Local Government Energy Audit:
Energy Audit Report

Bldg A - Admin &

Bldg B - Cottage Art Barn

101 Sullivan Way

Trenton, New Jersey 08628

Village Charter School

November 14, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services (TRC) and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Building A - Admin and Building B - Cottage Art Barn.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey local governments in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

The Admin Building is a 5,150 square foot facility comprised of office spaces, stairwell, hallways, restroom and basement with mechanical equipment. Cottage Art Barn is a 2,600 square foot facility comprised of spaces such kitchen, dining room, and TV room and basement areas.

These are two story buildings and operate during the weekdays from 8:00 AM – 6:00 PM and remain closed during the weekends. The buildings were constructed in the 1700s.

Space heating and cooling in the Admin Building is provided using three forced air, gas-fired furnaces and three 3-ton split AC units. At the Cottage Art Barn, there is one gas fired furnace and one split AC unit.

Lighting includes linear T8 and T12 tubes, compact fluorescent lamps, incandescent lamps, metal halide fixtures, and LED fixtures in a few spaces. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated seven measures and recommends four measures which together represent an opportunity to reduce annual energy costs by $1,290 and annual greenhouse gas emissions by 8,138 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 3.7 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce annual energy use by 5%.

Figure 1 – Previous 12 Month Utility Costs

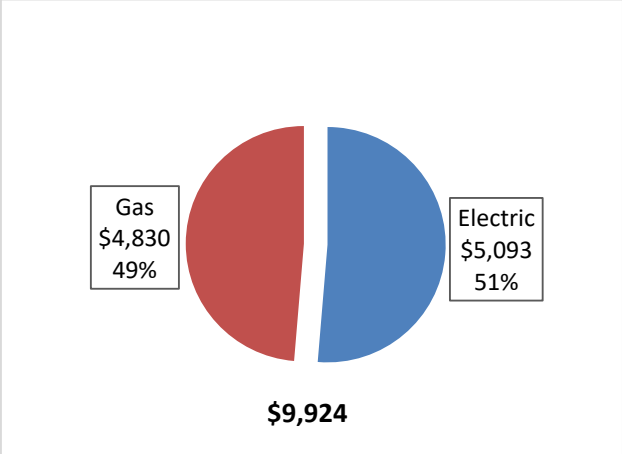
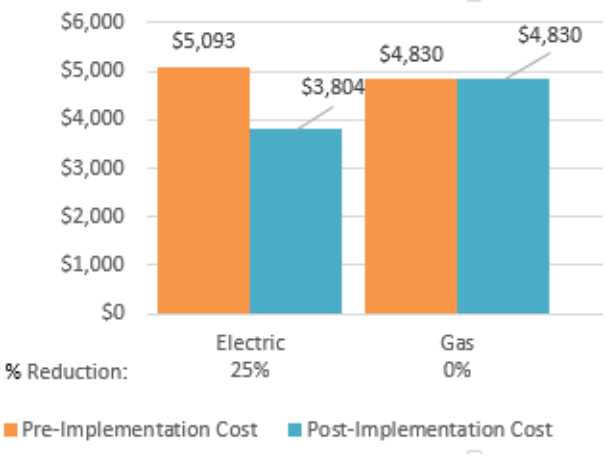


Figure 2 – Potential Post-Implementation Costs



A detailed description of existing energy use can be found in Section 3. Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4.

