

**CITY OF PLEASANTVILLE
CITY HALL**

**18 NORTH FIRST STREET
PLEASANTVILLE, NJ 08232**

FACILITY ENERGY REPORT

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I. HISTORIC ENERGY CONSUMPTION/COST

The energy usage for the facility has been tabulated and plotted in graph form as depicted within this section. Each energy source has been identified and monthly consumption and cost noted per the information provided by the Owner.

Electric Utility Provider:	Atlantic City Electric
Electric Utility Rate Structure:	Monthly General Service (MGS) & Annual General Service (AGS)
Third Party Supplier:	Liberty Power
Natural Gas Utility Provider:	South Jersey Gas
Utility Rate Structure:	General Service Gas (GSG)
Third Party Supplier:	None

The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the historical data received for the facility.

The gas usage profile within each facility report shows the actual natural gas energy usage for the facility. The gas utility measures consumption in cubic feet x 100 (CCF), and converts the quantity into Therms of energy. One Therm is equivalent to 100,000 BTUs of energy.

Table 1
Electricity Billing Data

ELECTRIC USAGE SUMMARY			
Utility Provider: Atlantic City Electric			
Rate: MGS		AGS	
Meter No: -			
Account # 0254 5809 9956		0254 .5809 9998	
Third Party Utility Liberty Power			
TPS Meter / Acct No:			
MONTH OF USE	CONSUMPTION KWH	DEMAND	TOTAL BILL
Mar-10	8,913	33.9	\$1,584
Apr-10	8,014	38.0	\$1,529
May-10	7,040	42.0	\$1,315
Jun-10	10,095	44.5	\$1,742
Jul-10	14,358	50.2	\$2,334
Aug-10	12,552	48.8	\$2,057
Sep-10	10,514	46.4	\$1,770
Oct-10	7,333	41.7	\$1,314
Nov-10	6,972	36.5	\$1,243
Dec-10	8,027	29.4	\$1,405
Jan-11	9,364	28.5	\$1,682
Feb-11	7,994	28.5	\$1,456
Totals	111,176	50.2 Max	\$19,429
AVERAGE DEMAND 39.0 KW average			
AVERAGE RATE \$0.175 \$/kWh			

Figure 1
Electricity Usage Profile

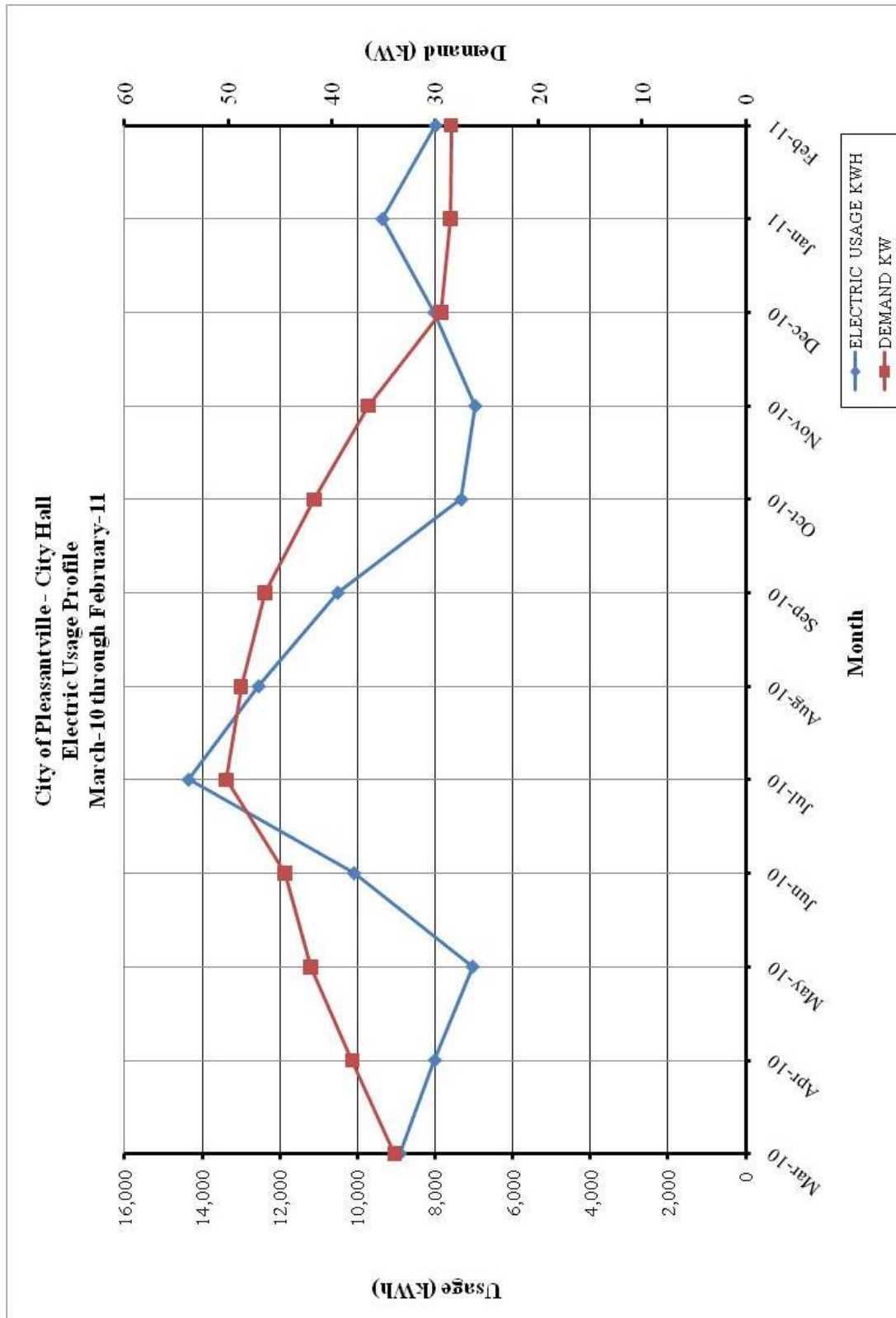
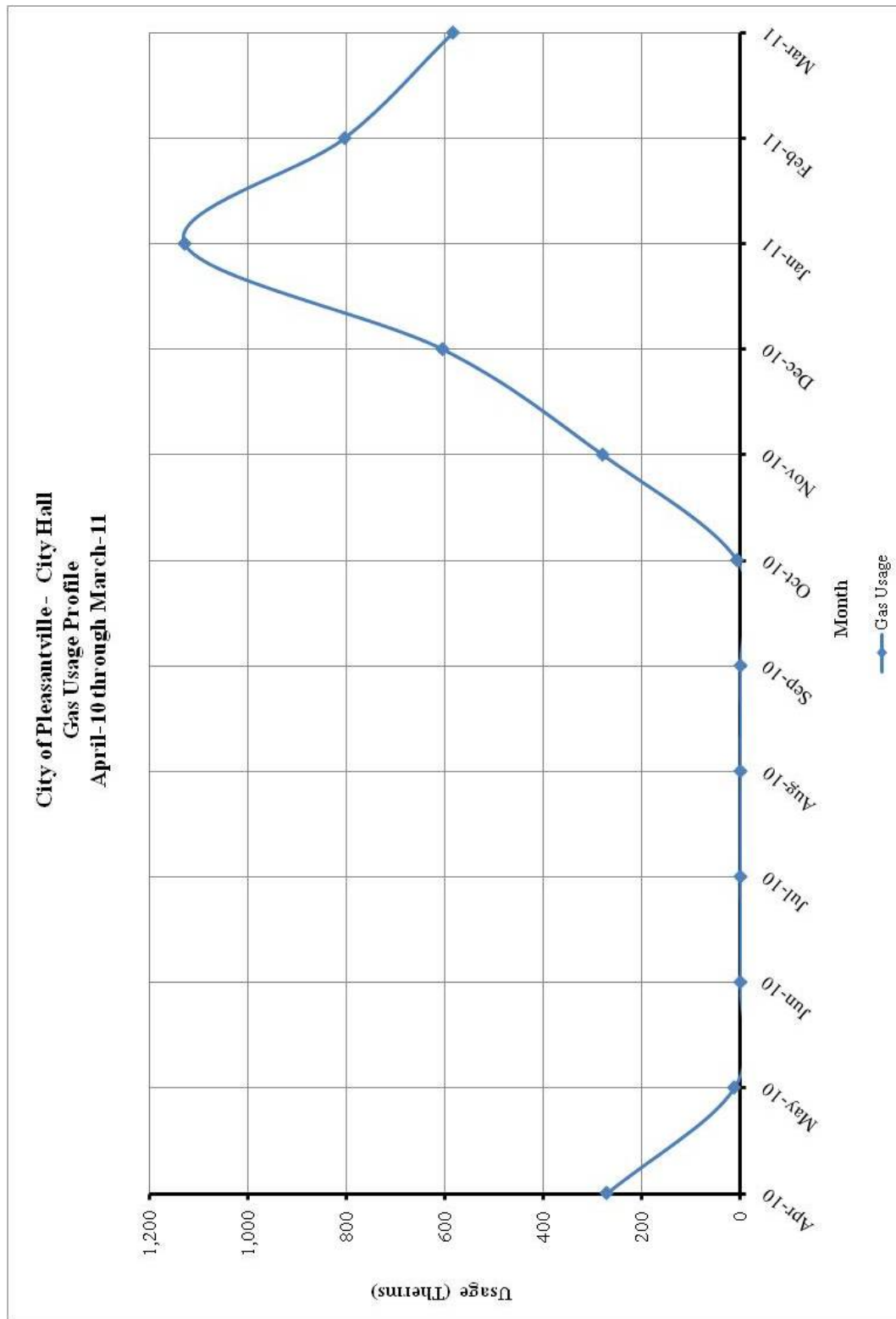


