

Qualifications of Stephen R. Eckberg

My name is Stephen R. Eckberg. I am employed as a Utility Analyst with the Office of Consumer Advocate (OCA), where I have worked since 2007. My business address is 21 S. Fruit Street, Suite 18, Concord, New Hampshire 03301.

I earned a B.S. in Meteorology from the State University of New York at Oswego in 1978, and an M.S. in Statistics from the University of Southern Maine in 1994.

After receiving my M.S., I was employed as an analyst in the Boston office of Hagler Bailly, Inc, a consulting firm working with regulated utilities to perform evaluations of energy efficiency and demand-side management programs.

From 2000 through 2003, I was employed at the NH Governor's Office of Energy and Community Services (now the Office of Energy and Planning) as the Director of the Weatherization Assistance Program. More recently, I was employed at Belknap-Merrimack Community Action Agency as the Statewide Program Administrator of the NH Electric Assistance Program (EAP). In that capacity, I presented testimony before this Commission in dockets related to the design, implementation and management of the EAP. I have also testified before Committees of the New Hampshire Legislature on issues related to energy efficiency and low income electric assistance.

In my position with the OCA, I have testified jointly with Kenneth E. Traum, Former Assistant Consumer Advocate, in the following dockets:

- DG 08-048 Until Corporation and Northern Utilities, Inc. Joint Petition for Approval of Stock Acquisition.
- DW 08-070 Lakes Region Water Company Petition for Financing and Step Increases.

- DW 08-098 Aquarion Water Company of New Hampshire.
- DE 09-035 Public Service of New Hampshire Distribution Service Rate Case.

I have also entered (non-joint) testimony in:

- DT 07-027 Kearsarge Telephone Company, Wilton Telephone Company Hollis Telephone Company and Merrimack County Telephone Company Petition for Alternative Form of Regulation. Phase II and Phase III.
- DW 08-073 Pennichuck Water Works, Inc. Petition for Rate Increase.
- DW 08-070 Lakes Region Water Company Third Step Increase.
- DW 08-065 Hampstead Area Water Company Petition for Rate Increase.
- DE 09-170 2010 CORE Energy Efficiency Programs.
- DW 10-090 Pittsfield Aquaduct Company Petition for Rate Increase.
- DW 10-091 Pennichuck Water Works Petition for Rate Increase.
- DW 10-141 Lakes Region Water Petition for Rate Increase.
- DE 10-188 2011-2012 CORE and Natural Gas Energy Efficiency Programs.
- DE 12-292 PSNH 2013 Energy Service Rate.

I have attended regulatory training at New Mexico State University's Center for Public Utilities. I participate in committees of the National Association of State Consumer Advocates (NASUCA) on behalf of the OCA. I am a member of the American Statistical Association.

Program Cost-Effectiveness - 2013 PLAN

	Total Resource Benefit/Cost Ratio	Present Value							Number of Customers Served
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	
Residential Programs									
ENERGY STAR Homes	6.59	\$7,058.43	\$892.28	\$178.05	497.4	10,586.6	162.3	139.6	312
ENERGY STAR Lighting	1.26	\$1,502.63	\$882.28	\$308.43	3,616.7	21,754.6	1,416.9	376.5	59,009
ENERGY STAR Appliances	2.40	\$14,509.26	\$1,997.73	\$4,050.39	2,821.4	30,263.4	287.4	373.2	16,741
Home Performance w/ENERGY ST/	2.20	\$6,567.29	\$1,899.50	\$1,082.74	443.7	4,576.8	84.1	14.8	1,050
Home Energy Assistance	1.63	\$4,500.15	\$2,763.38	\$0.00	619.5	9,036.0	72.3	67.1	657
EnergyStar Homes (Geothermal)	2.87	\$1,942.95	\$378.12	\$298.34	1,173.3	29,333.6	311.8	10.3	69
Customer Engagement Program	0.70	\$177.43	\$252.08	\$0.00	2,700.0	2,700.0	283.6	308.2	25,000
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-
Subtotal Residential	2.42	\$36,258.14	\$9,065.357	\$5,917.96	11,872.0	108,251.0	2,618.5	1,289.7	102,838
Commercial/Industrial Programs									
Large Business Energy Solutions	2.26	\$21,208.09	\$5,052.89	\$4,316.13	15,447.8	205,517.8	2,047.4	2,794.7	349
Small Business Energy Solutions	1.86	\$12,227.37	\$3,518.50	\$3,054.66	7,900.4	107,385.3	1,304.5	1,243.9	1,610
Other (Education)	0.00	\$0.00	\$191.63	\$0.00	0.0	-	-	-	4
C&I RFP Energy Rewards Program	2.83	\$2,955.59	\$561.43	\$482.54	2,979.2	34,723.2	405.1	611.7	12
CI Partnerships		\$0.00	\$32.75	\$0.00	0.0	-	-	-	6
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-
Subtotal C&I	2.11	\$36,391.05	\$9,357.199	\$7,853.33	26,327.3	347,626.3	3,757.1	4,650.3	1,982
Smart Start		\$0.00	\$35.00	\$0.00	0.0	-	-	0	-
ISO-NE Forward Capacity Market		\$0.00	\$200.00	\$0.00	0.0	-	-	0	-
		\$0.00	\$235.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-
Total	2.24	\$72,649.19	\$18,657.556	\$13,771.29	38,199.3	455,877.4	6,375.6	5,940.1	104,820

Note 1: Plan includes 59,009 customers purchasing a total of 236,036 lighting products.



**Public Service
of New Hampshire**

Public Service Company of New Hampshire
780 N. Commercial Street
P.O. Box 330
Manchester, NH 03105-0330
(603) 669-4000
www.psnh.com

The Northeast Utilities System

October 12, 2012

Debra A. Howland
Executive Director and Secretary
New Hampshire Public Utilities Commission
21 South Fruit Street Suite 10
Concord, NH 03301

Re: RSA 125-O:5, Public Service Company of New Hampshire report on the
use of SBC funds for energy efficiency projects at PSNH facilities

Dear Secretary Howland:

As required in accordance with RSA 125-O:5, PSNH is submitting its report detailing how unencumbered System Benefits Charge funds were used for cost-effective energy efficiency projects at PSNH facilities. The Company's last report filed September 23, 2010, reported on the transfer of \$500,000 from the fund balance to the CORE Programs fund balance for use on customer projects. This action was formally approved by the Public Utilities Commission¹. As noted in that report, after that transfer the fund balance was \$264,939. During 2010, an additional \$238,330 was added to the fund leaving a 2010 year-end balance of \$503,269 available for future projects at Company facilities.

