer #6175

RKW:clt
Enclosure

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
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INTRODUCTION TO THE INFRARED FLAT ROOF MOISTURE SURVEY

Infrared thermography is a form of non-contact, non-destructive testing used to detect and document thermal patterns and associated temperatures across a given surface. For commercial roofing systems, infrared inspections can identify and document latent moisture.

On a sunny day, solar energy is absorbed by the roof surface and is transferred to the insulation layers of the roof. While dry insulation resists heat, wet insulation readily absorbs it. Since wet insulation has a greater thermal capacity, those areas of the roof which contain wet insulation cool off much more slowly than those areas of the roof which contain dry insulation. By utilizing our infrared imagers, Jersey Infrared Consultants are able to locate these areas of wet insulation.

Our Infrared Surveys are performed by Certified Thermographers using a portable infrared imaging system called FLIR ThermaCAM. This equipment detects infrared energy emitted from an object and converts it into an image which is displayed on a monitor screen.

Because infrared energy is a direct and proportional function of temperature, the displayed image is designed to depict temperature levels on the monitor. This thermal image looks very similar to a black and white television picture where the various shades of gray represent different temperature levels throughout the chosen temperature range. Black corresponds to a lower temperature, and white indicates a higher temperature. In the color mode, colors are matched to the reference temperature bar at the side of the Thermogram. Colors which appear closer to the top of the reference bar correspond to higher temperatures. Colors appearing closer to the bottom of the reference bar correspond to lower temperatures.

Our FLIR ThermaCAM equipment has the capability to sense object temperatures from -10° Celsius to +1500° Celsius, with sensitivity of as little as 0.07 Celsius degrees.

When an area of the roof with an elevated temperature is located, a moisture probe is used to verify the presence of moisture. If moisture presence is confirmed, the perimeter of the damaged area is then outlined with spray paint on the roof surface.

Once the size and location of the problem area have been noted, a photograph is taken of the image displayed on the FLIR ThermaCAM monitor. These Thermograms, along with a standard photograph and our problem definition, provide you with the necessary information to correct the problem before it becomes serious.

As soon as the problem areas have been located and identified, plans can be made to repair these areas.

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
Fax: (609) 387-4334

March 20, 2019

Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA 23230

THERMOGRAPHER'S COMMENTS
OUR JOB NUMBER: 19-3172.5

On March 13, 2019 an Infrared Flat Roof Moisture Survey was performed for Schneider Electric USA, Inc. at the Buena Regional School District, Buena Regional High School facility located at 125 Weymouth Road in Buena, NJ.

The Survey covered the entire roof.

This report contains a scaled map of the roof with the moisture-damaged areas marked in yellow. These yellow areas correspond to the areas of the roofing system which contain moisture. All moisture-damaged areas of the roof are outlined with yellow spray paint on the roof surface. Also included in this report are Thermograms and control photographs of the moisture-damaged areas.

The Survey was performed by an Infraspection Institute Certified Infrared Thermographer using a FLIR E-60A, Thermal Imaging System, Serial #49030248.

WEATHER CONDITIONS: On March 13, 2019, daytime skies were partly sunny with highs in the high 40's. Evening low temperatures were in the mid 30's and skies were partly cloudy. Winds were light at 5 to 10 miles per hour.

The latest precipitation prior to the start of our Survey occurred on March 10.

FINDINGS: Twenty-two (22) areas of moisture damage were found on the night of our Survey. These areas were outlined on the roof surface with yellow spray paint and labelled 1 through 22. Moisture probes confirmed the presence of moisture in the outlined areas. The approximate percentage of moisture-damaged roof is as follows:

Section A	7%	Section I	0%	Section Q	13%
Section B	21%	Section J	0%	Section R	33%
Section C	6%	Section K	14%	Section S	5%
Section D	0%	Section L	0%	Section T	7%
Section E	0%	Section M	7%	Section U	7%
Section F	0%	Section N	100%	Section V	0%
Section G	0%	Section O	100%	Section W	32%
Section H	0%	Section P	10%	Section X	0%

An individual breakdown of each roof section appears on the following Roof Data Sheets.

DISCUSSION: It is impossible to determine when moisture infiltration occurred. The absence of leaks in some areas may be due to the travel of moisture on the deck to another location where it could leak into the building.

PROGNOSIS: Since this is the first time we have surveyed the roof, it is impossible to predict the rate of deterioration and future performance of the roofing system. While some of the wet areas may not leak for some time, it is likely that they will expand, causing building heat loss and/or solar gain, and adding weight to the roofing system.

RECOMMENDATIONS: We recommend that the moisture-damaged areas be ripped up and replaced. Should a decision be made to replace only the moisture-damaged areas, an area at least one foot wider than the painted outlines should be replaced to ensure that all moisture damage is removed. Since some of the areas may enlarge by the time repairs are made, the roofer should remove all moisture damage found.

Should a decision be made to install a new roof over the existing roof, all areas of moisture damage should be removed prior to installation of the new roof.

This report defines the extent and location of moisture damage detected in the roofing system at the time of our Infrared Survey. No information regarding the structural integrity of the building, the roof deck or the roof membrane is provided or implied in this report.

All invasive test sites on built-up roofs have been repaired in accordance with currently accepted industry practices. Care should be taken not to disturb these areas in any manner which might compromise their watertight integrity.

Many factors, such as sunlight, precipitation, wind, foot traffic and building movement, can affect the roof over a short period of time. Periodic Infrared Flat Roof Moisture Surveys will detect beginning problems and can extend the life of the roofing system.

We recommend another Infrared Flat Roof Moisture Survey of the entire roof once the necessary repairs have been completed. Infrared Surveys are then recommended once a year as part of a preventive maintenance program.

If you should have any questions or if we can be of further assistance, please feel free to call.

Robert K. Weigle
Level III
Infraspection Institute Certified Infrared Thermographer #6175

RKW:clt

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION: Section A

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	Several; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	7,000 sq. ft. (approx.)
Number of Wet Areas:	2
Total Area Moisture Damage:	455 sq. ft. (approx.)
Percentage Moisture Damage:	7% (approx.)

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section B

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,300 sq. ft. (approx.)
Number of Wet Areas:	2
Total Area Moisture Damage:	1,092 sq. ft. (approx.)
Percentage Moisture Damage:	21% (approx.)

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section C

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	3,300 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	202 sq. ft. (approx.)
Percentage Moisture Damage:	6% (approx.)

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section D

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Couple; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	1,450 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section E

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	Yes, leaves
Roof Size:	3,800 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section F

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Many; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	3,000 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	**Section G**

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,300 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section H

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,100 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
Buena Regional High School
125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION: Section I

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Couple; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	2,500 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Schneider Electric USA, Inc.
Buena Regional School District
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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section J

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	6,700 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section K

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,500 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	760 sq. ft. (approx.)
Percentage Moisture Damage:	14% (approx.)

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section L

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; large in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	2,600 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section M

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Many; varying in size, scattered throughout
Blistered Areas:	Several; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,800 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	400 sq. ft. (approx.)
Percentage Moisture Damage:	7% (approx.)

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION: Section N

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Poor
Patched Areas:	Many; varying in size, scattered throughout
Blistered Areas:	Several; varying in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	Yes, trash
Roof Size:	350 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	350 sq. ft. (approx.)
Percentage Moisture Damage:	100%

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Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION: Section O

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair to Poor
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,500 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	5,500 sq. ft. (approx.)
Percentage Moisture Damage:	100%

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section P

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Couple; varying in size, scattered throughout
Blistered Areas:	Couple; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	4,100 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	416 sq. ft. (approx.)
Percentage Moisture Damage:	10% (approx.)

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125 Weymouth Road
Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section Q

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Couple; varying in size, scattered throughout
Blistered Areas:	Couple; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	3,800 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	480 sq. ft. (approx.)
Percentage Moisture Damage:	13% (approx.)

Schneider Electric USA, Inc.
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Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section R

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	2,700 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	900 sq. ft. (approx.)
Percentage Moisture Damage:	33% (approx.)

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ROOF DATA SHEET

LOCATION: Section S

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair to Poor
Patched Areas:	Many; varying in size, scattered throughout
Blistered Areas:	Several; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	3,700 sq. ft. (approx.)
Number of Wet Areas:	3
Total Area Moisture Damage:	186 sq. ft. (approx.)
Percentage Moisture Damage:	5% (approx.)

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ROOF DATA SHEET

LOCATION:	**Section T**

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair to Poor
Patched Areas:	Many; varying in size, scattered throughout
Blistered Areas:	Several; small in size, scattered throughout
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	11,800 sq. ft. (approx.)
Number of Wet Areas:	5
Total Area Moisture Damage:	803 sq. ft. (approx.)
Percentage Moisture Damage:	7% (approx.)

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Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION: Section U

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	2,000 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	336 sq. ft. (approx.)
Percentage Moisture Damage:	17% (approx.)

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Buena, NJ

Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section V

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	None observed
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	6,900 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

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Our Job Number: 19-3172.5

ROOF DATA SHEET

LOCATION:	Section W

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Fair
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	5,300 sq. ft. (approx.)
Number of Wet Areas:	1
Total Area Moisture Damage:	1,704 sq. ft. (approx.)
Percentage Moisture Damage:	32% (approx.)

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ROOF DATA SHEET

LOCATION:	Section X

REPORTED ROOF CONSTRUCTION:

Deck:	Corrugated Metal
Vapor Retarder:	Unknown
Insulation:	Rigid
Membrane:	Built-up
Flood Coat:	Asphalt
Aggregate:	Yes

GENERAL ROOF DATA

Age:	Unknown
Condition of Membrane:	Good
Patched Areas:	Several; varying in size, scattered throughout
Blistered Areas:	None observed
Drainage Condition:	Good
Roof Surface:	Dry
Debris Present:	None observed
Roof Size:	6,100 sq. ft. (approx.)
Number of Wet Areas:	0
Total Area Moisture Damage:	0
Percentage Moisture Damage:	0

Area/Picture No 1 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 44 °F **Location** Section A

Damage Type Moisture

Area Description

Overall size: 430 sq. ft. (apx.)

Previously patched: Yes

Blisters present: Yes

Moisture Test Results

Moisture probe: Positive

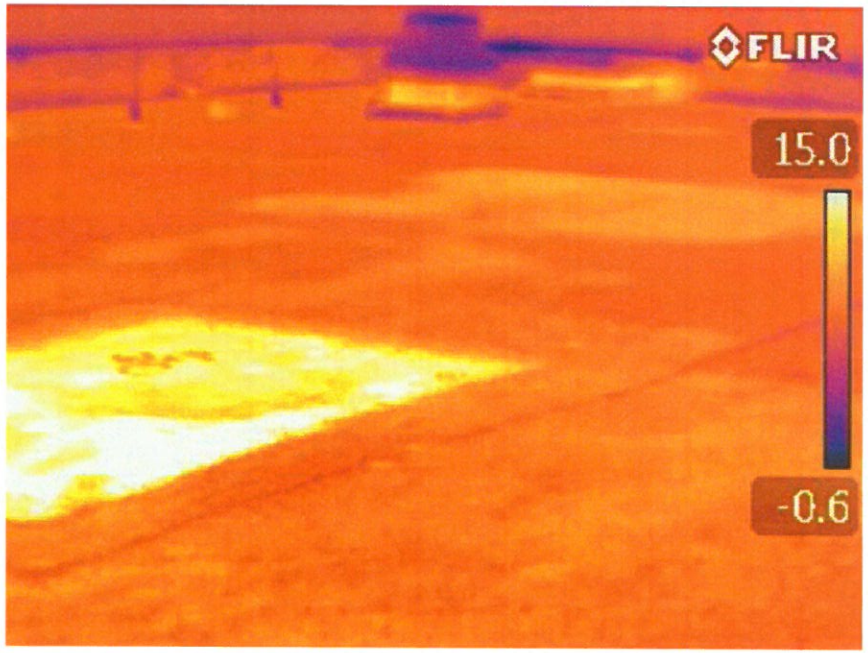
Core sample: N/A

Other: N/A

Comments







Area/Picture No 2 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 44 °F **Location** Section A

Damage Type Moisture

Area Description

Overall size: 5' x 5'

Previously patched: No

Blisters present: No

Moisture Test Results

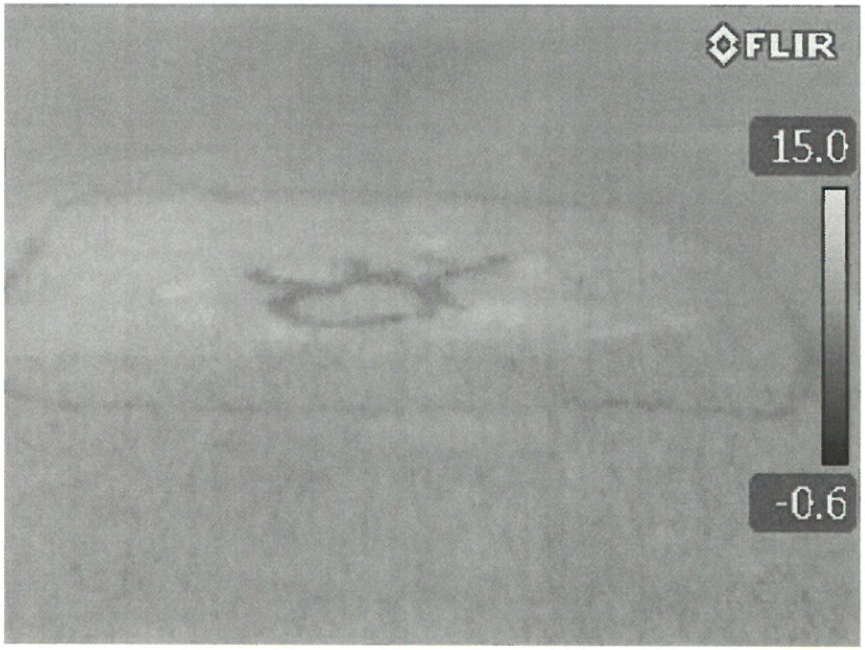
Moisture probe: Positive

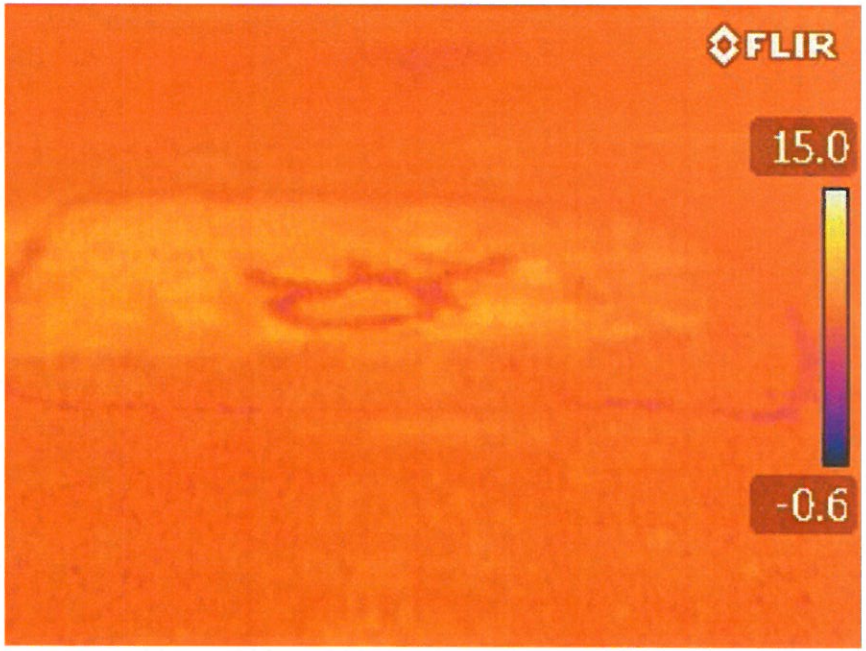
Core sample: N/A

Other: N/A

Comments







Area/Picture No 3 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 44 °F **Location** Section B

Damage Type Moisture

Area Description

Overall size: 20' x 35'

Previously patched: No

Blisters present: No

Moisture Test Results

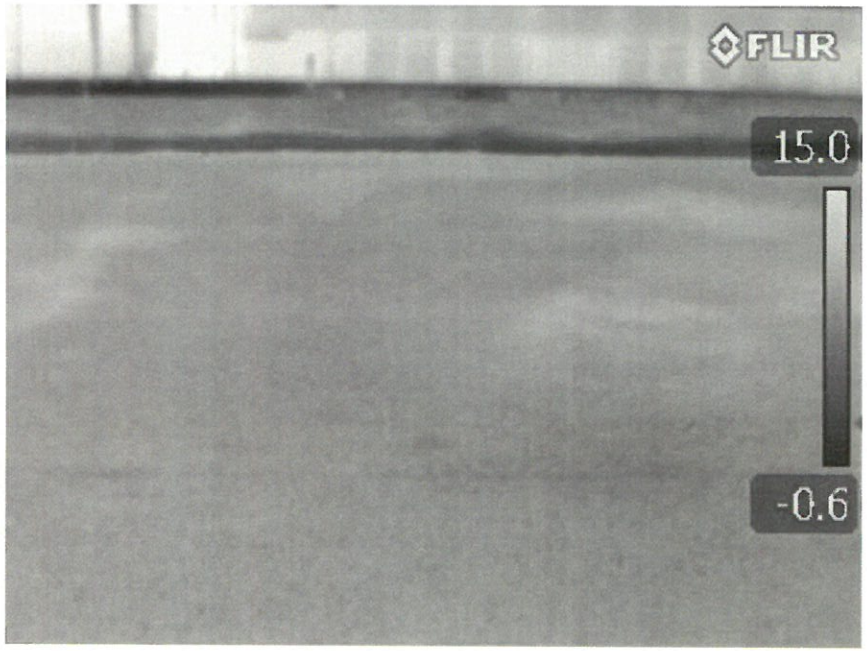
Moisture probe: Positive

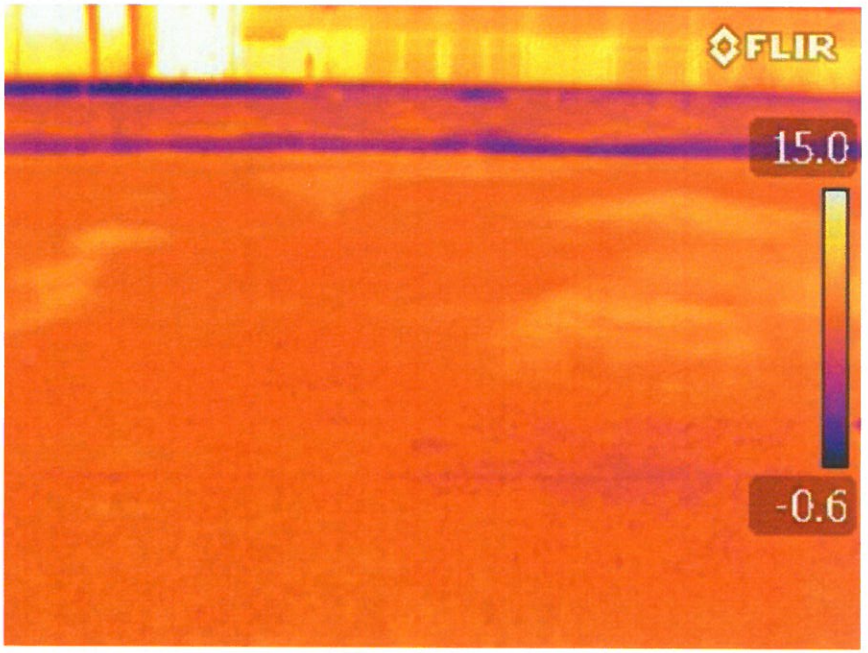
Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 4 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 44 °F **Location** Section B

Damage Type Moisture

Area Description

Overall size: 14' x 28'

Previously patched: Yes

Blisters present: No

Moisture Test Results

Moisture probe: Positive

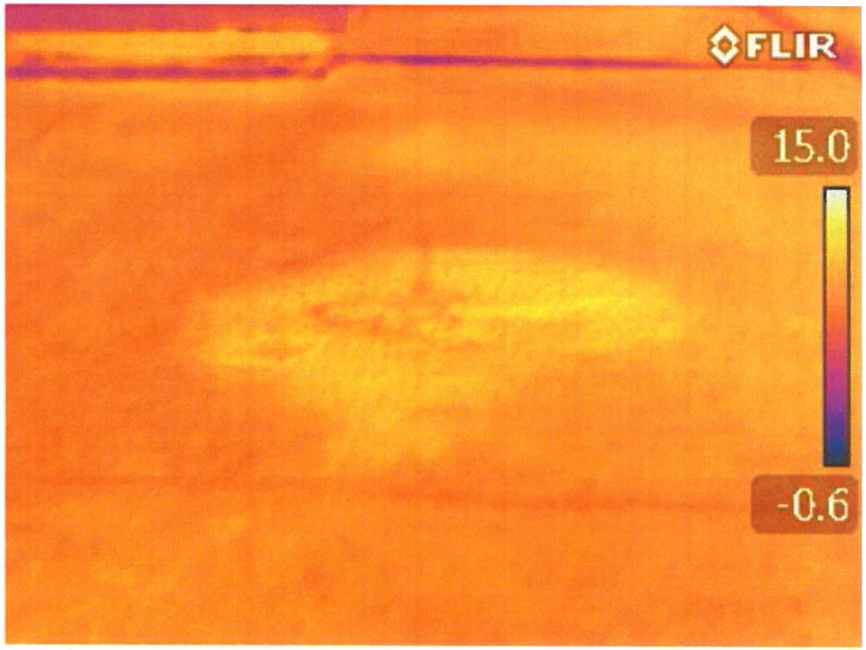
Core sample: N/A

Other: N/A

Comments







Area/Picture No 5 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 43 °F **Location** Section C

Damage Type Moisture

Area Description

Overall size: 202 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 6 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 43 °F **Location** Section K

Damage Type Moisture

Area Description

Overall size: 760 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

Moisture probe: Positive

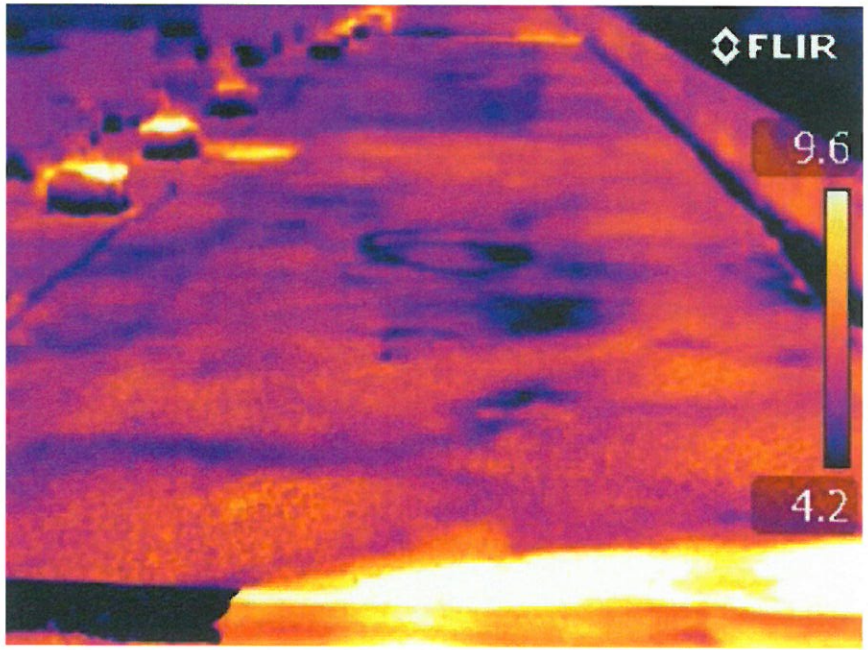
Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 7 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 42 °F **Location** Section M

Damage Type Moisture

Area Description

Overall size: 400 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

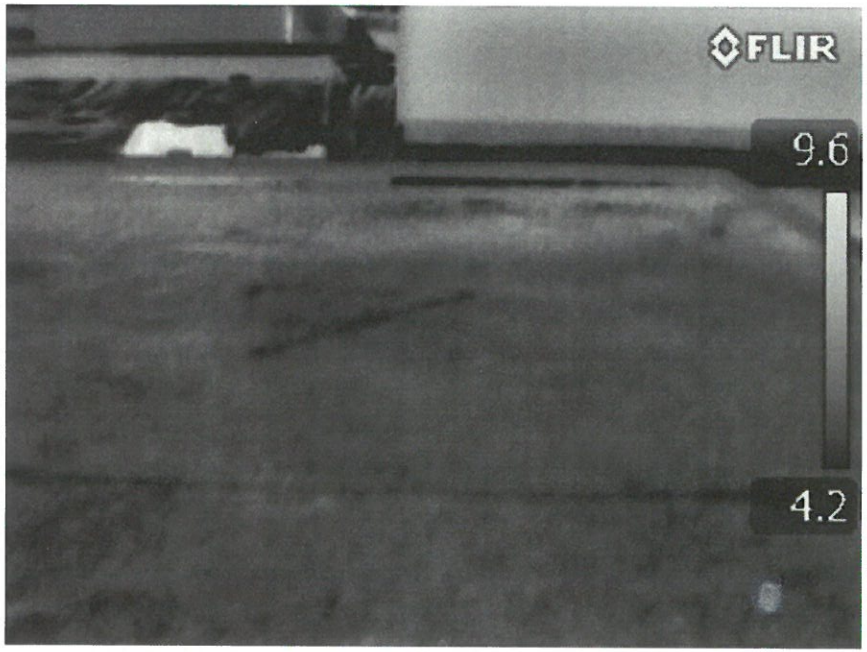
Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments







Area/Picture No 8 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 42 °F **Location** Section N

Damage Type Moisture

Area Description

Overall size: 350 sq. ft. (apx.)

