Local Government Energy Audit:
Energy Audit Report

Public Works Building #1

Borough of Folsom

1461 Backline Road

Folsom, NJ 08037

November 4, 2016

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities associated with recommended upgrades to the facility's systems at this site. Approximate savings are included in this report to make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. It should be noted that detailed design efforts are required in order to implement several of the improvements evaluated as part of this energy analysis.

The energy conservation measures and estimates of energy consumption contained in this report have been reviewed for technical accuracy. However, all estimates contained herein of energy consumption at the site are not guaranteed, because energy consumption ultimately depends on behavioral factors, the weather, and many other uncontrollable variables. The energy assessor and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy consumption vary from the estimated consumption shown herein.

Estimated installation costs are based on a variety of sources, including our own experience at similar facilities, our own pricing research using local contractors and vendors, and cost estimating handbooks such as those provided by RS Means. The cost estimates represent our best judgment for the proposed action. The Owner is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for a particular installation, and for conditions which cannot be known prior to in-depth investigation and design, the energy assessor does not guarantee installed cost estimates and shall in no event be liable should actual installed costs vary from the estimated costs herein.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates and are based on program information available at the time this report is written. The NJBPU reserves the right to extend, modify, or terminate programs without prior or further notice, including incentive levels and eligibility requirements. The Owner should review available program incentives and requirements prior to selecting and/or installing any recommended measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Public Works Building #1.

The goal of a LGEA is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and put you in a position to implement the ECMs. The LGEA also sets you on the path to receive financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing the ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist The Borough of Folsom in controlling energy costs and protecting our environment by offering a full spectrum of energy management options.

1.1 Facility Summary

Public Works Building #1 is a 1,600 square foot facility comprised of about 150 square feet of office space with the remaining space is used as a workshop and storage area. It consists mostly of aging and inefficient lighting, with most mechanical systems approaching 17 years of age. A thorough description of the facility and our observations are located in Section 2 "Facility Information and Existing Conditions".

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services evaluated four (4) projects which represent an opportunity for Public Works Building #1 to reduce annual energy costs by roughly $770. The measures would pay for themselves in roughly 5.59 years. The breakdown of existing and potential utility costs is illustrated in Figure 1 and Figure 2, respectively. These projects represent an opportunity to reduce Public Works Building #1's annual energy use by an estimated 13.8%, and results in a reduction in greenhouse gas (GHG) emissions of 5,781 lbs CO_2e.

Figure 1 –12 Month Utility Costs

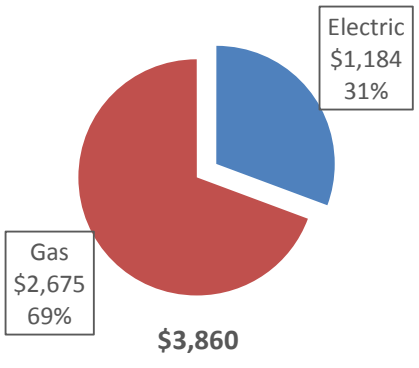
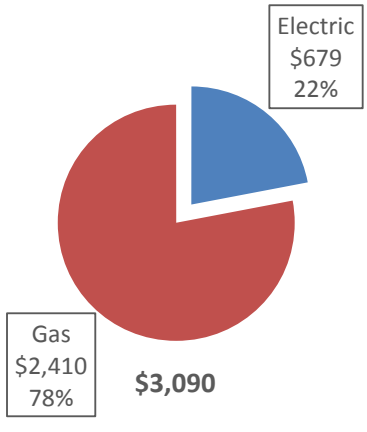


Figure 2 – Potential Post-Implementation Costs



A detailed description of Public Works Building #1's existing energy use can be found in Section 3, "Site Energy Use and Costs".

The evaluated measures have been listed and grouped into major categories as shown in Figure 3. Brief descriptions of the categories can be found below and descriptions of the individual opportunities can be found in Section 4, "Energy Conservation Measures".

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		3,251.53	1.0	0.0	$479.09	$3,836.41	$460.00	$3,636.40	7.59	3,275
ECM 1	Install LED Fixtures	923	0.2	0.0	$136.04	$781.35	$200.00	$581.35	4.27	930
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,328	0.8	0.0	$343.05	$3,055.05	$0.00	$3,055.05	8.91	2,345
HVAC System Improvements		0	0.0	19.89	$264.90	$659.74	$0.00	$659.74	2.49	2,329
ECM 3	Install Programmable Thermostats	0	0.0	19.9	$264.90	$659.74	$0.00	$659.74	2.49	2,329
Domestic Water Heating Upgrade		175	0.0	0.0	$25.84	$7.17	$0.00	$7.17	0.28	177
ECM 4	Install Low-Flow DHW Devices	175	0.0	0.0	$25.84	$7.17	$0.00	$7.17	0.28	177
TOTALS		3,426.87	1.0	19.89	769.82	4,503.32	460.00	4,303.31	5.59	5,781

* - All incentives presented in this table are based on NJ Smart Start Building equipment Incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand when conditions allow. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperatures. These measures save energy by reducing the demand on the systems and the amount of time systems operate.