Although no projects were completed in 2010, six projects were completed in 2011 totaling \$134,060. Descriptions of these projects are included in the attached report. Also in 2011, an additional \$230,791 was added to fund balance. While the unencumbered funds in 2011 were actually higher, the amount added to the unencumbered funds balance was limited \$230,791 to comply with the maximum fund balance of \$600,000. This maximum balance restriction is in accordance with the "Settlement Agreement On PSNH RSA 125-O Issues" filed on July 13, 2010. As reported earlier in our June 1, 2012, performance incentive submission, \$600,000 was the fund balance starting January 2012.

Please let me know if you have any questions or require additional information.

Sincerely,

Gilbert E. Gelineau, Jr.
Manager Marketing Support

¹ Docket No. DE 09-170, Order No. 25,099 (April 10, 2010) "Having said that, we commend PSNH's shift of \$500,000 of the set-aside funds to its Core program budget to help make up the shortfall occasioned by SB 300." Slip op. at 14.



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The Northeast Utilities System

October 12, 2012

Craig A. Wright
Acting Director, Air Resources Division
New Hampshire Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Re: RSA 125-O:5, Public Service Company of New Hampshire report on the use of
SBC funds for energy efficiency projects at PSNH facilities

Dear Director Wright:

As required in accordance with RSA 125-O:5, PSNH is submitting its report detailing how unencumbered System Benefits Charge funds were used for cost-effective energy efficiency projects at PSNH facilities. The Company's last report filed September 23, 2010, reported on the transfer of \$500,000 from the fund balance to the CORE Programs fund balance for use on customer projects. This action was formally approved by the Public Utilities Commission¹. As noted in that report, after that transfer the fund balance was \$264,939. During 2010, an additional \$238,330 was added to the fund leaving a 2010 year-end balance of \$503,269 available for future projects at Company facilities.

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**PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
REPORT ON THE USE OF SBC FUNDS FOR
ENERGY EFFICIENCY PROJECTS AT PSNH FACILITIES**

Compliance Report for Calendar Year 2011

I. INTRODUCTION

The enabling language contained in New Hampshire statute RSA 125-O: 5 authorizes PSNH to utilize a portion of the funds collected from the System Benefits Charge (SBC) to fund energy efficiency projects and energy saving measures at Company facilities. The complete text of the relevant statute is included below:

***CHAPTER 125-O
MULTIPLE POLLUANT REDUCTION PROGRAM***

Section 125-O: 5

125-O: 5 Energy Efficiency, Renewable Energy, and Conservation and Load Management Incentive.

- I. In order to encourage energy efficiency, energy conservation, renewable energy, and the reduction in local emissions which result, the integrated multi-pollutant strategy shall promote energy efficiency and conservation through conservation and load management programs.
- II. Public Service Company of New Hampshire (PSNH) may utilize SBC funds equivalent to the unencumbered amount, if any, rolled over from the prior program year for energy efficiency projects at facilities owned and operated by PSNH, provided that the company made a good faith effort in the prior program year to meet the goals approved by the public utilities commission for its core energy efficiency programs, and provided that the SBC funds used by PSNH shall not exceed 2 percent of all SBC funds collected in the prior program year. PSNH may utilize these funds to implement approved core energy efficiency initiatives or measures at PSNH's facilities that are cost effective and which enhance the efficient use of energy at PSNH facilities. Any energy savings resulting from the use of these funds by PSNH at its facilities will not be included in the calculation of PSNH's energy efficiency program goals, any shareholder incentive, or any other incentive program. In any year that PSNH utilizes SBC funds, PSNH shall submit a report to the public utilities commission and the department detailing how these funds were utilized, and will make the report available to interested parties. Any party may request that the public utilities commission schedule a hearing to review these reports and the expenditure by PSNH of rolled over SBC funds at its facilities.

Source. 2002, 130:2, eff. July 1, 2002. 2008, 182:10, eff. June 11, 2008.

Although the statute was enacted in July 2002, PSNH did not select specific projects at its facilities that would qualify for use of SBC funds to offset the cost of energy efficiency improvements until calendar year 2006. Projects were completed and funds were used in 2006-2008 and in 2011 (no projects were completed in 2009 or 2010) for energy efficiency investments at company facilities and the attached report will describe the projects for each of the three calendar years as required.

III. SCREENING PROCESS AND SELECTION CRITERIA

In evaluating PSNH facility projects, the minimum criterion was that the project would have to qualify for incentives had it been undertaken at a customer facility. However, PSNH choose to go beyond this minimum threshold condition to ensure that projects with high energy savings for the dollars invested were given priority. The following describes the process that was established to ensure that high-value projects were identified and screened:

- PSNH undertook an assessment of its facilities to identify energy saving opportunities and estimated costs. Twenty-seven projects were identified in the initial screening process.
- The projects were then ranked based on the cost per kilowatt-hour saved.
- The facility audit results were then presented to the PSNH Capital Budget Review Committee which meets monthly to review major capital projects. The Committee has representation from all functional areas (e.g. customer operations, customer service, energy delivery, generation, etc.). The Committee's role was expanded to include cross-functional review, oversight, and approval of SBC-funded energy saving projects. The following criteria were considered when selecting projects:
 - All else being equal, projects with a lower cost/kWh saved were given priority over those with a higher cost/kWh saved.
 - The cost to save a lifetime kWh must be less than or equal to 8 ¢/kWh.
NOTE: The Energy Service (ES) rate, which closely approximates the PSNH actual costs to supply a kWh, was 9.13 ¢/kWh when this criterion was established. Use of this criterion ensures that demand-side energy saving projects will be lower cost than their supply-side alternative.
- Additional consideration is given to new construction and to projects located in facilities undergoing renovations independent of the identified efficiency project.

IV. PSNH ENERGY EFFICIENCY PROJECT FUNDING

Table 1 below details the total available funding (set at a maximum of 2%) based on PSNH's actual kWh sales¹.