Previously patched: Yes

Blisters present: Yes

Moisture Test Results

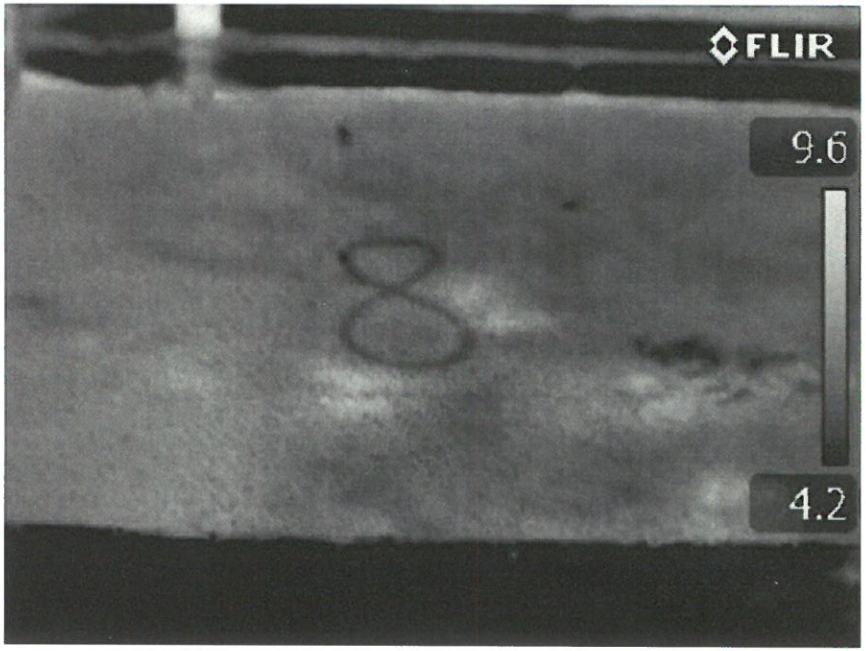
Moisture probe: Positive

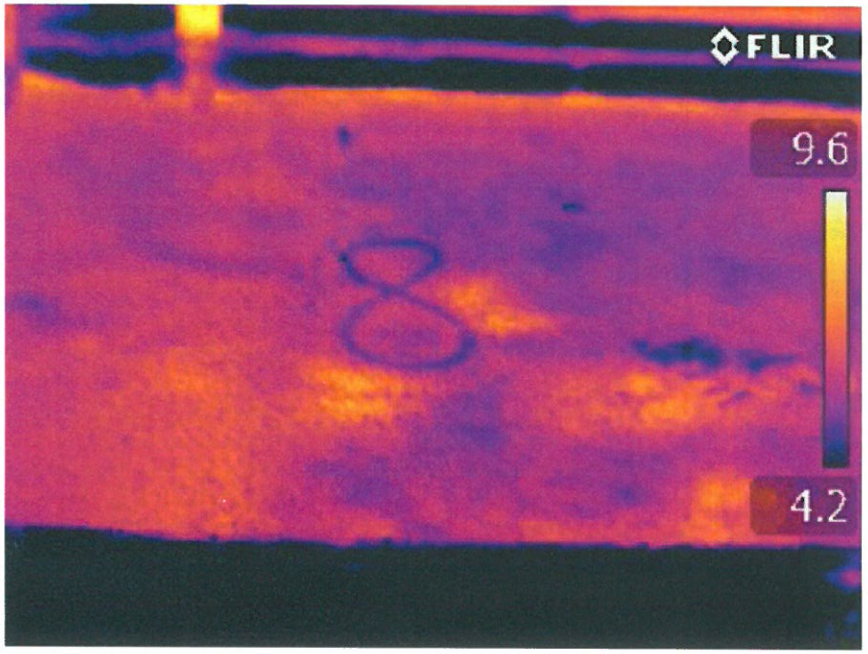
Core sample: N/A

Other: N/A

Comments







Area/Picture No 9 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 41 °F **Location** Section O

Damage Type Moisture

Area Description

Overall size: 5,500 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

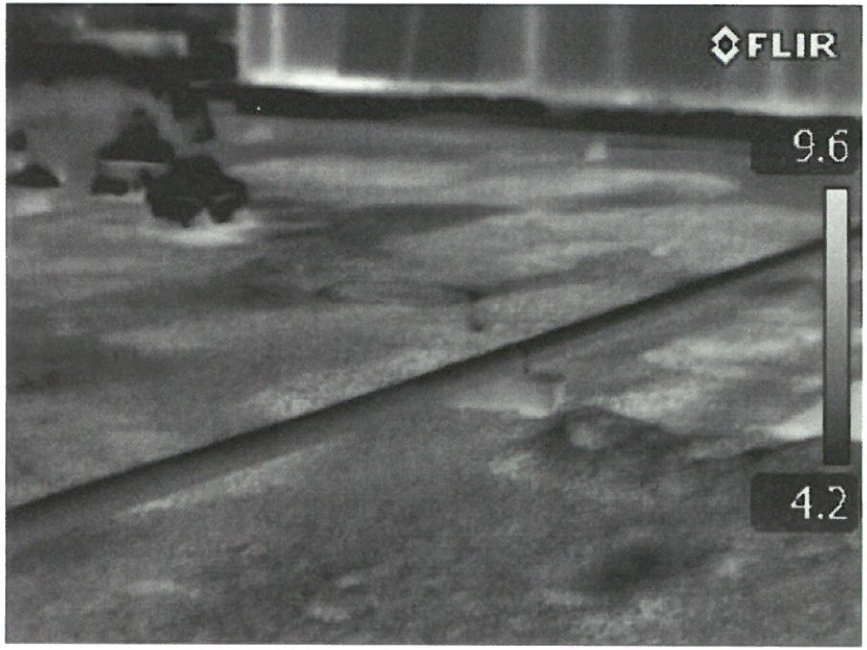
Moisture probe: Positive

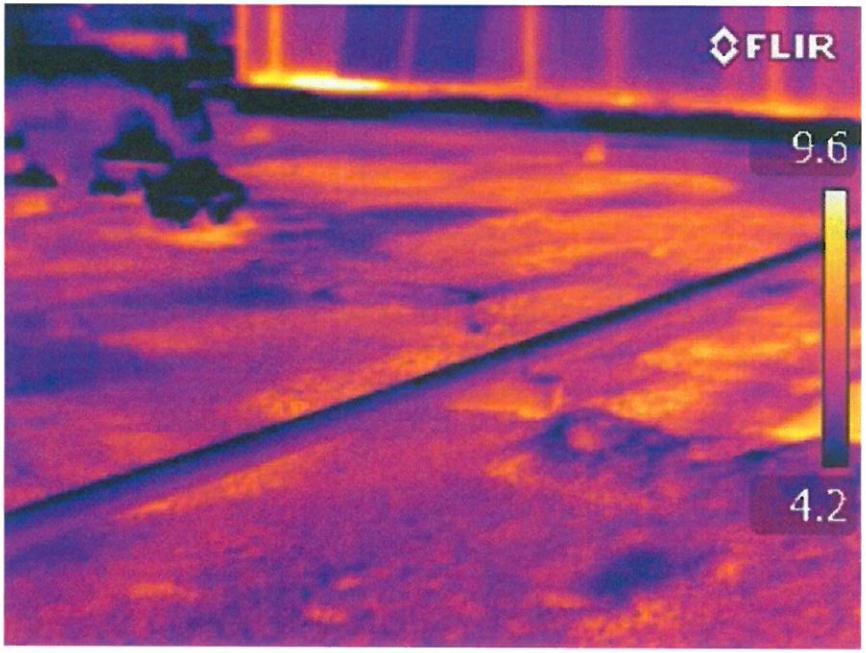
Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 10 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 41 °F **Location** Section P

Damage Type Moisture

Area Description

Overall size: 16' x 26'

Previously patched: No

Blisters present: No

Moisture Test Results

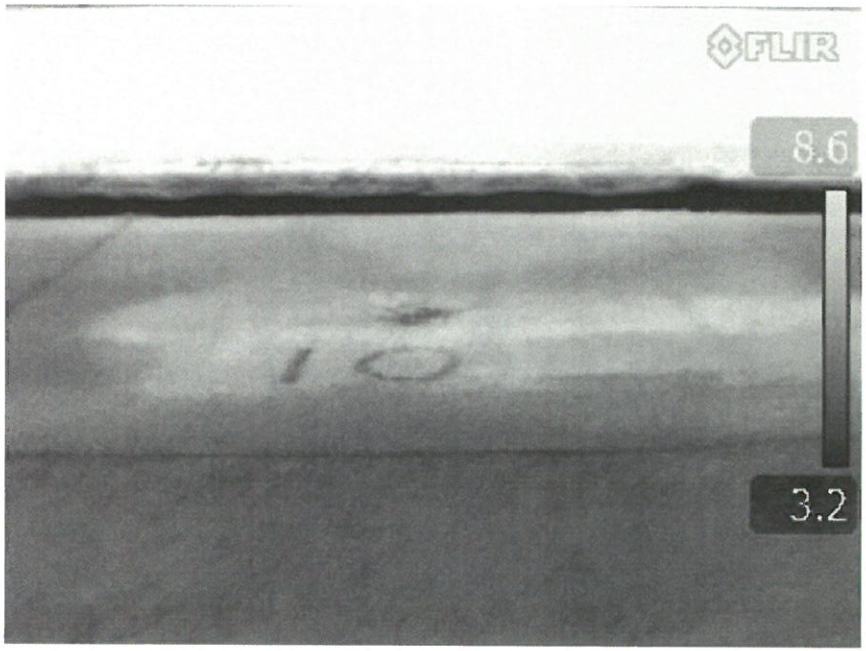
Moisture probe: Positive

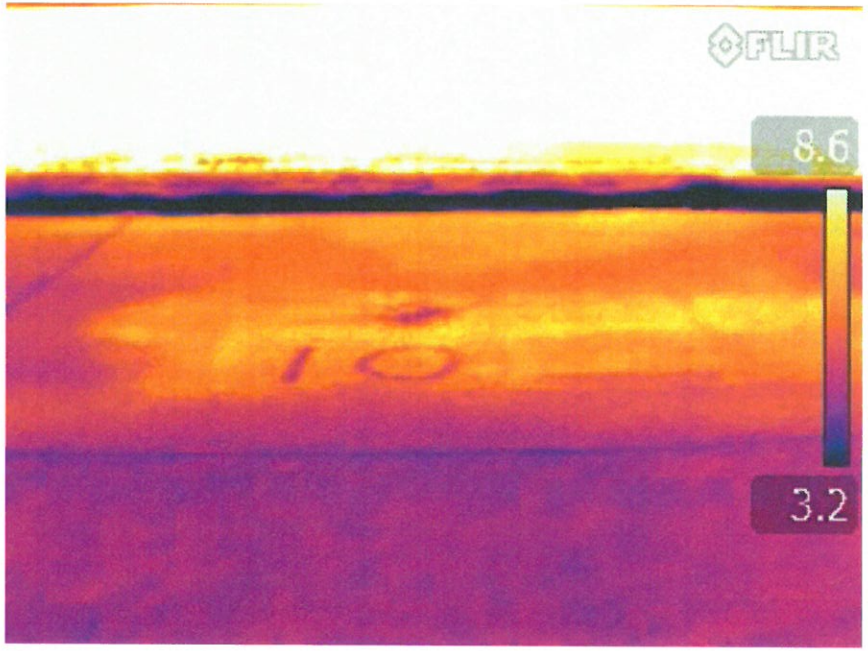
Core sample: N/A

Other: N/A

Comments







Area/Picture No 11 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 41 °F **Location** Section Q

Damage Type Moisture

Area Description

Overall size: 20' x 24'

Previously patched: No

Blisters present: No

Moisture Test Results

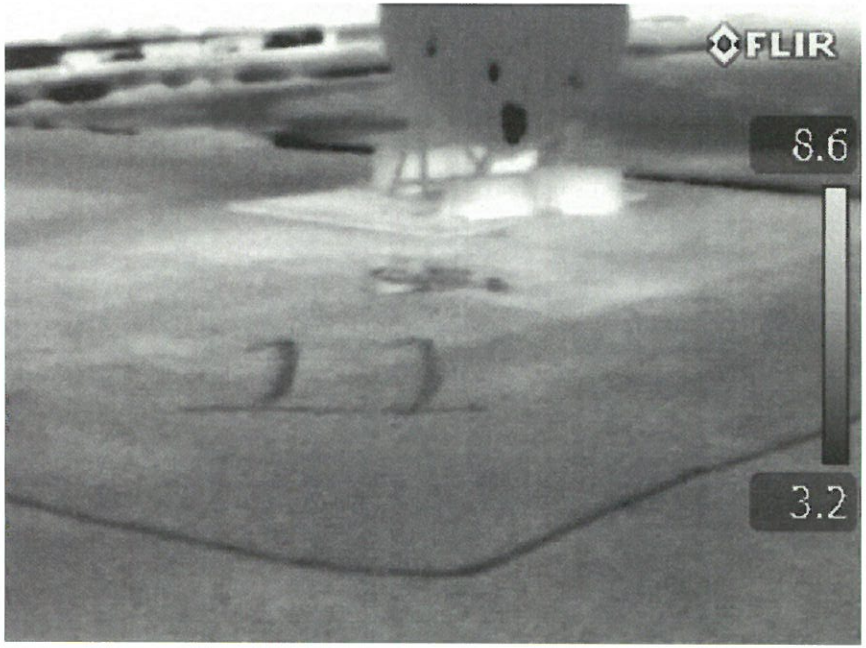
Moisture probe: Positive

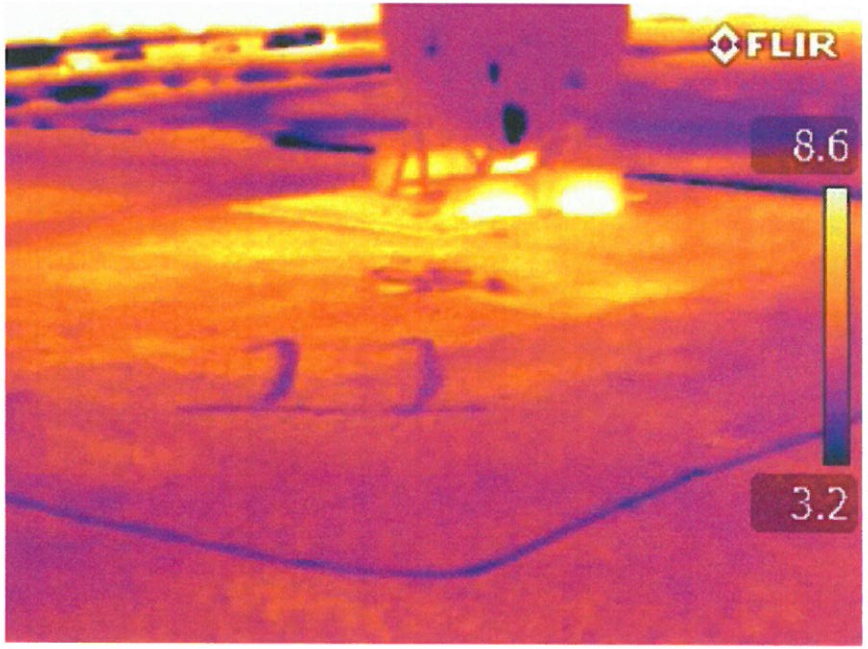
Core sample: N/A

Other: N/A

Comments







Area/Picture No 12 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 41 °F **Location** Section R

Damage Type Moisture

Area Description

Overall size: 900 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

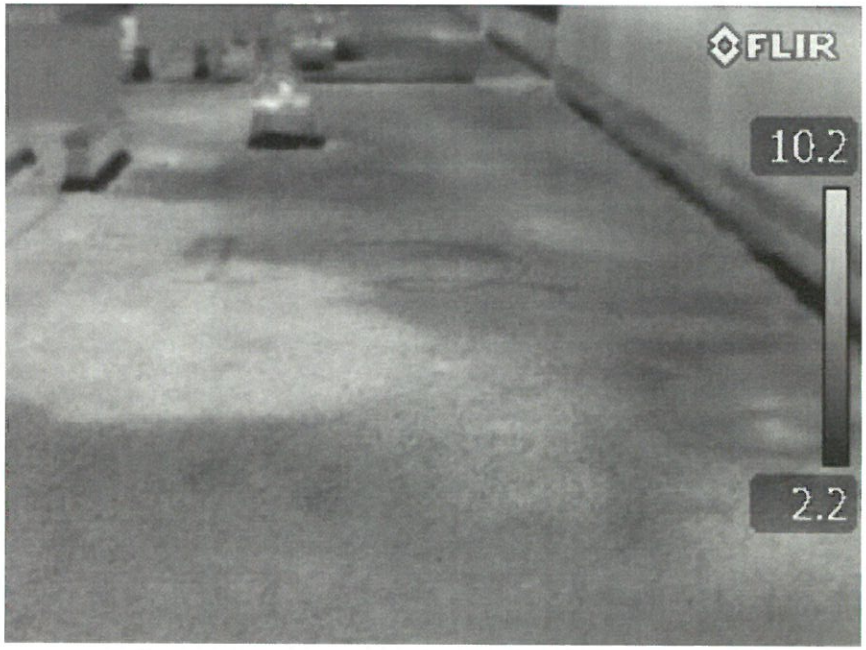
Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 13 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section S

Damage Type Moisture

Area Description

Overall size: 40 sq. ft. (apx.)

Previously patched: No

Blisters present: No

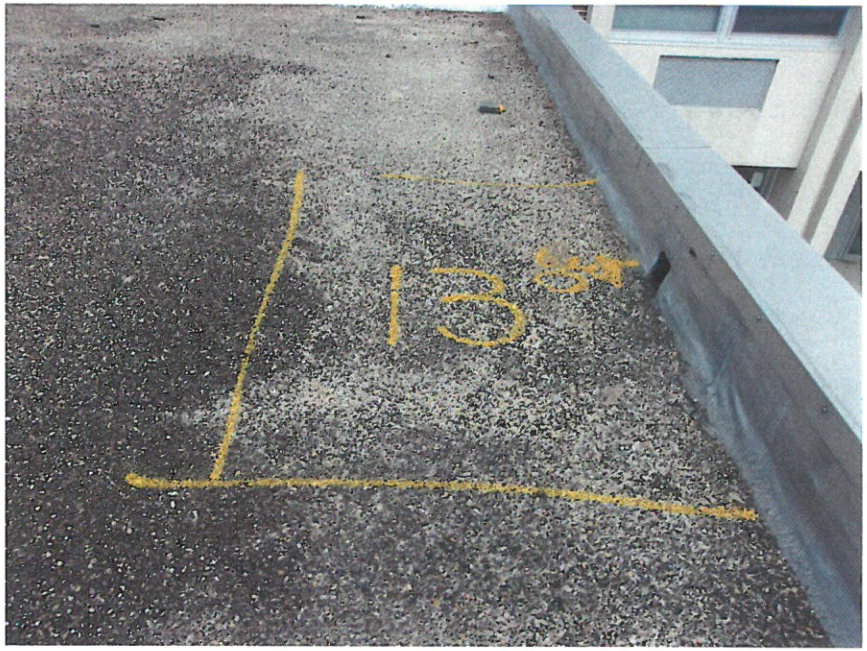
Moisture Test Results

Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments







Area/Picture No 14 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section S

Damage Type Moisture

Area Description

Overall size: 96 sq. ft. (apx.)

Previously patched: Yes

Blisters present: Yes

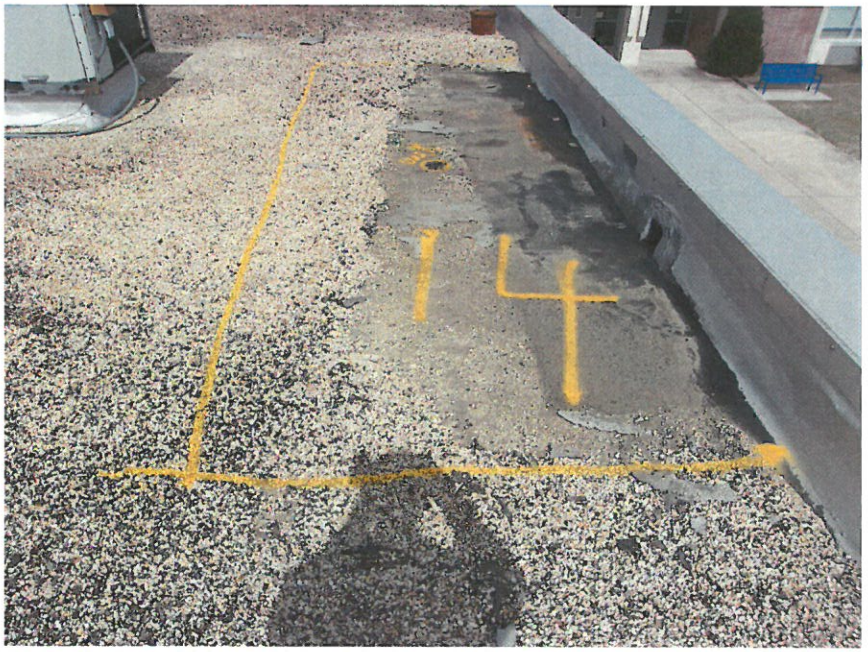
Moisture Test Results

Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments







Area/Picture No 15 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section S

Damage Type Moisture

Area Description

Overall size: 50 sq. ft. (apx.)

