

**FAIR HAVEN  
BOROUGH HALL  
ENERGY ASSESSMENT  
for  
NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

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**FAIR HAVEN  
STREET LIGHTING  
ENERGY ASSESSMENT**

**for**

**NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

**CHA PROJECT NO. 21968**

DECEMBER 2010

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## **1.0 INTRODUCTION**

This report summarizes the street lighting energy audit for the Borough of Fair Haven, New Jersey. The Borough of Fair Haven is approximately 1.6 square miles in area along the Navesink River. The Borough is bordered by the Boroughs of Rumson, Little Silver, and Red Bank.

New Jersey's Clean Energy Program, funded by the New Jersey Board of Public Utilities, supports energy efficiency and sustainability for Municipal and Local Government Energy Audits. Through the support of a utility trust fund, New Jersey is able to assist state and local authorities in reducing energy consumption while increasing comfort.

## 2.0 EXISTING CONDITIONS

### 2.1 General

The Borough of Fair Haven uses a combination of street lighting fixtures, including mercury vapor, incandescent, and sodium vapor lamps. Jersey Central Power and Light (JCP&L) is presently in the process of phasing out the mercury vapor and incandescent lamp fixtures and replacing them with more energy efficient sodium vapor lamps (SVLs).

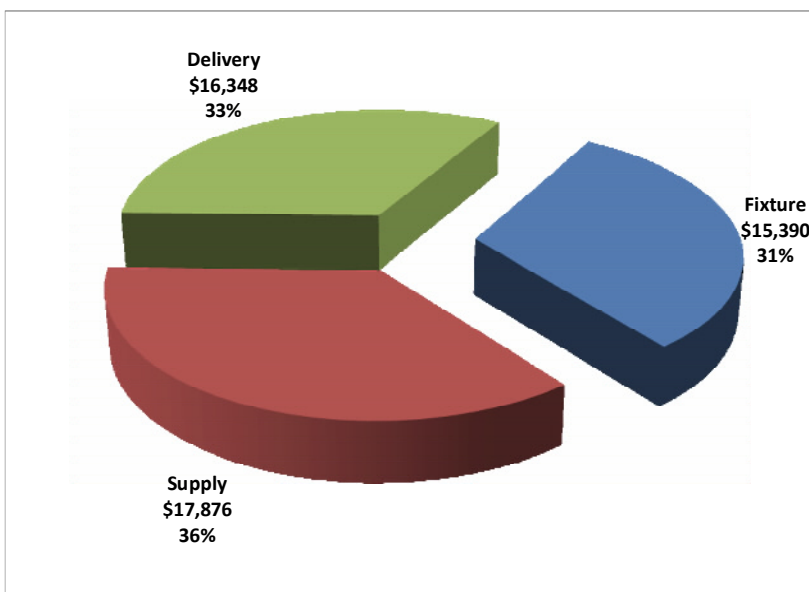
The street lights operate at an average of 4,200 hours per year.

### 2.2 Utility Usage

The electric service for the Fair Haven street lighting is supplied by JCP&L. There are no electric meters for the street lighting, but rather the rate under which each street lighting account is billed is based on the fixtures' type and wattage.

The Borough is currently charged by JCP&L approximately \$49,600 per year for 202,100 kWh of street lighting electric usage. This charge can be broken down into three categories as follows: Delivery, Supply and Lighting Fixtures, as shown in Figure 1 and Appendix A.

**Figure 1. Annual Electric Cost Breakdown**



Delivery costs include the transmission service provided by JCP&L and include Societal Benefit Charges, Delivery Service Charges, Transitional Assessment Charges, System Control Charges, RGGI Recovery Charges, and Non-Utility Generation Charges. The delivery component of the bill is fixed by JCP&L and is based on a \$0.08/kWh rate.

Supply costs include the generation and commodity service provided by JCP&L or an Independent Energy Supplier (IES). The Borough is currently purchasing electricity commodity from JCP&L based on a Basic Generation and Supply (BGS) rate of \$0.088/kWh, however, the supply can potentially be

purchased from a third party IES at a lower rate. A list of approved electrical energy commodity suppliers can be found in Appendix B.

The lighting fixture cost is a fixed cost, and is dependent on the number of street lights within the Borough. The charge rate per fixture is listed on the JCP&L bill as “Company Fixture” which represents lighting fixtures paid and installed by the utility company. These charges are presented in Table 1.

## 2.3 Lighting Inventory

Table 1 summarizes the utility data provided on the JCP&L bill and shows the number of each type of existing fixture, and the cost per fixture. A total of 351 fixtures were evaluated as part of this study.