Domestic Water Heating upgrade measures generally involve replacing old inefficient domestic water heating systems with modern energy efficient systems. New domestic water heating systems can provide equivalent or greater capacity as older systems, but use less energy. These measures save energy by reducing the fuel used by the domestic water heating systems due to improved efficiency or the removal of standby losses.

Energy Efficient Practices

TRC Energy Services also identified six (6) no/low cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at Public Works Building #1 include:

- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Check for and Seal Duct Leakage
- Perform Proper Furnace Maintenance
- Perform Proper Water Heater Maintenance

- Water Conservation

For details on these Energy Efficient Practices, please refer to section 5, “Energy Efficient Practices”

On-Site Generation Measures

TRC Energy Services evaluated the potential for installing on-site generation sources for Public Works Building #1. Based on the configuration of the site and its loads there is a low potential for installing any PV and combined heat and power on-site generation measures.

For details on our evaluation and the on-site generation potential, please refer to section 6, “On-Site Generation Measures”.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, the equipment changes outlined for each ECM need to be selected and installed through project implementation. One of the first considerations is if there is capital available for project implementation. Another consideration is whether to pursue individual ECMs, a group of ECMs, or a comprehensive approach wherein all ECMs are pursued, potentially in conjunction with other facility projects or improvements.

Rebates, incentives, and financing are available from the NJBPU, NJCEP, as well as some of the state’s investor-owned utilities, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any project, please review the appropriate incentive program guidelines before proceeding. This is important because in most cases you will need to submit an application for the incentives before purchasing materials and beginning installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart (SS)
- Direct Install (DI)
- Energy Savings Improvement Program (ESIP)

For facilities with capital available for implementation of selected individual measures or phasing implementation of selected measures over multiple years, incentives are available through the SmartStart (SS) program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to design the ECM(s), select the equipment and apply for the incentive(s). Program pre-approval is required for some SS incentives, so only after receiving approval may the ECM(s) be installed. The incentive values listed above in Figure 3 represent the SS program and will be explained further in Section 8, “Project Funding/Incentives” as well as the other programs as mentioned below.

This facility also qualifies for the Direct Install (DI) program which, through an authorized network of participating contractors, can assist with the implementation of a group of measures versus installing individual measures or phasing implementation. This program is designed to be turnkey and will provide an incentive up to 70% of the cost of the project identified by the designated contractor.

For facilities without capital available to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with external project development, design, and implementation services as well as financing for implementing ECMs. This LGEA report is the first step for participating in ESIP and should help you determine next steps. Refer to Section 8.4, “Energy Savings Improvement Program” for additional information on the ESIP Program.

Additional descriptions of all relevant incentive programs are located in Section 8, "Project Funding/Incentives". You may also check the following website for further information on available rebates and incentives:

www.NJCleanEnergy.com/CI

To ensure projects are implemented such that maximum savings and incentives are achieved, bids and specifications should be reviewed by your procurement personnel and/or consultant(s) to ensure that selected equipment coincides with LGEA recommendations, as well as applicable incentive program guidelines and requirements.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Patricia Gatto	Municipal Clerk	pgatto@folsomborough.com	609-561-3178
Designated Representative			
John LaPollo	Public Works Supervisor	N/A	N/A
TRC Energy Services			
Ignacio Badilla	Auditor	ibadilla@trcsolutions.com	211-221-7822

2.2 General Site Information

On May 12, 2016, TRC Energy Services performed an energy audit at Public Works Building #1 located in the Borough of Folsom. TRC Energy Services' team met with John LaPollo. Public Works Supervisor, to review the facility operations and focus the investigation on specific energy-using systems.

Public Works Building #1 is a 1,600 square foot facility constructed in 1999, comprising about 150 square feet of office space with the remaining space used as a workshop and storage area

2.3 Building Occupancy

The facility is used approximately 40 hours per week, however it is also open two Saturday's per month. There are approximately 3 full time employees that occupy the space on a daily basis.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Public Works Building	Weekday	8 AM - 4 PM
Public Works Building	Weekend	8 AM - 4 PM (Bi-weekly)

2.4 Building Envelope

The building is constructed of structural steel with sheet metal façade. There is a gable roof which is also covered in sheet metal. There are no windows, and the exterior doors are constructed of aluminum and are in good condition.