Table 1

	2008	2009 ¹	2010	2011
Beginning Balance	\$1,824,321	\$764,939	\$764,939	\$503,269
+ 2% PSNH Set Aside		\$0	\$238,330	\$230,791
- PSNH EE Projects (see Note 2)	\$1,059,382	\$0	\$0	\$134,060
- One-Time Transfer to CORE EE	\$0	\$0	\$500,000	\$0
Year-End Fund Balance	\$764,939	\$764,939	\$503,269	\$600,000

Note 1: In 2009, PSNH did not transfer \$275,699 in unencumbered funds for energy efficiency projects at PSNH facilities.
Note 2: The \$500,000 in PSNH Projects was actually transferred to the 2010 CORE NH Energy Efficiency Programs per a February 19, 2010 filing recommending proposed budget changes and approved in Commission Order 25,099 issued April 30, 2010.

IV. GOOD FAITH EFFORT

PSNH made a good faith effort to meet the goals approved by the Commission. As part of the Core Energy Efficiency Programs filing and proceedings, PSNH projected certain goals in the various programs for the number of customers served, number of rebates (Small Commercial and Industrial) or rebate dollars (residential lighting) distributed or the amount of funds invested in new construction or retrofit programs (Large Commercial and Industrial). PSNH substantially met or exceeded these goals. PSNH also exceeded the projected cost/benefits of the services provided to both the residential and nonresidential sectors in each of the years as well as the projected lifetime kilowatt-hour savings for each of these two customer sectors. Due to PSNH's ability to complete energy efficiency projects at a cost below those estimated in the initial filings, there were unencumbered funds in some program years.

Table 2 lists all of the projects completed at PSNH facilities which utilized SBC funding in 2011. Each of these projects is described in more detail in sections 1 through 6 of this report.

Table 2

No.	Project Location and Description	Project Cost
1	Berlin AWC - Lighting	\$29,967.00
2	Chocorua AWC - Lighting	\$22,055.00
3	Lancaster AWC - Lighting	\$21,991.00
4	Milford AWC - Lighting	\$17,100.00
5	Schiller Station - Lighting	\$28,170.16
6	1250 Hooksett Rd - Lighting + HVAC	\$14,777.00
	TOTAL	\$134,060.16

¹ The 2% was only available if there was a sufficient unspent balance at the end of the program year.

V. SUMMARY

As of the beginning of 2011, a total of \$503,269 of unencumbered funds was available for investment in beneficial energy efficiency projects at PSNH facilities in 2011. Based on 2011 year-end results, the additional 2% funding was calculated to be \$230,791 (the actual amount was \$256,338 but was reduced to comply with the \$600,000 cap). PSNH completed six projects in 2011 totaling \$134,060, leaving a year-end balance of \$600,000 going into 2012.

These projects provide a way for customers who do not participate in the CORE Programs to benefit from cost-effective investment of SBC funds. The energy savings that will accrue from these projects reduce the amount of energy that is considered PSNH "company use" – a benefit which flows to PSNH customers through the Energy Service rate. The following sections more fully describe the specific energy efficiency projects that were completed.

1. Berlin Area Work Center

68 Jericho Road, Berlin, NH

Description:

The Berlin Area Work Center consists of offices, a conference room and a lunchroom in the office section of the building. There are three garage areas that include a line truck garage, a maintenance repair garage and a leased garage. New high efficiency T8 fixtures with reduced wattage lamp and ballast systems replaced the facility's existing lighting. The existing lighting fixtures were +/- 25 year old T8 32W fluorescent fixtures with prismatic lenses that were in some cases cracked, yellowing and provided inadequate lighting in the office area. The existing lighting in the garage consisted of 250W and 400W Metal Halide fixtures.

The project scope completed in February of 2011 included replacement of all the existing lighting in the facility as follows:

- Installed a total of 184 new high efficient T8 fixtures with reduced wattage 28W lamp and ballast systems. This included replacing the 250W and 400W metal halide fixtures in the garage areas with high efficient low bay T8 fluorescent fixtures.
- Installed 45 occupancy sensors in various locations throughout the building.
- installed new LED exit signs to replace the incandescent exit signs.

Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
\$29,967	679,627	\$0.044

Project Timeline:

This project was reviewed by PSNH's Capital Budget Review committee and completed in February of 2011. The project has a simple payback of 5.3 years.

Benefits:

- Greatly reduced energy used for lighting
- Increased light levels
- Improved lighting quality
- Lower maintenance costs
- Reduced wattage 28W T8 lamps used throughout the building
- Annual energy savings of 52,279 kWh

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Figure 1a: Berlin AWC Garage Lighting (Before)

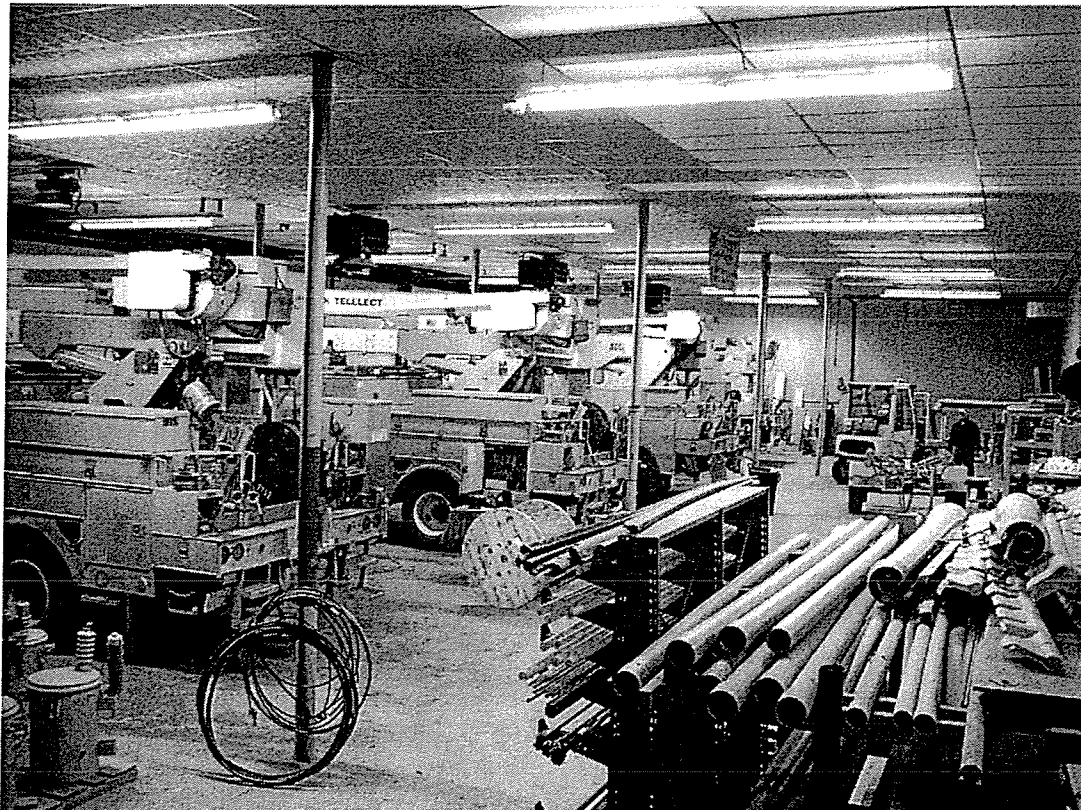


Figure 1b: Berlin AWC Garage Lighting (After EE Upgrade)