**Table 1. Lighting Inventory**

### Sodium Vapor Lamps

Type	Wattage	No. of Fixtures	Fixture Surcharge (\$/fixture)	Total Monthly Charges (\$)	Total “Company” Fixture Rate (\$/fixture)
SVL 50W	50	24	6.48	155.52	10.01
SVL 70W	70	21	6.48	136.08	11.53
SVL 100W	100	7	6.48	45.36	13.55
SVL 250W	250	1	7.68	7.68	25.02
SVL 400W	400	5	7.68	38.40	36.97
			<b>Total</b>	<b>383.04</b>	

### Mercury Vapor Lamps

Type	Wattage	No. of Fixtures	Fixture Surcharge (\$/fixture)	Total Monthly Charges (\$)	Total “Company” Fixture Rate (\$/fixture)
MVL 100W	100	105	4.54	476.70	11.61
MVL 175W	175	20	4.54	90.80	16.99
MVL 250W	250	4	4.54	18.16	21.88
			<b>Total</b>	<b>585.66</b>	

### Incandescent Lamps

Type	Wattage	No. of Fixtures	Fixture Surcharge (\$/fixture)	Total Monthly Charges (\$)	Total “Company” Fixture Rate (\$/fixture)
ISL 105W	105	112	1.90	212.80	8.13
ISL 205W	205	44	1.90	83.60	14.02
ISL 327W	327	8	1.90	15.20	21.09
			<b>Total</b>	<b>311.60</b>	

### 3.0 ENERGY CONSERVATION MEASURES

#### 3.1 ECM-1 Street Lighting Replacement

Of the 351 existing light fixtures, 58, or about 17%, are sodium vapor lamps. The remaining 293 fixtures can be retrofitted to SVLs, which are more energy efficient and provide greater light output per kilowatt-hour of electricity.

Under guidelines from JCP&L, conversions of mercury vapor and incandescent lamps will be scheduled in accordance with JCP&L's Sodium Vapor Lighting Conversion Program. Presently, as a failed mercury vapor lamp is repaired, it is replaced with an SVL fixture at no initial cost to the Borough. Mercury vapor street lighting service has been restricted in JCP&L's Tariff since July 1982. Sodium Vapor fixtures have been considered standard since then due to their superior energy efficiency. The Energy Policy Act of 2005 bans the manufacture or import of mercury vapor ballasts after January 1, 2008. As such, per discussions with JCP&L representatives, any failed mercury vapor fixtures are replaced with sodium vapor fixtures.

JCP&L has recommendations for lamp replacements of the mercury vapor and incandescent lamps, which were used as the basis of the energy calculations. It is important to note that the JCP&L's recommendations do not dictate what lamp wattage should be used, but only provides a basis of comparison for equivalent fixtures. A proper street lighting study would be required to determine the proper lumens for a particular application. This ECM assesses the potential savings for changing out less efficient fixtures with SLVs.

**Table 2. JCP&L Recommended Lamp Replacements**

RECOMMENDED MERCURY VAPOR TO SODIUM VAPOR LAMP WATTAGE CONVERSION				
Mercury Vapor			Sodium Vapor	
Wattage and Lamp Type	Lumens		Wattage and Lamp Type	Lumens
100 W MVL	4,000		50 W SVL	4,000
174 W MVL	8,150		100 W SVL	9,500
250 W MVL	11,500		150 W SVL	16,000
400 W MVL	21,500		250 W SVL	27,500
700 W MVL	42,000		400 W SVL	50,000

RECOMMENDED INCANDESCENT TO SODIUM VAPOR LAMP WATTAGE CONVERSION				
Incandescent			Sodium Vapor	
Wattage and Lamp Type	Lumens		Wattage and Lamp Type	Lumens
105 W INC	1,000		50 W SVL	4,000
205 W MVL	2,500		50 W SVL	4,000
327 W MVL	4,000		70 W SVL	5,800
448 W MVL	6,000		100 W SVL	9,500



According to JCP&L guidance, JCP&L offers three options for Street Lighting Service, with three corresponding monthly rates. The three options are categorized as Company Fixtures, Contribution Fixtures, and Customer Fixtures.

- Company Fixtures refer to all street lighting equipment, including brackets and luminaires installed by JCP&L at its expense on wood distribution poles or Street Light Poles, in accordance with its standard specifications, and all other equipment necessary in rendering the required Service. Company Fixtures are owned, operated, maintained and serviced by JCP&L. Fair Haven is currently under the Company Fixtures street lighting monthly billing rate with JCP&L.
- Contribution Fixtures refer to JCP&L fixtures for which the customer has paid an up-front “contributed installation” cost, in order to have lower monthly streetlight billing rates. Contribution Fixtures are installed, owned, operated, maintained and serviced by JCP&L. The “contributed installation” cost is \$405.45 per fixture.
- Customer Fixtures refer to all customer provided and installed street lighting equipment, including brackets, luminaires, and wire required for connection by JCP&L to a designated point on the company’s existing distribution system, which may be metered or unmetered. Such fixtures must be contiguous to one another, and installed on customer provided and installed poles located in areas which allow them to be clearly discernable from JCP&L owned street light facilities. Customer fixtures and poles must be installed in accordance with the current edition of the National Electrical Code, as well as equipment standards established and approved by JCP&L. The Customer must make any necessary maintenance, repairs, or replacements to Customer Fixtures or poles, including luminaire cleaning, or lamp and photoelectric control replacements. In this case, the monthly billing rate is based upon the metered consumption at the General Secondary Service Rate, or a predetermined fixed rate for unmetered installations.