2.5 On-site Generation

Public Works Building #1 does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

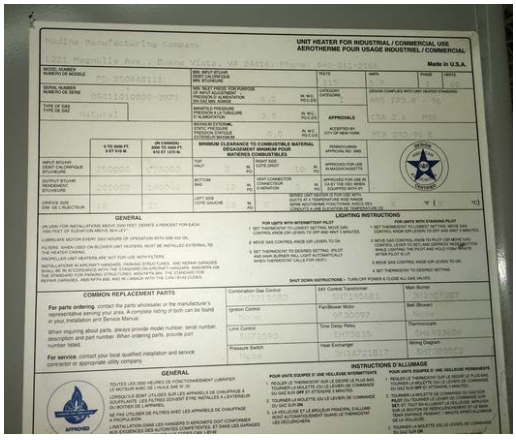
Lighting System

Lighting in the shop area is provided by linear 8 foot T12's, while lighting in the office area is provided by 4 foot T12's. Both fixture types have two lamps, and are controlled by switches. It should be noted that the NJ program currently does not provide incentives for replacing T12's in Smart Start. The exterior lights are timer controlled metal halide wall mounted fixtures.

8 Ft T12 Fixture

Space Heating

The Space heating in the facility is provided by one Goodman 60 MBtu/hr natural gas forced air furnace located in the mechanical room. The furnace, serves the left side of the facility which contains the offices and bathroom. The main area is heated by a 225 MBtu/hr Modine natural gas unit heater. Both systems are original to the building and are in good condition.



Furnace Nameplate

Furnace

Domestic Hot Water

The domestic hot water (DHW) system for the facility consists of one Richmond 40 gallon electric storage hot water heater which serves a single bathroom inside the facility.

Domestic Hot Water Heater

Plug load & Vending Machines

The facility plug loads consist of small office and kitchen appliances to include a refrigerator and a microwave.

2.7 Water-Using Systems

There is one bathroom at this facility, with one faucet rated for 2.5 gallons per minute (gpm) and a toilet rated at 2.5 gallons per flush (gpf). Both the faucet and toilet are above the current federal standards of 2.2 gpm and 1.6 gpf respectively.

Please refer to Appendix A: Equipment Inventory & Recommendations for an inventory of your all equipment.

3 SITE ENERGY USE AND COSTS

Utility data for Electricity and Natural Gas was analyzed to identify opportunities for savings. In addition, data for Electricity and Natural Gas was evaluated to determine the annual energy performance metrics for the building in energy cost/ft^2 and energy use/ft^2. These energy use indices are indicative of the relative energy effectiveness of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy use for other facilities identified as: Storage - Conditioned. Specific local climate conditions, daily occupancy hours of the facility, seasonal fluctuations in occupancy, daily operating hours of energy use systems, and the behavior of the occupants with regard to operating systems that impact energy use such as turning off appliances and leaving windows open. Please refer to Section 3.4, "Benchmarking" for additional information.

3.1 Total Cost of Energy

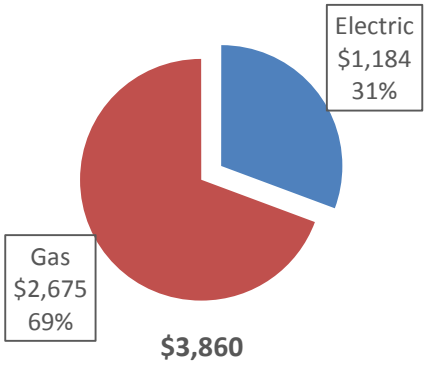
The following energy consumption and cost data is based on 12 month period of utility usage data that was provided for each utility. The annual consumption and cost was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Public Works Building #1		
Fuel	Usage	Cost
Electricity	8,038 kWh	$1,184
Natural Gas	2,009 Therms	$2,675
Total		$3,860

The current utility cost for this site is $3,860 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by Atlantic City Electric. The average electric cost (combined for commodity, transmission and distribution) for 12 months of provided data is $0.147/kWh, which is the blended rate used throughout the analyses in this report. While the facility is billed for demand, the summary information provided does not separate out demand charges. The monthly electricity consumption and peak demand is represented graphically in the chart below. Public Works Building doesn't receive electricity from a 3rd party supplier.