2. Chocorua Area Work Center

169 White Mountain Hwy, Tamworth, NH

Description:

The Chocorua Area Work Center consists of offices, conference room, lunchroom and a garage for line trucks. New high efficiency T8 fixtures with reduced wattage lamp and ballast systems replaced the facility's existing lighting. The existing lighting fixtures were +/- 25 year old T8 32W fluorescent fixtures with prismatic lenses that were in some cases cracked, yellowing, and provided inadequate lighting in the office area. The existing lighting in the garage consisted of 400W Metal Halide and High Pressure Sodium fixtures.

The project scope completed in February of 2011 included replacement of all the existing lighting in the facility as follows:

- Installed a total of 180 new high efficient T8 fixtures with reduced wattage 28W lamp and ballast systems. This included replacing the 400W metal halide and high pressure sodium fixtures in the garage with high efficient T8 fluorescent fixtures.
- Installed 15 occupancy sensors in various locations throughout the building.
- Installed new LED exit signs to replace the incandescent exit signs.

Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
\$22,055	406,900	\$0.054

This project was reviewed by PSNH's Capital Budget Review committee and completed in February of 2011. The project has a simple payback of 6.5 years.

Benefits:

- Greatly reduced energy used for lighting
- Increased light levels
- Improved lighting quality
- Lowered maintenance costs
- Reduced wattage 28W T8 lamps used throughout the building
- Annual energy savings of 31,300 kWh



Figure 2a: Chocorua AWC Garage Lighting (Before)

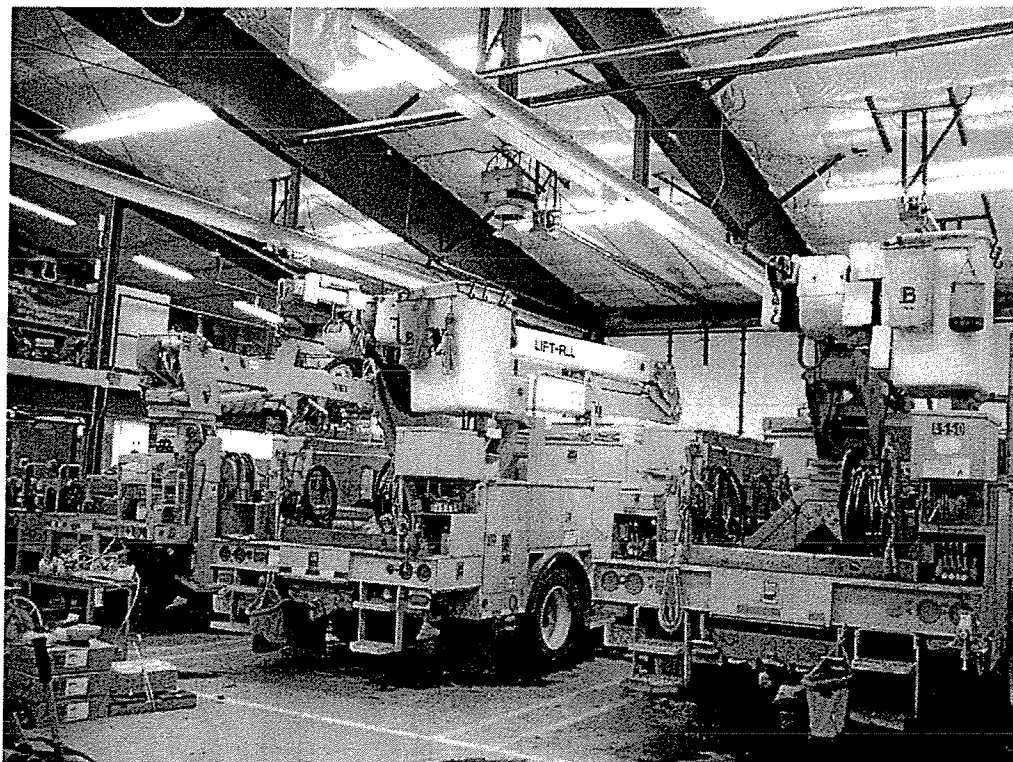


Figure 2b: Chocorua AWC Garage Lighting (After EE Upgrade)

3. Lancaster Area Work Center

425 Main Street, Lancaster, NH

Description:

The Lancaster Area Work Center consists of offices, conference room, lunchroom and a garage for line trucks. New high efficiency T8 fixtures with reduced wattage lamp and ballast systems replaced the facility's existing lighting. The existing lighting fixtures were +/- 25 year old T8 32W and some T12 fluorescent fixtures with prismatic lenses that were, in some cases cracked, yellowing, and provided inadequate lighting in the office area. The existing lighting in the garage consisted of 400W Metal Halide fixtures.

The project scope completed in February of 2011 included replacement of all the existing lighting in the facility as follows:

- Installed a total of 146 new high efficient T8 fixtures with reduced wattage 28W lamp and ballast systems. This included replacing the 400W metal halide fixtures in the garage with high efficient T8 fluorescent fixtures.
- Installed 20 occupancy sensors in various locations throughout the building.
- Installed new LED exit signs to replace the incandescent exit signs.

Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
\$21,991	368,771	\$0.060

This project was reviewed by PSNH's Capital Budget Review committee and completed in February of 2011. The project has a simple payback of 7.1 years.