Table 4
Natural Gas Billing Data

NATURAL GAS USAGE SUMMARY		
Utility Provider: South Jersey Gas Rate: GSG Meter No: Point of Delivery ID: 10738181907 Third Party Utility Provider: N/A TPS Meter No: N/A		
MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
Apr-10	272.00	\$383.72
May-10	13.00	\$41.01
Jun-10	0.00	\$23.81
Jul-10	0.00	\$23.81
Aug-10	0.00	\$23.81
Sep-10	0.00	\$23.81
Oct-10	7.00	\$33.07
Nov-10	280.00	\$394.30
Dec-10	605.00	\$824.34
Jan-11	1,129.00	\$1,517.70
Feb-11	804.00	\$1,087.66
Mar-11	584.00	\$796.56
TOTALS	3,694.00	\$5,173.60
AVERAGE RATE:	\$1.40	\$/THERM

Figure 2
Natural Gas Usage Profile



II. FACILITY DESCRIPTION

The City Hall is located at 18 North First Street in Pleasantville New Jersey. The facility is approximately 5,752 SF, built in 1925. The facility is a two story building comprised of office space, conference rooms, and waiting areas for resident services.

Occupancy Profile

The typical hours of operation for Pleasantville's City Hall are Monday through Friday between 8:30 am and 5:00 pm. The occupancy can vary during the day. The City Hall employs sixteen people.

Building Envelope

Exterior walls for the City Hall building are brick faced with a concrete block construction. The windows throughout the building are double pane with vinyl frames which are in fair condition. Blinds are utilized through the office areas of the facility per occupant comfort. The blinds provide a means to adjust for comfort within each occupied zone to reduce heat loss in the winter and reduce solar heat in the summer. The roof is a flat, built up rubber roof where the HVAC equipment resides. The amount of insulation below the roofing is estimated to be 1-2". The roof has been painted silver to reduce heat gain from solar radiation. The entrance side of the building has a 2nd story with a pitched single roof.

HVAC Systems

Heat is provided by a combination of hot water baseboards / radiators as well as electric baseboards / duct heaters. The central heating system consists of a cast iron hot water boiler made by Weil McLain with 4 zone circulators for hot water distribution. This boiler supplies hot water to the baseboard heat which is run throughout the building. The boiler is in poor condition and leaking from the pressure relief valve. There is evidence that the flue gases are leaking from the boiler housing into the basement. The boiler piping is primarily cast iron and does not have any insulation on the piping. There are significant losses to the surrounding basement accounting for energy loss from the system.

The air conditioning systems are comprised of multiple air cooled packaged units and air cooled split systems. The two packaged units are located on the roof of the first floor. They are comprised of a 3 ton unit made by Trane and a 10 ton unit made by Goodman. These units serve the administrator's offices, personnel offices, finance offices and city clerk's offices. The packaged units are in poor condition. The access panel on one of the units was noted to be poorly secured which can cause significant infiltration problems.

Two split systems made by Addison Products and Trane serve the Tax assessor's office and the tax collector's offices. The split system for the tax collection office is located on the roof. The split system for the tax assessor's office is located on grade. These units are in poor condition. The 2nd floor consists of the Mayor's office, Mayor secretary's office, and the upstairs conference room. Each zone utilizes a dedicated split system for cooling. Two split systems are made by Typhoon and one split system is made by Sanyo. All three split systems for the 2nd floor

are located on the roof. It appears that one of the Typhoon units has been disconnected. All split systems are in poor condition.

Exhaust System

Air is exhausted from the toilet rooms through cabinet style exhaust fans. The toilet room exhaust fans are controlled by the light switch.

HVAC System Controls

The HVAC systems within the building utilize “stand alone” controls. Individual thermostats are utilized to control individual HVAC units. Air conditioning units utilize programmable thermostats; however the programming features are not utilized for any of the systems. The heating zone pumps are controlled by standard non-programmable mercury thermostats. The zoning throughout the building is poorly configured which causes under/overheating for several spaces. Occupants rely on manual adjustment of radiator shut-off valves to control heat output at radiators and baseboards.

Domestic Hot Water

Domestic hot water for the building is provided by two (2) 40 gallon electric hot water heaters.

Lighting

Lighting throughout the building is comprised of T-12 fluorescent fixtures with magnetic ballasts. Several small storage rooms and stairwells utilized incandescent bulbs. All lighting is controlled by manual wall switch. Refer to the Investment Grade lighting Audit Appendix for a detailed list of the lighting throughout the facility and estimated operating hours per space.

III. MAJOR EQUIPMENT LIST

The equipment list contains major energy consuming equipment that through implementation of energy conservation measures could yield substantial energy savings. The list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment in some cases if a manufactures date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

Refer to the **Major Equipment List Appendix** for this facility.

IV. ENERGY CONSERVATION MEASURES

Energy Conservation Measures are developed specifically for this facility. The energy savings and calculations are highly dependent on the information received from the site survey and interviews with operations personnel. The assumptions and calculations should be reviewed by the owner to ensure accurate representation of this facility. The following ECMs were analyzed:

Table 1
ECM Financial Summary

ENERGY CONSERVATION MEASURES (ECM's)					
ECM NO.	DESCRIPTION	NET INSTALLATION COST ^A	ANNUAL SAVINGS ^B	SIMPLE PAYBACK (Yrs)	SIMPLE LIFETIME ROI
ECM #1	Lighting Upgrade	\$17,605	\$2,409	7.3	105.3%
ECM #2	Lighting Controls	\$1,875	\$631	3.0	404.8%
ECM #3	Boiler Upgrade	\$30,799	\$862	35.7	-30.0%
ECM #4	Pipe Blanket Insulation	\$2,300	\$4,439	0.5	2795.0%
ECM #5	AC Unit Upgrade	\$73,140	\$2,118	34.5	-56.6%
Notes:					
A. Cost takes into consideration applicable NJ Smart Start TM incentives.					
B. Savings takes into consideration applicable maintenance savings.					

Table 2
ECM Energy Summary

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
ECM #1	Lighting Upgrade	11.7	30490.0	0.0
ECM #2	Lighting Controls	3.2	7984.0	0.0
ECM #3	Boiler Upgrade	0.0	0.0	616.0
ECM #4	Pipe Blanket Insulation	0.0	0.0	3313.0
ECM #5	AC Unit Upgrade	10.9	13073.0	0.0

ECM #1: Lighting Upgrade

Description:

There are still a large amount of T-12 fixtures throughout the City Hall Building. Improved fluorescent lamps and ballasts are available as direct replacements for the existing lamps and ballasts. A simple retrofit of the existing fixture can provide substantial savings. For example, a conventional drop-ceiling lay in fixture with four, 4-foot lamps (34 Watt lamps with magnetic ballast) has a total wattage of 144 Watts per fixture. By using T-8 lamps and electronic ballasts, the total wattage would be reduced to 86 Watts. The light levels would increase by about 15% and the light quality would increase by 35%.

Some of the remaining interior lighting at the Pleasantville City Hall building is provided with fluorescent fixtures with older generation, 700 series 32W T8 lamps and electronic ballasts. Although 700 series T8 lamps are considered fairly efficient, further energy savings can be achieved by replacing the existing T8 lamps with new generation, 800 series 28W T8 lamps without compromising light output. CEG recommends, re-lamping all of the fixtures with 28W T8 lamps.