For this measure, two alternatives were evaluated for replacing the mercury vapor and incandescent fixtures with sodium vapor type fixtures as follows:

#### **ECM-1a. Street Lighting Replacement (As Needed Basis)**

The first alternative evaluates the energy saved by upgrading to SVL on an as-needed basis when mercury vapor or incandescent lamps fail. This approach assumes that the Borough’s current “Company Fixture” rate category on the JCP&L bill remains unchanged, and that no contractual negotiations are required between the Borough and JCP&L.

Energy savings for this measure were calculated by applying the existing and proposed fixture rates to determine the following annual electricity consumption and costs.

#### **Existing:**

Fixture	\$15,390
Supply	\$17,880
<u>Delivery</u>	<u>\$16,340</u>
Total	\$49,610
Usage	202,100 kWh/yr

#### **Proposed:**

Fixture	\$27,410
Supply	\$9,740
<u>Delivery</u>	<u>\$8,900</u>
Total	\$46,050
Usage	110,800 kWh/yr

The difference resulted in an annual savings of about 91,300 kWh (a 45% reduction in energy usage). For reference, this equates to a cost saving of about \$3,560 per year, or a 7% reduction in energy costs.

Supporting calculations, including all assumptions for lighting hours and annual energy usage for each fixture is provided in Appendix C.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

**ECM-1a Street Lighting Replacement (As Needed Basis)**

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
\$	kW	kWh	Therms	kGals	\$	\$	\$		\$	Years	Years
0	20	91,300	0	0	3,560	0	3,560	0	NA	0	NA

\* There is no incentive available through the New Jersey Smart Start program for this ECM.

Since there is no charge by JCP&L to upgrade the lighting to SVL when a fixture fails, this measure is recommended. Please note that per JCP&L guidance, the utility could limit the number of conversions to no more than 5% of the lamps served under this service classification (SVL) at the end of the previous year.

**ECM-1b. Street Lighting Replacement (Switch to “Contribution” Fixture Option)**

The second alternative evaluates the energy saved by upgrading to SVL and electing to switch from a “Company Fixture” monthly billing rate to a “Contribution Fixture” monthly billing rate. As discussed previously, this option requires the Borough to pay an up-front cost of \$405.45 per fixture in order to take advantage of lower monthly street lighting billing rates. For the 293 fixtures that can be converted to SVL, this corresponds to an investment of \$118,800. Note, per discussions with JCP&L, the Borough can upgrade to SVL without paying this up-front charge, however it would not qualify for the lower “Contribution Fixture” rate and would also have to pay a labor fee for the replacement to SVL.

Energy savings for this measure were calculated by applying the existing and proposed fixture rates to determine the following annual electricity consumption and costs.

**Existing:**

Fixture	\$15,390
Supply	\$17,880
Delivery	\$16,340
Total	\$49,610
Usage	202,100 kWh/yr

**Proposed:**

Fixture	\$7,630
Supply	\$9,740
Delivery	\$8,900
Total	\$26,270
Usage	110,800 kWh/yr

The difference resulted in an annual savings of about 91,300 kWh (a 45% reduction in energy usage). For reference, this equates to a cost saving of about \$23,340 per year, or a 47% reduction in energy costs, since a lower rate is applied to the same kWh savings as ECM-1a. Supporting calculations, including all assumptions for lighting hours and annual energy usage for each fixture is provided in Appendix C.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

**ECM-1b Street Lighting Replacement (Switch to “Contribution” Fixture Option)**

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
\$	kW	kWh	Therms	kGals	\$	\$	\$		\$	Years	Years
118,800	20	91,300	0	0	23,340	0	23,340	0	NA	5.1	NA

\* There is no incentive available through the New Jersey Smart Start program for this ECM.

Based on this analysis, it is recommended that the Borough contact the local JCP&L Area Manager to review the contractual details associated with switching to a “Contribution” fixture option. This measure is recommended assuming JCP&L concurs with these findings as detailed in this report.

## 4.0 CONCLUSIONS & RECOMMENDATIONS

The energy audit conducted by CHA for Street Lighting in the Borough of Fair Haven, New Jersey identified two potential ECM options for lighting upgrades. Potential annual savings may be realized for the recommended ECMs, with a summary of the costs, savings, and paybacks as follows:

### ECM-1a Street Lighting Replacement (As Needed Basis)

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
\$	kW	kWh	Therms	kGals	\$	\$	\$		\$	Years	Years
0	20	91,300	0	0	3,560	0	3,560	0	NA	0	NA

\* There is no incentive available through the New Jersey Smart Start program for this ECM.

### ECM-1b Street Lighting Replacement (Switch to “Contribution” Fixture Option)

Budgetary Cost	Annual Utility Savings					Estimated Maintenance Savings	Total Savings	ROI	Potential Incentive*	Payback (without Incentive)	Payback (with Incentive)
	Electricity		Natural Gas	Water	Total						
\$	kW	kWh	Therms	kGals	\$	\$	\$		\$	Years	Years
118,800	20	91,300	0	0	23,340	0	23,340	0	NA	5.1	NA

\* There is no incentive available through the New Jersey Smart Start program for this ECM.

Based on this analysis, it is recommended that the Borough contact the local JCP&L Area Manager to review the contractual details associated with implementing the above ECM options.