Benefits:

- Greatly reduced energy used for lighting
- Increased light levels
- Improved lighting quality
- Lowered maintenance costs
- Reduced wattage 28W T8 lamps used throughout the building
- Annual energy savings of 28,367 kWh



Figure 3a: Lancaster AWC Garage Lighting (Before)



Figure 3b: Lancaster AWC Garage Lighting (After EE Upgrade)

4. Milford Area Work Center

138 Elm Street, Milford, NH

Description:

The Milford Area Work Center consists of offices, conference room, lunchroom and a garage for line trucks. The office area had fairly new parabolic T8 fixtures which stayed in place. The existing 32W lamps and ballast were changed to reduced wattage T8 28W lamp and ballast systems. The wall packs on the exterior of the building were the older technology probe start metal halide fixtures and were changed to LED fixtures. The existing lighting in the garage consisted of 8 foot T8 fluorescent fixtures.

The project scope completed in December of 2011 included replacement of all existing lamp and ballast systems in the facility as follows:

- A total of 123 existing fixtures were retrofitted with new high efficient T8 fixtures with reduced wattage 28W lamp and ballast systems. This included replacing the exterior metal halide wall packs with new LED fixtures and replacing the metal halide floodlight fixtures with more efficient pulse start metal halide fixtures. The garage fixtures received new reflectors along with the reduced wattage T8 lamps and ballast system.
- Installed 9 occupancy sensors in various locations throughout the building.
- Installed new LED exit signs to replace the incandescent exit signs.
- Installed LED wall pack fixtures on the exterior of the building.

Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
\$17,100	246,168	\$0.069

This project was reviewed by PSNH's Capital Budget Review committee and completed in December of 2011. The project has a simple payback of 8.3 years.

Benefits:

- Greatly reduced energy used for lighting
- Increased light levels
- Improved lighting quality
- Lowered maintenance costs
- Reduced wattage 28W T8 lamps used throughout the building
- Annual energy savings of 18,936 kWh

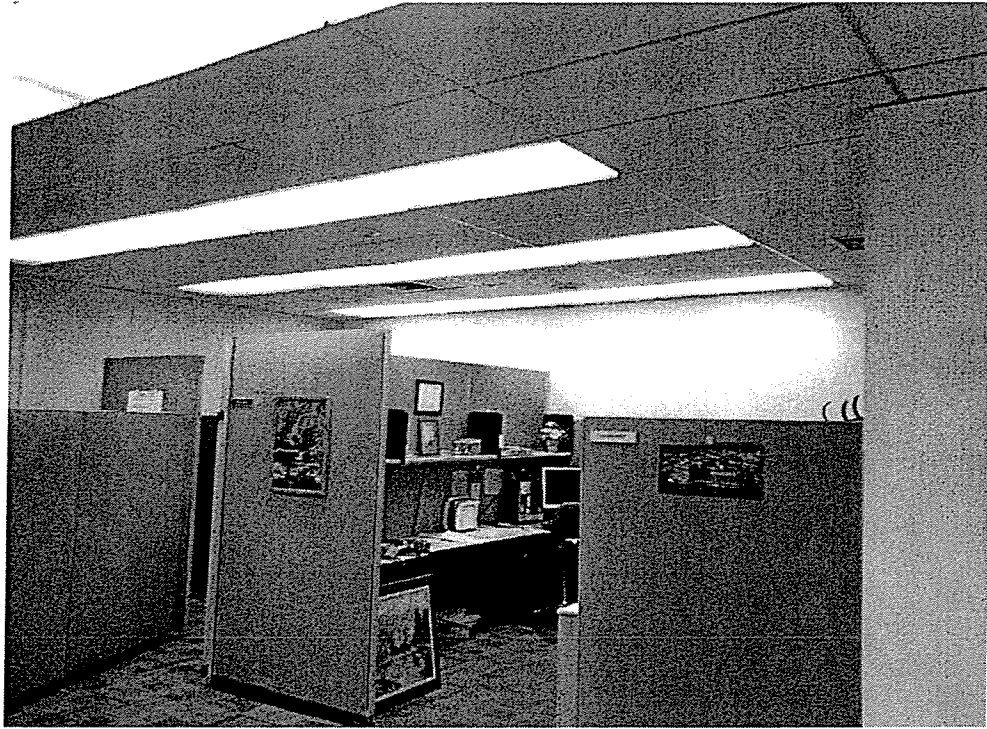


Figure 4a: Milford AWC existing fixtures retrofitted with high performance reduced wattage lamps and ballasts.



Figure 4b: Milford AWC - existing lighting in garage lighting replaced with new high performance reduced wattage lamps and ballast fixtures with reflectors.

5. Schiller Station

Gosling Road, Portsmouth, NH

Description:

The Turbine Bay of the station was dimly lit with 1960's vintage high bay 400W metal halide probe start lighting fixtures. During the assessment, the recommendation was made to replace the existing fixtures with high output fluorescent fixtures. The new fixtures decreased the energy consumption by 23% and increased the light levels on the operating floor by 40+ %. Occupancy sensors were installed in 40 of the 60 high bay fixtures that shut off the lights when no one is in the area. In December of 2011 the relighting work was completed at Schiller Station:

- Replaced 60 existing 400W metal halide light fixtures with high output high bay T5 fluorescent fixtures.
- Installed 40 occupancy sensors.

Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
\$28,170	857,428	\$0.033

Project Timeline:

This project was approved by the PSNH Capital Budget Review Committee and completed in December 2011. The project has a simple payback of 3.9 years.

Benefits:

- Greatly reduced energy used for lighting
- Increased light levels
- Improved lighting quality
- Lowered maintenance costs
- Reduced wattage T5 lamps in all the high bay fixtures
- Annual energy savings of 65,956 kWh