This ECM includes retrofitting each of the existing T-12 fluorescent lamp and magnetic ballast fixtures with T-8 lamps and high-power electronic ballasts. High efficiency electronic ballasts reduce overall wattage while maintaining the existing lumen levels of the various rooms. This ECM also includes re-lamping of the existing fluorescent fixtures with 800 series, 28W T8 lamps. Additionally, the retrofit of all older fluorescent fixtures with T8 or T5 fluorescent fixtures with electronic ballasts in the building would prove to be more energy efficient. The new, energy efficient T8 fixtures will provide adequate lighting and will save on electrical costs due to better performance of the lamp and ballasts. This ECM also includes maintenance savings through the reduced number of lamps replaced per year. The expected lamp life of a T8 lamp is approximately 30,000 burn-hours, in comparison to the existing T12 lamps which is approximately 20,000 burn-hours. The facility will need approximately 33% less lamps replaced per year for each one for one fixture replaced.

The ECM also includes replacement of any incandescent lamps with compact fluorescent lamps. Compact fluorescent lamps (CFL's) were designed to be direct replacements for the standard incandescent lamps which are common to table lamps, spot lights, hi-hats, bathroom vanity lighting, etc. The light output of the CFL has been designed to resemble the incandescent lamp. The color rendering index (CRI) of the CFL is much higher than standard fluorescent lighting, and therefore provides a much "truer" light. The CFL is available in a myriad of shapes and sizes depending on the specific application. Typical replacements are: a 13-Watt CFL for a 60-Watt incandescent lamp, an 18-Watt CFL for a 75-Watt incandescent lamp, and a 26-Watt CFL for a 100-Watt incandescent lamp. The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating. A 2700K CFL is the "warmest" color available and is closest in color to the incandescent lamp. CFL's are also available in 3000K, 3500K, and 4100K. The 4100K would be the "brightest" or "coolest" output. A CFL can be chosen to screw right into your existing fixtures, or hardwired into your existing fixtures. Where the existing fixture is controlled by a dimmer switch, the CFL bulb must be compatible with a dimmer switch. In some

locations the bulb replacement will need to be tested to make sure the larger base of the CFL will fit into the existing fixture. The energy usage of an incandescent compared to a compact fluorescent approximately 3 to 4 times greater. In addition to the energy savings, compact fluorescent fixtures burn-hours are 8 to 15 times longer than incandescent fixtures ranging from 6,000 to 15,000 burn-hours compared to incandescent fixtures ranging from 750 to 1000 burn-hours. However, the maintenance savings due to reduced lamp replacement is offset by the higher cost of the CFL's compared to the incandescent lamps.

Energy Savings Calculations:

The **Investment Grade Lighting Audit Appendix** outlines the hours of operation, proposed retrofits, costs, savings, and payback periods for each set of fixtures in the each building.

Rebates and Incentives:

From the **NJ Smart Start Incentive Appendix**, the retrofit of a T-12 fixture to a T-5 or T-8 fixture or the retrofit of existing 32 watt T-8 system to reduced wattage (28w/25w 4') warrants the following incentive: \$10 per fixture.

$$\text{SmartStart}^{\text{®}} \text{ Incentive} = (\# \text{ of } 1 - 4 \text{ lamp fixtures} \times \$10)$$

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$18,745
NJ Smart Start Equipment Incentive (\$):	\$1,140
Net Installation Cost (\$):	\$17,605
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$2,409
Total Yearly Savings (\$/Yr):	\$2,409
Estimated ECM Lifetime (Yr):	15
Simple Payback	7.3
Simple Lifetime ROI	105.3%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$36,135
Internal Rate of Return (IRR)	11%
Net Present Value (NPV)	\$11,153.49

ECM #2: Lighting Controls Upgrade – Occupancy Sensors

Description:

Some of the lights in the Pleasantville City Hall Building are left on unnecessarily. In many cases the lights are left on because of the inconvenience to manually switch lights off when a room is left or on when a room is first occupied. This is common in rooms that are occupied for only short periods and only a few times per day. In some instances lights are left on due to the misconception that it is better to keep the lights on rather than to continuously switch lights on and off. Although increased switching reduces lamp life, the energy savings outweigh the lamp replacement costs. The payback timeframe for when to turn the lights off is approximately two minutes. If the lights are expected to be off for at least a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is adequate to provide reduced lighting levels when full light output is not needed. Occupancy sensors detect motion and will switch the lights on when the room is occupied. Occupancy sensors can either be mounted in place of a current wall switch, or on the ceiling to cover large areas.

The U.S. Department of Energy sponsored a study to analyze energy savings achieved through various types of building system controls. The referenced savings is based on the “Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways,” document posted for public use April 2005. The study has found that commercial buildings have the potential to achieve significant energy savings through the use of building controls. The average energy savings are as follows based on the report:

- Occupancy Sensors for Lighting Control 20% - 28% energy savings.

Savings resulting from the implementation of this ECM for energy management controls are estimated to be 20% of the total light energy controlled by occupancy sensors and daylight sensors (The majority of the savings is expected to be after school hours when rooms are left with lights on)

This ECM includes installation of ceiling or switch mount sensors for individual offices, classrooms, large bathrooms, and libraries. Sensors shall be manufactured by Sensorswitch, Watt Stopper or equivalent. The **Investment Grade Lighting Audit Appendix** of this report includes the summary of lighting controls implemented in this ECM and outlines the proposed controls, costs, savings, and payback periods. The calculations adjust the lighting power usage by the applicable percent savings for each area that includes lighting controls.

Energy Savings Calculations:

$$\text{Energy Savings} = (\% \text{ Savings} \times \text{Controlled Light Energy (kWh/Yr)})$$

$$\text{Savings} = \text{Energy Savings (kWh)} \times \text{Ave Elec Cost} \left(\frac{\$}{\text{kWh}} \right)$$

From the **NJ Smart Start® Program Incentives Appendix**, the installation of a lighting control device warrants the following incentive:

Occupancy Sensor Fixture Mounted (existing facility only) = \$20 per sensor

Occupancy Sensor Remote Mounted (existing facility only) = \$35 per sensor

$$\text{Smart Start® Incentive} = (\# \text{ of wall mount} \times \$20) + (\# \text{ of ceiling mount} \times \$35)$$

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$2,400
NJ Smart Start Equipment Incentive (\$):	\$525
Net Installation Cost (\$):	\$1,875
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$631
Total Yearly Savings (\$/Yr):	\$631
Estimated ECM Lifetime (Yr):	15
Simple Payback	3.0
Simple Lifetime ROI	404.8%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$9,465
Internal Rate of Return (IRR)	33%
Net Present Value (NPV)	\$5,657.84

ECM #3: Condensing Boiler Installation

Description:

Space heating for the perimeter offices is provided with hot water baseboard and hot water radiators. The source of hot water for this equipment is one (1) hot water boiler located in the main boiler room in the basement. The input capacity of the boiler is 550 MBH. The boiler appears to be close to its rated life; however, this is not necessarily a good indicator of the end of useful life particularly when boilers are well maintained. This ECM provides insight into the energy efficiency benefit of condensing boiler technology compared to standard cast iron boilers.

Standard (non-condensing) boilers provide lower than nominal efficiency compared to condensing boilers. Standard boilers suffer further efficiency losses at part load operating conditions mainly due to limitations in the reduction of the flue gas temperature. Current average combustion efficiency of each boiler is estimated to be 75% due to standard non-condensing boiler technology, limited turn down ratio, cycling losses and outdated design and controls. A new condensing boiler could substantially improve the operating efficiency of the heating system of the building. Condensing boiler's peak efficiency tops out at 99% depending on return water temperature.

This ECM is based on the replacement of the one (1) boiler with a condensing hot water boiler to provide the building with heating throughout the year. The annual average operating efficiency of the proposed boiler set is expected to be 90%, which gives the heating system a 15% increase in efficiency. This ECM is based on variable supply water temperature adjusted based on outdoor temperature.

This ECM includes installation of one (1) new condensing gas fired boiler to replace the (1) existing hot water boiler. The basis for this ECM is Lochinvar Knight KBN500 condensing hot water boiler or equivalent. The new boiler shall be setup and programmed to be the primary source of heating for the building during entire year. The owner is recommended to retain a professional engineer to confirm equipment sizing and finalize design.