## **APPENDIX A**

### **Utility Usage Analysis**

Account Number10 00 12 4635 8 2

Meter numberGeneral Service Secondary 3 Phase

AddressRate

TOTAL\$36,723.79

Meter Date	QTY4		QTY20		QTY105	
	250W Fixture		175W Fixture		100W Fixture	
	Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge
1/17/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
2/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
3/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
4/17/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
5/19/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
6/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
7/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
8/19/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
9/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
10/20/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
11/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
12/18/2008	412	\$18.16	1480	\$90.80	4410	\$476.70
1/19/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
2/18/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
3/20/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
4/21/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
5/20/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
6/19/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
7/21/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
8/20/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
10/22/2009	412	\$18.16	1480	\$90.80	4410	\$476.70
11/18/2009	412	\$18.16	1480	\$90.80	4410	\$476.70

TOTAL BILLING KWH	Total Charge
6302	\$1,667.02
6302	\$1,664.44
6302	\$1,634.85
6302	\$1,616.78
6302	\$1,616.78
6302	\$1,676.61
6302	\$1,710.38
6302	\$1,710.38
6302	\$1,688.26
6302	\$1,655.31
6302	\$1,659.47
6302	\$1,687.57
6302	\$1,705.75
6302	\$1,705.65
6302	\$1,689.38
6302	\$1,681.25
6302	\$1,681.53
6302	\$1,679.31
6302	\$1,667.40
6302	\$1,667.40
6302	\$1,629.44
6302	\$1,628.83

Account Number10 00 12 4635 1 7

Meter number

AddressRate

TOTAL\$18,063.44

Meter Date		QTY 1		QTY 7		QTY 23		QTY 21		QTY 5		TOTAL BILLING KWH	Total Charge
		SVL 250w Fixture		SVL 100w Fixture		SVL 50w Fixture		SVL 70w Fixture		SCL 400w Fixture			
		Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge		
		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$784.93
2/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$783.96
3/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$772.79
4/17/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$765.96
5/19/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$765.96
6/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$788.56
7/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$801.31
8/19/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$801.31
9/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$792.95
10/20/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$780.51
11/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$782.08
12/18/2008		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$792.70
1/19/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$799.58
2/18/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$799.53
3/20/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$793.38
4/21/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$790.31
5/20/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$790.31
6/19/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$789.58
7/21/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$785.08
8/20/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$785.08
9/21/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$776.33
10/22/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$770.73
11/20/2009		103	\$7.68	294	\$45.36	483	\$149.04	630	\$136.08	870	\$38.40	2380	\$770.51

Account Number10 00 12 4636 3 2

Meter number10 00 12 4636 3 2

Address

General Service Secondary 3 Phase

Rate

TOTAL\$38,264.09

Meter Date	QTY2 Fire Police Box		QTY8 327W Fixture		QTY44 205W Fixture		QTY133 105W Fixture		TOTAL BILLING KWH	Total Charge
	Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge	Billing kWH	Charge		
1/17/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,736.33
2/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,732.94
3/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,694.07
4/17/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,670.32
5/19/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,670.32
6/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,748.93
7/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,793.29
8/19/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,793.29
9/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,764.23
10/20/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,720.93
11/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,726.40
12/18/2008	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,763.32
1/19/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,787.26
2/18/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,787.08
3/20/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,765.71
4/21/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,755.02
5/20/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,755.39
6/19/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,752.46
7/21/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,736.84
8/20/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,736.84
10/22/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,686.96
11/20/2009	18	\$2.24	912	\$15.20	3168	\$83.60	4181	\$214.70	8279	\$1,686.16



## **APPENDIX B**

### **Approved Electrical and Natural Gas Energy Commodity Suppliers**

## ELECTRIC MARKETERS LIST

The following is a listing of marketers/suppliers/brokers that have been licensed by the NJ Board of Public Utilities to sell electricity to residential, small commercial and industrial customers served by the Public Service Electric and Gas Company distribution system. **This listing is provided for informational purposes only and PSE&G makes no representations or warranties as to the competencies of the entities listed herein or to the completeness of this listing.**

American Powernet Management  
867 Berkshire Blvd, Suite 101  
Wyomissing, PA 19610  
[www.americanpowernet.com](http://www.americanpowernet.com)

Gerdau Ameristeel Energy Co.  
North Crossman Road  
Sayreville, NJ 08872

PPL EnergyPlus, LLC  
Energy Marketing Center  
Two North Ninth Street  
Allentown, PA 18101  
1-866-505-8825  
<http://www.pplenergyplus.com/>

BOC Energy Services  
575 Mountain Avenue  
Murray Hill, NJ 07974  
[www.boc-gases.com](http://www.boc-gases.com)

Gexa Energy LLC New Jersey  
20 Greenway Plaza, Suite 600  
Houston, TX 77046  
(866) 304-GEXA  
[Beth.miller@gexaenergy.com](mailto:Beth.miller@gexaenergy.com)

Sempra Energy Solutions  
The Mac-Cali Building  
581 Main Street, 8<sup>th</sup> Floor  
Woodbridge, NJ 07095  
(877) 273-6772  
[www.SempraSolutions.com](http://www.SempraSolutions.com)