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**7,608**	**1.8**	**0.0**	**$1,214.22**	**$4,633.23**	**$650.00**	**$3,983.23**	**3.3**	**7,661**
ECM 1	Install LED Fixtures	Yes	1,005	0.2	0.0	$160.40	$1,896.53	$200.00	$1,696.53	10.6	1,012
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	257	0.1	0.0	$41.08	$194.32	$30.00	$164.32	4.0	259
ECM 3	Retrofit Fixtures with LED Lamps	Yes	6,345	1.6	0.0	$1,012.74	$2,542.39	$420.00	$2,122.39	2.1	6,390
Lighting Control Measures			**473**	**0.1**	**0.0**	**$75.56**	**$888.00**	**$130.00**	**$758.00**	**10.0**	**477**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	473	0.1	0.0	$75.56	$888.00	$130.00	$758.00	10.0	477
Electric Unitary HVAC Measures			**456**	**0.5**	**0.0**	**$72.78**	**$4,488.66**	**$276.00**	**$4,212.66**	**57.9**	**459**
	Install High Efficiency Electric AC	No	456	0.5	0.0	$72.78	$4,488.66	$276.00	$4,212.66	57.9	459
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**1.5**	**$14.76**	**$5,437.76**	**$1,200.00**	**$4,237.76**	**287.1**	**175**
	Install High Efficiency Furnaces	No	0	0.0	1.5	$14.76	$5,437.76	$1,200.00	$4,237.76	287.1	175
Domestic Water Heating Upgrade			**0**	**0.0**	**1.5**	**$15.00**	**$5,625.60**	**$100.00**	**$5,525.60**	**368.5**	**178**
	Install High Efficiency Gas Water Heater	No	0	0.0	1.5	$15.00	$5,625.60	$100.00	$5,525.60	368.5	178
TOTALS FOR HIGH PRIORITY MEASURES			**8,081**	**2.0**	**0.0**	**$1,289.78**	**$5,521.23**	**$780.00**	**$4,741.23**	**3.7**	**8,138**
TOTALS FOR ALL EVALUATED MEASURES			**8,537**	**2.5**	**3.0**	**$1,392.32**	**$21,073.25**	**$2,356.00**	**$18,717.25**	**13.4**	**8,950**
TOTALS OF NON-RECOMMENDED MEASURES			**456**	**1**	**3**	**103**	**15,552**	**1,576**	**13,976**	**136.3**	**813**

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

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

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

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

Gas Heating (HVAC/Process) measures generally involve replacing older inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide equivalent heating compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel demands for heating, due to improved combustion and heat transfer efficiency.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Energy Efficient Practices

TRC also identified four low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities include:

- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Perform Proper Boiler Maintenance
- Install Plug Load Controls
- Water Conservation

For details on these energy efficient practices, please refer to Section 5.

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation. Based on the configuration of the site and its loads there is a low potential for installing photovoltaic (PV) and combined heat and power self-generation measures. For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

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

- SmartStart
- Direct Install

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SmartStart program. More details on this program and others are available in Section 8.

This facility may also qualify for the Direct Install program which can provide turnkey installation of multiple measures, through an authorized network of participating contractors. This program can provide substantially higher incentives that SmartStart, up to 70% of the cost of selected measures, although measure eligibility will have to be assessed and be verified by the designated Direct Install contractor and, in most cases, they will perform the installation work.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP.

The Demand Response Energy Aggregator is a (non-NJCEP) program designed to reduce electric loads at commercial facilities, when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. Demand Response (DR) service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability. By enabling grid operators to call upon commercial facilities to reduce their electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and facilities receive payments whether or not they are called upon to curtail their load during times of peak demand. Refer to Section 7 for additional information on this program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Paul Dewitt	Business Administator	pdewitt@villagecharter.org	609-695-0110 Ext 116
TRC Energy Services			
Alex Klieverik	Auditor	aklieverik@trcsolutions.com	732-855-0033

2.2 General Site Information

On June 19, 2018, TRC performed an energy audit at the Admin Building and Cottage Art Barn located in Trenton, New Jersey. TRC's team met with Paul Dewitt to review the facility operations and help focus our investigation on specific energy-using systems.

The Admin Building is a 5,150 square foot facility comprised of various majorly office spaces, stairwell, hallways, restroom and basement with mechanical equipment. Cottage Art Barn is a 2,600 square foot facility comprised of spaces such kitchen, dining room, and TV room and basement areas. These are two story buildings and were constructed in the 1700s.

Space heating and cooling in the Admin Building is provided using three forced air gas-fired furnaces and three 3-ton split AC units. At the Cottage Art Barn, there is one gas fired furnace and one split AC unit that provide heating and cooling in the building.

Lighting systems consist of linear T8 and T12 tubes, compact fluorescent lamps, incandescent lamps, metal halide fixtures, and LED fixtures in a few spaces.

2.3 Building Occupancy

The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 4 staff in the admin building. The Cottage Art Barn is rarely occupied by personnel. These are two story buildings and operate during the weekdays from 8:00 AM – 6:00 PM and remain closed during the weekends.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Building A - Administration Building	Weekday	8:00 AM - 6:00 PM
Building A - Administration Building	Weekend	No Operation
Building B - Cottage Art Barn	Weekday	8:00 AM - 6:00 PM
Building B - Cottage Art Barn	Weekend	No Operation

2.4 Building Envelope

Both buildings are constructed of a mixture of brick and mortar with a stone façade, reinforced with concrete block. The buildings have pitched roof sections with asphalt shingles that are in good condition. The buildings have single pane windows. The exterior doors are constructed of wooden frame and glass. There were no signs of exterior air infiltration.