Previously patched: No

Blisters present: No

Moisture Test Results

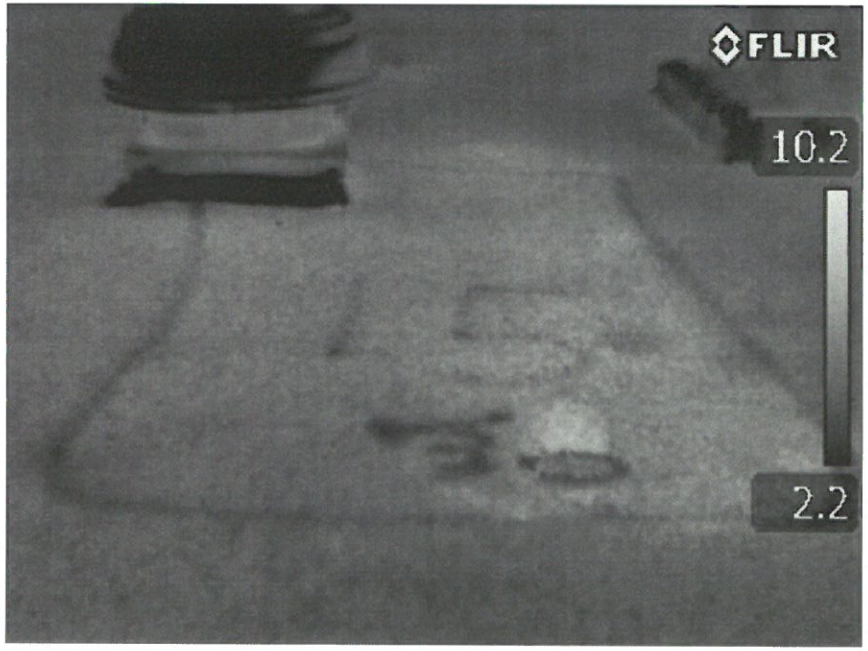
Moisture probe: Positive

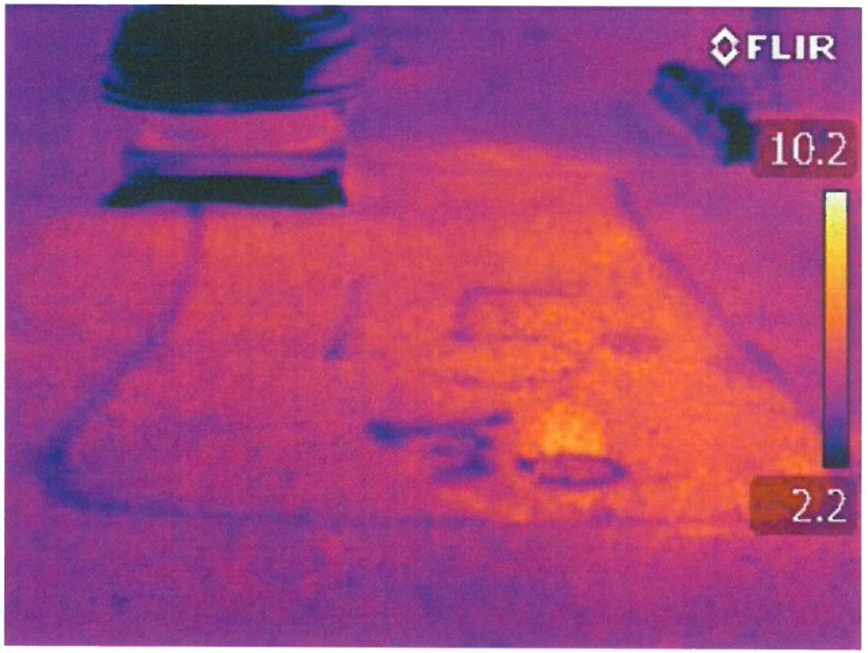
Core sample: N/A

Other: N/A

Comments







Area/Picture No 16 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section T

Damage Type Moisture

Area Description

Overall size: 231 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

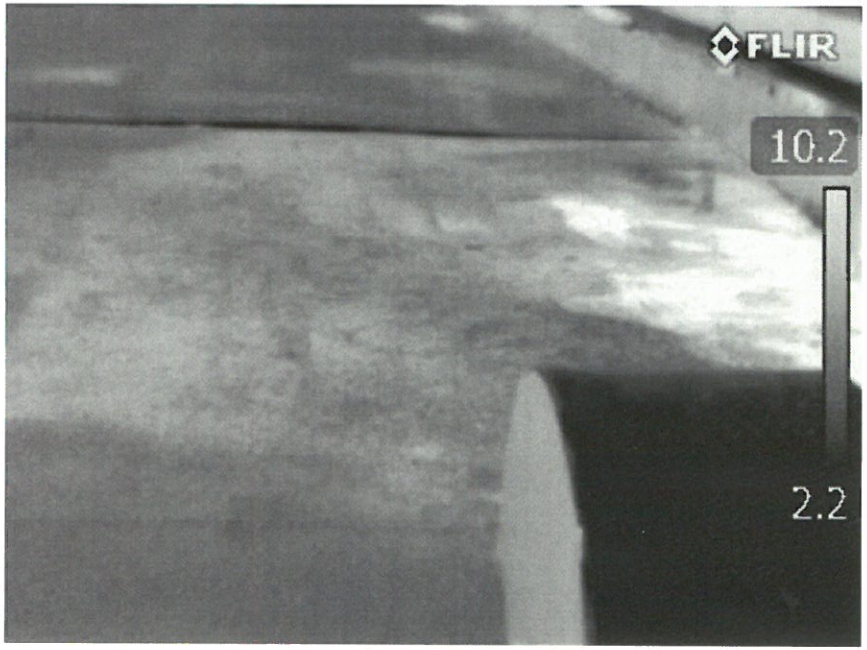
Moisture probe: Positive

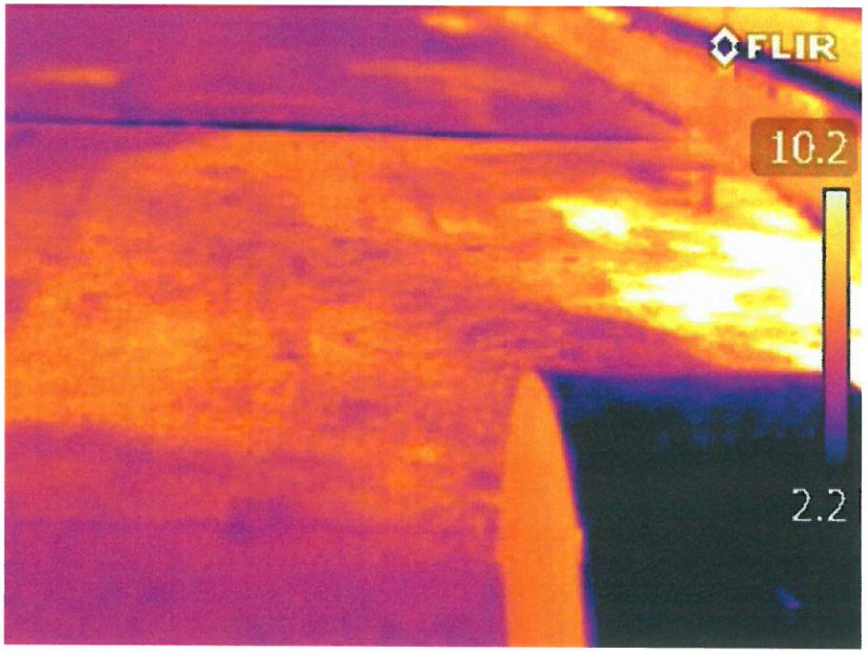
Core sample: N/A

Other: N/A

Comments







Area/Picture No 17 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section T

Damage Type Moisture

Area Description

Overall size: 231 sq. ft. (apx.)

Previously patched: No

Blisters present: No

Moisture Test Results

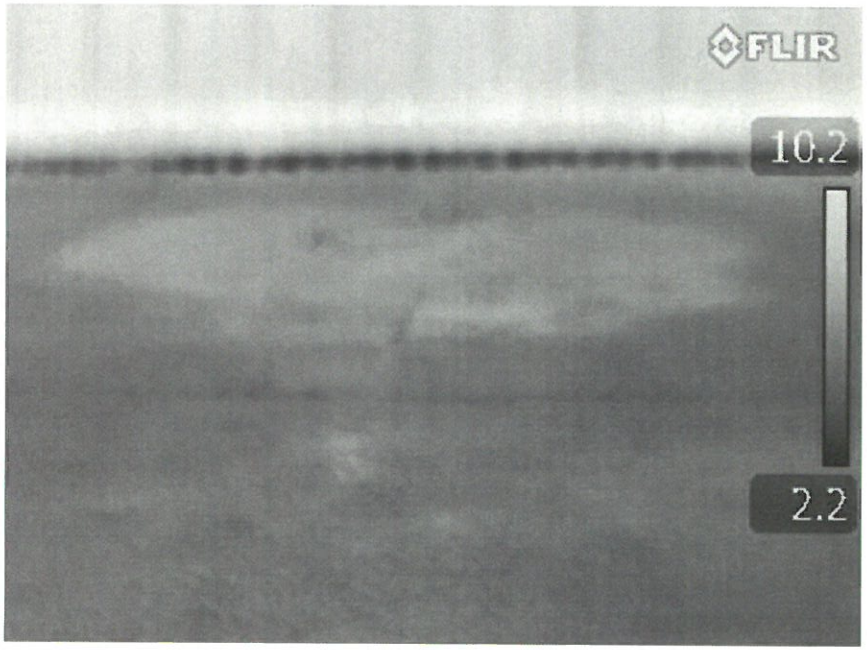
Moisture probe: Positive

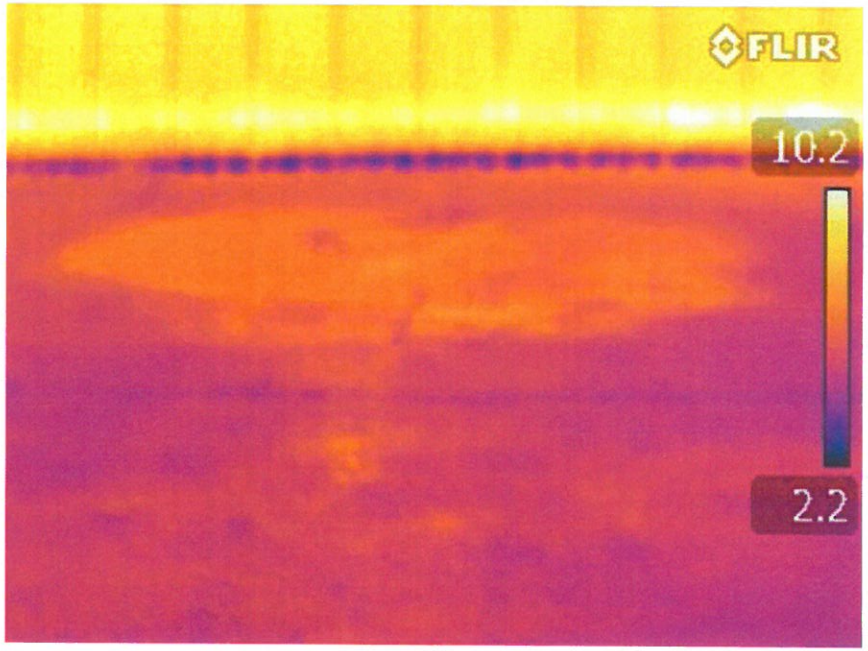
Core sample: N/A

Other: N/A

Comments







Area/Picture No 18 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section T

Damage Type Moisture

Area Description

Overall size: 140 sq. ft. (apx.)

Previously patched: No

Blisters present: No

Moisture Test Results

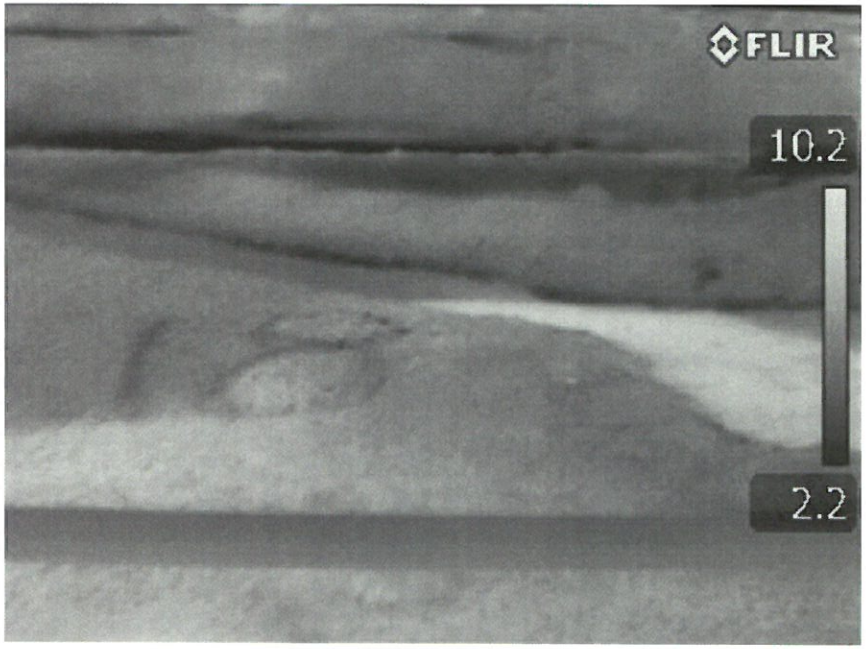
Moisture probe: Positive

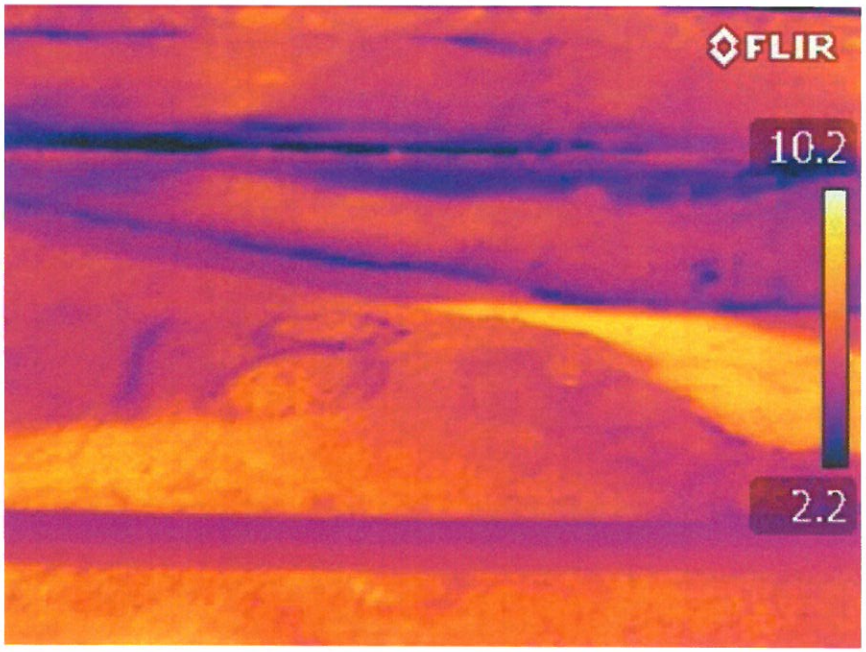
Core sample: N/A

Other: N/A

Comments







Area/Picture No 19 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section T

Damage Type Moisture

Area Description

Overall size: 153 sq. ft. (apx.)

Previously patched: No

Blisters present: No

Moisture Test Results

Moisture probe: Positive

Core sample: N/A

Other: N/A

Comments







Area/Picture No 20 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 40 °F **Location** Section T

Damage Type Moisture

Area Description

Overall size: 48 sq. ft. (apx.)

Previously patched: No

Blisters present: No

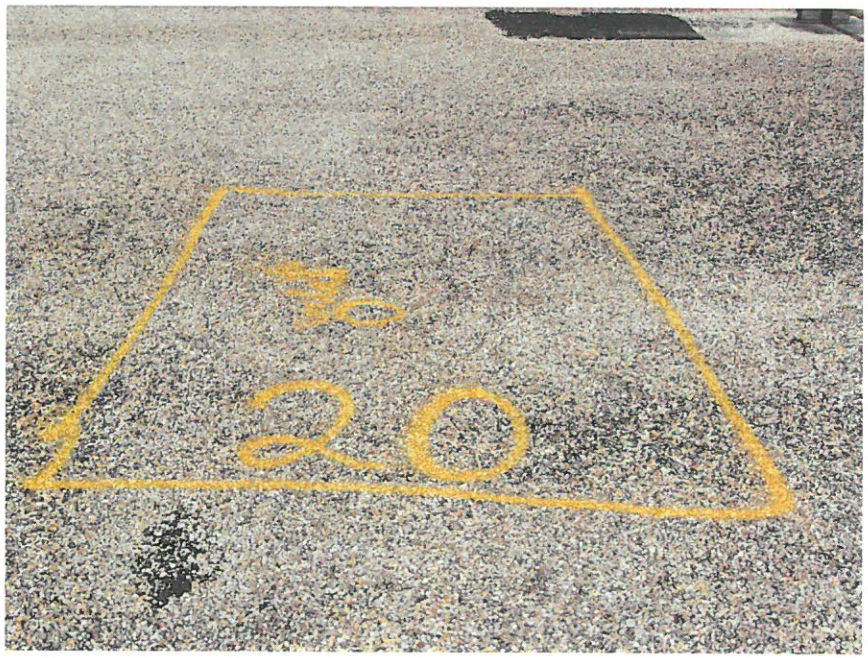
Moisture Test Results

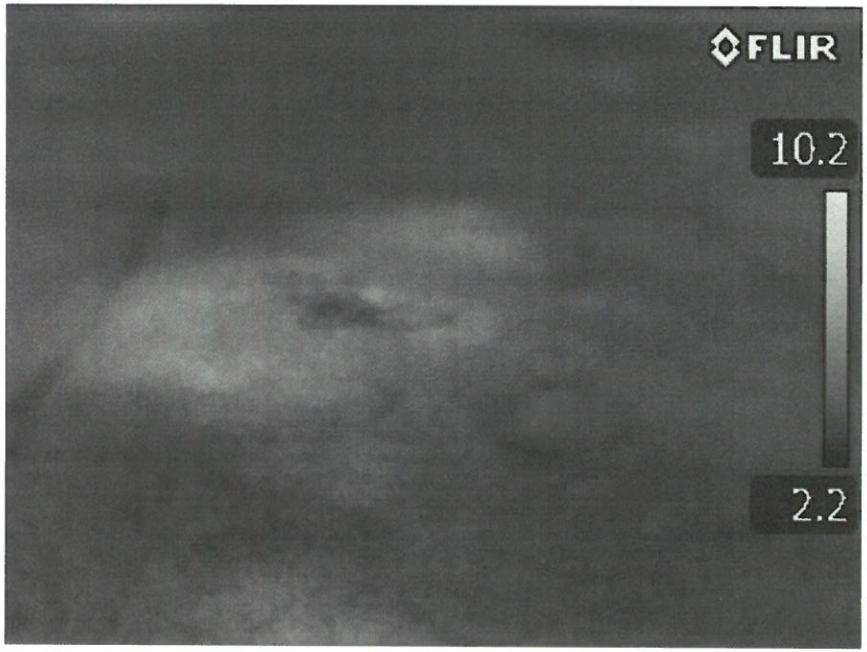
Moisture probe: Positive

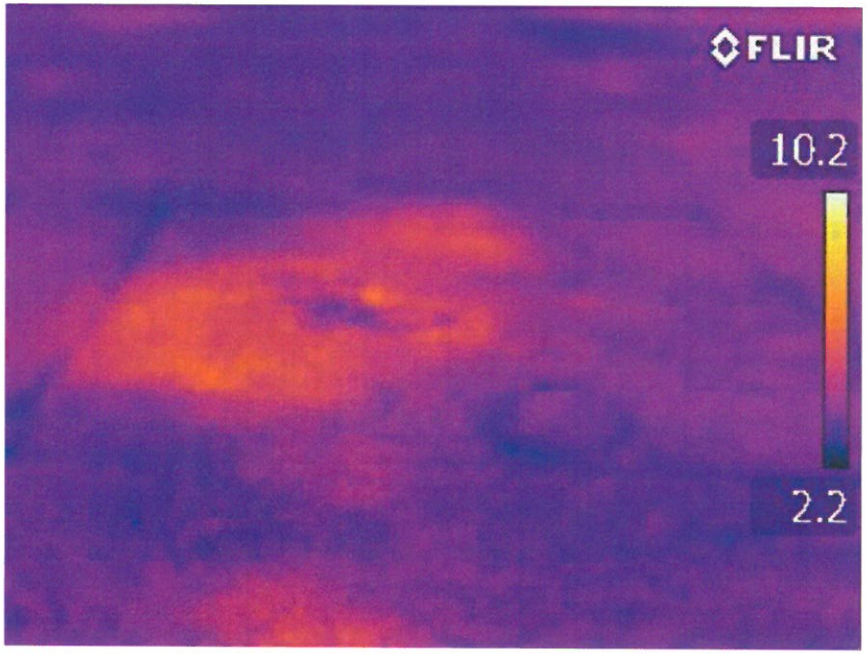
Core sample: N/A

Other: N/A

Comments







Area/Picture No 21 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 38 °F **Location** Section U

Damage Type Moisture

Area Description

Overall size: 336 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

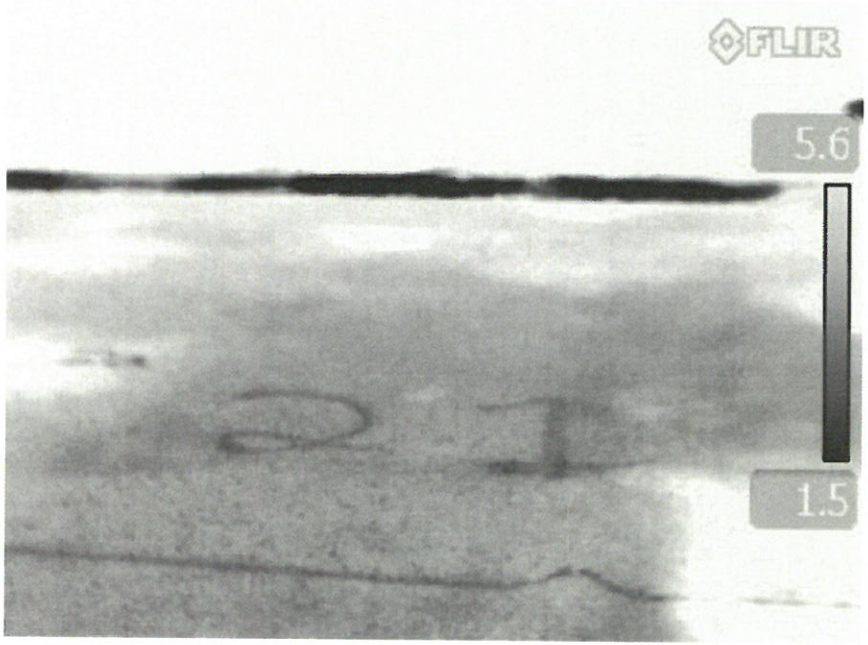
Moisture probe: Positive

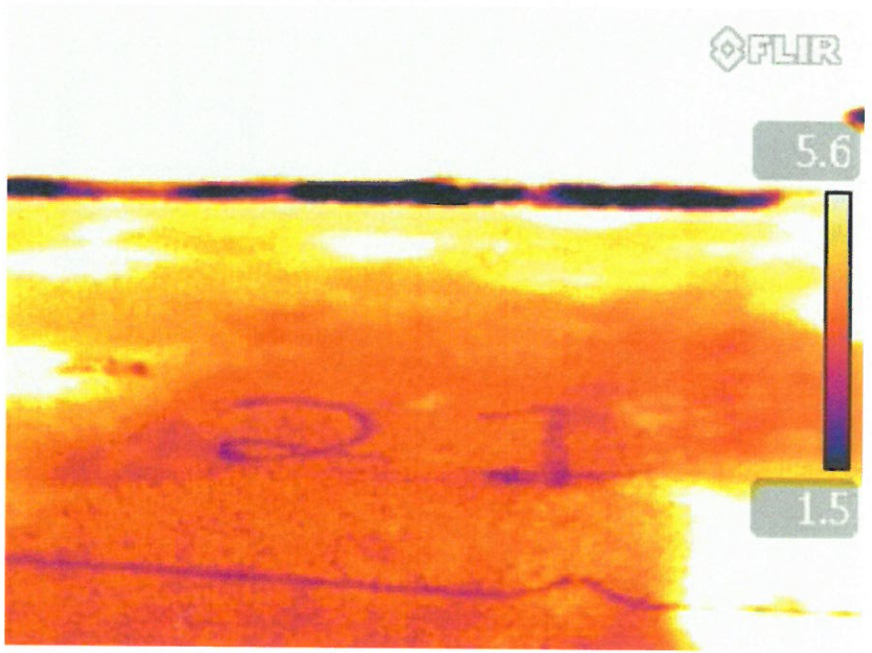
Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.







Area/Picture No 22 **Job Number** 19-3172.5 **Date** 3/12/19

Ambient Temp 38 °F **Location** Section W

Damage Type Moisture

Area Description

Overall size: 1,704 sq. ft. (apx.)