Commerce Energy Inc.  
535 Route 38, Suite 138  
Cherry Hill, NJ 08002  
(888) 817-8572 or  
(858) 910-8099  
[www.commerceenergy.com](http://www.commerceenergy.com)

Glacial Energy of New Jersey  
2602 McKinney Avenue, Suite 220  
Dallas, TX 75204  
[www.glacialenergy.com](http://www.glacialenergy.com)

South Jersey Energy Company  
1 South Jersey Plaza, Route 54  
Folsom, NJ 08037  
(800) 756-3749  
[www.sjindustries.com](http://www.sjindustries.com)

ConEdison Solutions  
701 Westchester Avenue  
Suite 201 West  
White Plains, NY 10604  
(800) 316-8011  
[www.ConEdSolutions.com](http://www.ConEdSolutions.com)

Hess Corporation  
1 Hess Plaza  
Woodbridge, NJ 07095  
[www.hess.com](http://www.hess.com)

Strategic Energy, LLC  
6 East Main Street, Suite 6E  
Ramsey, NJ 07446  
(888) 925-9115  
[www.sel.com](http://www.sel.com)

Constellation NewEnergy, Inc.  
1199 Route 22 East  
Mountainside, NJ 07092  
908 228-5100  
[www.newenergy.com](http://www.newenergy.com)

Integrus Energy Services, Inc.  
99 Wood Avenue, Suite 802  
Iselin, NJ 08830  
[www.integrusenergy.com](http://www.integrusenergy.com)

Suez Energy Resources NA  
333 Thornall Street FL6  
Edison, NJ 08818  
866.999.8374(toll free)  
[www.suezenergyresources.com](http://www.suezenergyresources.com)

Credit Suisse (USA), Inc.  
700 College Road East  
Princeton, NJ 08450  
[www.creditsuisse.com](http://www.creditsuisse.com)

Liberty Power Delaware, LLC  
1901 W Cypress Road, Suite 600  
Fort Lauderdale, FL 33309  
(866) Power-99  
(866) 769-3799  
[www.libertypowercorp.com](http://www.libertypowercorp.com)

UGI Energy Services, Inc.  
d/b/a POWERMARK  
1 Meridian Blvd. Suite 2C01  
Wyomissing, PA 19610  
(800) 427-8545  
[www.ugienergyservices.com](http://www.ugienergyservices.com)

Direct Energy Services, LLC  
One Gateway Center, Suite 2600  
Newark, NJ 07102  
(973) 799-8568  
[www.directenergy.com](http://www.directenergy.com)

Liberty Power Holdings, LLC  
1901 W Cypress Creek Road, Suite 600  
Fort Lauderdale, FL 33309  
(866) Power-99  
(866) 769-3799  
[www.libertypowercorp.com](http://www.libertypowercorp.com)

FirstEnergy Solutions  
395 Ghent Road Suite 407  
Akron, OH 44333  
(800) 977-0500  
[www.fes.com](http://www.fes.com)

Pepco Energy Services, Inc.  
d/b/a Power Choice  
23 S. Kinderkamack Rd Ste D  
Montvale, NJ 07645  
(800) 363-7499  
[www.pepco-services.com](http://www.pepco-services.com)

## GAS MARKETERS LIST

The following is a listing of marketers/suppliers/brokers that have been licensed by the NJ Board of Public Utilities to sell natural gas to residential, small commercial and industrial customers served by the Public Service Electric and Gas Company distribution system. **This listing is provided for informational purposes only and PSE&G makes no representations or warranties as to the competencies of the entities listed herein or to the completeness of this listing.**

Gateway Energy Services  
44 Whispering Pines Lane  
Lakewood, NJ 08701  
(800) 805-8586  
[www.gesc.com](http://www.gesc.com)

Metro Energy Group, LLC  
14 Washington Place  
Hackensack, NJ 07601  
[www.metroenergy.com](http://www.metroenergy.com)

RPL Holdings, Inc  
601 Carlson Pkwy  
Minnetonka, MN 55305

Great Eastern Energy  
3044 Coney Island Ave. PH  
Brooklyn, NY 11235  
888-651-4121  
[www.greateasterngas.com](http://www.greateasterngas.com)

Metromedia Energy, Inc.  
6 Industrial Way  
Eatontown, NJ 07724  
(800) 828-9427  
[www.metromediaenergy.com](http://www.metromediaenergy.com)

South Jersey Energy Company  
One South Jersey Plaza, Rte 54  
Folsom, NJ 08037  
(800) 756-3749  
[www.sjindustries.com/sje.htm](http://www.sjindustries.com/sje.htm)

Hess Corporation  
1 Hess Plaza  
Woodbridge, NJ 07095  
(800) 437-7872  
[www.hess.com](http://www.hess.com)

Mitchell- Supreme Fuel  
(NATGASCO)  
532 Freeman Street  
Orange, NJ 07050  
(800) 840-4GAS  
[www.mitchellsupreme.com](http://www.mitchellsupreme.com)

Sprague Energy Corp.  
Two International Drive, Ste 200  
Portsmouth, NH 03801  
800-225-1560  
[www.spragueenergy.com](http://www.spragueenergy.com)