Image 1 Left: Admin Building Envelope, Right: Cottage Art Barn

2.5 On-Site Generation

There is no on-site electric generation.

2.6 Energy-Using Systems

Please see Appendix A: Equipment Inventory & Recommendations for an equipment inventory.

Lighting System

Interior lighting is provided by a mix of light sources including 32-Watt linear fluorescent T8 lamps with electronic ballasts, incandescent lamps, compact fluorescent lamps (CFL) and LED exit signs. Most of the linear fluorescent fixtures contain two or three 4-foot long lamps although 2-foot lamps are present. Exterior sources include incandescent, metal halide, and LED screw-in lamps.

Lighting control in most interior spaces is provided by manual wall switches. The exterior light fixtures are controlled by timers at both buildings

Image 2 Lighting System at the Admin Building

Image 3 Lighting System at the Cottage Art Barn

Heating and Air Conditioning System

In the Admin Building, the heating system consists of three Armstrong Air – Ultra V Enhanced 95 forced air furnaces providing and distributing heat. These furnaces have an efficiency of 94.5%. The units were installed in 2002. The space cooling in the building is provided by one 3-ton and two 5-ton split AC units. The units are 16 and two years old respectively. The older unit has been evaluated for replacement.

Image 4 Heat and AC systems at the Admin Building

In the Cottage Art Barn, the space heating is provided using one York gas-fired furnace. The output capacity of the furnace has been assumed for analytical purposes. The furnace is eight years old and in good condition. The space cooling is provided by a 3-ton split AC unit. The AC unit is 16 years old and has been evaluated for replacement.

Image 5 Heat and AC system at the Cottage Art Barn

Domestic Hot Water Heating System

The Admin Building has one Bradford White gas-fired hot water heater with an input capacity of 40 MBh. The system efficiency is 80% and the tank capacity is 80 gallons. The domestic hot water heater is 15 years old and has been evaluated for replacement.

Image 6 Domestic Hot Water Systems

Building Plug Load

The plug loads in both the buildings include LCD TV, desktop computers, desk printers, photo copier, mini-refrigerators, copy machines, microwave oven, shredders and dehumidifiers (in the basement). There is no centralized PC power management software installed.

2.7 Water-Using Systems

The restrooms have faucets are rated for 2.2 gallons per minute (gpm) or lower, toilets are rated at 1.6 gallons per flush and the urinals are rated at 1 gallons per flush (gpf).

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 0 for additional information.

3.1 Total Cost of Energy

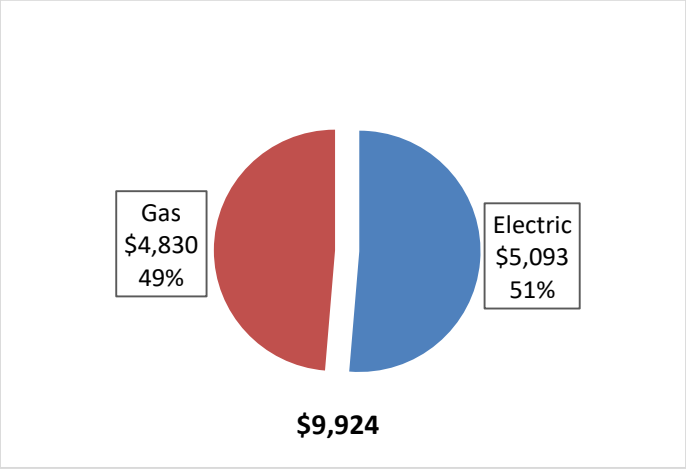
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Bldg A - Admin & Bldg B - Cottage Barn		
Fuel	**Usage**	**Cost**
Electricity	31,913 kWh	$5,093
Natural Gas	4,899 Therms	$4,830
Total		**$9,924**

The current annual energy cost for this facility is $9,924 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G. The average electric cost over the past 12 months was $0.160/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