Previously patched: Yes

Blisters present: No

Moisture Test Results

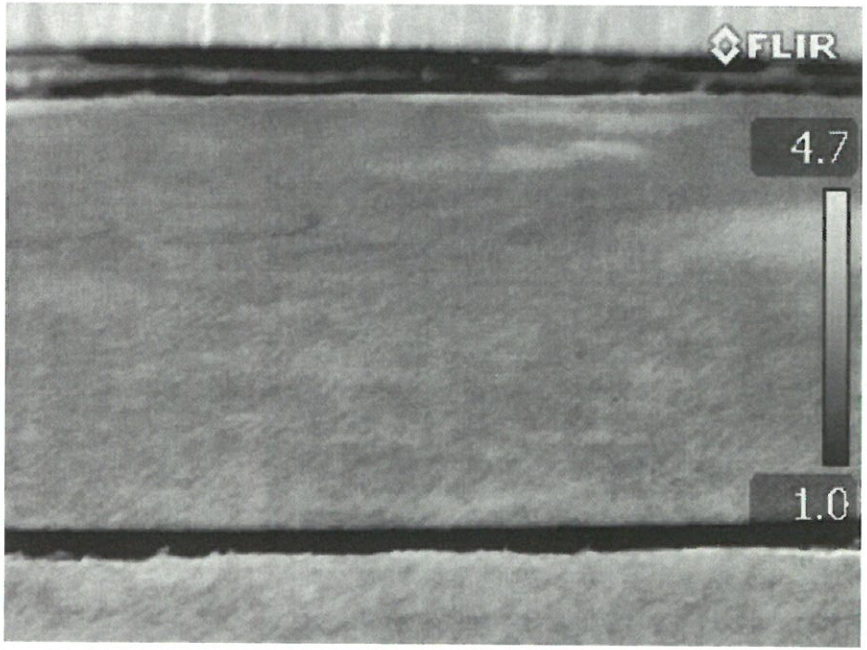
Moisture probe: Positive

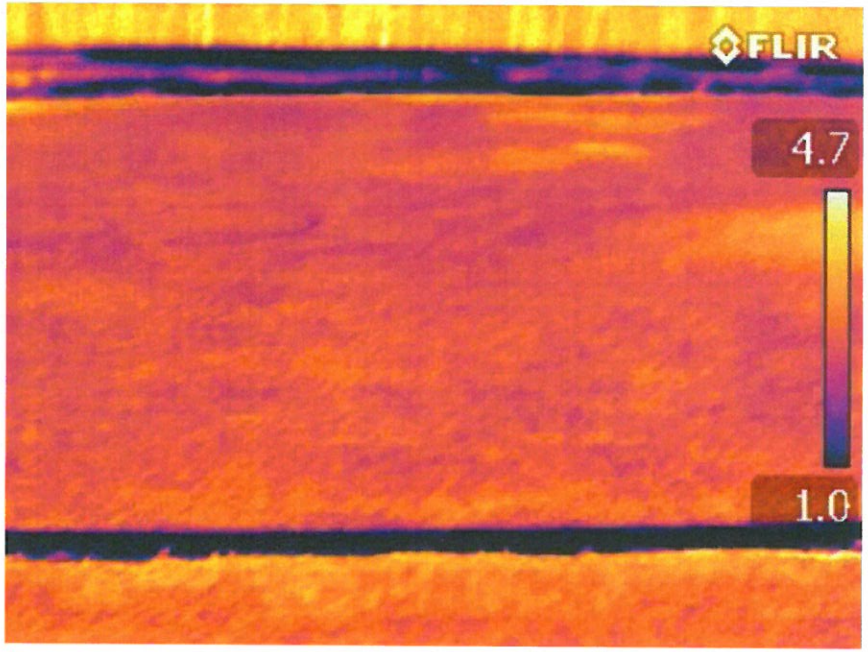
Core sample: N/A

Other: N/A

Comments Area contains pockets of dry insulation.

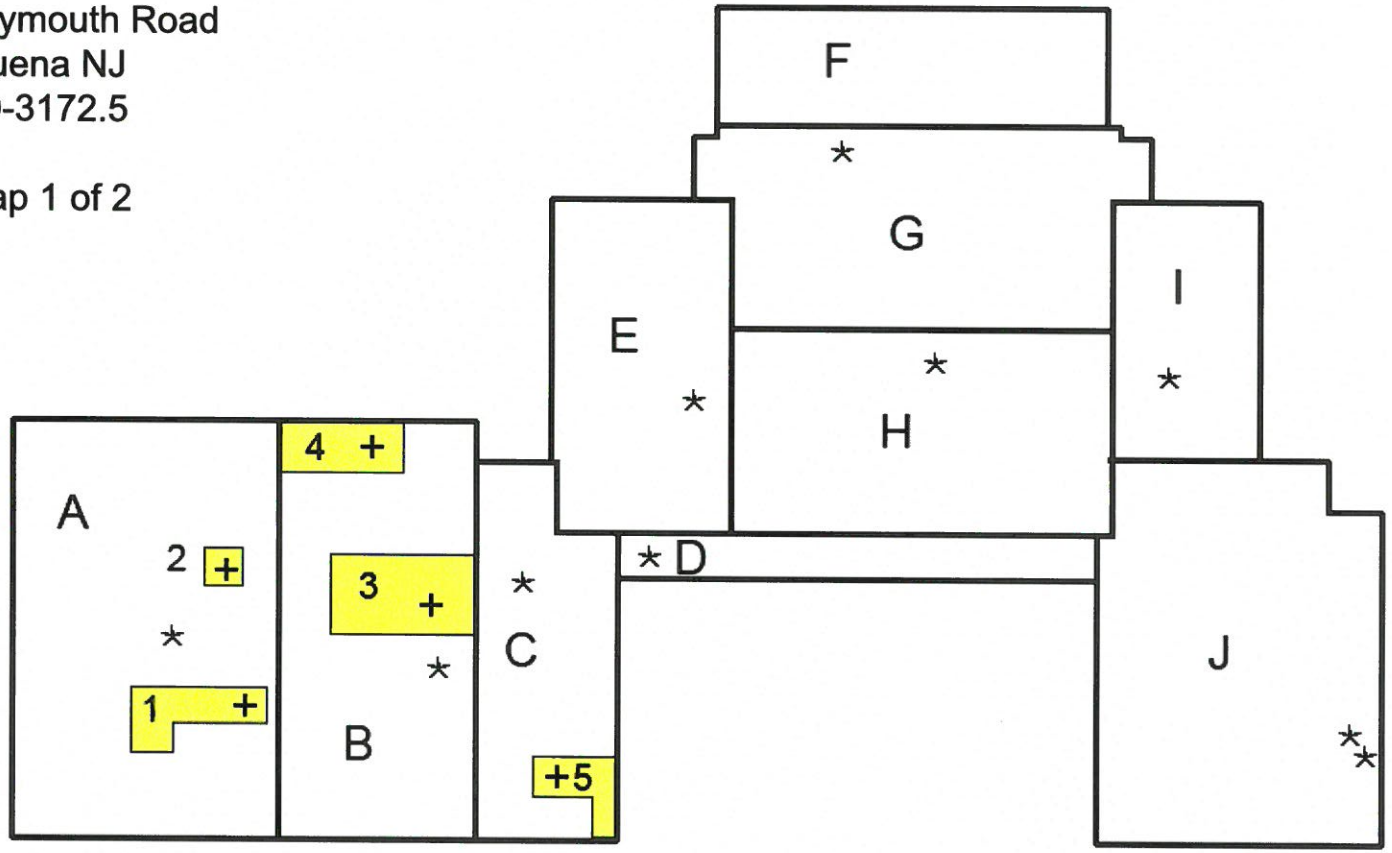






Schneider Electric USA, Inc
Buena Regional High School
125 Weymouth Road
Buena NJ
19-3172.5

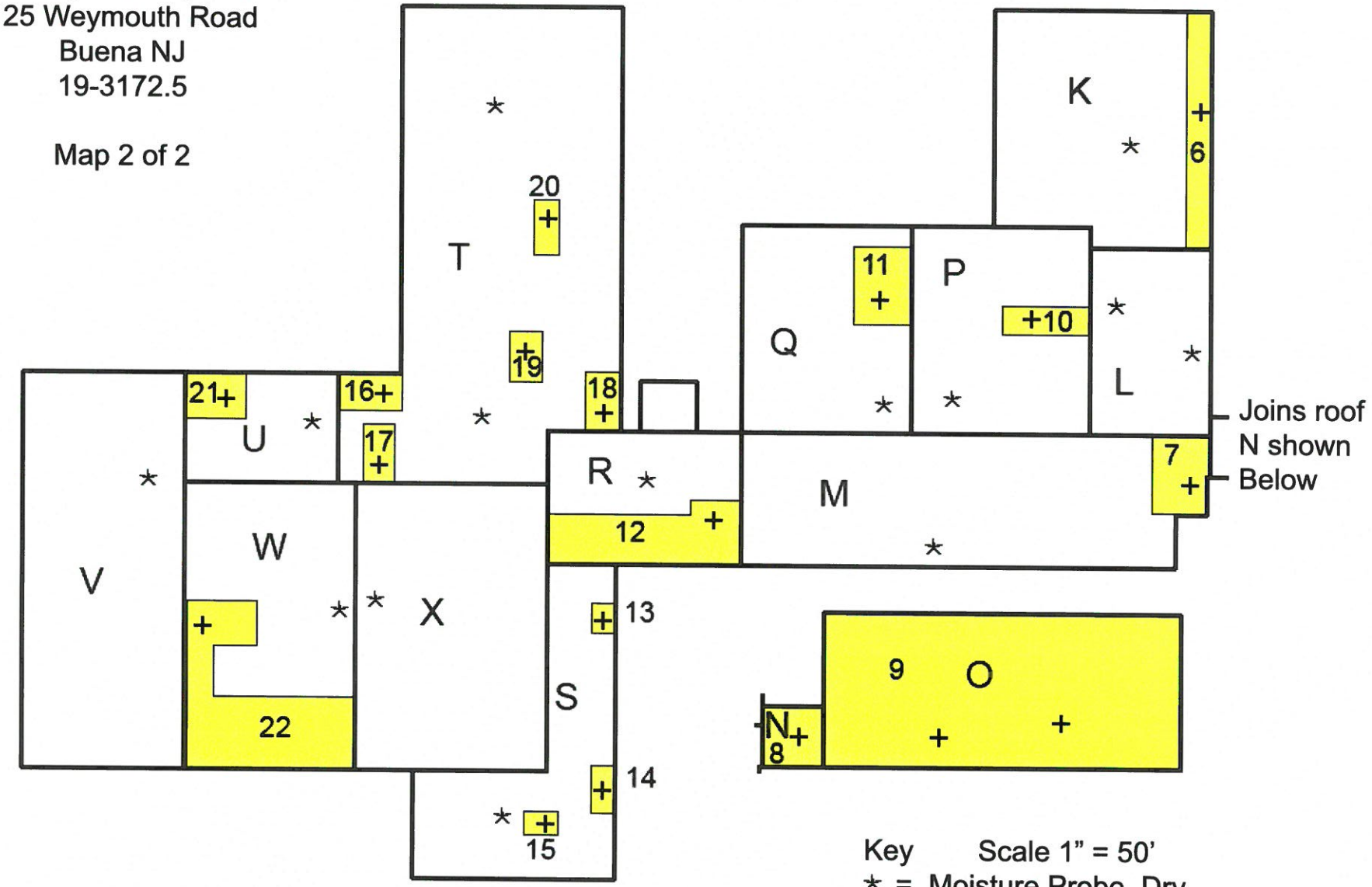
Map 1 of 2



Key Scale 1" = 50'
* = Moisture Probe, Dry
+ = Moisture Probe, Wet
= Area of Moisture Damage

Schneider Electric USA, Inc
Buena Regional High School
125 Weymouth Road
Buena NJ
19-3172.5

Map 2 of 2



JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
Fax: (609) 387-4334

INFRARED BUILDING ENVELOPE SURVEY

for

Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA

at

Buena Regional School District
Buena Regional Middle School
175 Weymouth Road
Buena, NJ

March 6, 2019

Our Job Number: 19-3172.4

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
Phone: (609) 386-1281
Fax: (609) 387-4334

March 6, 2019

Sam Ringelberg
Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA 23230

RE: INFRARED BUILDING ENVELOPE SURVEY REPORT
OUR JOB NUMBER: 19-3172.4

Dear Mr. Ringelberg:

Here is our completed report in hard copy and electronic format for the Infrared Building Envelope Survey performed at the Buena Regional School District, Buena Regional Middle School 175 Weymouth Road in Buena, NJ on March 4, 2019.

Thank you for this opportunity to serve you. If you have any questions or if we can be of further assistance, please feel free to call.

Very truly yours,

Robert K. Weigle
Level III
Infraspection Institute Certified Infrared Thermographer #6175

RKW:clt
Enclosure

JERSEY INFRARED CONSULTANTS

P.O. Box 39
Burlington, NJ 08016
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INTRODUCTION TO THE INFRARED BUILDING ENVELOPE SURVEY (INTERIOR/EXTERIOR)

Infrared thermography is a form of non-contact, non-destructive testing used to detect and document thermal patterns and associated temperatures across a given surface. Infrared thermography can be used as a quality assurance and/or diagnostic tool to find latent failures or defects within the building envelope.

Two types of energy loss can occur within a building envelope. The first type of loss is conduction. Conduction losses are most often due to missing or damaged insulation within the building walls and/or roof. Conduction heat losses may also be caused due to entrapped moisture within the building sidewalls. The second type of heat loss is air infiltration/exfiltration. Air infiltration/exfiltration can occur at numerous locations within a building envelope through seemingly insignificant cracks and uncaulked openings. Air infiltration can be detected when Surveys are performed from the interior of the building. Air exfiltration can be detected when Surveys are performed from the exterior of the building.

Our Infrared Surveys are performed by Certified Thermographers using a portable thermal imaging system called FLIR ThermaCAM. This equipment detects infrared energy emitted from an object and converts it into an image which is displayed on a monitor screen.

Because infrared energy is a direct and proportional function of temperature, the displayed image is designed to depict temperature levels on the monitor in either black and white or color. In the black and white mode, the thermal image looks very similar to a black and white television picture where the various shades of gray represent different temperature levels throughout the chosen temperature range. Black corresponds to a lower temperature, and white indicates a higher temperature. In the color mode, colors are matched to the reference temperature bar at the side of the Thermogram. Colors which appear closer to the top of the reference bar correspond to higher temperatures. Colors appearing closer to the bottom of the reference bar correspond to lower temperatures.

Our FLIR equipment has the capability to sense object temperatures from -10° Celsius to +1500° Celsius, with sensitivity of as little as 0.07 Celsius degrees.

When viewed through the infrared imager, air infiltration/exfiltration generally appear as amorphous thermal signatures appearing around windows, doors and other penetrations or openings in the building envelope. Conduction heat losses generally appear as amorphous or square edge patterns throughout the building envelope.

Once the location of a problem area has been noted, the thermal image displayed on the FLIR monitor is recorded to electronic media. Thermograms are then made from the stored images and incorporated into our report, along with a description of the problem area.

JERSEY INFRARED CONSULTANTS

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March 6, 2019

Schneider Electric USA, Inc.
Energy Solutions Group
6800 Paragon Place, Suite 470
Richmond, VA 23230

THERMOGRAPHER'S COMMENTS
OUR JOB NUMBER: 19-3172.4

On March 4, 2019, an Infrared Building Envelope Survey was performed at the Buena Regional School District, Buena Regional Middle School facility located at 175 Weymouth Road in Buena, NJ.

The Survey covered the underside of the roof decking of the building. The Survey was conducted from the interior of the subject building in an attempt to locate areas of moisture infiltration.

The Survey was performed by an Infraspection Institute Certified Infrared Thermographer using a FLIR GF-309, Thermal Imaging System, Serial #44600810.

WEATHER CONDITIONS: March 4, 2019, daytime skies were mostly sunny with highs in the low 40's. Evening skies were partly cloudy with lows in the high 20's. Winds were calm at 0 to 5 miles per hour.

The latest precipitation prior to the start of our Survey occurred on March 3, 2019.

FINDINGS: All thermal data collected during our Survey were stored on digital media. Thermograms were then made from the digital media and appear on the following pages along with a brief description of problem areas.

The relative location of Thermograms were also marked on the enclosed drawing.

RECOMMENDATIONS: We recommend that the cause of all thermal anomalies be investigated and that the proper corrective measures be taken. A follow-up Survey should then be performed once repairs have been made.

Please note that all inspections are performed with the building in an "as found" condition. No attempt is made to verify that the building is under normal operating condition at the time of the Infrared Survey.

This report depicts thermal patterns in the building envelope at the time of the Infrared Survey. No information regarding the structural integrity of the building or the building components is provided or implied in this report.

Robert K. Weigle
Level III
Infraspection Institute Certified Infrared Thermographer #6175

RKW:clt

Schneider Electric USA, Inc.

TABLE OF CONTENTS
OUR JOB NUMBER: 19-3172.4

PICTURE	LOCATION	EQUIPMENT
1	302	Underside of Roof Decking
2	304	Underside of Roof Decking
3	327	Block Wall Above Ceiling at Steel
4	327	Underside of Roof Decking
5	327	Underside of Roof Decking
6	209	Underside of Roof Decking
7	207	Underside of Roof Decking
8	126	Underside of Roof Decking
9	100 Wing, Odd Side	Underside of Roof Decking
10	204	Underside of Roof Decking
11	Youth Center	Underside of Roof Decking
12	305	Underside of Roof Decking

Schneider Electric USA, Inc.

TABLE OF CONTENTS
OUR JOB NUMBER: 19-3172.4

PICTURE	LOCATION	EQUIPMENT
13	Hallway Outside of Nurse's Office	Underside of Roof Decking
14	Gym Ceiling	Underside of Roof Decking
15	503 Storage	Block Wall Above Ceiling at Steel

Area/Picture No. 1 **Job No.** 19-3172.4 **Date** 3/5/19

Location 302

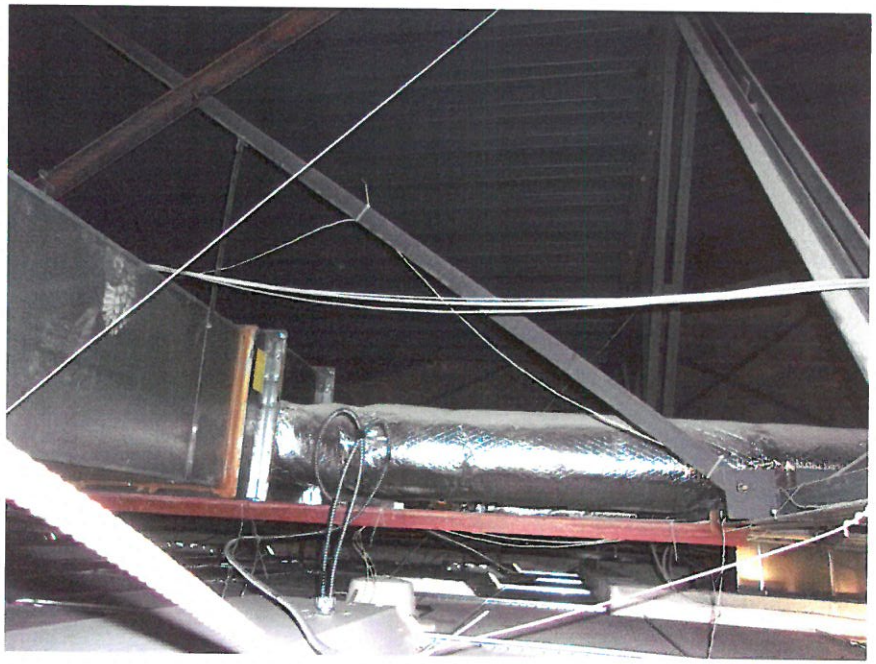
Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

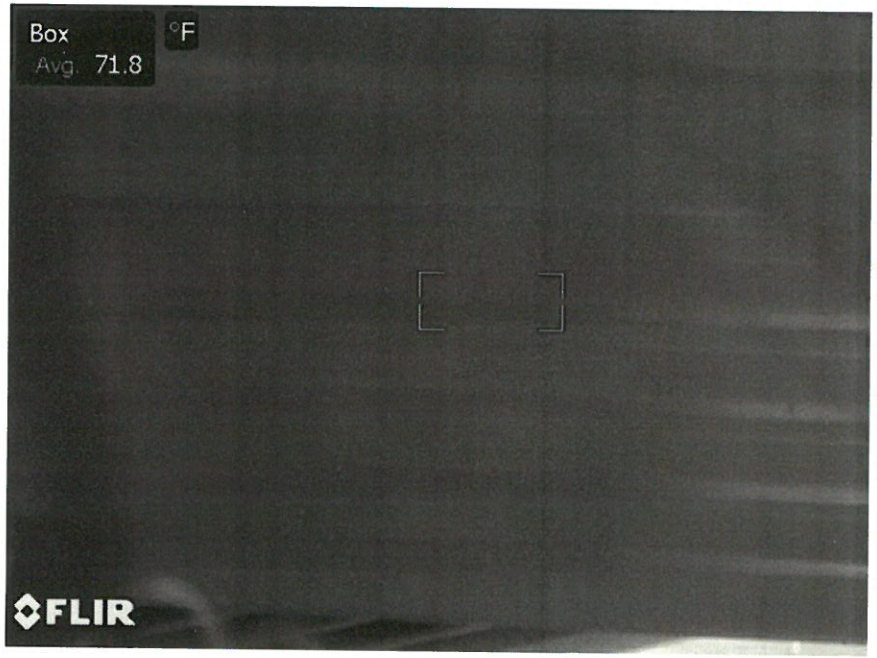
Ambient Temp 68°F

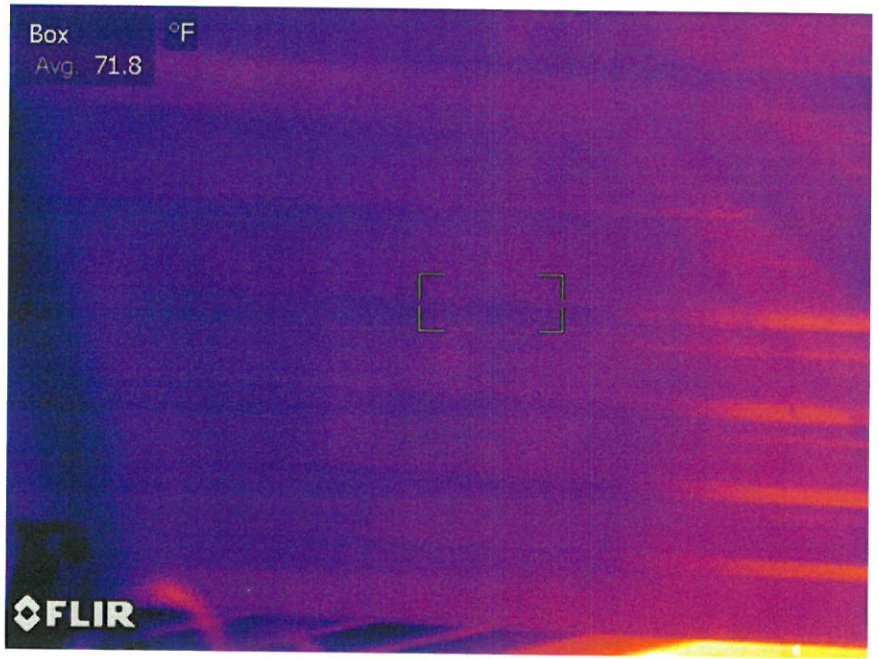
Comments Thermogram shows normal thermal pattern.