Energy Savings Calculations:

$$\text{Bldg Heat Required} = \text{Heating Nat. Gas (Therm)} \times \text{Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)$$

$$\text{Proposed Heating Gas Usage} = \frac{\text{Bldg. Heat Required (BTU)}}{\text{New Heating Eff (\%)} \times \text{Fuel Heat Value} \left(\frac{\text{BTU}}{\text{Therm}} \right)}$$

$$\text{Energy Cost} = \text{Heating Gas Usage (Therms)} \times \text{Ave Fuel Cost} \left(\frac{\$}{\text{Therm}} \right)$$

Energy savings calculations are summarized in the table below:

CONDENSING BOILER CALCULATIONS			
ECM INPUTS	EXISTING	PROPOSED	SAVINGS
ECM INPUTS	Existing Hot Water Boilers	New Condensing Boilers	-
Existing Nat Gas (Therms)	3,694	-	-
Boiler Efficiency (%)	75%	90%	15%
Nat Gas Heat Value (BTU/Therm)	100,000	100,000	-
Equivalent Building Heat Usage (MMBTUs)	277	277	-
Ave. Gas Cost (\$/Therm)	1.40	1.40	-
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	EXISTING	PROPOSED	SAVINGS
Natural Gas Usage (Therms)	3,694	3,078	616
Energy Cost (\$)	\$5,172	\$4,310	\$862
COMMENTS:			

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$31,860
NJ Smart Start Equipment Incentive (\$):	\$1,061
Net Installation Cost (\$):	\$30,799
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$862
Total Yearly Savings (\$/Yr):	\$862
Estimated ECM Lifetime (Yr):	25
Simple Payback	35.7
Simple Lifetime ROI	-30.0%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$21,550
Internal Rate of Return (IRR)	-3%
Net Present Value (NPV)	(\$15,788.87)

ECM #4: Valve Blanket and Pipe Insulation

Description:

The boiler plant supplies heating hot water to the facility for heating season. The piping remains heated at approximately 180°F continuously during this period (approximately 6 months). Un-insulated piping has significant heat losses due to the exposure of the steel piping to the surrounding air. Insulated piping has a heat loss which is a small fraction of the heat loss from un-insulated piping. It was noted that all piping within the boiler room was missing piping insulation.

Based on the site survey approximately 50 feet of 4" steel pipe, 100 feet of 2" steel pipe and 100 feet of 3" pipe were not insulated. This ECM includes installation of insulation of all un-insulated piping within the boiler room.

Energy Savings Calculations:

Heat Loss for un-insulated steel piping is based on ASHRAE 2009 Fundamentals – “Insulation for Mechanical Systems”

Bare Steel Piping Heat Loss 2" pipe:	141 BTU/HR per Linear FT
Bare Steel Piping Heat Loss 3" pipe:	201 BTU/HR per Linear FT
Bare Steel Piping Heat Loss 4" pipe:	254 BTU/HR per Linear FT

$$\text{Heat Loss } \frac{\text{BTU}}{\text{HR}} \text{ per Linear FT} = \frac{1}{R - \text{Value}} \times \text{Pipe Dia (FT)} \times 3.14 \times (\text{Pipe Temp (°F)} - \text{Ambient Temp (°F)})$$

$$\text{Heat Loss } \frac{\text{BTU}}{\text{HR}} = \text{Heat Loss } \frac{\text{BTU}}{\text{HR}} \text{ per Linear FT} \times \text{Length of Uninsulated Pipe}$$

$$\text{Energy Use, Therms} = \frac{\text{Heat Loss } \frac{\text{BTU}}{\text{HR}} \times \text{Operating Hrs}}{\text{Heating System Eff. (\%)} \times \text{Fuel Heat Value } \frac{\text{BTU}}{\text{Therm}}}$$

$$\text{Heating Energy Cost Savings} = \text{Energy Use, Therms} \times \text{Cost of Nat Gas } \left(\frac{\$}{\text{Therm}} \right)$$

VALVE BLANKET INSULATION CALCULATIONS							
ECM INPUTS	EXISTING	EXISTING	EXISTING	PROPOSED	PROPOSED	PROPOSED	SAVINGS
ECM INPUTS	Bare Pipe	Bare Pipe	Bare Pipe	Insulation Blanket	Insulation Blanket	Insulation Blanket	
Length of Un-Insulated Pipe Including Valves	100	100	100	100	50	50	
Pipe Diameter (In)	2	3	4	2	3	4	
Blanket Insulation R-value	0	0	0	6	6	6	6
Temperature Difference Pipe to Ambient (°F)	100	100	100	100	100	100	
Pipe Heat Loss (BTU/Hr per FT)	134	197	254	9	9	9	558
Heat Loss (BTU/Hr)	13,400	19,700	25,400	872	450	450	56,728
Heating System Operating Hrs	4380	4380	4380	4380	4380	4380	
Energy Loss (kBtus)	58,692	86,286	111,252	3,820	1,971	1,971	248,468
Heating System Eff (%)	75%	75%	75%	75%	75%	75%	
Fuel Heat Value (BTU/Therm)	100,000	100,000	100,000	100,000	100,000	100,000	
Nat Gas Cost (\$/Therm)	1.34	1.34	1.34	1.34	1.34	1.34	
ENERGY SAVINGS CALCULATIONS							
ECM RESULTS	EXISTING	EXISTING	EXISTING	PROPOSED	PROPOSED	PROPOSED	SAVINGS
Nat Gas Usage Usage (Therms)	783	1,150	1,483	51	26	26	3,313
Energy Cost (\$)	\$1,049	\$1,542	\$1,988	\$68	\$35	\$35	4,439
COMMENTS:	Bare Pipe Heat Loss value is based on ASHRAE 2009 Fundamentals "Insulation for Mechanical Systems"						

There is no maintenance savings due to implementation of this ECM.

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$2,300
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$2,300
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$4,439
Total Yearly Savings (\$/Yr):	\$4,439
Estimated ECM Lifetime (Yr):	15
Simple Payback	0.5
Simple Lifetime ROI	2795.0%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$66,585
Internal Rate of Return (IRR)	193%
Net Present Value (NPV)	\$50,692.49

ECM #5: Air Conditioning Unit Upgrades

Description:

Pleasantville City Hall is air conditioned by split system AC units and packaged rooftop units. The entirety of the units at the building is in poor condition and in need of replacement. The units currently installed are inefficiency compared to modern equipment and can be replaced with new high efficiency units. New air conditioners provide higher full load and part load efficiencies due to advances in inverter motor technologies, heat exchangers and refrigerants.

This ECM includes one-for-one replacement of the older air conditioning units with new higher efficiency systems. It is recommended to fully evaluate the capacity needed for all new systems prior to moving forward with this ECM. A summary of the unit replacements for this ECM can be found in the table below:

IMPLEMENTATION SUMMARY					
ECM INPUTS	SERVICE FOR	NUMBER OF UNITS	COOLING CAPACITY, BTU/HR	TOTAL CAPACITY, TONS	REPLACE UNIT WITH
DS-1	Mayor Office	1	24,000	2.0	Carrier 24ANA1
AC-1	Finance/Clerk	1	36,000	3.0	Carrier 50XL-A
AC-2	Admin Offices	1	120,000	10.0	Trane YHC-120
AC-3	Conf Room	2	36,000	6.0	Carrier 50XL-A
AC-4	Tax Collector	1	24,000	2.0	Carrier 50XL-A
AC-5	Tax Assessor	2	12,000	2.0	Carrier 50XL-A
Total		8	252,000	25.0	

The manufacturers used as the basis for design are Trane and Carrier. This ECM includes replacement of the outdoor condensing units and associated indoor air handling units or cooling coils where appropriate. The RTU replacements include full unit replacements. All units are one for one style replacements with matching capacity of the new units to the old units.