Figure 8 - Graph of 12 Months Electric Usage & Demand

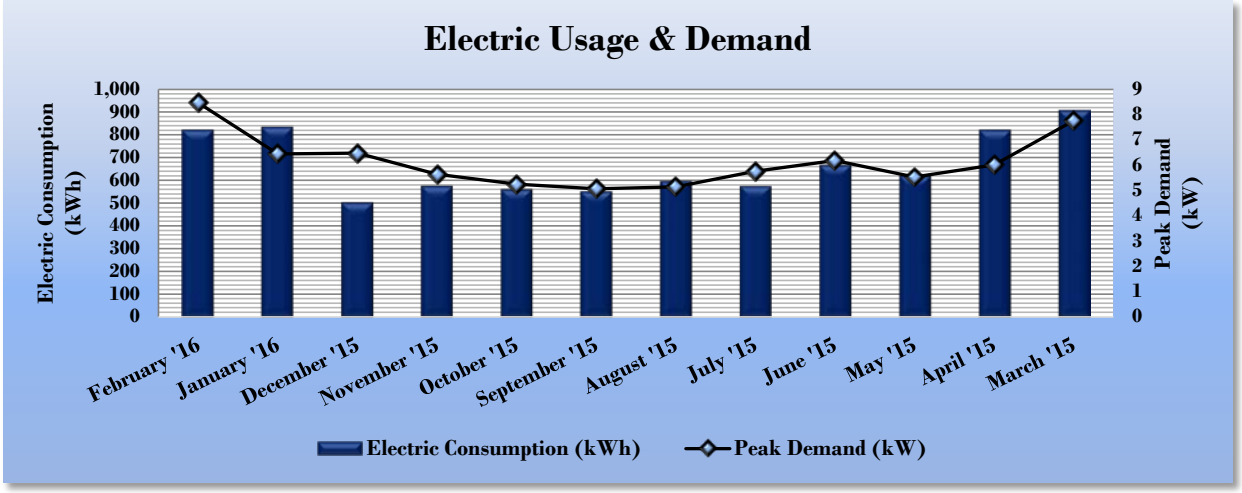


Figure 9 - Table of 12 Months Electric Usage & Demand

Electric Billing Data for Public Works Building #1					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
2/19/16	28	821	8	$0	$142
1/22/16	23	834	6	$0	$143
12/30/15	40	504	6	$0	$92
11/20/15	28	576	6	$0	$101
10/23/15	30	562	5	$0	$100
9/23/15	29	552	5	$0	$103
8/25/15	21	597	5	$0	$109
8/4/15	43	575	6	$0	$108
6/22/15	34	668	6	$0	$68
5/19/15	28	621	6	$0	$58
4/21/15	32	821	6	$0	$76
3/20/15	29	907	8	$0	$83
Totals	365	8,038	8.46	$0	$1,184
Annual	365	8,038	8.46	$0	$1,184

3.3 Natural Gas Usage

Natural Gas is provided by South Jersey Gas, and 3rd party supply is from Woodruff Energy. The average gas cost for 12 months of provided data is $1.332/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is represented graphically in the chart below.

Figure 10 - Graph of 12 Months Natural Gas Usage

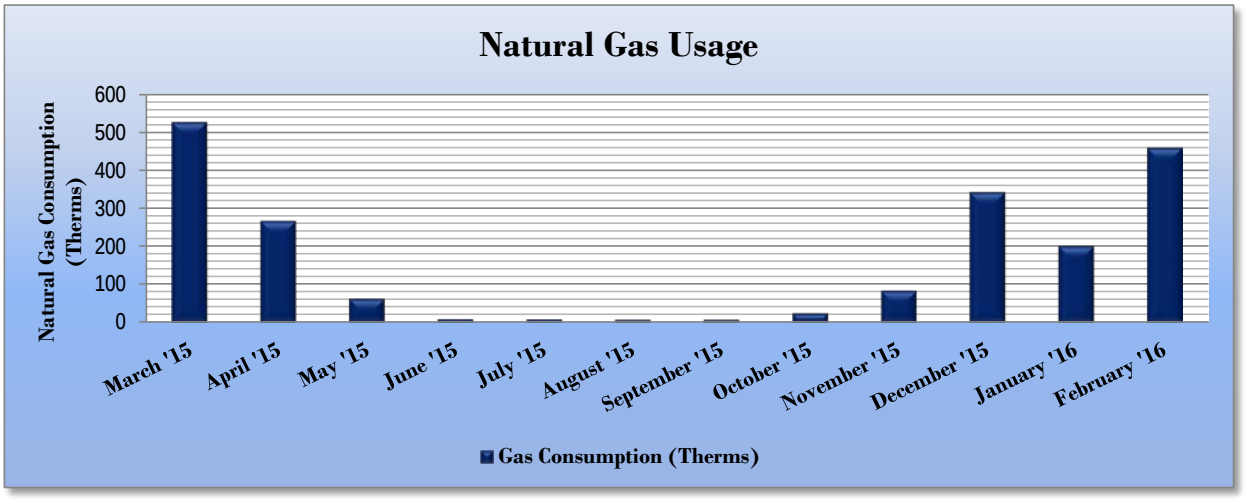


Figure 11 - Table of 12 Months Natural Gas Usage

Gas Billing Data for Public Works Building #1			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
3/19/15	29	526	$655
4/20/15	32	267	$351
5/18/15	28	63	$102
6/18/15	31	9	$41
7/21/15	33	8	$42
8/20/15	30	7	$38
9/21/15	32	7	$40
10/20/15	29	24	$55
11/18/15	29	84	$123
12/18/15	30	342	$414
1/19/16	32	201	$256
2/16/16	28	459	$544
Totals	363	1,998	$2,661
Annual	365	2,009	$2,675

3.4 Benchmarking

This facility was benchmarked through Portfolio Manager, an online tool created and managed by the United State Environmental Protection Agency (EPA) through the ENERGY STAR® program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and compares its performance against a yearly baseline, national medians, or similar buildings in your portfolio. Metrics used in this comparison are the energy use intensity (EUI) and ENERGY STAR® Score.