Priority

Repair Check Date





Area/Picture No. 2 **Job No.** 19-3172.4 **Date** 3/5/19

Location 304

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

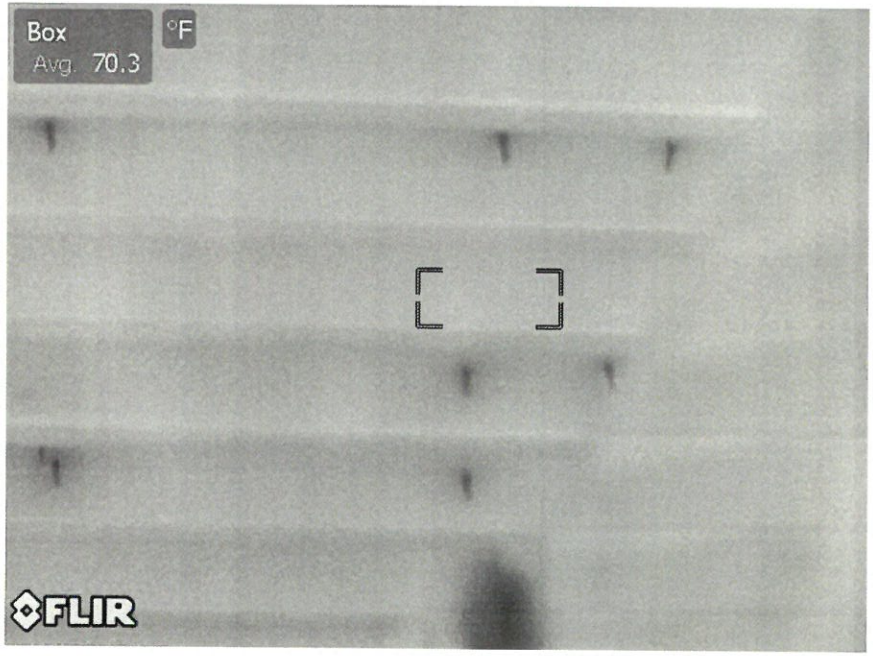
Ambient Temp 68°F

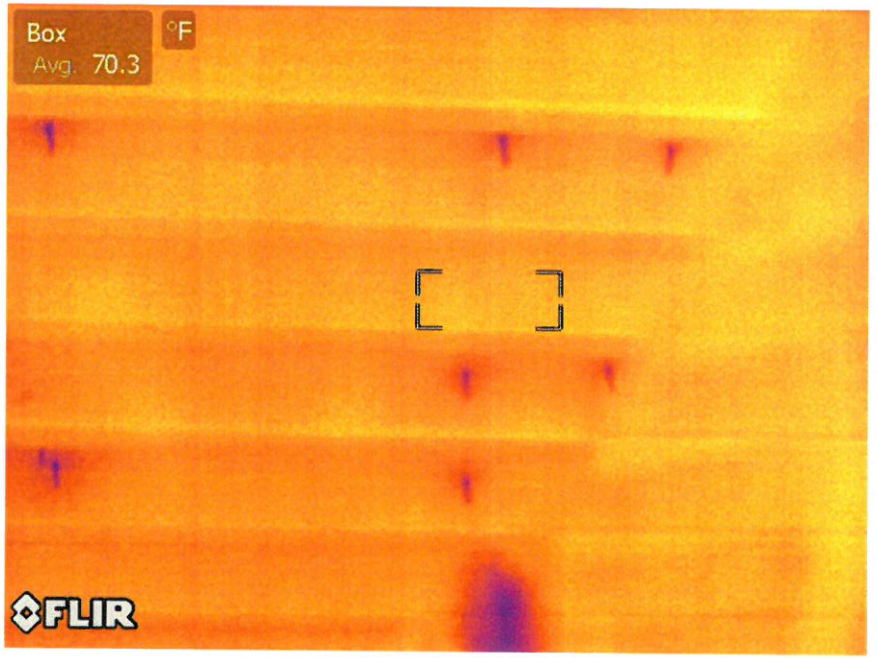
Comments Thermogram shows normal thermal pattern.



Priority

Repair Check Date





Area/Picture No. 3 **Job No.** 19-3172.4 **Date** 3/5/19

Location 327

Equipment Block Wall Above Ceiling at Steel

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

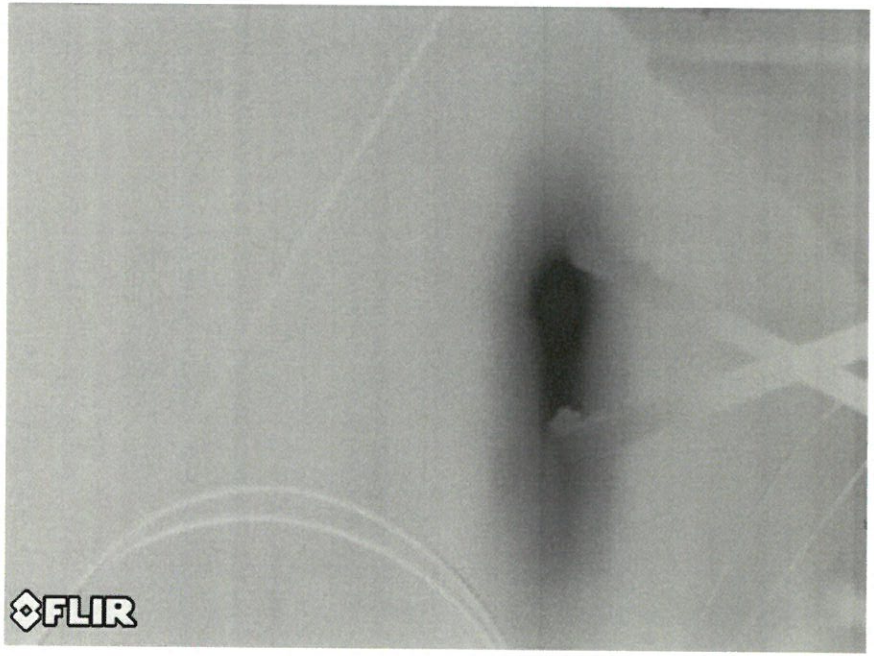
Ambient Temp 68°F

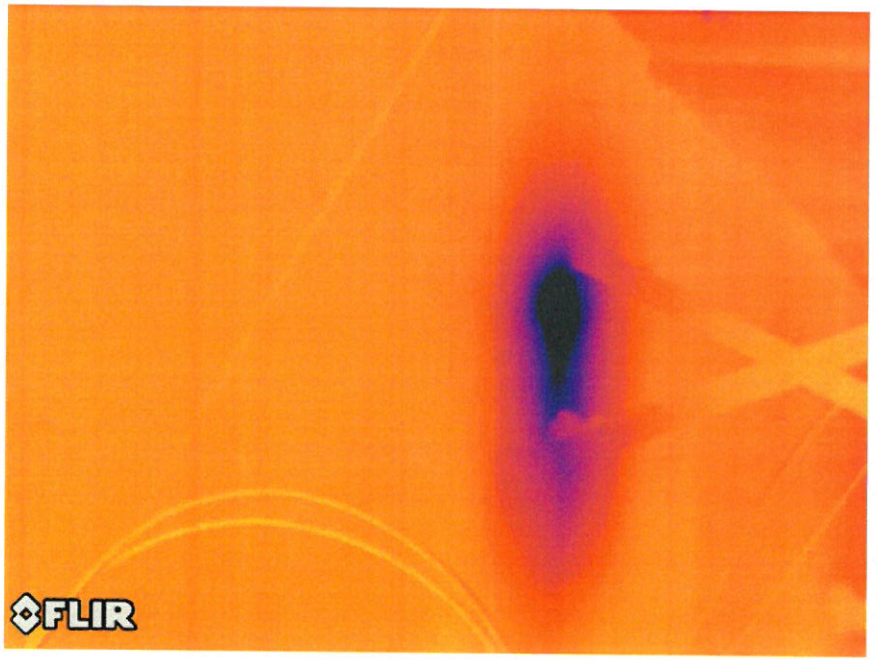
Comments Thermogram shows abnormal thermal pattern on interior wall, may be caused by moisture.



Priority

Repair Check Date





Area/Picture No. 4 **Job No.** 19-3172.4 **Date** 3/5/19

Location 327

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

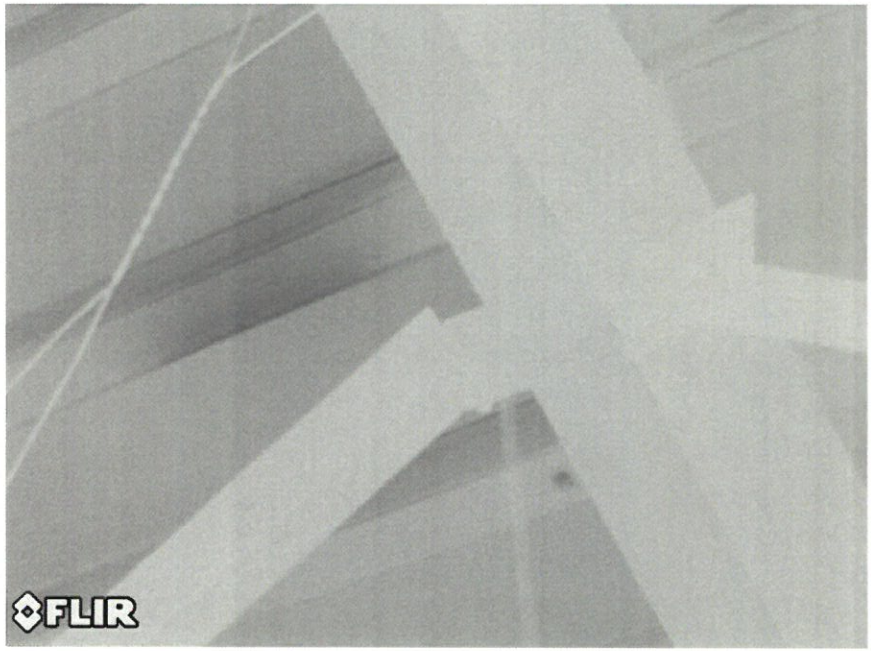
Ambient Temp 68°F

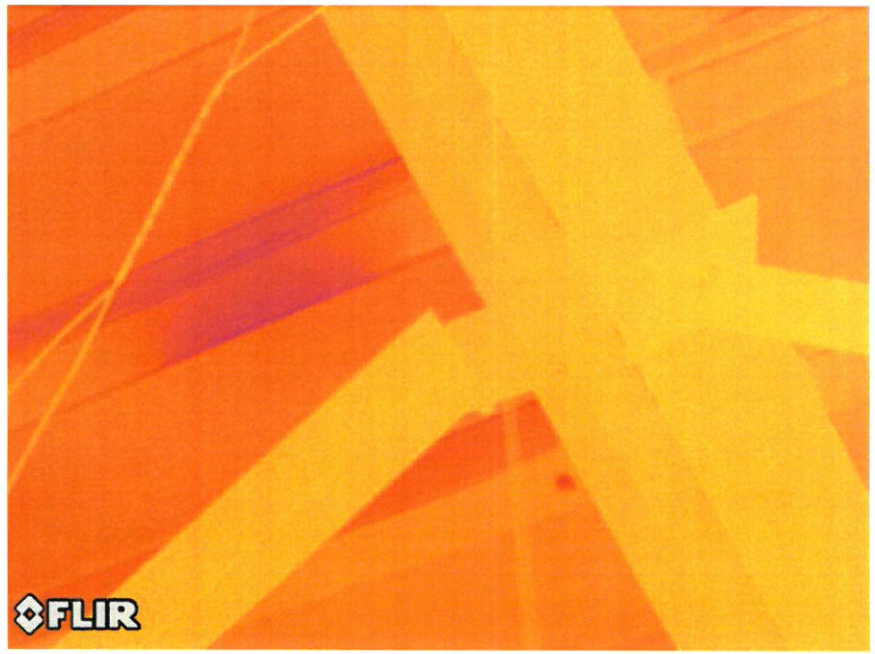
Comments Thermogram shows abnormal thermal pattern on decking, may be caused by moisture.



Priority

Repair Check Date





Area/Picture No. 5 **Job No.** 19-3172.4 **Date** 3/5/19

Location 327

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

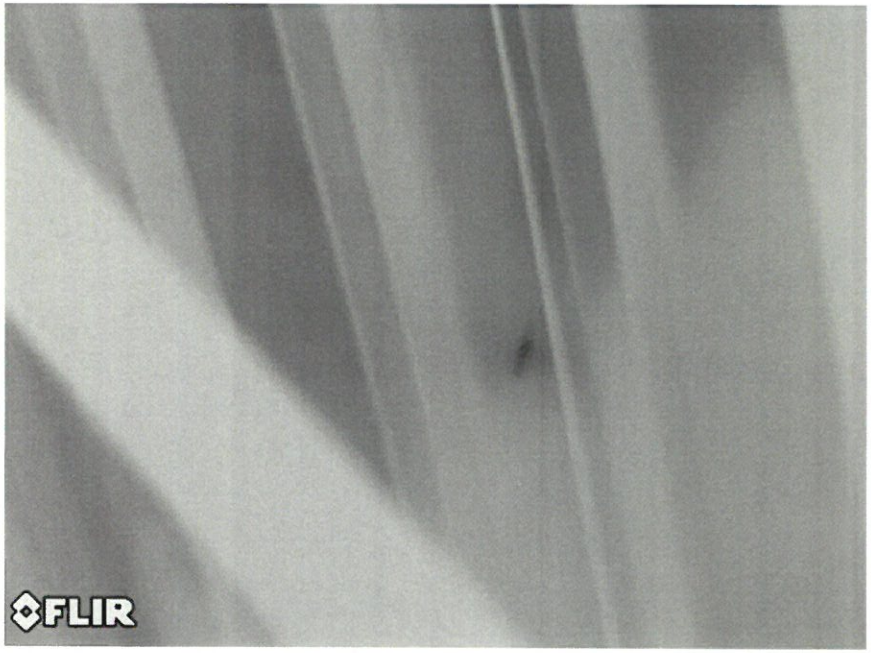
Ambient Temp 68°F

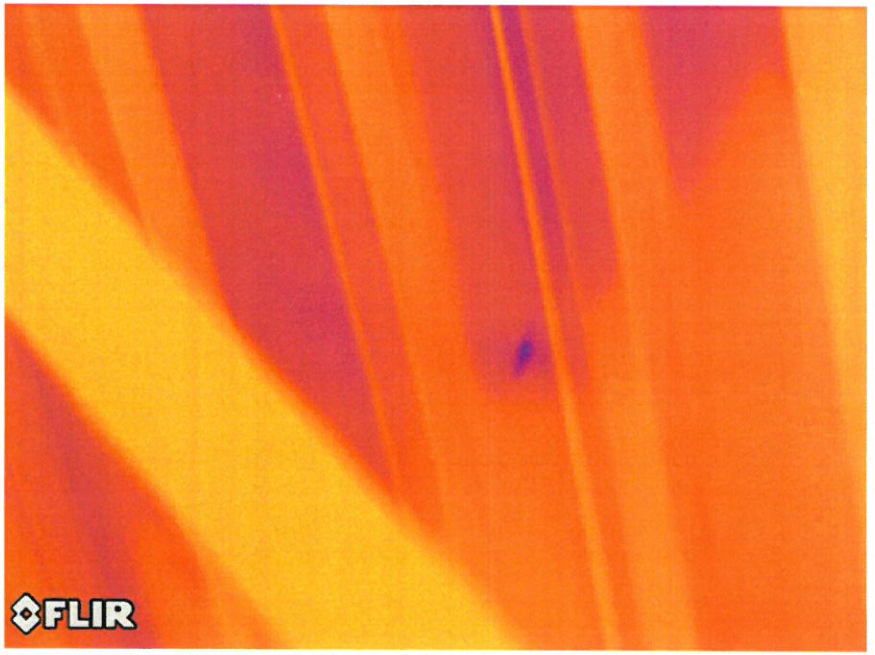
Comments Thermogram shows abnormal thermal pattern on decking, may be caused by moisture.



Priority

Repair Check Date





Area/Picture No. 6 **Job No.** 19-3172.4 **Date** 3/5/19

Location 209

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

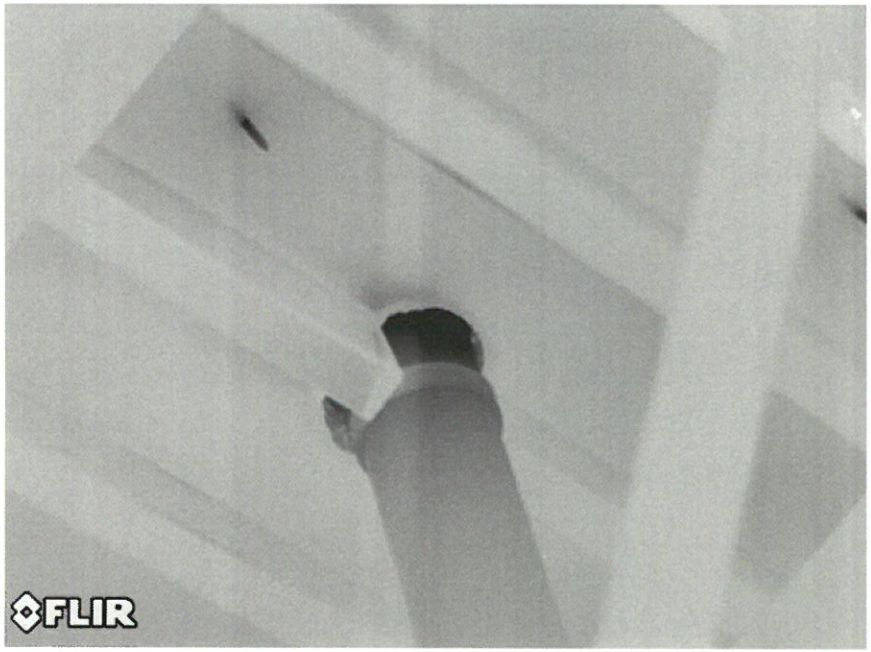
Ambient Temp 68°F

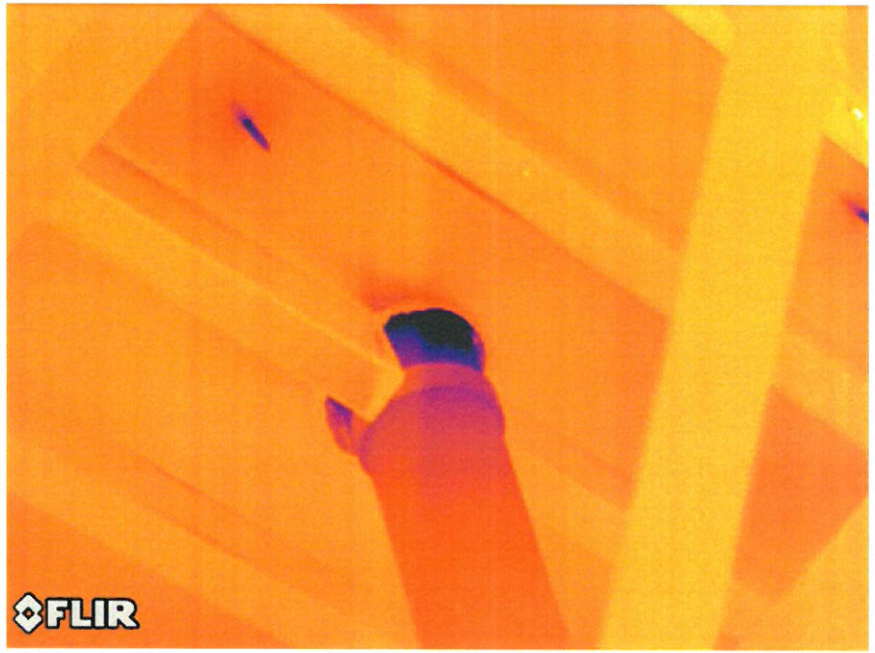
Comments Thermogram shows thermal pattern typical of cold air infiltration at penetration of black pipe.



Priority

Repair Check Date





Area/Picture No. 7 **Job No.** 19-3172.4 **Date** 3/5/19

Location 207

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

Ambient Temp 68°F

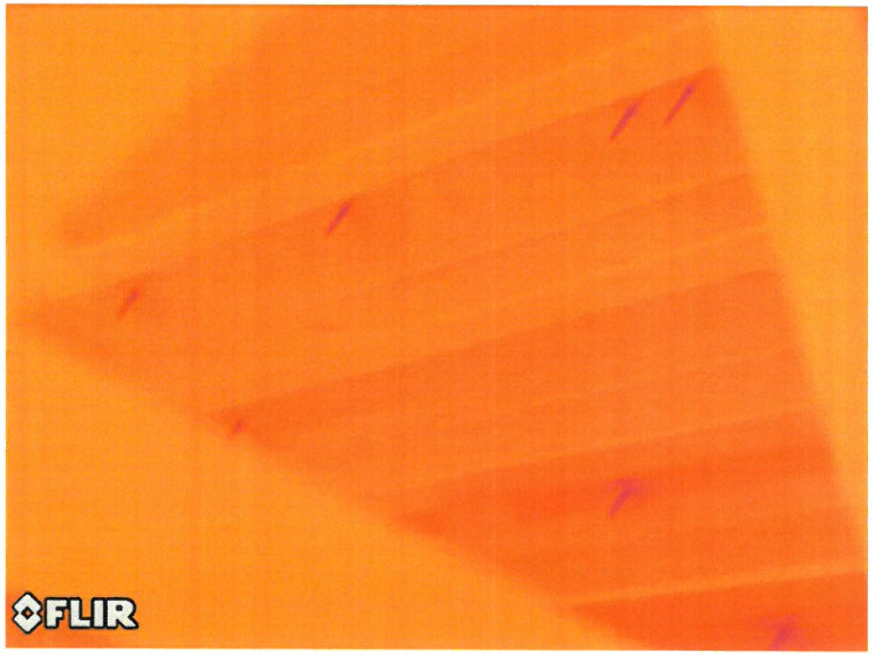
Comments Thermogram shows normal thermal pattern.



Priority

Repair Check Date





Area/Picture No. 8 **Job No.** 19-3172.4 **Date** 3/5/19

Location 126

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

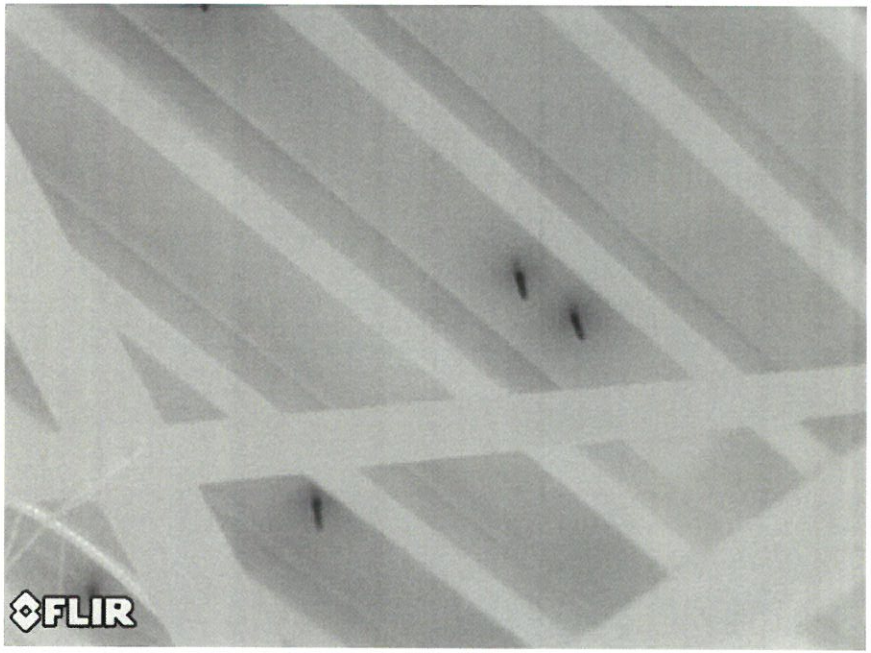
Ambient Temp 68°F

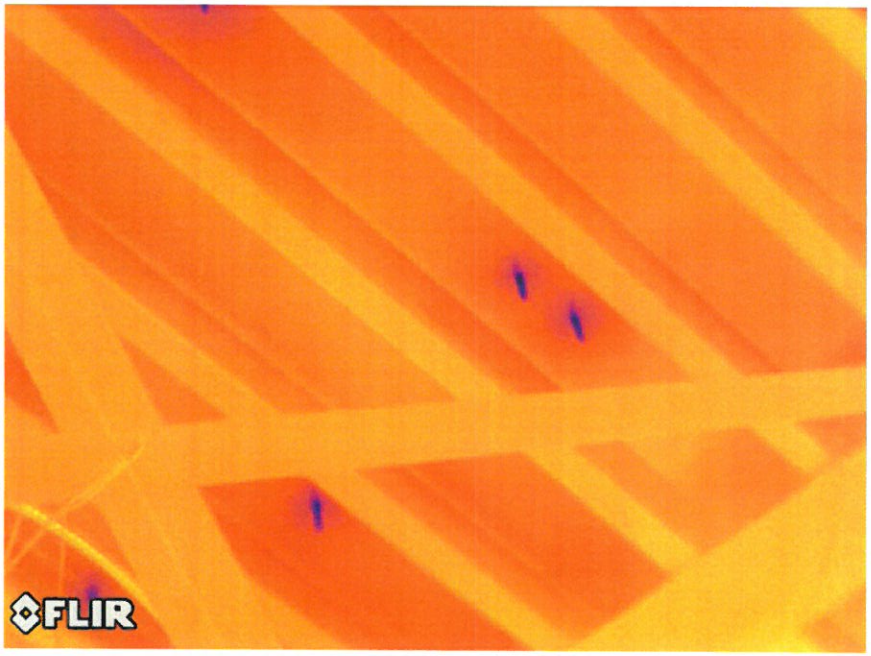
Comments Thermogram shows normal thermal pattern.