Energy Savings Calculations:

Cooling Energy Savings:

Seasonal energy consumption of the air conditioners at the cooling mode is calculated with the equation below:

$$\text{Energy Savings, kWh} = \text{Cooling Capacity, } \frac{\text{BTU}}{\text{Hr}} \times \left(\frac{1}{\text{SEER}_{\text{Old}}} - \frac{1}{\text{SEER}_{\text{New}}} \right) \times \frac{\text{Operation Hours}}{1000 \frac{\text{Btu}}{\text{kWh}}}$$

$$\text{Demand Savings, kW} = \frac{\text{Energy Savings (kWh)}}{\text{Hours of Cooling}}$$

$$\text{Cooling Cost Savings} = \text{Energy Savings, kWh} \times \text{Cost of Electricity} \left(\frac{\$}{\text{kWh}} \right)$$

ENERGY SAVINGS CALCULATIONS							
ECM INPUTS	COOLING CAPACITY, BTU/Hr	ANNUAL COOLING HOURS	EXISTING UNITS (S)EER	SPLIT UNITS (S)EER	# OF UNITS	ENERGY SAVINGS kWh	DEMAND SAVINGS kW
DS-1	24,000	1,200	7.6 EER	12 EER	1	1,389	1.2
AC-1	36,000	1,200	7.5 EER	12 EER	1	2,160	1.8
AC-2	120,000	1,200	9.7 EER	12 EER	1	2,324	1.9
AC-3	36,000	1,200	7.5 EER	12 EER	2	4,320	3.6
AC-4	24,000	1,200	7.5 EER	12 EER	1	1,440	1.2
AC-5	12,000	1,200	7.5 EER	12 EER	2	1,440	1.2
Total					8	13,073	10.9

Project Cost, Incentives and Maintenance Savings

From the NJ Smart Start® Program appendix, the replacement of split system AC units and unitary systems with high efficiency AC systems falls under the category “Unitary HVAC Split System” and warrants an incentive based on efficiency (EER/SEER). The program incentives are calculated as follows:

$$\text{SmartStart® Incentive} = (\text{CoolingTons} \times \$/\text{TonIncentive})$$

SPLIT SYSTEM AC UNITS REBATE SUMMARY				
UNIT DESCRIPTION	UNIT EFFICIENCY	REBATE \$/TON	PROPOSED CAPACITY TONS	TOTAL REBATE \$
≥20 to 30 tons	10.5 EER	79	0	\$0
≥ 11.25 to < 20 tons	11.5 EER	79	0	\$0
≥ 5.4 to < 11.25 tons	11.5 EER	73	10	\$730
5.4 tons or less Unitary AC and Split System	≥14 SEER	\$92	15.0	\$1,380
TOTAL			25	\$2,110

Summary of cost, savings and payback for this ECM is below.

COST & SAVINGS SUMMARY							
ECM INPUTS	INSTALLED COST	# OF UNITS	TOTAL COST	REBATES	NET COST	ENERGY SAVING	PAY BACK YEARS
DS-1	\$7,500	1	\$7,500	\$184	\$7,316	\$225	32.5
AC-1	\$9,250	1	\$9,250	\$276	\$8,974	\$350	25.6
AC-2	\$17,500	1	\$17,500	\$730	\$16,770	\$376	44.6
AC-3	\$9,250	2	\$18,500	\$552	\$17,948	\$700	25.6
AC-4	\$7,500	1	\$7,500	\$184	\$7,316	\$233	31.4
AC-5	\$7,500	2	\$15,000	\$184	\$14,816	\$233	63.5
Total		8	\$75,250	\$2,110	\$73,140	\$2,118	34.5

There is no significant maintenance savings due to implementation of this ECM.

Energy Savings Summary:

ECM #5 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$75,250
NJ Smart Start Equipment Incentive (\$):	\$2,110
Net Installation Cost (\$):	\$73,140
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$2,118
Total Yearly Savings (\$/Yr):	\$2,118
Estimated ECM Lifetime (Yr):	15
Simple Payback	34.5
Simple Lifetime ROI	-56.6%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$31,770
Internal Rate of Return (IRR)	-9%
Net Present Value (NPV)	(\$47,855.45)

V. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy but save energy none the less.

- A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
- B. Maintain all weather stripping on windows and doors.
- C. Clean all light fixtures to maximize light output.
- D. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.
- E. Turn off computers when not in use. Ensure computers are not running in screen saver mode which saves the monitor screen not energy.
- F. Ensure outside air dampers are functioning properly and only open during occupied mode.

APPENDIX A

ECM COST & SAVINGS BREAKDOWN
CONCORD ENGINEERING GROUP

City of Pleasantville - City Hall

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME	LIFETIME ENERGY SAVINGS	LIFETIME MAINTENANCE SAVINGS	LIFETIME ROI	SIMPLE PAYBACK	INTERNAL RATE OF RETURN	NET PRESENT VALUE (NPV)
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC	TOTAL		(Yearly Saving * ECM Lifetime)	(Yearly Maint Saving * ECM Lifetime)	(Lifetime Savings - Net Cost) / (Net Cost)	(Net cost / Yearly Savings)	$\sum_{n=0}^N \frac{C_n}{(1 + IRR)^n}$	$\sum_{n=0}^N \frac{C_n}{(1 + IRR)^n}$
		(\$)	(\$)	(\$)	(\$)	(\$/Yr)	(\$/Yr)	(\$/Yr)		(\$)	(\$)	(%)	(Yr)	(\$)	(\$)
ECM #1	Lighting Upgrade	\$14,996	\$3,749	\$1,140	\$17,605	\$2,409	\$0	\$2,409	15	\$36,135	\$0	105.3%	7.3	10.71%	\$11,153.49
ECM #2	Lighting Controls	\$1,920	\$480	\$525	\$1,875	\$631	\$0	\$631	15	\$9,465	\$0	404.8%	3.0	33.20%	\$5,657.84
ECM #3	Boiler Upgrade	\$17,800	\$14,060	\$1,061	\$30,799	\$862	\$0	\$862	25	\$21,550	\$0	-30.0%	35.7	-2.58%	(\$15,788.87)
ECM #4	Pipe Blanket Insulation	\$775	\$1,525	\$0	\$2,300	\$4,439	\$0	\$4,439	15	\$66,585	\$0	2795.0%	0.5	193.00%	\$50,692.49
ECM #5	AC Unit Upgrade	\$60,200	\$15,050	\$2,110	\$73,140	\$2,118	\$0	\$2,118	15	\$31,770	\$0	-56.6%	34.5	-8.98%	(\$47,853.45)

Notes: 1) The variable Cn in the formulas for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
2) The variable DR in the NPV equation stands for Discount Rate
3) For NPV and IRR calculations: From n=0 to N periods where N is the lifetime of ECM and Cn is the cash flow during each period.

APPENDIX B



Concord Engineering Group, Inc.

520 BURNT MILL ROAD
VOORHEES, NEW JERSEY 08043
PHONE: (856) 427-0200
FAX: (856) 427-6508

SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of February 15, 2011:

Electric Chillers

Water-Cooled Chillers	\$12 - \$170 per ton
Air-Cooled Chillers	\$8 - \$52 per ton

Energy Efficiency must comply with ASHRAE 90.1-2007

Gas Cooling

Gas Absorption Chillers	\$185 - \$400 per ton
Gas Engine-Driven Chillers	Calculated through custom measure path)

Desiccant Systems

\$1.00 per cfm – gas or electric

Electric Unitary HVAC

Unitary AC and Split Systems	\$73 - \$92 per ton
Air-to-Air Heat Pumps	\$73 - \$92 per ton
Water-Source Heat Pumps	\$81 per ton
Packaged Terminal AC & HP	\$65 per ton
Central DX AC Systems	\$40- \$72 per ton
Dual Enthalpy Economizer Controls	\$250
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	\$75 per thermostat

Energy Efficiency must comply with ASHRAE 90.1-2007

Gas Heating

Gas Fired Boilers < 300 MBH	\$300 per unit
Gas Fired Boilers ≥ 300 - 1500 MBH	\$1.75 per MBH
Gas Fired Boilers ≥1500 - ≤ 4000 MBH	\$1.00 per MBH
Gas Fired Boilers > 4000 MBH	(Calculated through Custom Measure Path)
Gas Furnaces	\$300 - \$400 per unit, AFUE ≥ 92%

Ground Source Heat Pumps

Closed Loop	\$450 per ton, EER $\geq$ 16 \$600 per ton, EER $\geq$ 18 \$750 per ton, EER $\geq$ 20
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Energy Efficiency must comply with ASHRAE 90.1-2007

Variable Frequency Drives

Variable Air Volume	\$65 - \$155 per hp
Chilled-Water Pumps	\$60 per VFD rated hp
Compressors	\$5,250 to \$12,500 per drive
Cooling Towers $\geq$ 10 hp	\$60 per VFD rated hp

Natural Gas Water Heating

Gas Water Heaters $\leq$ 50 gallons, 0.67 energy factor or better	\$50 per unit
Gas-Fired Water Heaters $>$ 50 gallons	\$1.00 - \$2.00 per MBH
Gas-Fired Booster Water Heaters	\$17 - \$35 per MBH
Gas Fired Tankless Water Heaters	\$300 per unit