Hudson Energy Services, LLC  
545 Route 17 South  
Ridgewood, NJ 07450  
(201) 251-2400  
[www.hudsonenergyservices.com](http://www.hudsonenergyservices.com)

MxEnergy Inc.  
P.O. Box 177  
Annapolis Junction, MD 20701  
800-375-1277  
[www.mxenergy.com](http://www.mxenergy.com)

Stuyvesant Energy LLC  
642 Southern Boulevard  
Bronx, NY 10455  
(718) 665-5700  
[www.stuyfuel.com](http://www.stuyfuel.com)

Intelligent Energy  
7001 SW 24<sup>th</sup> Avenue  
Gainesville, FL 32607  
Sales: 1 877 I've Got Gas  
(1 877 483-4684)  
Customer Service:  
1 800 927-9794  
[www.intelligentenergy.org](http://www.intelligentenergy.org)

Pepco Energy Services, Inc.  
23 S Kinderkamack Rd, Suite D  
Montvale, NJ 07645  
(800) 363-7499  
[www.pepco-services.com](http://www.pepco-services.com)

Tiger Natural Gas, Inc.  
1422 E. 71st Street, Suite J.  
Tulsa, OK 74136  
1-888-875-6122  
[www.tignaturalgas.com](http://www.tignaturalgas.com)

Systrum Energy  
877-SYSTRUM  
(877-797-8786)  
[www.systrumenergy.com](http://www.systrumenergy.com)

Plymouth Rock Energy, LLC  
165 Remsen Street  
Brooklyn, NJ 11201  
866-539-6450  
[www.plymouthrockenergy.com](http://www.plymouthrockenergy.com)

UGI Energy Services, Inc.  
d/b/a GASMARK  
704 E. Main Street, Suite I  
Moorestown, NJ 08057  
856-273-9995  
[www.ugienergyservices.com](http://www.ugienergyservices.com)

Macquarie Cook Energy, LLC  
10100 Santa Monica Blvd, 18<sup>th</sup>  
Fl  
Los Angeles, CA 90067

PPL EnergyPlus, LLC  
Energy Marketing Center  
Two North Ninth Street  
Allentown, PA 18101  
1-866-505-8825  
[www.pplenergyplus.com/natural+gas/](http://www.pplenergyplus.com/natural+gas/)

Woodruff Energy  
73 Water Street  
P.O. Box 777  
Bridgeton, NJ 08302  
(856) 455-1111  
[www.woodruffenergy.com](http://www.woodruffenergy.com)

## **APPENDIX C**

### **ECM-1 Street Lighting Replacement**

Borough of Fair Haven  
CHA #21968

**ECM-1 Replacement of mercury vapor and incandescent fixtures with sodium vapor lamps.**  
Note: SUMMARY TABLE

Fixture counts for the Mercury Vapor, Incandescent and Sodium Vapor lights were supplied by Jersey Central Power and Light.  
Replacement cost of the fixtures supplied by Jersey Central Power and Light.  
One time replacement cost      \$405.45 / fixture

EXISTING CONDITIONS														"Company" Fixture
Area Description	Fixture Information							Fixture		Supply	Delivery	Total Monthly Bill for Street Lighting (\$)	Total Rate (\$/Fixture)	
	Number of Fixtures	Existing Fixture Code	Control	kWh / Fixture (per JCP&L)	Total kWh per Fixture Type	Months / Year	Annual kWh	Fixture Charge Rate (\$/fixture)	Total Charges (\$/month)	Total Charges (\$/month)	Total Charges (\$/month)			
100 W Mercury Vapor Lamps	105	MV100/1	Photo	42	4410	12	52,920	4.54	\$476.70	\$387.69	\$354.54	\$1,218.93	\$11.61	
175 W Mercury Vapor Lamps	20	MV175/1	Photo	74	1480	12	17,760	4.54	\$90.80	\$130.11	\$118.98	\$339.89	\$16.99	
250 W Mercury Vapor Lamps	4	MV250/1	Photo	103	412	12	4,944	4.54	\$18.16	\$36.22	\$33.12	\$87.50	\$21.88	
					6302		75,624		\$585.66	\$554.02	\$506.65	\$1,646.32		
105 W Incandescent Lamps	112	I105	Photo	37	4144	12	49,728	1.9	\$212.80	\$364.30	\$333.16	\$910.26	\$8.13	
205 W Incandescent Lamps	44	I205	Photo	72	3168	12	38,016	1.9	\$83.60	\$278.50	\$254.69	\$616.79	\$14.02	
327 W Incandescent Lamps	8	I327	Photo	114	912	12	10,944	1.9	\$15.20	\$80.17	\$73.32	\$168.70	\$21.09	
fire/police box	2	I	Photo	9	18	12	216	1.12	\$2.24	\$1.58	\$1.45	\$5.27	\$2.63	
					8242		98,904		\$313.84	\$724.56	\$662.62	\$1,701.02		
50 W Sodium Vapor Lamps	24	HPS50/1	Photo	21	504	12	6,048	6.48	\$155.52	\$44.31	\$40.52	\$240.35	\$10.01	
70 W Sodium Vapor Lamps	21	HPS70/1	Photo	30	630	12	7,560	6.48	\$136.08	\$55.39	\$50.65	\$242.11	\$11.53	
100 W Sodium Vapor Lamps	7	HPS100/1	Photo	42	294	12	3,528	6.48	\$45.36	\$25.85	\$23.64	\$94.84	\$13.55	
250 W Sodium Vapor Lamps	1	HPS250/1	Photo		0	12	-	7.68	\$7.68	\$9.06	\$8.28	\$25.02	\$25.02	
400 W Sodium Vapor Lamps	5	HPS400/1	Photo	174	870	12	10,440	7.68	\$38.40	\$76.48	\$69.94	\$184.83	\$36.97	
					2298		27,576		\$383.04	\$211.08	\$193.03	\$787.15		
TOTALS -	353				16,842		202,104		\$1,282.54	\$1,489.66	\$1,362.29	\$4,134.49		
% of Total:								31%	36%	33%	100%			