Priority

Repair Check Date





Area/Picture No. 9 **Job No.** 19-3172.4 **Date** 3/5/19

Location 100 Wing, Odd Side

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

Ambient Temp 68°F

Comments Thermogram shows normal thermal pattern.



Priority

Repair Check Date





Area/Picture No. 10 **Job No.** 19-3172.4 **Date** 3/5/19

Location 204

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

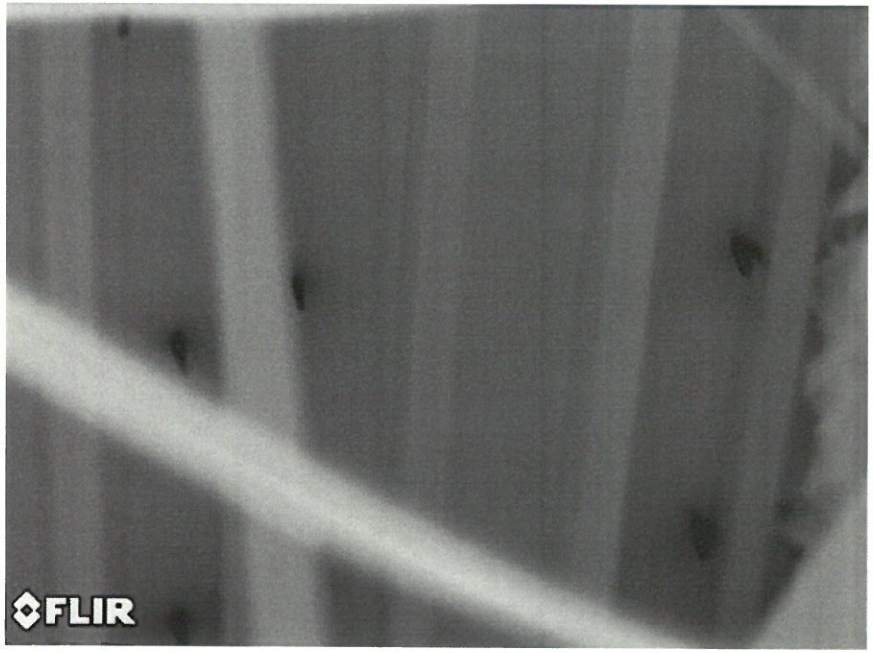
Ambient Temp 68°F

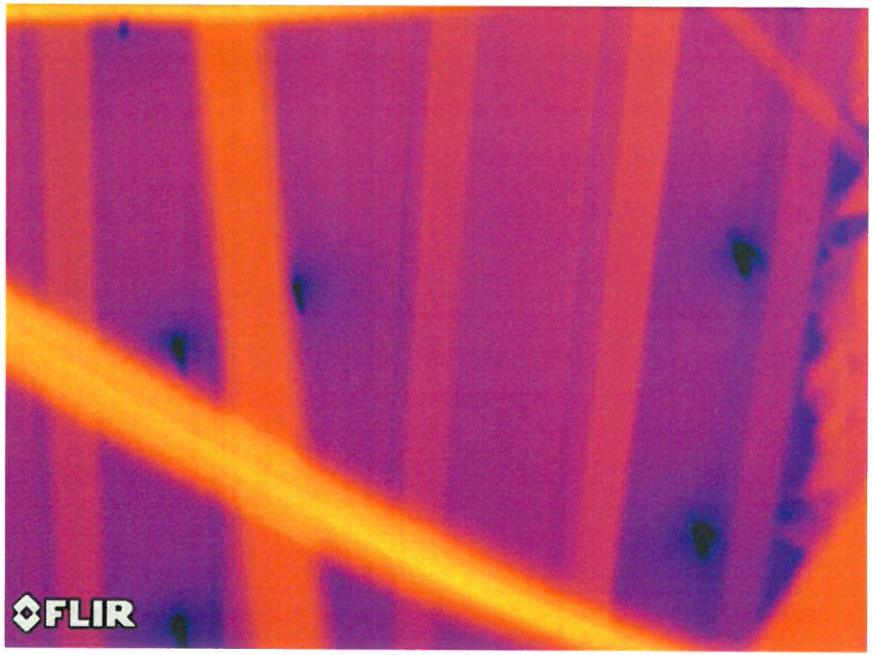
Comments Thermogram shows normal thermal pattern.

Priority

Repair Check Date







Area/Picture No. 11 **Job No.** 19-3172.4 **Date** 3/5/19

Location Youth Center

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

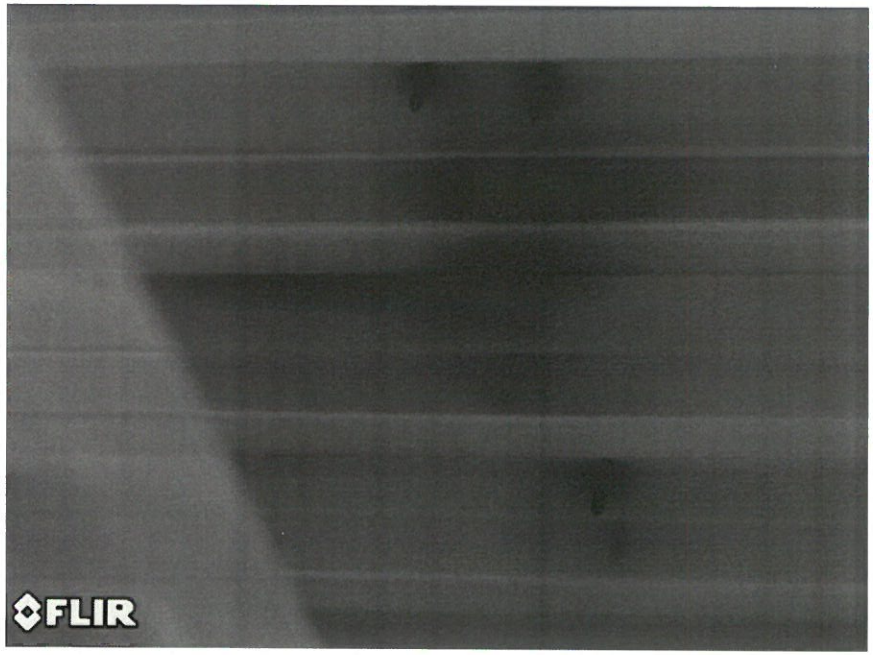
Ambient Temp 68°F

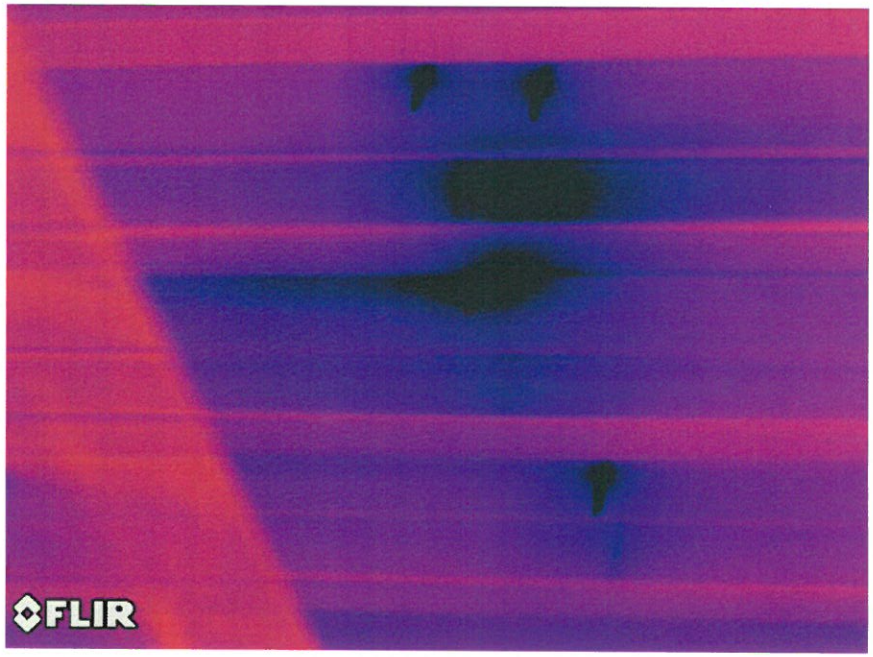
Comments Thermogram shows abnormal thermal pattern on decking, may be caused by moisture.

Priority

Repair Check Date







Area/Picture No. 12 **Job No.** 19-3172.4 **Date** 3/5/19

Location 305

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

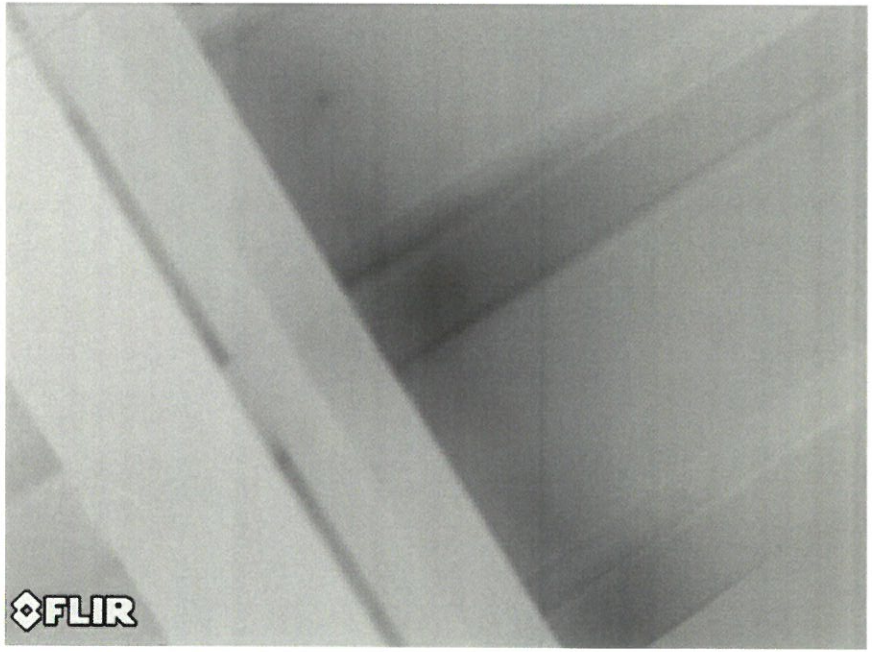
Ambient Temp 68°F

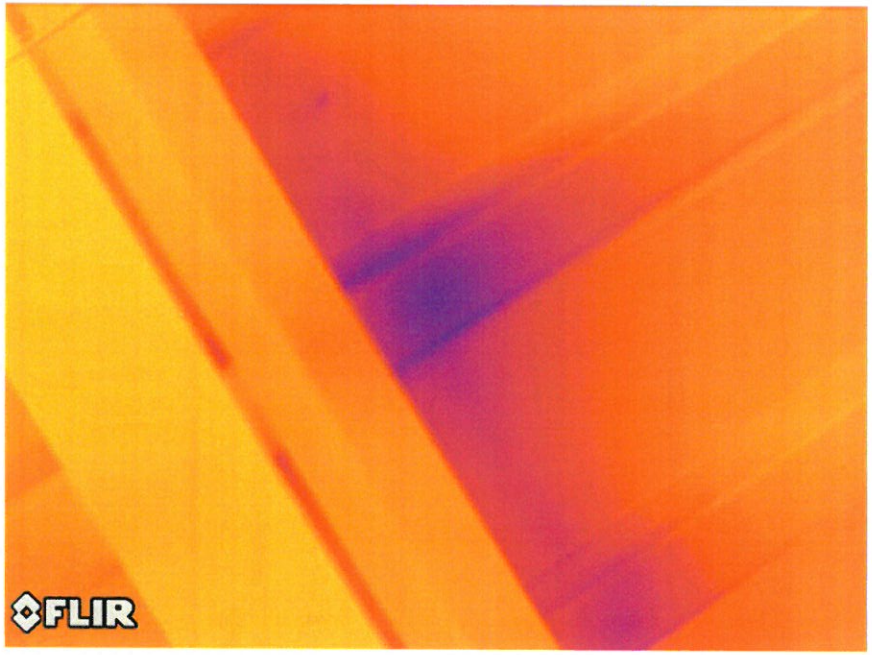
Comments Thermogram shows abnormal thermal pattern on decking, may be caused by moisture.



Priority

Repair Check Date





Area/Picture No. 13 **Job No.** 19-3172.4 **Date** 3/5/19

Location Hallway Outside of Nurse's Office

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

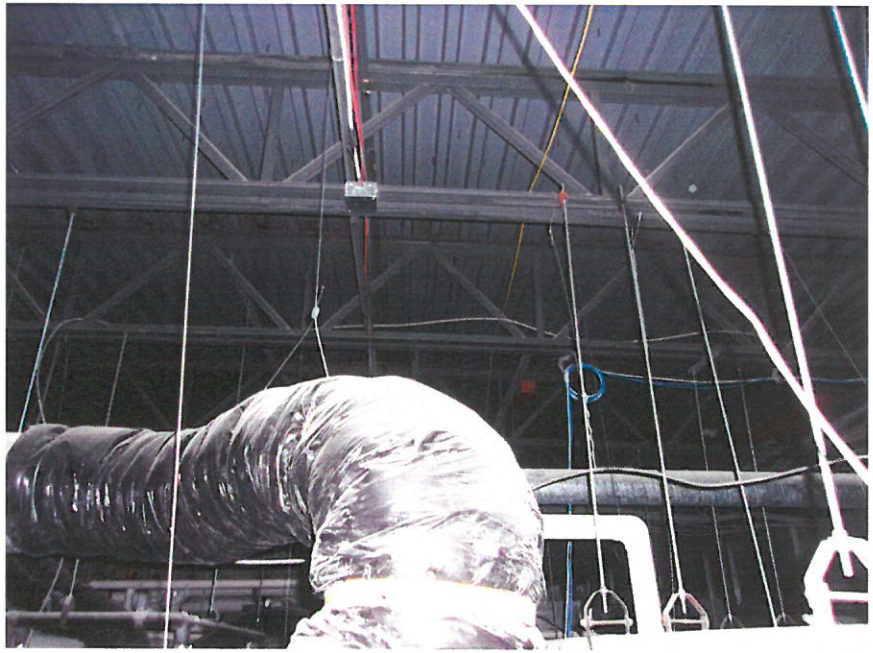
Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

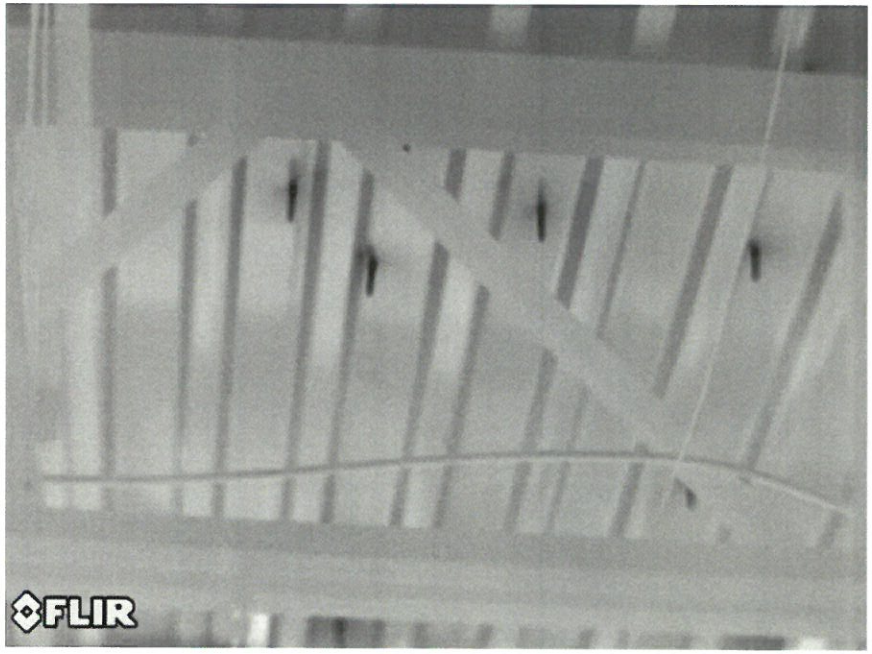
Ambient Temp 68°F

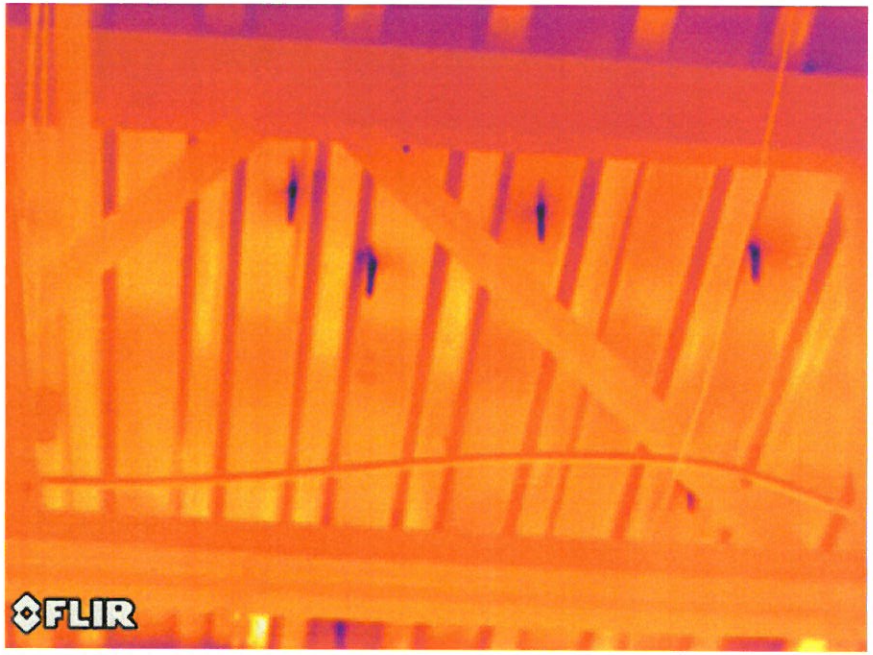
Comments Thermogram shows normal thermal pattern.

Priority

Repair Check Date







Area/Picture No. 14 **Job No.** 19-3172.4 **Date** 3/5/19

Location Gym Ceiling

Equipment Underside of Roof Decking

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

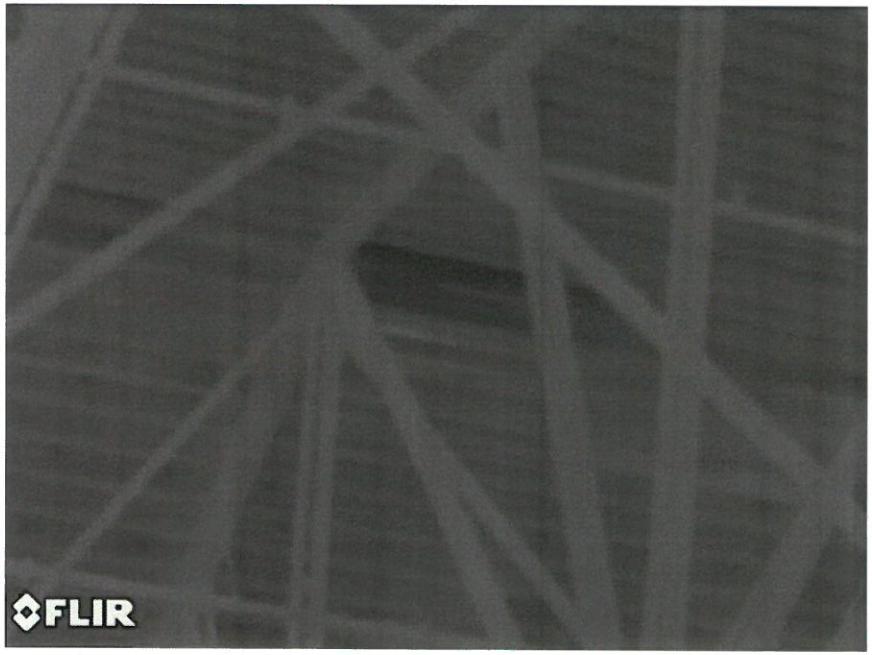
Ambient Temp 68°F

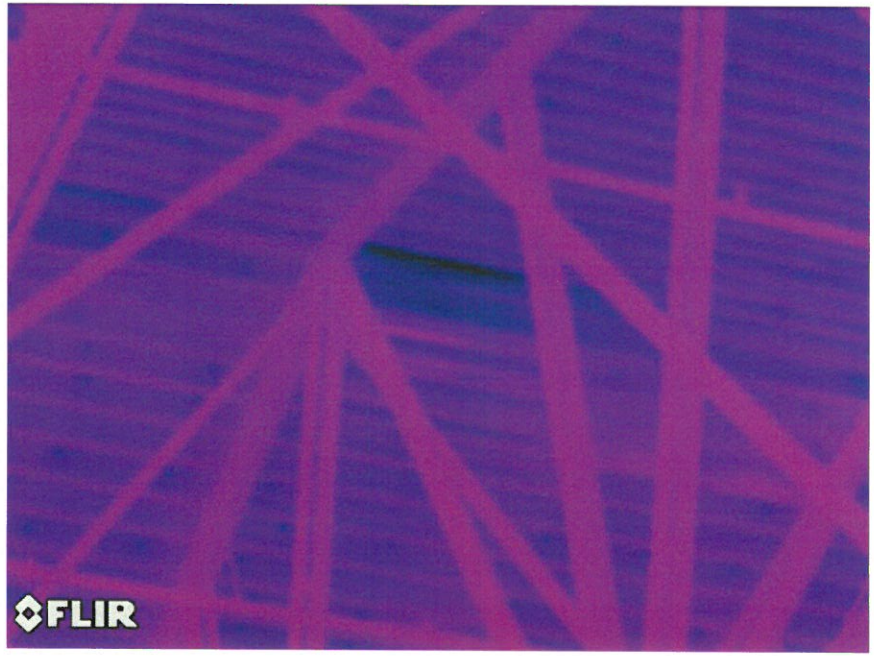
Comments Thermogram shows thermal pattern typical of cold air infiltration at peak of roof.