Energy use intensity is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more energy than similar buildings on a square foot basis or if that building performs better than the median. EUI is presented in both site energy and source energy. Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy is the raw fuel consumed to generate the energy consumed at the site, factoring in energy production and distribution losses.

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Public Works Building #1	National Median Building Type: Storage - Conditioned
Source Energy Use Intensity (kBtu/ft^2)	185.6	126.3
Site Energy Use Intensity (kBtu/ft^2)	142.7	252.6

By implementing all recommended measures covered in this reporting, the Project's estimated post-implementation EUI improves as shown in the Table below:

Figure 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Public Works Building #1	National Median Building Type: Storage - Conditioned
Source Energy Use Intensity (kBtu/ft^2)	149.6	126.3
Site Energy Use Intensity (kBtu/ft^2)	122.9	252.6

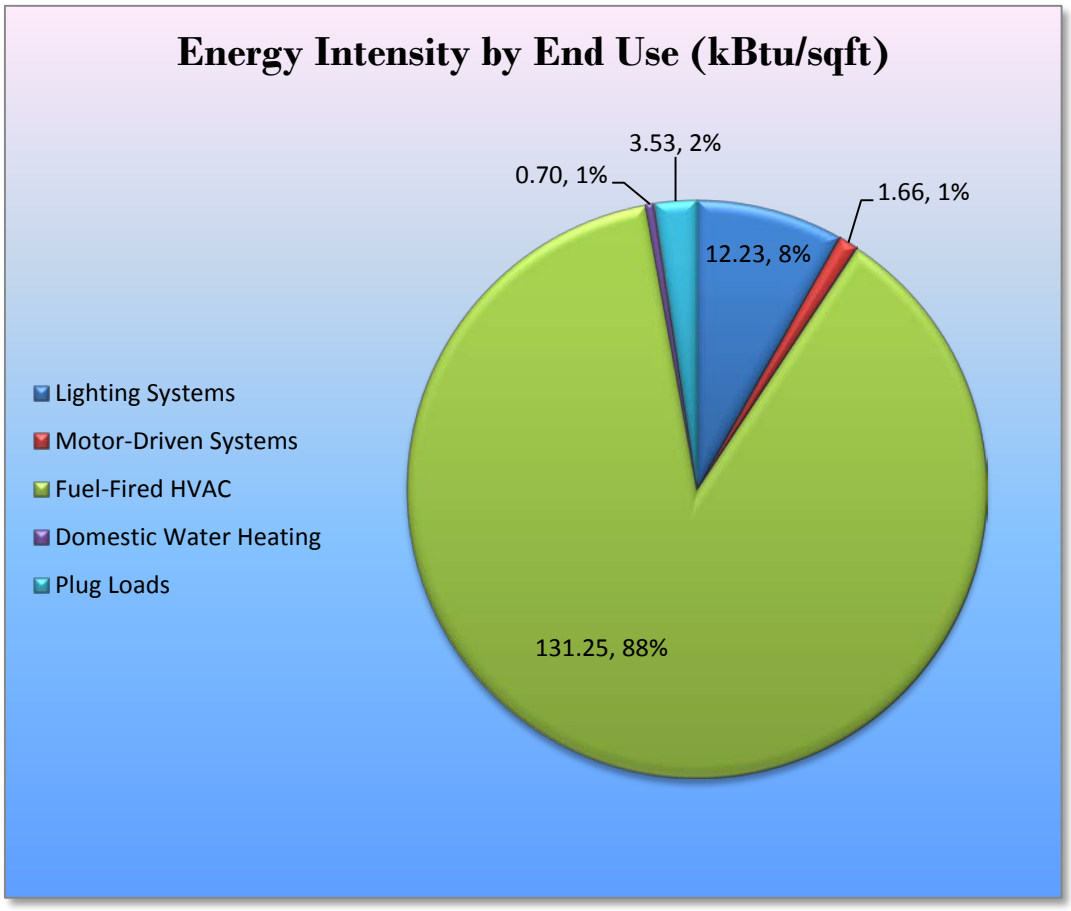
Many buildings can also receive a 1 – 100 ENERGY STAR® score. This score compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide — and may be eligible for ENERGY STAR® certification. This building type currently does not qualify to receive a score.

A Portfolio Manager account has been created for you, and you will be provided with your login information. We encourage you to keep up with updating your utility information in Portfolio Manager, so that you can keep track of how your building is performing. The Portfolio Manager, Statement of Energy Performance can be found in Appendix B: EPA Statement of Energy Performance.

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building and determine their proportional contribution to overall building energy usage. This visual representation of energy end uses highlights systems that may benefit most from energy efficiency projects.

Figure 14 - Energy Balance (kBtu/SF and %)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy projects, help prioritize specific measures for implementation, and set Public Works Building #1 on the path to receive financial incentives. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is considered sufficient to make "Go/No-Go" decisions and to prioritize energy projects. Savings are based on the New Jersey Board of Public Utilities, Clean Energy Program "Protocols to Measure Resource Savings" dated March 17, 2014. Further analysis or investigation may be required to calculate more accurate savings to support any custom SmartStart, Pay for Performance, or Large Energy Users incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJ prescriptive SmartStart program. Depending on your implementation strategy, the project may be eligible for more lucrative incentives through other programs as identified in Section 8, "Project Funding/Incentives".