Baseline - Existing Annual Cost for Street Lighting				Rate (\$/kWh)
Fixture	\$15,390	31% of total		n/a
Supply	\$17,876	36% of total		\$0.088
Delivery	\$16,348	33% of total		\$0.081
Total	\$49,614			\$0.169
Existing kWh/yr	202,104 kWh/yr			

RETROFIT CONDITIONS - "COMPANY" FIXTURES														
		Fixture Information						Fixture		Supply	Delivery			"Company" Fixture
Area Description		Number of Fixtures	Retrofit Fixture Code	Control	kWh / Fixture (per JCP&L)	Total kWh per Fixture Type	Months / Year	Annual kWh	Fixture Charge Rate (\$/fixture)	Total Charges (\$/month)	Total Charges (\$/month)	Total Charges (\$/month)	Total Monthly Bill for Street Lighting (\$)	Total Rate (\$/Fixture)
1	100 W Mercury Vapor Lamps	105	HPS50/1	Photo	21	2205	12	26,460	6.48	\$680.40	\$193.85	\$177.27	\$1,051.52	\$10.01
2	175 W Mercury Vapor Lamps	20	HPS100/1	Photo	42	840	12	10,080	6.48	\$129.60	\$73.85	\$67.53	\$270.98	\$13.55
3	250 W Mercury Vapor Lamps	4	HPS150/1	Photo	63	252	12	3,024	6.48	\$25.92	\$22.15	\$20.26	\$68.33	\$17.08
						3297		39,564		\$835.92	\$289.85	\$265.06	\$1,390.83	
4	105 W Incandescent Lamps	112	HPS50/1	Photo	21	2352	12	28,224	6.48	\$725.76	\$206.77	\$189.09	\$1,121.62	\$10.01
5	205 W Incandescent Lamps	44	HPS50/1	Photo	21	924	12	11,088	6.48	\$285.12	\$81.23	\$74.28	\$440.64	\$10.01
6	327 W Incandescent Lamps	8	HPS70/1	Photo	30	240	12	2,880	6.48	\$51.84	\$21.10	\$19.29	\$92.23	\$11.53
7	fire/police box	2	I	Photo	9	18	12	216	1.12	\$2.24	\$1.58	\$1.45	\$5.27	\$2.63
						3534		42,408		\$1,064.96	\$310.69	\$284.12	\$1,659.76	
8	50 W Sodium Vapor Lamps	24	HPS50/1	Photo	21	504	12	6,048	6.48	\$155.52	\$44.31	\$40.52	\$240.35	\$10.01
9	70 W Sodium Vapor Lamps	21	HPS70/1	Photo	30	630	12	7,560	6.48	\$136.08	\$55.39	\$50.65	\$242.11	\$11.53
10	100 W Sodium Vapor Lamps	7	HPS100/1	Photo	42	294	12	3,528	6.48	\$45.36	\$25.85	\$23.64	\$94.84	\$13.55
11	250 W Sodium Vapor Lamps	1	HPS250/1	Photo	103	103	12	1,236	7.68	\$7.68	\$9.06	\$8.28	\$25.02	\$25.02
12	400 W Sodium Vapor Lamps	5	HPS400/1	Photo	174	870	12	10,440	7.68	\$38.40	\$76.48	\$69.94	\$184.83	\$36.97
						2401		28,812		\$383.04	\$211.08	\$193.03	\$787.15	
TOTALS -		353				9,232		110,784		\$2,283.92	\$811.62	\$742.21	\$3,837.74	
% Change (Existing to Retrofit)						-45%		-45%		78%			-7%	

ECM 1A. Replace all mercury vapor and incandescent lamps with "Company" Sodium Vapor Fixtures (As Needed Basis):

		Rate (\$/kWh)			
Fixture	\$27,407	60% of total	n/a		
Supply	\$9,739	21% of total	\$0.088	(could be reduced with Independent Energy Supplier)	
Delivery	\$8,906	19% of total	\$0.080	(JCP&L fixed - non negotiable)	
Total	\$46,053		\$0.168		
Proposed kWh/yr	110,784 kWh/yr				

Annual Cost Savings (\$/yr)	\$3,561	7% reduction
Annual Electric Savings (kWh/yr)	91,320	45% reduction
Value (\$) of Electricity Saved -- Supply & Demand	\$15,370	
Change in Annual Fixture Charges (\$/yr)	\$12,017	78% increase