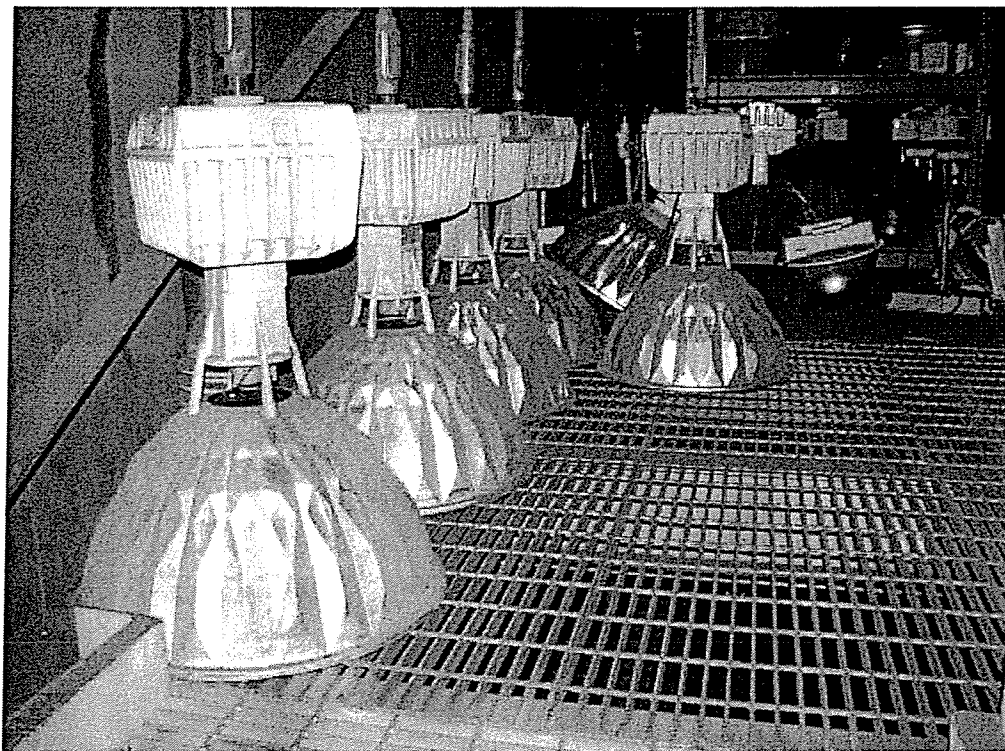


Figure 5a: Old Metal Halide Fixtures in Turbine Bay at Schiller Station



Figure 5b: Schiller Station Turbine Bay (After EE Upgrade)

6. Hooksett Transmission, Distribution and Maintenance

1250 Hooksett Rd, Hooksett, NH

Description:

The efficiency projects at this facility were part of a major renovation being performed in 2011 and continuing into 2012. As part of the renovations, high efficient light fixtures and HVAC equipment were specified and installed. The completed project included:

- 163 high efficient T8 fixtures and reduced wattage 28W lamp and ballast systems
- 19 high efficiency heat pump units varying in size from 1.5 to 4.0 tons

Measure	Project Cost	Lifetime kWh Savings	Cost / Lifetime kWh Savings
Lighting	\$10,960	214,275	\$0.051
HVAC	\$3,877	176,580	\$0.022

Project Timeline:

The Capital Budget Review Committee reviewed and approved the additional funding in 2011 to specify and purchase the higher efficiency equipment. The equipment was installed by December 2011.

General Benefits:

The higher quality lighting for employees at PSNH facilities saves energy and reduced maintenance costs. On average there are fewer issues when higher efficiency systems and equipment are installed in buildings.

- High efficiency fixtures have fewer lamps consuming less energy
- Higher efficiency lamps that produce more lumens and have a longer life
- Better to see colors (higher color rendering index or CRI)
- High efficiency ballasts
- Occ Sensors that shuts the lights off when area not in use
- High Efficiency Water Source Heat Pumps for Heating & Cooling
- Annual energy savings of 14,285 kWh for Lighting and 11,772 kWh for HVAC

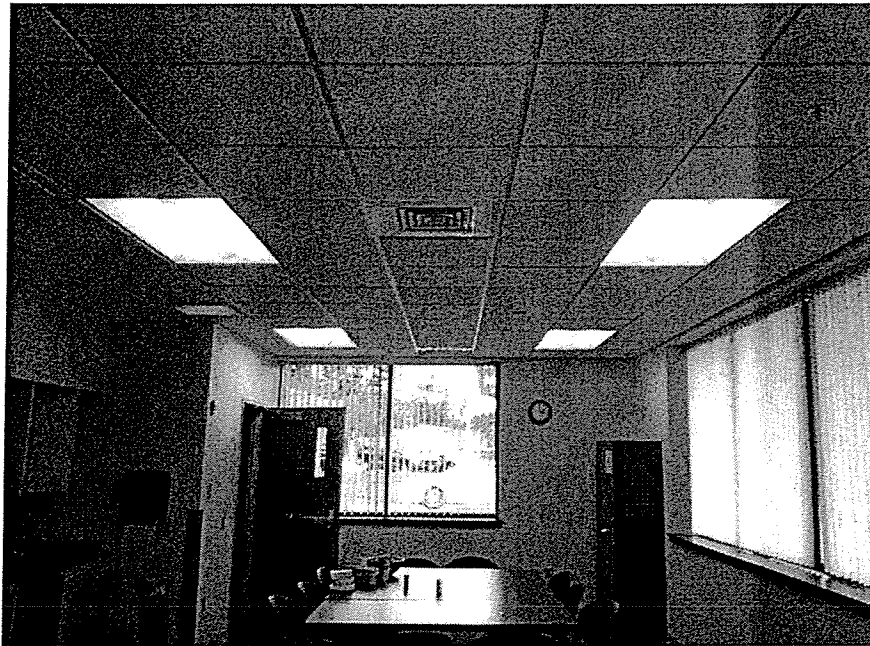


Figure 6a: New high efficiency indirect lighting fixtures in Cafeteria

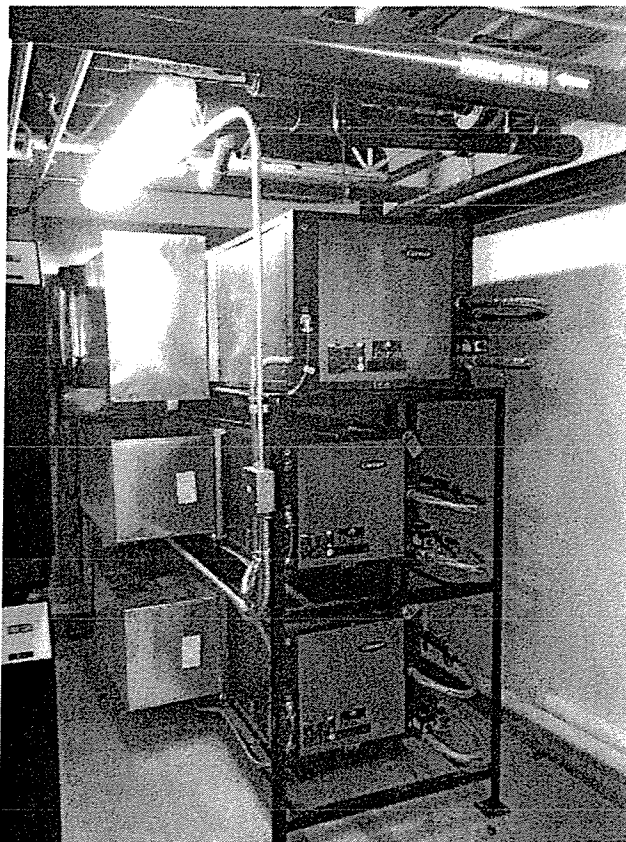


Figure 6b: New high efficiency water source heat pumps

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Summary of 2011 PSNH Facility Projects

The \$134,120 spent in 2011 on six major projects at PSNH facilities resulted in substantial energy savings of 222,895 kWh annually and 2,949,749 kWh over the life of the equipment. The average cost / lifetime kWh savings was \$0.045 and the simple payback for all 2011 projects was 5.7 years.