The following sections describe the evaluated measures.

4.1 Lighting Upgrades

Lighting Upgrades include two "submeasures" as outlined in Figure 15 below.

Figure 15 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		3,251.53	1.0	0.0	$479.09	$3,836.41	$460.00	$3,636.40	7.59	3,275
ECM 1	Install LED Fixtures	923	0.2	0.0	$136.04	$781.35	$200.00	$581.35	4.27	930
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,328	0.8	0.0	$343.05	$3,055.05	$0.00	$3,055.05	8.91	2,345

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Exterior	923	0.2	0.0	$136.04	$781.35	$200.00	$581.35	4.27	930

Measure Description

This measure evaluates replacing existing fixtures containing metal halide lamps with new high performance LED light fixtures. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output.

Maintenance savings are anticipated since LED sources have burn hours which are generally more than twice that of a fluorescent source and more than 10 times incandescent sources. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	2,328	0.8	0.0	$343.05	$3,055.05	$0.00	$3,055.05	8.91	2,345

Measure Description

This measure evaluates replacing linear fluorescent lamps, ballasts, and reflectors with LED tube lamps, reflectors, and drivers specifically designed for existing linear fluorescent fixtures. The retrofit uses the existing fixture housing but replaces the rest of the components with equipment designed for LEDs. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output and efficiently projects the light into the space.

Maintenance savings are anticipated since LED sources have burn hours which are more than twice that of a fluorescent source. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

4.2 HVAC System Improvements

ECM 3: Install Programmable Thermostats

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	19.9	$264.90	$659.74	$0.00	$659.74	2.49	2,329

Measure Description

This measure evaluates replacing manual thermostats with programmable thermostats. Manual thermostats are generally adjusted to a single heating and cooling setpoint and left at that setting regardless of occupancy in the area served by the HVAC equipment. As a result, the same level of heating and cooling is provided regardless of the occupancy in the space. Programmable thermostats can be set to maintain different temperature settings for different times of day and days of the week. By setting the heating temperature setpoint down and the cooling temperature setpoint up, for times that the conditioned space is not occupied, the operation of the HVAC equipment is reduced while still maintaining reasonable space temperatures during unoccupied periods.

The thermostat provides savings by reducing heating and cooling energy when a room is unoccupied.

4.3 Domestic Water Heating Upgrade

ECM 4: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated NJCEP Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
175	0.0	0.0	$25.84	$7.17	$0.00	$7.17	0.28	177

Measure Description

This measure evaluates the savings from installing low flow domestic water devices to reduce overall water flow in general and hot water flow in particular.

Installing low flow faucets or faucet aerators l saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gallons per minute (gpm) for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low flow toilets and low flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

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5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, "Energy Conservation Measures", a facility's energy performance can also be improved through application of low or no-cost efficiency strategies. By employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance. If the LED fixture replacement recommendation in this report is implemented, ballasts will no longer need to be replaced, and your maintenance schedule will involve fixture cleaning only.

Check for and Seal Duct Leakage

Duct leakage in commercial buildings typically accounts for 5 to 25 percent of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building, significantly increasing cooling and heating costs. By sealing sources of leakage, cooling, heating, and ventilation energy use can be reduced significantly, depending on the severity of air leakage.

Perform Proper Furnace Maintenance

Preventative furnace maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should include tasks such as checking for gas / carbon monoxide leaks; changing the air and fuel filters; checking components for cracks, corrosion, dirt, or debris build-up; ensuring the ignition system is working properly; testing and adjusting operation and safety controls; inspecting the electrical connections; and ensuring proper lubrication for motors and bearings.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion

issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

Conserving water is very closely linked to saving energy; electricity or gas is used to heat water, so the less hot water used, the less energy is needed to heat the water. Water conservation reduces the significant energy demands of local water companies to treat and pump water to your facilities, and to treat sewage. So, water conservation helps to reduce the system-wide demand for energy which helps control utility costs for everyone.

The following are tips that can set you on a path towards water conservation/efficiency:

- Audit your current water use: Energy Star Portfolio Manager can be used to track and understand your water use.
- Repair leaking pipes, fixtures, and seals. Small leaks can add up to many gallons of water and dollars wasted.
- Use water-saving faucets, showerheads, and toilets/urinals.
- In kitchen areas, use low-flow pre-rinse spray valves.
- Choose WaterSense® labelled equipment and appliances (https://www3.epa.gov/watersense/products)
- Set water temperature only as hot as needed. A hot water setting of 110-120 degrees is recommended to prevent scalds and save energy
- Educate employees about the importance of water conservation.
- When landscaping, choose plants native to the climate that require minimal watering. If local code allows, consider diverting “gray water” (i.e. runoff collected from rooftops) for irrigation.
- Lawns and gardens require 1/5 inch of water per day during warm weather, less during spring, fall or cool weather. Water lawns every three to five days, rather than for a short period every day, and try and water during the cooler part of the day (morning or evening). Use sprinkler timers (shut-off/on-off) if possible, and do not leave sprinklers on all day!
- Cover your pool: The average pool takes 22,000 gallons of water to fill, and if it is not covered, hundreds of gallons of water per month can be lost due to evaporation.