Priority

Repair Check Date





Area/Picture No. 15 **Job No.** 19-3172.4 **Date** 3/5/19

Location 503 Storage

Equipment Block Wall Above Ceiling at Steel

Wind Speed N/A **Wind From** N/A **Sky** N/A

Emiss. 1.00 **B/G** N/A° **Distance** 20' **Lens** 1x

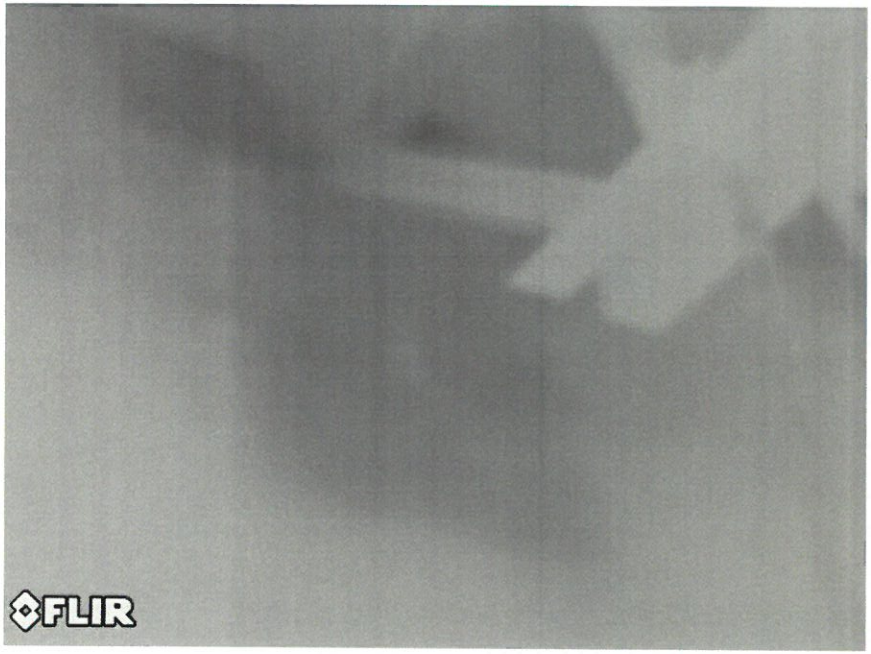
Ambient Temp 68°F

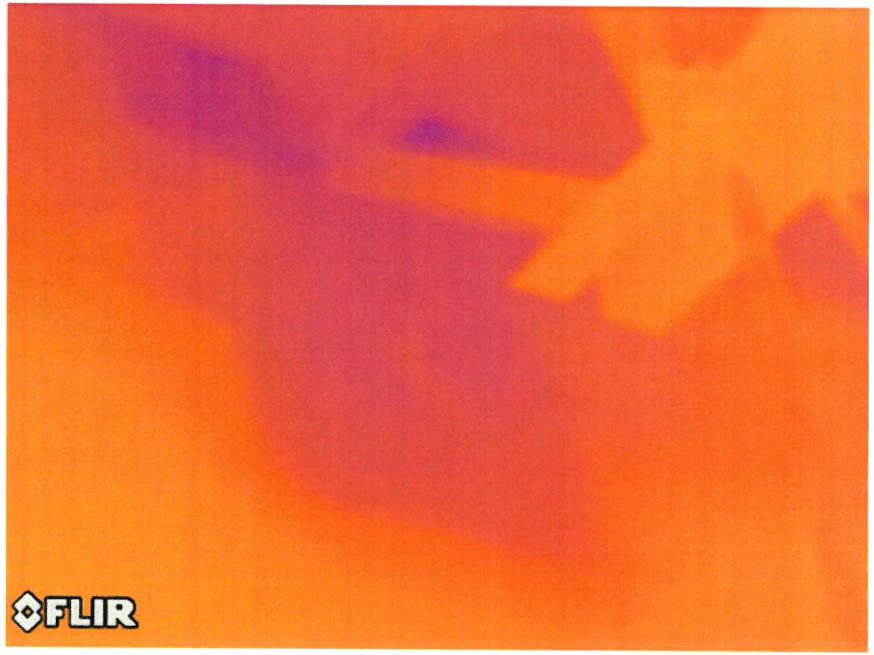
Comments Thermogram shows abnormal thermal pattern on interior wall, may be caused by moisture.



Priority

Repair Check Date



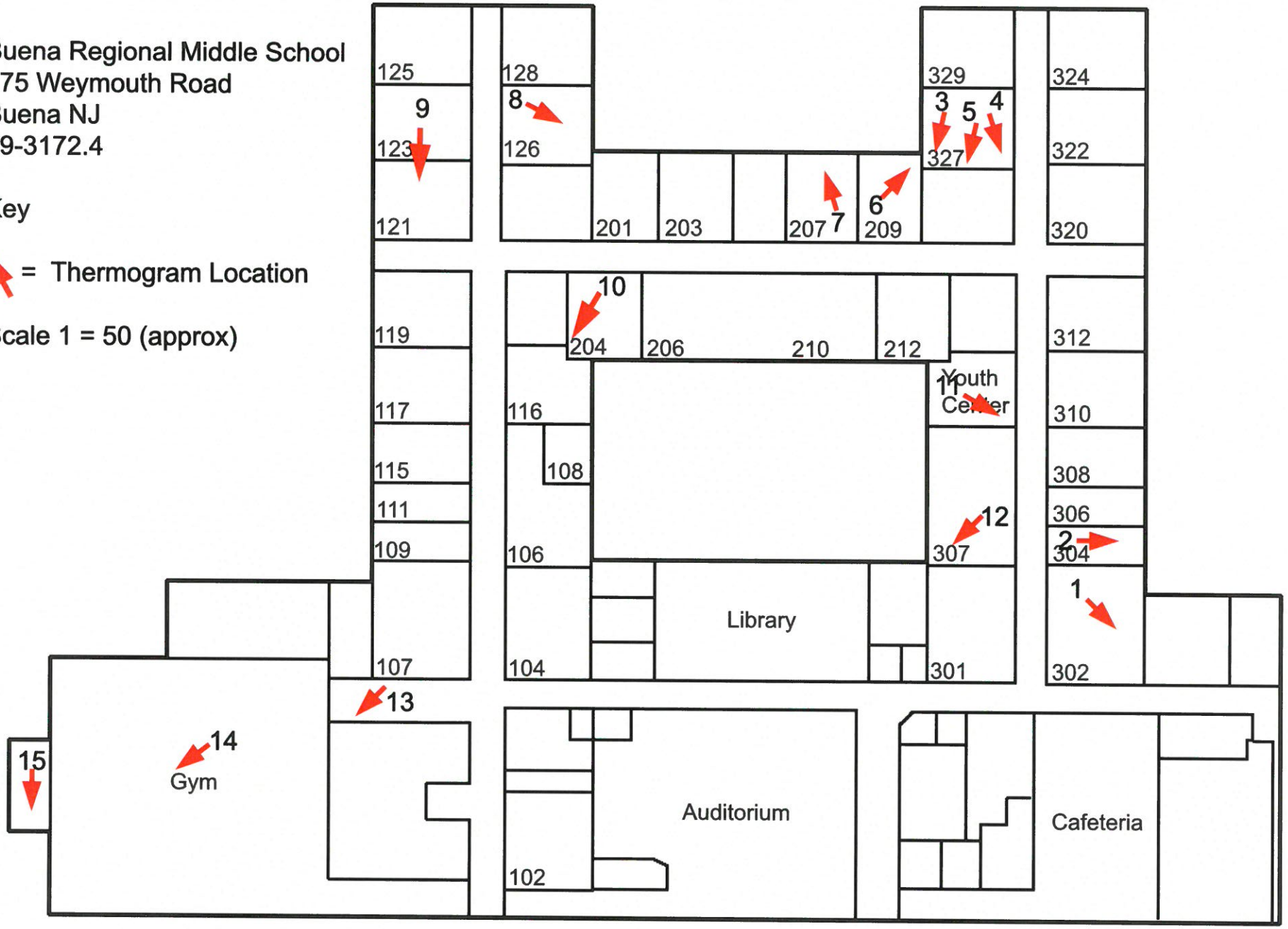


Buena Regional Middle School
175 Weymouth Road
Buena NJ
19-3172.4

Key

= Thermogram Location

Scale 1 = 50 (approx)



7.7 Rebate Estimates

7.8 Operational and Maintenance Costs

BUENA REGIONAL SCHOOL DISTRICT

Administrative Office:
914 Main Avenue, Richland, NJ 08350
Mailing Address:
P.O. Box 309, Buena, NJ 08310
Tel (856) 697-0800 • Fax (856) 697-4963

The Board of Education is Tax Exempt under Section 9 (a) (1) of Chapter 30 New Jersey Laws of 1966.

ALL BILLS MUST BE ITEMIZED

BUDGET YEAR
2017->2018

VENDOR NO.
5027

PURCHASE ORDER NUMBER
18-01998
THIS NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES AND CORRESPONDENCE.

DATE:
05/17/2018

VENDOR:

CM3 BUILDING SOLUTIONS
185 COMMERCE DRIVE
SUITE 1
FORT WASHINGTON, PA 19034

SHIP TO:

Attn To : John Vargas
Buena Regional Board Office
914 Main Ave.
Richland, NJ 08350

REQUISITION NUMBER	NAME

QUANTITY ORDERED	CATALOG / UNIT	ITEM DESCRIPTION / ACCOUNT NUMBER	UNIT PRICE	TOTAL AMOUNT
*1	EA	Repair of heating coil at high school as per work order 112525 & 99743. Invoice #23447. Repair of heating valve actuator at high school as per work order 19437 - Invoice #23330. Repair of actuator in room 104 at high school as per work order #19740 - invoice #23332. Repair of hot water boilers at high school as per work order 20755 - Invoice #23945.	2,536.66	2,536.66
1	Each	Repair of actuators at middle school in room 212, room 327, room 104, room 126, room 405, room 405F, media center unit, room 312 as per work order 19695 - Invoice #23331. 7243/11-000-261-420-01-00-000- ($2,536.66) 7250/11-000-261-420-15-00-000-	1,305.50	1,305.50

CLAIMANT'S SIGNED DECLARATION

I do solemnly declare and certify that the goods or services itemized in the above bill have been delivered or rendered, that no bonus or rewards has been given or received by any person or person with the knowledge of the deponent in connection with the claim, and that the bill is true and correct.

X
SIGNATURE

OFFICIAL POSITION DATE

PAYMENT AUTHORIZED

The above claim was ordered paid at a meeting of the Buena Board of Education.

DATE PAID CHECK NO.

The materials, supplies or services as shown herein were received and are satisfactory.

John A. Vargas 5/30/18
RECEIVED BY DATE

NO ORDER VALID UNLESS SIGNED BY THE BOARD SECRETARY

SUPERINTENDENT

BOARD SECRETARY

NUMERICAL COPY

MGL PRINTING SOLUTIONS
908-665-1999 M117-01 Q

BUENA REGIONAL SCHOOL DISTRICT

Administrative Office:
914 Main Avenue, Richland, NJ 08350
Mailing Address:
P.O. Box 309, Buena, NJ 08310
Tel (856) 697-0800 • Fax (856) 697-4963

The Board of Education is Tax Exempt under Section 9 (a) (1) of Chapter 30 New Jersey Laws of 1966.

ALL BILLS MUST BE ITEMIZED

BUDGET YEAR
2017->2018

VENDOR NO.
5027

PURCHASE ORDER NUMBER
18-01663
THIS NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES AND CORRESPONDENCE.

DATE:
03/02/2018

VENDOR:

CM3 BUILDING SOLUTIONS
185 COMMERCE DRIVE
SUITE 1
FORT WASHINGTON, PA 19034

SHIP TO:

Attn To : John Vargas
Buena Regional Board Office
914 Main Ave.
Richland, NJ 08350

REQUISITION NUMBER	NAME

QUANTITY ORDERED	CATALOG / UNIT	ITEM DESCRIPTION / ACCOUNT NUMBER	UNIT PRICE	TOTAL AMOUNT
*1	Each	Service call for kitchen and main office with leaking in the piping as per invoice #21924.	1,698.00	1,698.00
*1	Each	Repair of hot water heater/boilers at high school as per invoice #21925.	462.00	462.00
*1	Each	Repair of freeze pump on roof top at high school as per invoice #21926.	753.60	753.60
1	Each	Repair of heaters overheating at BRMS as per invoice #21929.	1,119.00	1,119.00
		7243/11-000-261-420-01-00-000- ($2,913.60) 7250/11-000-261-420-15-00-000- ($1,119.00)		$4,032.60

CLAIMANT'S SIGNED DECLARATION

I do solemnly declare and certify that the goods or services itemized in the above bill have been delivered or rendered, that no bonus or rewards has been given or received by any person or person with the knowledge of the deponent in connection with the claim, and that the bill is true and correct.

X
SIGNATURE

OFFICIAL POSITION DATE

PAYMENT AUTHORIZED

The above claim was ordered paid at a meeting of the Buena Board of Education.

DATE PAID CHECK NO.

The materials, supplies or services as shown herein were received and are satisfactory.

John A. Vargas 3/8/18
RECEIVED BY DATE

NO ORDER VALID UNLESS SIGNED BY THE BOARD SECRETARY

SUPERINTENDENT

BOARD SECRETARY

NUMERICAL COPY

MGL PRINTING SOLUTIONS
908-665-1999 M117-01 Q

BUENA REGIONAL SCHOOL DISTRICT

Administrative Office:
914 Main Avenue, Richland, NJ 08350
Mailing Address:
P.O. Box 309, Buena, NJ 08310
Tel (856) 697-0800 • Fax (856) 697-4963

The Board of Education is Tax Exempt under Section 9 (a) (1) of Chapter 30 New Jersey Laws of 1966.

ALL BILLS MUST BE ITEMIZED

BUDGET YEAR (13)
2018->2019

VENDOR NO.
5027

PURCHASE ORDER NUMBER
19-00965
THIS NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES AND CORRESPONDENCE.

DATE:
10/10/2018

VENDOR:

CM3 BUILDING SOLUTIONS
185 COMMERCE DRIVE
SUITE 1
FORT WASHINGTON, PA 19034

SHIP TO:

Attn To : John Alex Vargas
Buena Regional High School
125 Weymouth Road
Buena, NJ 08310

REQUISITION NUMBER	NAME

QUANTITY ORDERED	CATALOG / UNIT	ITEM DESCRIPTION / ACCOUNT NUMBER	UNIT PRICE	TOTAL AMOUNT
1	Each	PROVIDE THE FOLLOWING SERVICES: CM3 SHALL PERFORM SERVICES ON THE HIGH SCHOOL BOILERS AND SEASONAL STARTUP SERVICES. THE SERVICES PERFORMED ARE ACCORDING THE ATTACHED BOILER CHECKOUT SHEET. THE BOILER REPAIR SERVICES INCLUDE: - REPAIRS TO THE BOILER NIPPLES - REPAIR TO THE MILANESI ES SECTIONAL BOILER 7241/11-000-261-420-00-00-000- ($6,220.00)	6,220.00	6,220.00 $6,220.00

CLAIMANT'S SIGNED DECLARATION

I do solemnly declare and certify that the goods or services itemized in the above bill have been delivered or rendered, that no bonus or rewards has been given or received by any person or person with the knowledge of the deponent in connection with the claim, and that the bill is true and correct.

X
SIGNATURE

OFFICIAL POSITION DATE

PAYMENT AUTHORIZED

The above claim was ordered paid at a meeting of the Buena Board of Education.

DATE PAID CHECK NO.

The materials, supplies or services as shown herein were received and are satisfactory.

John A. Vargs 10/29/18
RECEIVED BY DATE

NO ORDER VALID UNLESS SIGNED BY THE BOARD SECRETARY

SUPERINTENDENT

Pasquale Yacovelli
BOARD SECRETARY

NUMERICAL COPY

MGL PRINTING SOLUTIONS
908-665-1999 M117-01 Q

Copy of a Purchase Order. This is not a valid Purchase Order

PURCHASE ORDER PREVIEW

v.013014

VENDOR NO. 7259

P.O. NUMBER
18-00498

DATE: 07/28/2017

VENDOR:

ELECTRI-TECH INC.
1334 MAYS LANDING ROAD
FOLSOM, NJ 08037

SHIP TO:

Attn To : Joe Biluck
Buena Regional Board Office
914 Main Ave.
Richland, NJ 08350

CONTROL NUMBER	ORDER DESCRIPTION

QUANTITY ORDERED	CATALOG / UNIT	ITEM DESCRIPTION / ACCOUNT NUMBER	AGGREGATION	UNIT PRICE	EXTENSION
1	Each	Estimated Electrical repairs for 2017/2018 school year for High School, BRMS, Cleary, Collings Lakes, Milanesi and BOE.		31,000.0000	31,000.00
		Outstanding Transactions :			
		11-000-261-420-05-00-000- ($4,898.40)	Milanesi HS		
		11-000-261-420-01-00-000- ($3,014.20)			
		11-000-261-420-03-00-000- ($3,012.40)			
		11-000-261-420-02-00-000- ($2,898.87)			
		11-000-261-420-15-00-000- ($2,680.37)			
		11-000-261-420-08-00-000- ($178.80)			
					$31,000.00

PO Type **Other,Exc $36,277.37**

User **BCAIRONE**

Commit Date **07/31/2017**

Copy of a Purchase Order. This is not a valid Purchase Order

		Proposed Energy Savings Plan	Operational and Maintenance Savings	Methodology
		Learning Environment		
1	HS	LED Lighting Improvements	$ 4,716	Calculated
1	MS	LED Lighting Improvements	$ 4,392	Calculated
1	CL	LED Lighting Improvements	$ 1,854	Calculated
1	CO	LED Lighting Improvements	$ 48	Calculated
2	HS	Air Sealing Improvements	$ -	
2	MS	Air Sealing Improvements	$ -	
2	CL	Air Sealing Improvements	$ -	
2	CO	Air Sealing Improvements	$ -	
2	ML	Air Sealing Improvements	$ -	
		Building Automation System		
3	HS	Building Management System Improvements	$ -	
3	MS	Building Management System Improvements	$ -	
3	CL	Building Management System Improvements	$ -	
3	CO	Building Management System Improvements	$ -	
3	ML	Building Management System Improvements	$ -	
4	All	Staff Training for Building Management Systems	$ -	
5	All	Building Pressure Sensors	$ -	
6	All	Humidity Sensors	$ -	
7	MS	Demand Controlled Ventilation	$ -	
7	ML	Demand Controlled Ventilation	$ -	
8	ML	Replace Existing Pneumatics with DDC	$ -	
		Humidity Control		
9	CL	Reheat Coils	$ -	
		Efficiency		
10	HS	Water Fixture Improvements	$ -	
11	HS	Pipe Insulation	$ -	
11	MS	Pipe Insulation	$ -	
11	ML	Pipe Insulation	$ -	
12	ALL	Walk-in Refrigeration Controls	$ -	
13	HS	High Efficiency Transformers	$ -	
13	CO	High Efficiency Transformers	$ -	
14	HS	Kitchen Hood Blocking	$ -	
14	CO	Kitchen Hood Blocking	$ -	
15	CL	Verify ERV Operation	$ -	
		Infrastructure		
16	HS	Hot Water Boiler Replacements	$ 15,318	Estimated
16	ML	Hot Water Boiler Replacements	$ 9,191	Estimated
17	HS	Hot Water VFDs	$ -	
18	HS	Domestic Hot Water Heater Replacement	$ 2,525	Estimated at less than 2% of replacement cost.
19	HS	Chiller Replacement	$ 1,460	Estimated at less than 2% of replacement cost.
20	CL	Replace Split Systems	$ -	
19	HS	Combined Heat and Power	$ -	
20	HS	Rooftop Unit Replacement	$ 1,771	Estimated at less than 1% of replacement cost.
21	HS	Unit Ventilator Replacement (A Section Classrooms)	$ 2,699	Estimated at less than 1% of replacement cost.
22	HS/MS	Roof Scans	$ -	
		Sustainability		
23	ALL	Solar Power Purchase Agreement	$ -	
		Community Engagement		
24	ALL	Sustainable Jersey for Schools	$ -	
25	ALL	Public Awareness Campaign	$ -	
		Financial		
26	ALL	Rebates		
27	ML	Direct Install	$ 3,689	Calculated
		Project Summary:	**$ 47,664**	

7.8 Third Party Review & Approval Report

To be provided once complete.

SCHILLER AND HERSH ASSOCIATES, INC.
Consulting M/E/P Engineers

636 Skippack Pike, Suite 200
Blue Bell, PA 19422

P: 215.886.8947
F: 215.886.8956
www.schillerhersh.com

June 7, 2019

Mr. Pasquale Yacovelli
Business Administrator
Buena Regional School District Administrative Office
PO Box 309
Buena, NJ 08310

Email Report

Re: Rev 1 - Third-Party ESIP Plan Review Report for
Buena Regional School District
S&H Project #1944A

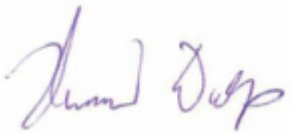
Dear Mr. Yacovelli:

Schiller and Hersh Associates, Inc. (SHA) is pleased to present our third party review of the energy savings calculations and energy savings plan completed by Schneider Electric for Buena Regional School District. This report is based on our detailed review of the documents with special attention on verifying the requirements set forth in Chapter 4 of the Laws of 2009 "Energy Savings Improvement Program" and Local Finance Notices 2009-11 and 2011-17 are covered in the documents.

The basis of the review is the Revision 2 Schneider Electric Report dated 06-04-19.

If you have any questions or comments, feel free to contact our office at any time.

Very Truly Yours,
SCHILLER AND HERSH ASSOCIATES, INC



Richard Delp, P.E.

Enclosure.

Table of Contents:

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II. Review Disclaimer 5

III. Energy Savings Calculations Narrative Review 6

IV. Energy Savings Plan Review

A. Plan Review Comments 7
B. Plan Components – Required By P.L. 2009, C.4 19

I. Executive Summary:

Schiller and Hersh Associates, Inc. (SHA) has been commissioned by the Buena Regional School District (BRSD) with providing third party review services in accordance with the requirements set forth in Chapter 4 of the Laws of 2009 "Energy Savings Improvement Program" and Local Finance Notices 2009-11 and 2011-17. The third party review results are as follows:

1. First, a review of the plan savings for conformance with Board of Public Utilities (BPU) protocols is required.

2. Second, a review of the energy savings plan is completed to confirm conformance with BPU standards and that all required elements are included.

This report represents the summary and conclusions of the SHA Energy Savings Plan (ESP) third party review for the Buena Regional School District. The third party review is based on the ESP document created by the Energy Services Company (ESCO), Schneider Electric., Rev 2 dated June 4, 2019, including all appendices and supplemental documents provided. The ESIP document summarizes the proposed efficiency upgrades for the following schools:

- Buena High School
- Buena Middle School
- Cleary Elementary School
- Collins Lake Elementary School
- Milanesi Elementary School

Energy Savings Calculations Review:

The review of the energy savings calculation included within the ESIP concluded that the calculations provided were performed in accordance with industry standard practice and utilizing the intent of the BPU protocol. SHA finds the calculations and information provided to be consistent with industry standards and would recommend approval of the calculations.

A number of minor comments are included in this report, but they do not have a material impact on the financial aspects of the project.

Energy Savings Plan Review:

The updated energy savings plan appears to be in compliance with the applicable laws and regulations. Based on the Schneider Electric revision 2 report, we would recommend the report be approved and submitted to the BPU for final approval.

Conclusion:

Overall, both the Energy Savings Plan and the energy savings calculations included within appear to be completed with satisfactory effort and in accordance with the requirements set forth in Chapter 4 of the Laws of 2009 “Energy Savings Improvement Program” and Local Finance Notices 2009-11 and 2011-17.

Based on the Schneider Electric revision 2 report, we would recommend the report be approved and submitted to the BPU for final approval.

II. Review Disclaimer:

Schiller and Hersh Associates, Inc. has agreed to offer the professional opinions of its staff in review of the building simulation models and the energy savings improvement plan developed for Buena Regional School District by Schneider Electric. This analysis is not a guarantee that the savings and assumptions stated by Schneider Electric are valid. Neither Schiller and Hersh Associates, Inc. nor its subcontractors will be held responsible for failure to achieve the predicted savings. A building energy savings analysis performed in spreadsheet calculations and Schneider Electric's proprietary calculation tool Element is a complicated undertaking, there are a vast number of variables built into the programming which can shape the results. Further, the end-user can change the variables via BAS changes or other field changes, which will also impact the results. Schiller and Hersh Associates, Inc. has generally checked bottom line numbers and a limited number of parameters for the reasonableness of the results. Since Schneider Electric is the ESCO, the warranty and guarantee of the ESIP project remains with Schneider Electric.

III. Energy Conservation Measure (ECM) Review Narratives:

The major ECM's were reviewed by S&H and we offer the following commentary below for the benefit of the District:

LED Lighting

Lighting conservation measures were calculated utilizing Excel spreadsheets, but were only provided in PDF format. Noted within the ESP document was Schneider Electric's strong effort to collect actual building usage data through the use of data loggers and data analysis software. SHA cautions Schneider Electric to ensure all light levels are calculated and maintained in accordance with the Department of Community Affairs requirements for educational facilities and IES standards. We further caution to make sure emergency lighting, if part of the retrofit lighting fixtures, should maintain the code-required emergency illumination levels.