Prescriptive Lighting

Retro fit of T12 to T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities	\$10 per fixture (1-4 lamps)
Replacement of T12 with new T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities	\$25 per fixture (1-4 lamps)
Replacement of incandescent with screw-in PAR 38 or PAR 30 (CFL) bulb	\$7 per bulb
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	\$10 per fixture
Hard-Wired Compact Fluorescent	\$25 - \$30 per fixture
Metal Halide w/Pulse Start Including Parking Lot	\$25 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$200 per fixture
HID $\geq$ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	\$50 per fixture
HID $\geq$ 100w Replacement with new HID $\geq$ 100w	\$70 per fixture

Prescriptive Lighting - LED

LED New Exit Sign Fixture Existing Facility < 75 kw Existing Facility > 75 kw	\$20 per fixture \$10 per fixture
LED Display Case Lighting	\$30 per display case
LED Shelf-Mtd. Display & Task Lights	\$15 per linear foot
LED Portable Desk Lamp	\$20 per fixture
LED Wall-wash Lights	\$30 per fixture
LED Recessed Down Lights	\$35 per fixture
LED Outdoor Pole/Arm-Mounted Area and Roadway Luminaries	\$175 per fixture
LED Outdoor Pole/Arm-Mounted Decorative Luminaries	\$175 per fixture
LED Outdoor Wall-Mounted Area Luminaries	\$100 per fixture
LED Parking Garage Luminaries	\$100 per fixture
LED Track or Mono-Point Directional Lighting Fixtures	\$50 per fixture
LED High-Bay and Low-Bay Fixtures for Commercial & Industrial Bldgs.	\$150 per fixture
LED High-Bay-Aisle Lighting	\$150 per fixture
LED Bollard Fixtures	\$50 per fixture
LED Linear Panels (2x2 Troffers only)	\$100 per fixture
LED Fuel Pump Canopy	\$100 per fixture
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	\$42 per 5 foot \$65 per 6 foot

Lighting Controls – Occupancy Sensors

Wall Mounted	\$20 per control
Remote Mounted	\$35 per control
Daylight Dimmers	\$25 per fixture
Occupancy Controlled hi-low Fluorescent Controls	\$25 per fixture controlled

Lighting Controls – HID or Fluorescent Hi-Bay Controls

Occupancy hi-low	\$75 per fixture controlled
Daylight Dimming	\$75 per fixture controlled
Daylight Dimming - office	\$50 per fixture controlled

Premium Motors

Three-Phase Motors	\$45 - \$700 per motor
Fractional HP Motors Electronic Communicated Motors (replacing shaded pole motors in refrigerator/freezer cases)	\$40 per electronic communicated motor

Other Equipment Incentives

Performance Lighting	\$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1- 2007 for New Construction and Complete Renovation
Custom Electric and Gas Equipment Incentives	not prescriptive
Custom Measures	\$0.16 KWh and \$1.60/Therm of 1st year savings, or a buy down to a 1 year payback on estimated savings. Minimum required savings of 75,000 KWh or 1,500 Therms and a IRR of at least 10%.
Multi Measures Bonus	15%

APPENDIX C



STATEMENT OF ENERGY PERFORMANCE

Pleasantville - City Hall

Building ID: 2706143
For 12-month Period Ending: February 28, 2011¹
Date SEP becomes ineligible: N/A

Date SEP Generated: May 17, 2011

Facility
Pleasantville - City Hall
18 North First Street
Pleasantville, NJ 08232

Facility Owner
City of Pleasantville
18 North First Street
Pleasantville, NJ 08232

Primary Contact for this Facility
Marvin Hopkins
18 North First Street
Pleasantville, NJ 08232

Year Built: 1925
Gross Floor Area (ft²): 5,752

Energy Performance Rating² (1-100) 4

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	379,333
Natural Gas (kBtu) ⁴	339,865
Total Energy (kBtu)	719,198

Energy Intensity⁵

Site (kBtu/ft ² /yr)	125
Source (kBtu/ft ² /yr)	282

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	72
---	----

Electric Distribution Utility

Atlantic City Electric Co [Pepco Holdings Inc]

National Average Comparison

National Average Site EUI	64
National Average Source EUI	143
% Difference from National Average Source EUI	97%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

Meets Industry Standards⁶ for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Certifying Professional

Michael Fischette
520 South Burnt Mill Road
Voorhees, NJ 08043

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

Statement of Energy Performance

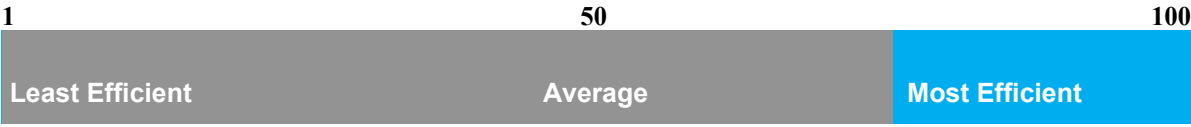
2011

Pleasantville - City Hall
18 North First Street
Pleasantville, NJ 08232

Portfolio Manager Building ID: 2706143

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.

This building's
score



This building uses 282 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending February 2011

Buildings with a score of
75 or higher may qualify
for EPA's ENERGY STAR.

I certify that the information contained within this statement is accurate and in accordance with U.S.
Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification



APPENDIX D

MAJOR EQUIPMENT LIST

Concord Engineering Group

Pleasantville - City Hall

Rooftop / AC Units

Tag	DS-1	AC-1	AC-2
Unit Type	Ductless Split	Packaged Rooftop Unit	Packaged Rooftop Unit
Qty	1	1	1
Location	Mayor's Office	Roof	Roof
Area Served	Mayor's Office	Financing / City Clerk Offices	Admin / Personnel Offices
Manufacturer	Sanyo	Trane	Goodman
Model #	Indoor - SAP241K Outdoor - SAP241C	BTC036C10CBA	PCB120-3
Serial #	Indoor - 0115352 Outdoor - 0361154	B02158590	9612817761
Cooling Type	DX	DX	DX
Cooling Capacity (Tons)	2 Tons	3 Tons	10 Tons
Cooling Efficiency (SEER/EER)	7.6 EER	7.5 EER (Est)	9.7 EER
Heating Type	Heat Pump	Unknown (Electric?)	Unknown (Electric?)
Heating Input (MBH)	22.8 (Capacity)	N/A	N/A
Efficiency	2.5 COP	N/A	N/A
Fuel	Electric	N/A	N/A
Approx Age	>15 Yrs (Est)	>15 Yrs (Est)	Unknown
ASHRAE Service Life	15	15	15
Remaining Life	0	0	N/A
Comments	Poor Condition	Poor Condition	3 HP Fan motor, 87.5% eff (est), Access panel not secured to unit

Rooftop / AC Units

Tag	AC-3	AC-4	AC-5
Unit Type	Split System	Split System	Split System
Qty	2	1	2
Location	Roof	Roof	Grade
Area Served	Mayor Conf Room / Mayor Secretary	Tax Collector Office	Tax Assessor Office
Manufacturer	Typhoon	Addison Products	Trane
Model #	N/A	SFC924C-1B	BTD712A100A0
Serial #	N/A	29002114873	N/A
Cooling Type	DX	DX	DX
Cooling Capacity (Tons)	3 Tons (Est)	2 Tons (Est)	1 Tons (Est)
Cooling Efficiency (SEER/EER)	7.5 EER (Est)	7.5 EER (Est)	7.5 EER (Est)
Heating Type	N/A	N/A	N/A
Heating Input (MBH)	N/A	N/A	N/A
Efficiency	N/A	N/A	N/A
Fuel	N/A	N/A	N/A
Approx Age	>15 Yrs (Est)	>15 Yrs (Est)	>15 Yrs (Est)
ASHRAE Service Life	15	15	15
Remaining Life	N/A	N/A	N/A
Comments	One unit disconnected. Very poor condition.	Poor condition.	Poor condition.