One Time Retrofit Charge (\$)	\$0 (No JCP&L charge to replace "failed" Mercury Vapor and Incadescent Lamps with SVL)
Simple Payback	0.0 years

Borough of Fair Haven  
CHA #21968

RETROFIT CONDITIONS - "CONTRIBUTION" FIXTURES														
Area Description	Fixture Information							Fixture		Supply	Delivery	Total Monthly Bill for Street Lighting (\$)	"Contribution" Fixture Total Rate (\$/Fixture)	Exist. vs. Retro Percent Change (%)
	Number of Fixtures	Retrofit Fixture Code	Control	kWh / Fixture (per JCP&L)	Total kWh per Fixture Type	Months / Year	Annual kWh	Fixture Charge Rate (\$/fixture)	Total Charges (\$/month)	Total Charges (\$/month)	Total Charges (\$/month)			
1 100 W Mercury Vapor Lamps	105	HPS50/1	Photo	21	2205	12	26,460	\$1.81	\$189.58	\$193.85	\$177.27	\$560.70	\$5.34	-54%
2 175 W Mercury Vapor Lamps	20	HPS100/1	Photo	42	840	12	10,080	\$1.81	\$36.22	\$73.85	\$67.53	\$177.60	\$8.88	-48%
3 250 W Mercury Vapor Lamps	4	HPS150/1	Photo	63	252	12	3,024	\$1.64	\$6.55	\$22.15	\$20.26	\$48.96	\$12.24	-44%
					<b>3297</b>		<b>39,564</b>		<b>\$232.35</b>	<b>\$289.85</b>	<b>\$265.06</b>	<b>\$787.26</b>		-52%
4 105 W Incandescent Lamps	112	HPS50/1	Photo	21	2352	12	28,224	\$1.81	\$202.22	\$206.77	\$189.09	\$598.08	\$5.34	-34%
5 205 W Incandescent Lamps	44	HPS50/1	Photo	21	924	12	11,088	\$1.81	\$79.44	\$81.23	\$74.28	\$234.96	\$5.34	-62%
6 327 W Incandescent Lamps	8	HPS70/1	Photo	30	240	12	2,880	\$1.81	\$14.49	\$21.10	\$19.29	\$54.88	\$6.86	-67%
7 fire/police box	2	I	Photo	9	18	12	216	1.12	\$2.24	\$1.58	\$1.45	\$5.27	\$2.63	0%
					<b>3534</b>		<b>42,408</b>		<b>\$298.39</b>	<b>\$310.69</b>	<b>\$284.12</b>	<b>\$893.19</b>		-47%
8 50 W Sodium Vapor Lamps	24	HPS50/1	Photo	21	504	12	6,048	\$1.81	\$43.33	\$44.31	\$40.52	\$128.16	\$5.34	-47%
9 70 W Sodium Vapor Lamps	21	HPS70/1	Photo	30	630	12	7,560	\$1.81	\$38.03	\$55.39	\$50.65	\$144.06	\$6.86	-40%
10 100 W Sodium Vapor Lamps	7	HPS100/1	Photo	42	294	12	3,528	\$1.81	\$12.68	\$25.85	\$23.64	\$62.16	\$8.88	-34%
11 250 W Sodium Vapor Lamps	1	HPS250/1	Photo	103	103	12	1,236	\$1.80	\$1.80	\$9.06	\$8.28	\$19.14	\$19.14	-23%
12 400 W Sodium Vapor Lamps	5	HPS400/1	Photo	174	870	12	10,440	\$1.79	\$8.97	\$76.48	\$69.94	\$155.40	\$31.08	-16%
					<b>2401</b>		<b>28,812</b>		<b>\$104.81</b>	<b>\$211.08</b>	<b>\$193.03</b>	<b>\$508.92</b>		-35%
<b>TOTALS -</b>	<b>353</b>				<b>9,232</b>		<b>110,784</b>		<b>\$635.55</b>	<b>\$811.62</b>	<b>\$742.21</b>	<b>\$2,189.37</b>		-47%
% Change (Existing to Retrofit)					-45%		-45%		-50%			-47%		

**ECM 1B. Replace all mercury vapor and incandescent lamps with "Contribution" Sodium Vapor Fixtures:**

			Rate (\$/kWh)	
Fixture	\$7,627	29% of total	n/a	
Supply	\$9,739	37% of total	\$0.088	(could be reduced with Independent Energy Supplier)
Delivery	\$8,906	34% of total	\$0.080	(JCP&L fixed - non negotiable)
Total	\$26,272		\$0.168	
Proposed kWh/yr	110,784 kWh/yr			

Annual Cost Savings (\$/yr)	\$23,341	47% reduction
Annual Electric Savings (kWh/yr)	91,320	45% reduction
Value (\$) of Electricity Saved -- Supply & Demand	\$15,370	
Change in Annual Fixture Charges (\$/yr)	(\$7,764)	-50% (decrease)

One Time Retrofit Charge (\$) \$118,797 (Estimated JCP&L charge to replace all Mercury Vapor and Incandescent Lamps if paying an up-front "Contribution" charge)  
Simple Payback 5.1 years