Refer to the comments section below for comments and questions all ECM's.

Building Automation System upgrades:

Energy savings calculations performed using the program Element, but calculations were only provided in pdf format. ELEMENT, which as has received prior approval by the BPU, allows hourly analysis of mechanical, lighting and other building components based on documented weather data by the Department of Energy for the specific region where the project is occurring. The energy engineer inputs building parameters, system parameters, usage schedules, occupancy profiles and other necessary information to fully simulate the energy usage of a facility over a full year. SHA reviewed the inputs included within the energy model. It did not appear that there were any major discrepancies with the assumptions utilized in the baseline model versus the proposed energy conservation measures. The proposed upgraded building automation system would permit individual scheduling function for equipment, dynamic temperature reset, outside air damper modulation and system monitoring. The control upgrades include building pressure sensors, humidity sensors, replacement of pneumatic controls with DDC, and demand controlled ventilation. Demand controlled ventilation can significantly reduce energy consumption by controlling outside air rates based on occupancy to eliminate over-ventilation. The energy savings for the upgrades equipment controls was calculated using the energy modeling software by comparing the baseline existing control system to the proposed upgraded control system.

The District should understand that the CO2 sensors for demand controlled ventilation require regular (yearly at minimum) calibration to insure accurate readings and operation.

Refer to the comments section below for comments and questions on all ECM's.

IV. Energy Savings Plan Review

A. Plan Review Comments

The following are SHA's general review comments:

1. General:

    a. Please make all ECM names consistent throughout the ESP for clarity. For example: 'Furnace Replacement' has been used instead of 'Boiler Replacement'. Water Fixture Upgrades' versus 'Water Fixture Improvements'. 'Reheat coils' versus 'Humidity Control'.
        - Schneider Electric: ECM Names have been updated for consistency throughout the ESP.

        Comment and updates approved by S&H.

    b. No rebate calculation sheet was provided in order to verify the total rebates listed in Section 2.3 and 2.4. Also, we would caution the assumption of any SmartStart rebates based on the high efficiency transformer installation. NJ OCE's assumptions for transformer savings are quite old and do not match up with the efficiency of current transformers (they are limited to TP-1 efficiencies).
        - Schneider Electric: No rebates were estimated for transformers. Additional Information on rebate estimates can be provided in appendix 7.7. Smart Start Measures of over $3,000 in smart start rebates have had forms partially filled out.

        Based on the lighting, boilers and domestic water heater, we estimate these rebates at $82,357. The VFDs, pumps, chiller, split system and RTU are also available for rebates and we estimate these will contribute achieve the total rebate target of $101,324. Comment and rebate calculations approved by S&H.

    c. Hard construction cost estimates could not be reviewed or verified, as no calculations or assumptions were provided.
        - Schneider Electric: This will be provided to the district.

        Construction costs are assumed to be correct. If the projects come in over budget, financial projections will need to be re-done at the time to verify compliance with positive cash flow over the 20 year ESIP period.

2. Section 2.1 Financial Analyses scope summary:

    a. Verify that the total energy savings are consistent with the energy savings totals in Section 4.2 for each ECM. For example, Air sealing cost savings are inconsistent for HS, MS & ML buildings.
        - Schneider Electric: Tables have been updated to reflect corrected savings totals and should now be consistent.

Comment and updates approved by S&H.

b. Consider clarifying the column header "Annual Energy Savings" as not all the line items, such as water savings and rebates, are energy classifications and not all are annual in nature.
   - Schneider Electric: A note has been added at the bottom of the first chart in 2.1

   Comment and updates approved by S&H.

c. Provide a sub total of costs and energy savings for all ECMs other than rebates, since the rebates do not occur every year per section 2.4.
   - Schneider Electric: The table has been modified to relay the information in more clear manner.

   Comment and updates approved by S&H.

d. It appears only the Smart Start rebate savings were included in the table. Consider including all the rebates with a footnote referencing the rebate schedule in section 2.4.
   - Schneider Electric: A footnote has been added.

   Comment and updates approved by S&H.

e. Verify the ERV: Add Cleary ES descriptor 'CL' for the ECM. Provide estimated hard costs for investigation, repair and recommissioning of the ERV units.
   - Schneider Electric: CL has been added to the table. Schneider Electric is not charging for this scope as equipment may only need turned on.

   Comment and updates approved by S&H.

f. Provide estimated hard costs for kitchen hood blocking at the High School and Collins Lake.
   - Schneider Electric: Schneider Electric is not charging for this measure.

   Comment and updates approved by S&H.

g. Provide energy savings cost information for the Pipe Insulation ECM at the High School, Middle School, and Milanesi Elementary.
   - Schneider Electric: Section 2.1 has been updated with this information.

   Comment and updates approved by S&H.

h. Unit Ventilator Replacement (Section A): Revise annual energy savings in Section 2.1 to $2,187 per section 4.2 comments.
   - Schneider Electric: Please see response to later section 4.2 comments

   Comment and updates approved by S&H.

i. Missing Cleary ES (3) transformers.
   - Schneider Electric: This scope had been removed from the project due to payback.

Comment and updates approved by S&H.

j. Direct Install hard cost is not correct at $13,500. It should be $24,022.67 per section 7.4 calculation sheet.
   - Schneider Electric: The $13,500 cost is Schneider Electric's fee for overseeing this program. Services include, walking contractor, state application forms, attending meetings and working with the district to explain benefits and risks of this program.

   Where is the $24,022.67 getting paid out of? This is the amount the District will need to pay the DI contractor. This amount is minor and would not change the financial results of the ESP.

k. The Total Energy Savings ($) for all ECMs at the bottom of the table does not appear to reflect the actual total. Please verify.
   - Schneider Electric: Table has been updated. Table matches within $2.

   Comment and updates approved by S&H.

3. Section 2.2:

   a. Adjust the estimated value of the hard costs to match the revised amount based on the comments herein.
      - Schneider Electric: Noted.

      Comment and updates approved by S&H.

4. Section 2.3:

   a. Cash Flow Analysis: Provide supporting documentation for the Annual O&M savings listed for years 1 through 5 as required by the BPU.
      - Schneider Electric: Provided in appendix 7.8. Actual invoices proved difficult to get due to the district having (4) facility directors in that last (2) years. Schneider Electric believes the estimation of $45,150 with an escalation of 2.3% to be conservative for the following reasons.
        1. While individual lighting invoices could not be found. The Master PO w/ Electri Tech was found. This amount was for $31,000. Schneider Electric quantified a total of $14,700 for lighting O&M savings (includes $1,175 for Milanesi under Direct Install program).
        2. Boiler Invoices for High School were found totaling 9,218, however this amount did not include the hiring of an emergency employee to help get the Milanesi and HS boilers operational for winter of 2018/2019.
        3. All other scope with O&M was estimated at less than 2% of hard cost.

      Comments approved by S&H.

b. Revise Cash Flow Chart to reflect the revised energy savings per comments in Section 2.1 and elsewhere in the review.
   - Schneider Electric: Noted.

   Comment and updates approved by S&H.

c. Term of Agreement is listed as 19 years, but the savings calculations are for 20 years. Please clarify.
   - Schneider Electric: Corrected.

   Comment and updates approved by S&H.

d. The Direct Install "Total Cost" and "State Clean Energy Share" do not match section 7.4 calculation spreadsheet. These should be $80,076 total cost and $56,053 state clean energy share.
   - Schneider Electric: Corrected.

   Comment and updates approved by S&H.

e. District should understand the risk of escalating water, electric and gas utility costs at the listed indexed rates per year. While these amounts are within BPU guidance/allowance, the reality of competitive purchasing of the utility rates at regular intervals (1 or 2- or 3-year contracts) typically results in lower annual indexed percentages than listed.
   - Schneider Electric: Noted.

   Comment approved by S&H.

5. LED Lighting

a. It appears the intent is to remove the fluorescent ballasts and have line voltage to the terminals with the LED lamps operating at 120V or 277V. We believe this provides the best overall solution by reducing maintenance of ballast replacements.
   - Schneider Electric: Noted.

   Comment approved by S&H.

6. Air Sealing Improvements:

a. No calculations in 7.1 were provided to go from the calculated infiltration rates to an Annual Energy Savings. Please provide savings calculations.
   - Schneider Electric: In section 7.1 a table of observed envelope leaks was provided. The information in this table was used in the following spreadsheet calculations (eCalcs) to find the infiltration for each building due to the observed leaks. This value is listed at the bottom of each spreadsheet calc page under the column titled "Occupied Rates/Wall" (For Buena HS, the value is 3673 cfm). This value was then divided by the calculated wall area in Element at the corresponding school (67,788

sqft at the HS) to find the infiltration rate that can be expected to be reduced by sealing the entry points. The new reduced infiltration rate was used in Element to calculate the annual energy savings.

Comment and updates approved by S&H.

7. Building Automation System upgrades:

    a. The ELEMENT HVAC schedule inputs indicates approximately 38% reduction in occupied run-time based on improved equipment scheduling. Verify that the proposed HVAC schedules represent actual building occupancy schedules that are acceptable to the District.
        a. Schneider Electric: The proposed HVAC schedules are representative of building occupancy and are acceptable to the District for implementation.

        Comment and updates approved by S&H.

8. Humidity Control: The proposed measure provides humidity control for Water Source Heat Pumps utilizing new reheat coils and control valves diverting water from the heat pump water loop. The measure is designed to increase comfort and mitigate mold growth and will not provide energy savings.

    a. Overview section: Verify if the 2nd sentence should read "The humidity level inside the school can get high enough to cause occupant discomfort…"
        i. Schneider Electric: Corrected.

        Comment and updates approved by S&H.

    b. No energy usage calculations have been provided for this measure. It appears that the measure may increase energy usage. Provide energy model calculations showing the impact on energy usage for this ECM. Include energy usage in Section 2.1, 2.2 & 4.2
        i. Schneider Electric: Schneider Electric has updated the ESP. Schneider Electric decreased the space temperature setpoint in the element model by (1) degree Fahrenheit to reflect increase runtime on the water source heat pumps.

        Comment and updates approved by S&H.

    c. Verify that the measure is compliant with ASHRAE 90.1-2013 dehumidification requirements in Section 6.5.2.3 by meeting one of the exceptions listed in the section.
        i. Schneider Electric: Schneider Electric has verified this measure meets one of the exceptions listed in 6.5.2.3.

        Comment and updates approved by S&H.

9. Water Fixture Improvements:

a. Kitchen spreadsheet water usage calculations: The prep sink usage hours/day have been reduced from 4 hours/day pre-retrofit to 2.67 hours/day post retrofit. Verify actual sink usage and provide justification for reduction in usage.
    a. Schneider Electric: Changes have been made to the energy calculations and this reduction in usage hours no longer exists.

    Comment and updates approved by S&H.

10. Pipe Insulation

    a. No Comments

11. Walk-in Refrigeration Controls

    a. Add scope of work summary for Milanesi ES and Cleary ES in Section 3.1.
        a. Schneider Electric: Updated.

        Comment and updates approved by S&H.

12. High Efficiency Transformers

    a. The transformer summary only includes transformer replacements in the HS and Collings Lakes ES. The section 7.1 transformer calculations include (3) transformers at Cleary ES with a total kW reduction of 1.96kW and kWh reduction of 17,161kWh. Please clarify why Clearly ES is not included in the summary and is also not included in the 2.1 scope summary and section 4.2 energy savings plan.
        a. Schneider Electric: Cleary Elementary was evaluated for transformer replacement but due to poor payback removed from the project.

        Comment and updates approved by S&H.

13. Verify Energy Recovery Ventilator Operation

    a. Consider adding fan and wheel operating status to Building Automation System Improvement scope of work for ongoing monitoring and alarm.
        a. Schneider Electric: Schneider will develop a quote for the district to consider during the construction of this project.

        Comment and updates approved by S&H.

    b. Provide estimated hard costs for investigation, repairs if required and recommissioning of the ERV units in Section 2.1.
        a. Schneider Electric: Schneider Electric is not charging for this measure.

        Comment and updates approved by S&H.

14. Kitchen Hood Blocking

a. Provide estimated hard costs for kitchen hood blocking at the High School and Collins Lake in Section 2.1.
    a. Schneider Electric: Schneider Electric is not charging for this measure.

    Comment and updates approved by S&H.

15. Boiler Replacements:

a. In the summary of work section, clarify that the existing boiler at Milanesi is being replaced with a new condensing style boiler for this ECM. Add narrative for all Milanesi boiler system components being replaced similar to the High School summary of work above.
    - Schneider Electric: The Energy Savings Plan has been updated.

    Comment and updates approved by S&H.

b. Note the thermal efficiency of the proposed boilers at both schools.
    - Schneider Electric: The Energy Savings Plan has been updated.

    Comment and updates approved by S&H.

c. Refer to the Combined Heat and Power comments for additional requirements.
    - Schneider Electric: Noted.

    Comment approved by S&H.

16. Hot Water VFDs

a. The existing 750 GPM & 82 FT Head hot water pumps are being replaced with reduced capacity 500 GPM & 75 Head pumps. Verify that the new pumps are sized sufficiently for the existing system at full load.
    a. Schneider Electric: Engineering has changed these requirements slightly. New GPM is 675 and new head is 80ft. New sizes have been verified for new system design.

    Comment and updates approved by S&H.

b. The heating and ventilator unit control valves are being converted from 3-way to 2-way valves. Two of the heating and ventilator unit valves will remain 3-way. Verify that the flow through the (2) 3-way valves is large enough so that the total system flow does not drop below the minimum flow of the pumps.
    a. Schneider Electric: This will be confirmed during final engineering.

    Comment and updates approved by S&H.

c. Clarify this section is for the High School.
    a. Schneider Electric: Schneider Electric has updated the Energy Savings Plan.

Comment and updates approved by S&H.

17. Domestic Hot Water Heater Replacement:

    a. In the summary of work section, clarify the proposed type (condensing style) of water heaters being installed with thermal efficiency. Add clarification that the hot water heater scope is for the High School. Refer to the Combined Heat and Power comments for additional requirements.
        - Schneider Electric: Schneider Electric has updated the Energy Savings Plan.

        Comment and updates approved by S&H.

18. Chiller Replacement:

    a. The ELEMENT energy savings calculations indicate an efficiency increase from 1.47 kW/ton to 1.46 kW/ton which appears to be rather conservative. Verify actual efficiencies of the existing and propose chillers. Consider utilizing part-load efficiency curves of the proposed chiller to improve the accuracy of the energy calculations, if you have not already.
        - Schneider Electric: The efficiency values listed are a combined value for all equipment efficiencies at the site, and do not represent any single piece of equipment. The modeled efficiency change represents an upgrade from an existing value of 1.263 kW/ton to a new value of 1.181 kW/ton for the chiller being replaced.

        Comment and updates approved by S&H.

19. Split System Replacements:

    a. The ELEMENT energy savings calculations indicate natural gas energy savings in months of December and April. The electric heat split system is being replaced with WSHP units connected to the heat pump loop. It appears that there should be an increase in gas usage throughout the heating season due to the additional load on the heat pump loop. Verify that the energy savings accurately reflect the change in unit type described in this ECM.
        - Schneider Electric: Changes have been made to the energy calculations to account for the shift of load from electric heat to the heat pump loop.

        Comment and updates approved by S&H.

20. Combined heat and power:

    a. Energy savings calculations were performed using spreadsheet hourly calculations for a full year. The proposed combined heat and power plant generates power and captures the waste heat for use in domestic hot water and heating hot water systems. Verify that the energy savings calculated in the Boiler Replacement and Hot Water Heater Replacements account for the combined effect of the ECMs. The hot water generated by the CHP will reduce the load to the Boiler and Hot Water Heater plants and reduce the potential savings from the replacement ECMs.

- Schneider Electric: Schneider Electric accounted for combined effect of ECMs when calculating the savings for the measures listed. The Boiler and Hot Water Heater Replacements were implemented as the third and fourth measures at the HS, and after all other measures had been implemented, the resulting HVAC loads from Element were used in the CHP savings spreadsheet. Therefore, the savings for the CHP measure were calculated using the efficiencies and design conditions of the new boiler and hot water heater equipment, accounting for the interactive effects between the measures.

  Comment and updates approved by S&H.

21. Roof Top Unit Replacements:

    a. The electric energy savings in ELEMENT appear to be larger than expected during the heating season. The inputs indicate pumping power is reduced by 1.72 kW compared to the VFD ECM. The fan constant kW Load is reduced by 9 kW. The Fan variable load is increased by 5.22 kW. Verify that the energy inputs accurately reflect the existing and proposed RTU and associated energy recovery wheel.
       - Schneider Electric: The 1.72 kW reduction represents the elimination of a glycol heating loop pump of 2.3 HP. The change in fan energy represents removal of the existing RTU including a 10 HP supply fan and 2 HP return fan. A change has been made to the variable kW reflect the install of a new RTU with a 10 HP supply fan that will have variable speed control.

         Comment and updates approved by S&H.

22. Unit Ventilator Replacement (Section A):

    a. No Comments.

23. Solar Power Purchase Agreement:

    a. No 3rd party information was provided from the Solar PV PPA. Please provide a copy of the solar PPA for verification of the savings estimates included in this ESP.
       - Schneider Electric: This will be provided.

         Please provide a copy of the Solar PV PPA submission or contract for verification of the savings for our records.

    b. Page 55 of the ESP outlines the PPA and indicates a savings of $118,686 per year. This does not match up with the $140,251 savings included in the Table 2.1 financial analysis. Please clarify.
       - Schneider Electric: The $140,251 includes demand savings as well as consumption savings.

         Please provide a copy of the Solar PV PPA submission or contract for verification of the savings for our records.

24. Direct Install:

    a. No comments.

25. Section 4.2:

    a. Energy Savings: Verify the values in the 'Natural Gas Savings (Therms)' column in the ECM energy savings chart as the values are inconsistent with the savings calculations in section 7.1. It appears the values are in the units 'Millions BTU' rather than 'Therms', as listed. Consider revising the values to Therms for consistency with the remainder of the report. The natural gas cost savings column appears to be consistent with the energy savings calculated in Section 7.1.
        - Schneider Electric: The ECM Energy Savings chart has been updated to show savings in Therms, and should now be consistent with calculations in section 7.1.

        Comment and updates approved by S&H.

    b. Lighting:
        - HS: Section 7.1 spreadsheet calculations show a total of 202,649kWh in savings for interior plus 47,842kWh in savings for the exterior for a total of 250,491kWh. However, the 4.2 table lists 270,151kWh as the total, which is incorrect. Correct kWh savings and also the electric cost savings. kW demand savings of 1,006kW is also incorrect.
        - Schneider Electric: The calculations have been updated to show lighting HVAC effect savings calculated in ELEMENT, which account for the previous difference in savings.

        Comment and updates approved by S&H. We assume the 1,006kW demand savings is a monthly additive amount that represents the yearly total savings. Similarly for the CHP that shows a 420kW savings, which must be cumulative yearly.

        - MS: Section 7.1 spreadsheet calculations show a total of 128,775kWh in savings for interior plus 69,762kWh in savings for the exterior for a total of 198,537kWh. However, the 4.2 table lists 215,882kWh as the total, which is incorrect. Correct kWh savings and also the electric cost savings. kW demand savings of 814kW is also incorrect.
        - Schneider Electric: See previous comment

        Comment and updates approved by S&H. We assume the 771kW demand savings is a monthly additive amount that represents the yearly total savings.

        - Cleary ES: Section 7.1 spreadsheet calculations show a total of 58,735kWh in savings for interior plus 26,078kWh in savings for the exterior for a total of 84,813kWh. However, the 4.2 table lists 85,783kWh as the total, which is incorrect. Correct kWh savings and also the electric cost savings. kW demand savings of 310kW is also incorrect.

- Schneider Electric: See previous comment

  Comment and updates approved by S&H. We assume the 298kW demand savings is a monthly additive amount that represents the yearly total savings.

- Collings Lake ES: Similar to the other buildings above for LED Lighting, the 4.2 table numbers do not match with the section 7.1 calculations.
- Schneider Electric: See previous comment

  Comment and updates approved by S&H.

- Milanesi ES: Similar to the other buildings above for LED Lighting, the 4.2 table numbers do not match with the section 7.1 calculations.
- Schneider Electric: See previous comment

  Comment and updates approved by S&H.

c. Unit Ventilator Replacement (Section A): Revise the electric cost savings to be a negative value to reflect the negative savings (increase) in electric usage. The resulting total savings for gas and electric should be $2,187. Revise energy savings in Section 2.1 accordingly. Verify the demand savings (kW). The ELEMENT savings indicate 92 kW and the Table in section 4.2 indicates 104 kW.
   - Schneider Electric: The cost savings from demand reduction outweigh the cost increase from electric usage increase due to the tariff structure at this site, so the net electric savings are positive for this measure. The savings shown in Sections 2.1 and 4.2 have been corrected.

     Comment and updates approved by S&H.

d. High efficiency transformer savings:
   - Missing Cleary ES (3) transformers.
   - Schneider Electric: This scope has been removed from the project due to poor payback.

     Comment and updates approved by S&H.

   - Collings Lake ES kW demand savings should be 0.44, not 5. Check savings calculations after adjustment.
   - Schneider Electric: The demand savings listed in the calculation of 0.44 kW represent a monthly peak kW reduction, and are not annual values. The total kW savings for the year are 0.44 x 12 = 5.25 kW. The calculations have been changed for clarity.

     Comment and updates approved by S&H.

   - High School kW demand savings should be 6.11, not 73. Check savings calculations after adjustment.

- Schneider Electric: See previous comment

Comment and updates approved by S&H.

e. For other ECM line items, similar to the above, please cross check the savings on kWh, kW and Therms matches up with the section 7.1 calculations. Not all discrepancies are listed herein.
   - Schneider Electric: Savings should now be consistent with section 7.1

Comment and updates approved by S&H.

B. Plan Components – Required by P.L. 2009, C.4

The Energy Savings Plan (ESP) is the core of the Energy Savings Improvement Program process. The goal of the ESP is to describe and identify the energy conservation measures that are planned for a respective facility or facilities and the cost calculations that support how the plan will pay for itself via the reduced energy costs. Under the law, the ESP is required to address multiple elements. The elements are as follows:

1. Energy Audit Results
2. Energy Conservation Measure Descriptions
3. Greenhouse Gas Reduction (GRG) Calculations
4. Identification of Design and Compliance Issues
5. Risk Assessment for Plan Implementation
6. Identification of Eligibility, Costs and Revenues for Demand Response and Curtailable Energy Services
7. Identification of all Implementation Costs and Projected Energy Savings
8. Maintenance Requirements to ensure Projected Energy Savings
9. Description of and Cost Estimate for ESCO Savings Guarantee

C. Plan Components – Submitted Energy Savings Plan

The submitted Energy Savings Plan document created by Schneider Electric was the basis for review. The table below details the specific required elements of the ESP as noted in the section above and whether they were addressed satisfactorily in the ESP presented by the ESCO.

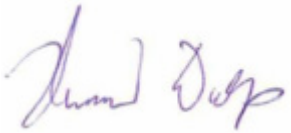
The following are SHA's comments in regards to the components noted above:

Energy Savings Plan Component Review			
Plan Component	**Included (Yes or No) ?**	**Location of Existence**	**Comments**
Energy Audit Results	Yes	ESP, Section 7.3	N/A
ECM Description	Yes	ESP, Section 3	N/A
GRG Calculations	Yes	ESP, Section 4.3	N/A
Design and Compliance Issues	Yes	ESP, Section 6.1	N/A
Implementation Risk Assessment	Yes	ESP, Section 6.2	N/A
Demand Response Program	Yes	ESP, Section 2.4	N/A
Curtailable Energy Services	Yes	ESP, Section 2.4	N/A
Implementation Costs	Yes	ESP, Section 2.2	N/A
Projected Energy Savings	Yes	ESP Section 4.2 & Appendix	N/A
Maintenance Requirements	Yes	ESP Section 5.3, throughout document	N/A
ESCO Savings Guarantee Information	Yes	ESP, Section 5.0	N/A

End of the Third-Party Review Report.

If you have any questions or comments, feel free to contact our office at any time.

Very Truly Yours,
SCHILLER AND HERSH ASSOCIATES, INC



Richard Delp, P.E.

Enclosure.

7.9 Board of Public Utilities (BPU) Approval

To be provided once complete.