Refer to Section 4.3 “Domestic Water Heating Upgrade” for any low-flow ECM recommendations.

6 On-site Generation Measures

On-site Generation measures include both renewable (e.g., solar, wind) and non-renewable (e.g., microturbines) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

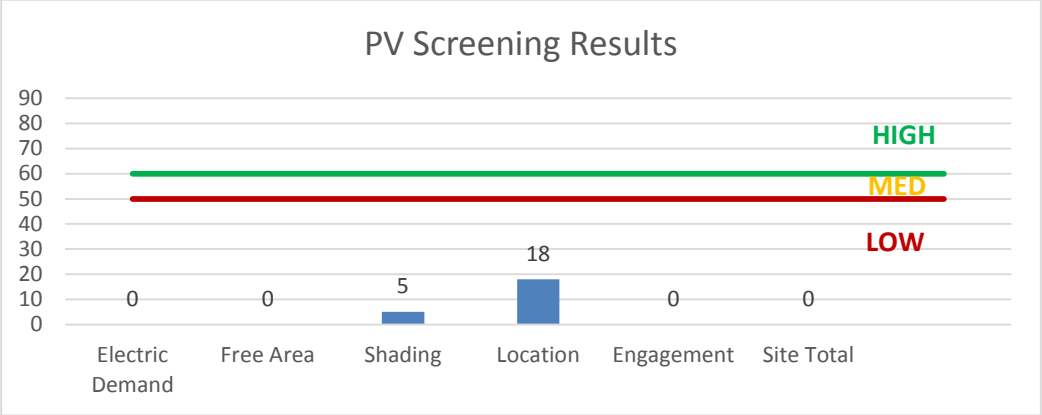
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

As requested by the customer, the installation of a PV system was evaluated and a preliminary screening done. Based on the facility's electric demand, size and location of free area, and shading elements, it was determined that the facility has a low potential for installing a PV array.

In order to be cost-effective, a solar PV array generally needs a minimum of 4,000 sq ft of flat or south-facing rooftop (based on installing a 50kW array), or other unshaded space, on which to place the PV panels. In our opinion, the facility does appear not meet these minimum criteria for cost-effective PV installation.

Figure 16 - Photovoltaic Screening



Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing. Refer to Section 8.3,"SREC Registration Program" for additional information.

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Wind Generation

According to information published by NREL, NJ is generally not a good candidate for wind power, however. For further information on wind power, contact the NREL.

6.3 Combined Heat and Power

CHP systems are typically used to produce a portion of the electricity needed by a facility, with the balance of electric needs satisfied by purchase from the grid. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a limited to low potential for installing a cost-effective CHP system.

7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce consumer electric load when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. DR service providers (a.k.a. Curtailment Service Providers) are registered with Pennsylvania-New Jersey-Maryland (PJM), the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability locally.

Typically an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program

Due to low demand during peak demand hours, there is limited to no opportunity to employ a Demand Response (DR) program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and others, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's 1999 Electricity Restructuring Law which requires all customers of investor-owned electric and gas utilities to pay this charge on their monthly energy bills. As a contributor to the fund you were able to participate in the LGEA program and are also eligible to utilize the equipment incentive programs. Also available through the NJBPU is an alternative financing program described later in this section. Please refer to Figure 17 for a list of the eligible programs identified for each ECM.

Figure 17 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x		x			
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers			x			
ECM 3	Install Programmable Thermostats	x		x			
ECM 4	Install Low-Flow DHW Devices			x			

SmartStart (SS) is generally well suited for implementation of individual or small sets of measures, with the flexibility to install projects at your own pace using in-house staff or a preferred contractor. Direct Install (DI) caters to small to mid-size facilities to bundle measures and simplify participation, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities and requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption; applicants can use in-house staff or preferred contractor.

Generally, the incentive values provided throughout the report assume the SS program is utilized because it provides a consistent comparison of available incentives.

Brief descriptions of all relevant alternative financing and incentive programs are located in the sections below. You may also check the following website for further information, including most current program availability, requirements, and incentive levels: www.NJCleanEnergy.com/CI

8.1 SmartStart

Overview

The SmartStart (SS) program is comprised of New Construction and Retrofit components that offer incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives for various energy efficiency equipment based on national/market trends, new technologies or changes in efficiency baselines.