Furthermore, the SBC funds were invested in a manner that benefits customers, the community, and the employees. These energy savings also result in the reduction of greenhouse gas emissions, an important part of the multi-pollutant bill. The following chart shows both the reduction in oil and the greenhouse gas reductions.

transition & default energy charge effective 7-1-11, emissions updated 5/04					
Estimated Energy Savings for Rate GV Customers					
	222,895 kWh	X	13.00 year measure life	=	2,897,635 Lifetime kWh Savings
X	\$ 0.10645 per kWh			\$	0.10645
	\$ 23,727 annual energy savings			\$	308,453 Lifetime energy savings
Reduced Power Plant Emissions					
CO2 (a "greenhouse" gas)					
	222,895 kWh	X	1.107 lbs/kWh	=	246,745 lbs/year
SO2 (a cause of acid rain)					
	222,895 kWh	X	0.00175 lbs/kWh	=	390 lbs/year
NOx (a cause of acid rain)					
	222,895 kWh	X	0.00054 lbs/kWh	=	120 lbs/year
The above calculations assume fossil fuels are burned to provide incremental energy to the PSNH distribution system. (Nuclear power plants provide baseload energy and their operation would not be affected by this energy efficiency project.)					

Public Service Company of New Hampshire
Docket No. DE 12-262

Data Request OCA-02
Dated: 10/31/2012
Q-OCA-003
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Witness: Thomas R. Belair
Request from: Office of Consumer Advocate

Question:

To PSNH: Reference "RSA 125-O:5 Report" dated October 12, 2012. (The report was distributed via email from Tom Belair to CORE parties on 10/18/12. If you need a copy, please feel free to contact the OCA.) Please respond to the following:

- a. At page 2 it states "PSNH undertook an assessment of its facilities..." Was this assessment performed by PSNH employees or another party? Please identify all costs related to this assessment which were paid for through the RSA 125-O:5 fund or with other SBC funds.
- b. At page 2 it states "Twenty-seven projects were identified in the initial screening process." Please provide a listing of these projects, the cost and savings estimates for each, the estimated cost per lifetime kWh saved for each, and the ranking of each project.
- c. For each of projects 1, 2, 3 (Berlin, Chocorua, Lancaster) completed in February 2011, please provide a table comparing monthly energy consumption data in 2010 (pre-retrofit) and 2011 (post-retrofit). Such a comparative table would likely present data beginning with comparison of March 2010 and March 2011 data (the first month that post-retrofit data may be available) through the most recent data available). Data may be presented on a billing cycle basis rather than calendar month basis for convenience.
- d. At page 6, the description of the Berlin AWC project indicates one of the three garage areas is leased space. Please provide a discussion of issues related to performing energy efficiency improvements on this property if it is not Company owned. Please include such details as the period of the lease, name of lessor, traditional "split-incentive" issue related to EE investments on non-owned property, whether the project was performed by Company personnel, and whether the project cost shown represents the fully installed cost including assessment/audit, project design, materials and labor.
- e. How were the old metal halide fixtures such as those removed in projects 1, 2, 3, and 5 disposed of? Was there any salvage value realized for ratepayers?
- f. At page 16 the report describes the project at the Hooksett Transmission, Distribution & Maintenance (TD&M) facility. Please provide additional details on the HVAC project performed. Figure 6b shows "New high efficiency water source heat pumps." Is this a new or upgraded geothermal heat pump installation? If so, when was the system first installed? What was the existing HVAC system that was upgraded or replaced? Are there savings being reported that are related to fuel use reduction other than kWh savings (i.e. are there "equivalent kWh" savings being reported)?
- g. At page 19 the report provides Summary details on reduced power plant emissions. Do the figures provided account for the installation of the Clean Air Project (CAP) at Merrimack Station? That is, if SO2 emissions per kWh have been reduced by the installation of the CAP, does the value shown of 0.00175 lbs/kWh reflect the CAP related reductions? If so, what was the pre-CAP estimate of SO2 lbs/kWh emitted?

Response:

- a. Initial walk through assessments were performed by PSNH's electrical contractor whose time was paid for by the Facilities Department. No assessment costs were paid for by RSA 125-O-5 or SBC funds.
- b. Please see page 3 for the list of prioritized projects.

- c. Please see page 4 for a report summarizing the usage data for PSNH's Berlin, Chocorua and Lancaster Area Work Centers.
- d. The word "leased" was incorrectly used in this report. The Berlin AWC is a PSNH facility operated by PSNH.
- e. All the old lighting including lamps, ballast and fixtures are disposed of by PSNH in accordance with PSNH's light disposal procedures. Lamps, ballast and fixtures are placed in specially marked containers from the various PSNH buildings, shipped to a central location and then disposed of or recycled by authorized contractors. There is no salvage value associated with the disposal of the old materials.
- f. This project is a new water source heat pump system, coupled with a gas boiler, providing both heating and cooling. This project was installed in 2011. The existing HVAC equipment included an oil fired boiler attached to a hot water heating system, with separate air conditioning units. Since this was really a new equipment and construction project, PSNH estimated all the kWh savings based on incremental savings of new standard efficient versus new high efficient water source heat pumps, and therefore are all kWh savings.
- g. PSNH used the regional ISO-NE marginal power plant emissions for this calculation. The figures provided did not account for the installation of the Clean Air Project at Merrimack Station because they came from ISO-NE's 2006 and 2007 reports and the Clean Air Project was declared in-service September 2011.