MAJOR EQUIPMENT LIST

Concord Engineering Group

Pleasantville - City Hall

Boilers

Tag	Boiler-1
Unit Type	Cast Iron Boiler
Qty	1
Location	Bsmt
Area Served	Radiators & Baseboards
Manufacturer	Weil McLain
Model #	FGH - 125 PI
Serial #	Series 2
Input Capacity (MBH)	550
Rated Output Capacity (MBH)	440
Approx. Efficiency %	75% (Est)
Fuel	Nat Gas
Approx Age	20 (Est)
ASHRAE Service Life	20
Remaining Life	0
Comments	4 zone pumps. Water Leaking from relief valve. Appears to be leaking exhaust from housing

APPENDIX E

Investment Grade Lighting Audit

APPENDIX E
1 of 5

CEG Job #: 9C11005

Project: Pleasantville LGEA

18 N 1st Street

Pleasantville, NJ 08232

Bldg. Sq. Ft. 5,752

City Hall

KWH COST: \$0.175

ECM #1: Lighting Upgrade - General

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS					
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback			
128.46	Entrance	4400	1	1	6' Channel, 1 Lamp, 57w T12, Mag. Ballast, Surface Mnt., No Lens	74	0.07	325.6	\$56.98	1	1	6' Lamp to (1) 4' Lamp - 32w T8, Elect Ballast; retrofit	29	0.03	127.6	\$22.33	\$80.00	\$80.00	0.05	198	\$34.65	2.31			
142.21	Side Desk	2600	1	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.16	405.6	\$70.98	1	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.09	223.6	\$39.13	\$100.00	\$100.00	0.07	182	\$31.85	3.14			
111	Main Hallway	4400	3	1	4' Channel, 1-Lamp, 34w T12, Mag. Ballast, Surface Mnt., No Lens	48	0.14	633.6	\$110.88	3	1	1 Lamp, 32w T8, Elect. Ballast; retrofit	30	0.09	396	\$69.30	\$80.00	\$240.00	0.05	237.6	\$41.58	5.77			
127.21	Elevator Hall	4400	8	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.58	2,534.4	\$443.52	8	2	2x2, 2 Lamp, 14w T5, Indirect; Fixture	31	0.25	1091.2	\$190.96	\$215.00	\$1,720.00	0.33	1443.2	\$252.56	6.81			
142.21	Back Hallway	4400	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.31	1,372.8	\$240.24	2	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.17	756.8	\$132.44	\$100.00	\$200.00	0.14	616	\$107.80	1.86			
132.21	Bathroom	2600	1	3	2x4, 3-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	127	0.13	330.2	\$57.79	1	2	2 Lamp, 32w T8, Elect. Ballast, Specular Reflector; retrofit	58	0.06	150.8	\$26.39	\$100.00	\$100.00	0.07	179.4	\$31.40	3.19			
142.21	Front Office	2600	7	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.09	2,839.2	\$496.86	7	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.60	1565.2	\$273.91	\$100.00	\$700.00	0.49	1274	\$222.95	3.14			
127.21		2600	6	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.43	1,123.2	\$196.56	6	2	2x2, 2 Lamp, 14w T5, Indirect; Fixture	31	0.19	483.6	\$84.63	\$215.00	\$1,290.00	0.25	639.6	\$111.93	11.53			
142.21	Tax Assessor	2600	7	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.09	2,839.2	\$496.86	7	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.60	1565.2	\$273.91	\$100.00	\$700.00	0.49	1274	\$222.95	3.14			
610	Stairwell	4400	3	2	1x1 Surface Mount, Prismatic Lens, (2) 60w A Lamp	120	0.36	1,584.0	\$277.20	3	2	13w CFL Lamps	26	0.08	343.2	\$60.06	\$25.00	\$75.00	0.28	1240.8	\$217.14	0.35			
612	Basement	1200	1	1	Pendant Mnt., 100w A19 Lamp	100	0.10	120.0	\$21.00	1	1	(1) 26w CFL Lamp	26	0.03	31.2	\$5.46	\$20.00	\$20.00	0.07	88.8	\$15.54	1.29			
613		1200	1	1	Industrial Fixture, 100w A19 Lamp	100	0.10	120.0	\$21.00	1	1	(1) 26w CFL Lamp	26	0.03	31.2	\$5.46	\$20.00	\$20.00	0.07	88.8	\$15.54	1.29			
621	Upstairs Meeting Room	2600	8	1	Recessed Light, 100w A Lamp	100	0.80	2,080.0	\$364.00	8	1	(1) 26w CFL Lamp	26	0.21	540.8	\$94.64	\$20.00	\$160.00	0.59	1539.2	\$269.36	0.59			
623		2600	12	12	Hanging Chandelier, (12) 25w Cand. Base Lamp	300	3.60	9,360.0	\$1,638.00	12	12	3w LED Candalabra Base, Dimmable Lamp	36	0.43	1123.2	\$196.56	\$360.00	\$4,320.00	3.17	8236.8	\$1,441.44	3.00			
621	Upstairs Hallway	2600	2	1	Recessed Light, 100w A Lamp	100	0.20	520.0	\$91.00	2	1	(1) 26w CFL Lamp	26	0.05	135.2	\$23.66	\$20.00	\$40.00	0.15	384.8	\$67.34	0.59			
621	Upstairs Office	2600	3	1	Recessed Light, 100w A Lamp	100	0.30	780.0	\$136.50	3	1	(1) 26w CFL Lamp	26	0.08	202.8	\$35.49	\$20.00	\$60.00	0.22	577.2	\$101.01	0.59			
142.21	Mayor's Office	2600	4	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.62	1,622.4	\$283.92	4	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.34	894.4	\$156.52	\$100.00	\$400.00	0.28	728	\$127.40	3.14			
142.21	Mayor's Bathroom	2600	1	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.16	405.6	\$70.98	1	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.09	223.6	\$39.13	\$100.00	\$100.00	0.07	182	\$31.85	3.14			

Investment Grade Lighting Audit

APPENDIX E
2 of 5

ECM #1: Lighting Upgrade - General

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS					
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback			
127.21	City Clerk	2600	2	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.14	374.4	\$65.52	2	2	2x2, 2 Lamp, 14w T5, Indirect; Fixture	31	0.06	161.2	\$28.21	\$215.00	\$430.00	0.08	213.2	\$37.31	11.53			
142.21		2600	12	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.87	4,867.2	\$851.76	12	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	1.03	2683.2	\$469.56	\$100.00	\$1,200.00	0.84	2184	\$382.20	3.14			
142.21	Womens Room	2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.31	811.2	\$141.96	2	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.17	447.2	\$78.26	\$100.00	\$200.00	0.14	364	\$63.70	3.14			
142.21	Break Room	2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.31	811.2	\$141.96	2	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.17	447.2	\$78.26	\$100.00	\$200.00	0.14	364	\$63.70	3.14			
142.21	Copy Room	2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.31	811.2	\$141.96	2	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.17	447.2	\$78.26	\$100.00	\$200.00	0.14	364	\$63.70	3.14			
142.21	Finance Office	2600	13	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	2.03	5,272.8	\$922.74	13	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	1.12	2906.8	\$508.69	\$100.00	\$1,300.00	0.91	2366	\$414.05	3.14			
127.21		2600	8	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.58	1,497.6	\$262.08	8	2	2x2, 2 Lamp, 14w T5, Indirect; Fixture	31	0.25	644.8	\$112.84	\$215.00	\$1,720.00	0.33	852.8	\$149.24	11.53			
142.21	Office	2600	6	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.94	2,433.6	\$425.88	6	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.52	1341.6	\$234.78	\$100.00	\$600.00	0.42	1092	\$191.10	3.14			
142.21	Conference Room	2600	6	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.94	2,433.6	\$425.88	6	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.52	1341.6	\$234.78	\$100.00	\$600.00	0.42	1092	\$191.10	3.14			
142.21	Personnel Office	2600	8	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.25	3,244.8	\$567.84	8	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.69	1788.8	\$313.04	\$100.00	\$800.00	0.56	1456	\$254.80	3.14			
142.21	Basement 2	1200	8	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.25	1,497.6	\$262.08	8	3	3 Lamp , 32w T8, Elect. Ballast, Specular Reflector; retrofit	86	0.69	825.6	\$144.48	\$100.00	\$800.00	0.56	672	\$117.60	6.80			
121.14		1200	4	2	1x4, 2-Lamp, 34w T12, Mag. Ballast, Surface Mnt., No Lens	78	0.31	374.4	\$65.52	4	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.20	240	\$42.00	\$80.00	\$320.00	0.11	134.4	\$23.52	13.61			
221.14		1200	2	2	1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., No Lens	58	0.12	139.2	\$24.36	2	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00			
610		1200	2	2	1x1 Surface Mount, Prismatic Lens, (2) 60w A Lamp	120	0.24	288.0	\$50.40	2	2	13w CFL Lamps	26	0.05	62.4	\$10.92	\$25.00	\$50.00	0.19	225.6	\$39.48	1.27			
725	Outside	3650	6	1	150w HPS Wallpack	188	1.13	4,117.2	\$720.51	6	0	No Change	0	0.00	0	\$0.00	\$0.00	\$0.00	0.00	0	\$0.00	0.00			
Totals			154	99				57,970	\$10,145	154	80			9.0	23,223	\$4,064		\$18,745	11.7	30,490	\$5,336	3.51			