Prescriptive Equipment Incentives Available:

- *Electric Chillers*
- *Electric Unitary HVAC*
- *Gas Cooling*
- *Gas Heating*

- *Gas Water Heating*
- *Ground Source Heat Pumps*
- *Lighting*
- *Lighting Controls*
- *Refrigeration Doors*
- *Refrigeration Controls*
- *Refrigerator/Freezer Motors*
- *Food Service Equipment*
- *Variable Frequency Drives*

All customer sizes and types may be served by this program. This program provides an effective mechanism for securing incentives for individual projects that may be completed at once or over several years.

Incentives

The prescriptive path provides fixed incentives for specific energy efficiency measures whereas the custom measure path provides incentives for unique or specialized technologies that are not addressed through prescriptive offerings.

Since your facility is an existing building, only the Retrofit incentives have been applied in this report. Custom Measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at the lesser of 50% of the total installed incremental project cost, or a buy down to a one year payback. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.NJCleanEnergy.com/SSB

8.2 Direct Install

Overview

Direct Install (DI) is a turnkey program available to existing small to mid-sized facilities with a peak electric demand that did not exceed 200 kW in any of the preceding 12 months. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and install those measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

The program pays up to 70% of the total installed cost of eligible measures, up to $125,000 per project. Direct Install participants will also be held to a fiscal year cap of $250,000 per entity.

How to Participate

To participate in the DI program you will need to contact the participating contractor assigned to the county where your facility is located; a complete list is provided on the DI website identified below. The contractor will be paid the program incentive directly which will pass on to you in the form of reduced

material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps mentioned above, and the remaining 30% of the cost is your responsibility to the contractor.

Since DI offers a free assessment, LGEA applicants that do not meet the audit program eligibility requirements, but do meet the DI requirements, may be moved directly into this program.

** This program is not accepting applications at this time, but is expected to re-open in August 2016.*

Detailed program descriptions and applications can be found at: www.NJCleanEnergy.com/DI

8.3 SREC Registration Program

The SREC Registration Program (SRP) is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SRP prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number which enables it to generate New Jersey SRECs. SREC's are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SREC's to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar RPS. One way they can meet the RPS requirements is by purchasing SRECs. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period can and will fluctuate depending on supply and demand.

Information about the SRP can be found at: www.NJCleanEnergy.com/SREC

8.4 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract", whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO";
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations;
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.NJCleanEnergy.com/ESIP

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize the incentive programs to help further reduce costs when compiling the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: **www.state.nj.us/bpu/commercial/shopping.html**.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: **www.state.nj.us/bpu/commercial/shopping.html**.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
Interior	12	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	2,080	Relamp & Reballast	No	12	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	80	2,080	0.68	2,064	0.0	$304.07	$2,820.05	$0.00	9.27
office	2	Linear Fluorescent - T12: 2' T12 (20W) - 4L	Wall Switch	100	2,080	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	40	2,080	0.09	265	0.0	$38.98	$235.00	$0.00	6.03
front of building	1	Metal Halide: (1) 250W Lamp	None	295	3,250	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	120	3,250	0.13	603	0.0	$88.83	$390.68	$100.00	3.27
Side of building	1	Metal Halide: (1) 100W Lamp	None	128	3,250	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	35	3,250	0.07	320	0.0	$47.21	$390.68	$100.00	6.16

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
mechanical room	offices	2	Supply Fan	0.5	65.0%	No	800	No	65.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
mechanical room	area	1	Air Compressor	5.0	75.0%	No	24	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
main room	Main Room	1	Warm Air Unit Heater	225.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
mechanical room	offices	1	Furnace	60.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Programmable Thermostat Recommendations

		Recommendation Inputs				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	Thermostat Quantity	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
Office	Furnace	1	0.00	0.00	60.00	0.00	0	4.6	$61.13	$329.87	$0.00	5.40
Main room	Furnace	1	0.00	0.00	225.00	0.00	0	15.3	$203.77	$329.87	$0.00	1.62

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
maintenance closet	bathroom	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total NJCEP Incentives	Simple Payback w/ Incentives in Years
bathroom	1	Faucet Aerator (Lavatory)	2.50	1.00	0.00	175	0.0	$25.84	$7.17	$0.00	0.28

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
office	1	refrigerator	350.0	No
office	1	microwave	1,450.0	No
office	1	water cooler	250.0	No
office	1	computer	150.0	No

Appendix B: EPA Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

Public Works Building #1

Primary Property Type: Other - Public Services
Gross Floor Area (ft²): 1,600
Built: 1999

For Year Ending: January 31, 2016
Date Generated: May 23, 2016

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Public Works Building #1 1461 Backline Rd. Folsom, New Jersey 08037	_____ , (____)____-_____	____ _____ , (____)____-_____ _____

Property ID: 4992134

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
159.1 kBtu/ft²

Source EUI
204.4 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	225,875 (89%)
Electric - Grid (kBtu)	28,608 (11%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	95.8
National Median Source EUI (kBtu/ft²)	123.1
% Diff from National Median Source EUI	66%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	16

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer Stamp (if applicable)