(PSNH Response)

PSNH Facility Projects

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# Project	Category	Efficiency Measure	Estimated Project Cost	Actual Project Costs	Estimated Annual kWh Savings	Estimated Lifetime kWh Savings	Project Cost / Lifetime kWh Savings	Work Completed in
1 Pittsfield Area Work Center (AWC)	AWC	Lighting	\$9,000	\$9,975	9,089	181,780	0.055	2006
2 MK Station Air Compressor	MK Station	Comp Air	\$520,000	\$520,000	3,720,671	55,810,065	0.009	2006,07,08
3 MK Station Lighting	MK Station	Lighting	\$188,068	\$172,675	879,580	13,193,700	0.013	2007,08
4 AMC - 80 West Penn	Auto Main Ctr	Lighting	\$24,700	\$24,975	30,824	616,480	0.041	2007
5 Cust Serv Call Center	Call Center	Lighting	\$121,117	\$121,117	150,065	3,001,300	0.040	2007
6 Cust Serv Lighting Retro, 1st flr	Call Center	Lighting	\$9,800	\$5,952	5,559	83,385	0.071	2007
7 Cust Serv Lighting Retro, 2nd flr	Call Center	Lighting	\$57,000	\$54,900	53,570	803,550	0.068	2007
8 Cust Serv 2-HVAC Retrofit	Call Center	HVAC	\$106,184	\$113,800	151,800	2,277,000	0.050	2007
9 Rochester AWC	Call Center	Lighting	\$19,000	\$36,768	44,811	896,220	0.041	2008
10 Milford AWC	Call Center	Lighting	\$3,975	\$17,100	18,936	246,168	0.069	2011
11 Lancaster AWC	Call Center	Lighting	\$26,500	\$21,991	28,367	368,771	0.060	2011
12 Chocorua AWC	Call Center	Lighting	\$16,800	\$22,055	31,300	406,900	0.054	2011
13 Berlin AWC	Call Center	Lighting	\$26,500	\$29,967	52,279	679,627	0.044	2011
14 1250 Hooksett Rd Building Renovations	AWC	Lighting	\$10,100	\$10,960	14,285	214,275	0.051	2011
15 1250 Hooksett Rd Building Renovations	AWC	HVAC	\$5,000	\$3,877	11,772	176,580	0.022	2011
16 Schiller Station	Schiller Station	Lighting	\$25,000	\$28,170	65,956	857,428	0.033	2011
17 Portsmouth AWC	Call Center	Lighting	\$26,000	\$37,529	81,024	1,053,312	0.036	2012
18 60 W Pennacook St	AWC	Lighting	\$9,850		4,071	81,420	0.121	TBD
19 Epping AWC	AWC	Lighting	\$10,100		5,187	103,740	0.097	TBD
20 1250 Hooksett Rd Steel Building	AWC	Lighting	\$10,100		6,271	125,420	0.081	TBD
21 1580 Elm Street	IT Offices	Lighting	\$21,800		13,779	275,580	0.079	TBD
22 Newport AWC	AWC	Lighting	\$13,950		9,850	197,000	0.071	TBD
23 Nashua AWC	AWC	Lighting	\$26,400		23,453	469,060	0.056	TBD
24 Hillsborough AWC	AWC	Lighting	\$8,250		10,250	205,000	0.040	TBD
25 North Haverill AWC	AWC	Lighting	\$9,100		11,492	229,840	0.040	TBD
26 Keene AWC	AWC	Lighting	\$25,000		47,828	956,560	0.026	TBD
27 MK Station Power Spray Modules	MK Station	Motors	\$406,000		1,210,178	18,152,670	0.022	TBD
Estimated Totals (Completed 2016-2012)				\$1,231,811	5,349,888	80,866,541		
Estimated Totals (TBD)			\$540,550		1,342,359	20,796,290		

PSNH Area Work Centers
Monthly kWh and kW Usage Data

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Berlin Area Work Center

Billing Cycle	2010		2011		2012	
	kWh	kW	kWh	kW	kWh	kW
Dec	35,280	115.2	34,560	108.0		
Nov	20,400	112.8	15,840	60.0		
Oct	15,600	134.4	8,160	40.8		
Sept	9,120	21.6	6,960	16.8	7,440	50.4
Aug	8,160	19.2	6,480	16.8	7,440	19.2
July	7,920	21.6	6,960	16.8	6,720	48.0
Jun	7,680	24.0	6,480	16.8	7,200	64.8
May	13,200	132.0	7,200	43.2	12,000	96.0
Apr	14,160	88.8	22,560	67.2	21,120	112.8
Mar	24,960	120.0	27,840	86.4	31,920	160.8
Feb			34,560	110.4	46,560	156.0
Jan			41,760	122.4	61,920	172.8

Chocorua Area Work Center

Billing Cycle	2010		2011		2012	
	kWh	kW	kWh	kW	kWh	kW
Dec	24,000	89.6	20,160	52.8		
Nov	11,360	75.2	10,560	57.6		
Oct	6,880	30.4	8,480	24.0	8,000	46.4
Sept	7,520	24.0	8,480	36.8	9,920	25.6
Aug	11,360	30.4	10,080	30.4	10,720	27.2
July	10,560	27.2	9,760	22.4	9,600	30.4
Jun	11,680	84.8	7,840	64.0	10,880	52.8
May	18,080	96.0	18,880	72.0	12,320	60.8
Apr	20,640	91.2	28,480	99.2	31,040	84.8
Mar	31,200	108.8	32,000	91.2	31,680	76.8
Feb			33,920	105.6	35,680	113.6
Jan			29,280	112.0	29,120	124.8

Lancaster Area Work Center

Billing Cycle	2010		2011		2012	
	kWh	kW	kWh	kW	kWh	kW
Dec	23,160	105.6	17,880	97.2		
Nov	13,200	76.8	11,280	99.6		
Oct	6,600	46.8	5,520	51.6	5,280	50.4
Sept	6,240	12.0	5,880	8.4	5,280	8.4
Aug	6,480	12.0	5,160	8.4	5,760	26.4
July	6,240	45.6	6,240	31.2	5,880	27.6
Jun	8,400	58.8	7,440	36.0	6,600	33.6
May	13,200	72.0	13,200	78.0	11,880	72.0
Apr	20,760	82.8	26,880	98.4	18,000	74.4
Mar	29,040	110.4	35,400	121.2	30,960	85.2
Feb			34,920	126.0	31,440	102.0
Jan			36,600	115.2	29,280	96.0