CEG Job #:
Project: Pleasantville LGEA
Address: 18 N 1st Street
Pleasantville, NJ 08232
Building SF: 5,752

City Hall

KWH COST: \$0.175

FALSE

ECM #2: Lighting Controls

EXISTING LIGHTING										PROPOSED LIGHTING CONTROLS										SAVINGS					
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback		
128.46	Entrance	4400	1	1	6' Channel, 1 Lamp, 57w T12, Mag. Ballast, Surface Mnt., No Lens	74	0.074	325.6	\$56.98	1	0	No Change	74	0.07	0%	325.6	\$56.98	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
142.21	Side Desk	2600	1	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.156	405.6	\$70.98	1	0	No Change	156	0.16	0%	405.6	\$70.98	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
111	Main Hallway	4400	3	1	4' Channel, 1-Lamp, 34w T12, Mag. Ballast, Surface Mnt., No Lens	48	0.144	633.6	\$110.88	3	0	No Change	48	0.14	0%	633.6	\$110.88	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
127.21	Elevator Hall	4400	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.312	1372.8	\$240.24	2	0	No Change	156	0.31	0%	1372.8	\$240.24	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
142.21	Back Hallway	2600	1	3	2x4, 3-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	127	0.127	330.2	\$57.79	1	0	No Change	127	0.13	0%	330.2	\$57.79	\$0.00	\$0.00	0.00	0	\$0.00	0.00		
132.21	Bathroom	2600	7	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.092	2839.2	\$496.86	7	0	No Change	156	1.09	0%	2839.2	\$496.86	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
142.21	Front Office	2600	6	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.432	1123.2	\$196.56	6	1	Dual Technology Occupancy Sensor - Remote Mnt.	72	0.35	20%	898.56	\$157.25	\$160.00	\$160.00	0.09	224.64	\$39.31	4.07		
127.21		2600	7	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.092	2839.2	\$496.86	7	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.87	20%	2271.36	\$397.49	\$160.00	\$160.00	0.22	567.84	\$99.37	1.61		
142.21	Tax Assessor	4400	3	2	1x1 Surface Mount, Prismatic Lens, (2) 60w A Lamp	120	0.36	1584	\$277.20	3	1	Dual Technology Occupancy Sensor - Remote Mnt.	120	0.29	20%	1267.2	\$221.76	\$160.00	\$160.00	0.07	316.8	\$55.44	2.89		
610	Stairwell	1200	1	1	Pendant Mnt., 100w A19 Lamp	100	0.1	120	\$21.00	1	0	No Change	100	0.10	0%	120	\$21.00	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
612	Basement	1200	1	1	Industrial Fixture, 100w A19 Lamp	100	0.1	120	\$21.00	1	0	No Change	100	0.10	0%	120	\$21.00	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
613		2600	8	1	Recessed Light, 100w A Lamp	100	0.8	2080	\$364.00	8	0	No Change	100	0.80	0%	2080	\$364.00	\$300.00	\$0.00	0.00	0	\$0.00	0.00		
621	Upstairs Meeting Room	2600	12	12	Hanging Chandelier, (12) 25w Cand. Base Lamp	300	3.6	9360	\$1,638.00	12	1	Dual Technology Occupancy Sensor - Remote Mnt.	300	2.88	20%	7488	\$1,310.40	\$160.00	\$160.00	0.72	1872	\$327.60	0.49		
623		2600	2	1	Recessed Light, 100w A Lamp	100	0.2	520	\$91.00	2	1	Dual Technology Occupancy Sensor - Remote Mnt.	100	0.16	20%	416	\$72.80	\$160.00	\$160.00	0.04	104	\$18.20	8.79		
621	Upstairs Hallway	2600	3	1	Recessed Light, 100w A Lamp	100	0.3	780	\$136.50	3	0	No Change	100	0.30	0%	780	\$136.50	\$300.00	\$0.00	0.00	0	\$0.00	0.00		

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS											SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback				
621	Upstairs Office	2600	4	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.624	1622.4	\$283.92	4	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.50	20%	1297.92	\$227.14	\$160.00	\$160.00	0.12	324.48	\$56.78	2.82				
142.21	Mayor's Office	2600	1	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.156	405.6	\$70.98	1	0	No Change	156	0.16	0%	405.6	\$70.98	\$125.00	\$0.00	0.00	0	\$0.00	0.00				
142.21	Mayor's Bathroom	2600	2	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.144	374.4	\$65.52	2	0	No Change	72	0.14	0%	374.4	\$65.52	\$0.00	\$0.00	0.00	0	\$0.00	0.00				
127.21	City Clerk	2600	12	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.872	4867.2	\$851.76	12	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	1.50	20%	3893.76	\$681.41	\$160.00	\$160.00	0.37	973.44	\$170.35	0.94				
142.21		2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.312	811.2	\$141.96	2	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.25	20%	648.96	\$113.57	\$160.00	\$160.00	0.06	162.24	\$28.39	5.64				
142.21	Womens Room	2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.312	811.2	\$141.96	2	0	No Change	156	0.31	0%	811.2	\$141.96	\$0.00	\$0.00	0.00	0	\$0.00	0.00				
142.21	Break Room	2600	2	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.312	811.2	\$141.96	2	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.25	20%	648.96	\$113.57	\$160.00	\$160.00	0.06	162.24	\$28.39	5.64				
142.21	Copy Room	2600	13	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	2.028	5272.8	\$922.74	13	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	1.62	20%	4218.24	\$738.19	\$160.00	\$160.00	0.41	1054.56	\$184.55	0.87				
142.21	Finance Office	2600	8	2	2x2, 2 Lamp, 34w T12 U-Tube, Mag. Ballast, Recessed Mnt., Prismatic Lens	72	0.576	1497.6	\$262.08	8	1	Dual Technology Occupancy Sensor - Remote Mnt.	72	0.46	20%	1198.08	\$209.66	\$160.00	\$160.00	0.12	299.52	\$52.42	3.05				
127.21		2600	6	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.936	2433.6	\$425.88	6	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.75	20%	1946.88	\$340.70	\$160.00	\$160.00	0.19	486.72	\$85.18	1.88				
142.21	Office	2600	6	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	0.936	2433.6	\$425.88	6	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	0.75	20%	1946.88	\$340.70	\$160.00	\$160.00	0.19	486.72	\$85.18	1.88				
142.21	Conference Room	2600	8	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.248	3244.8	\$567.84	8	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	1.00	20%	2595.84	\$454.27	\$160.00	\$160.00	0.25	648.96	\$113.57	1.41				
142.21	Personnel Office	1200	8	4	2x4, 4 Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	156	1.248	1497.6	\$262.08	8	1	Dual Technology Occupancy Sensor - Remote Mnt.	156	1.00	20%	1198.08	\$209.66	\$160.00	\$160.00	0.25	299.52	\$52.42	3.05				
142.21	Basement 2	1200	4	2	1x4, 2-Lamp, 34w T12, Mag. Ballast, Surface Mnt., No Lens	78	0.312	374.4	\$65.52	4	0	No Change	78	0.31	0%	374.4	\$65.52	\$0.00	\$0.00	0.00	0	\$0.00	0.00				
121.14		1200	2	2	1x4, 2 Lamp, 32w T8, Elect. Ballast, Surface Mnt., No Lens	58	0.116	139.2	\$24.36	2	0	No Change	58	0.12	0%	139.2	\$24.36	\$300.00	\$0.00	0.00	0	\$0.00	0.00				
221.14		1200	2	2	1x1 Surface Mount, Prismatic Lens, (2) 60w A Lamp	120	0.24	288	\$50.40	2	0	No Change	120	0.24	0%	288	\$50.40	\$0.00	\$0.00	0.00	0	\$0.00	0.00				

ECM #2: Lighting Controls

EXISTING LIGHTING										PROPOSED LIGHTING CONTROLS											SAVINGS					
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly \$ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly \$ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly \$ Savings	Yearly Simple Payback			
610		3650	6	1	150w HPS Wallpack	188	1.128	4117.2	\$720.51	6	0	No Change	188	1.13	0%	4117.2	\$720.51	\$0.00	\$0.00	0.00	0	\$0.00	0.00			
725	Outside	3650	6	1	150w HPS Wallpack	188	1.128	4117.2	720.51	6	0	No Change	188	1.13	0%	4117.2	\$720.51	-\$200.00	\$0.00	0.00	0	\$0.00	0.00			
	0		1	2			22.5	59,552.6	\$10,422	152	15			19.4		51,568.9	\$9,024.56		\$2,400	3.16	7,984	\$1,397	1.72			