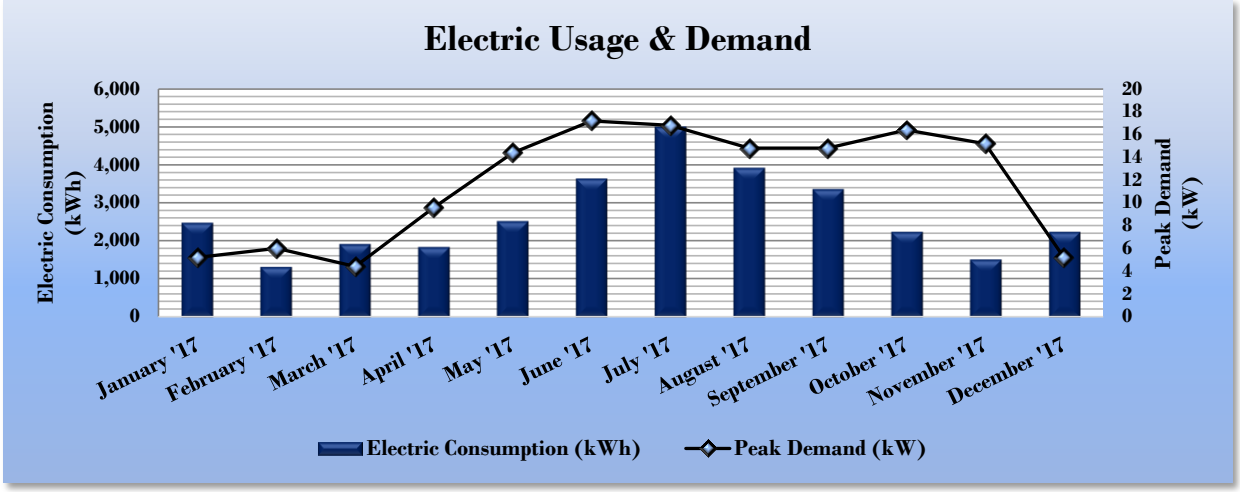


Figure 9 - Electric Usage & Demand

Electric Billing Data for Bldg A - Admin & Bldg B - Cottage Barn					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/31/17	30	2,480	5	$23	$310
3/2/17	30	1,320	6	$27	$181
3/31/17	29	1,920	4	$20	$247
5/2/17	32	1,840	10	$43	$261
6/1/17	30	2,520	14	$65	$362
6/30/17	29	3,640	17	$78	$685
8/1/17	32	5,000	17	$76	$851
8/30/17	29	3,920	15	$67	$689
9/29/17	30	3,360	15	$68	$622
10/30/17	31	2,240	16	$75	$345
12/1/17	32	1,520	15	$70	$259
1/2/18	32	2,240	5	$24	$295
Totals	**366**	**32,000**	**17.2**	**$634**	**$5,107**
Annual	**365**	**31,913**	**17.2**	**$633**	**$5,093**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.986/therm, which is the blended rate used throughout the analyses in this report. The third party gas supply is being provided by Direct Energy. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

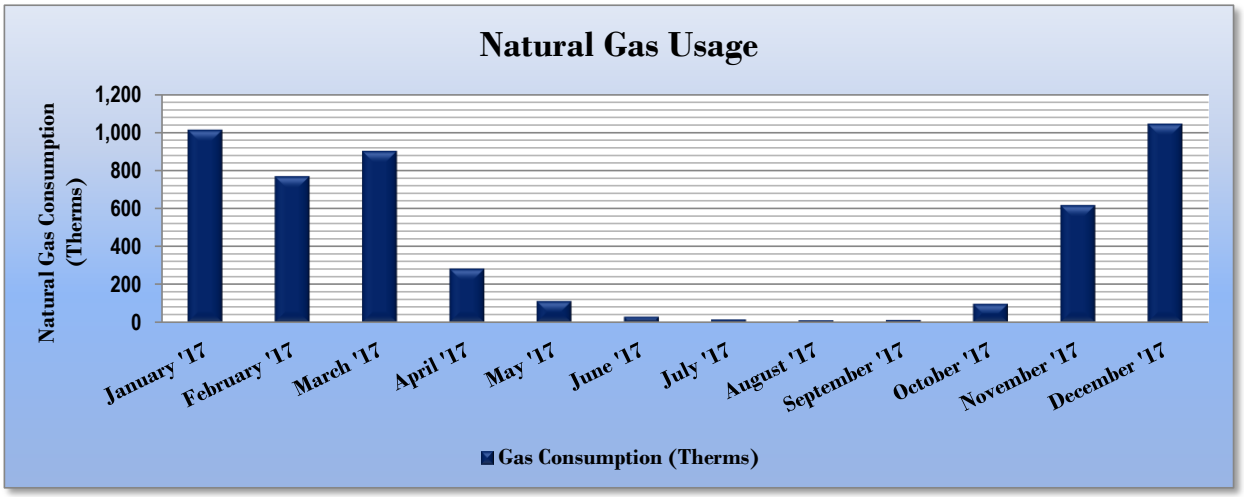


Figure 11 - Natural Gas Usage

Gas Billing Data for Bldg A - Admin & Bldg B - Cottage Barn			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
1/31/17	30	1,014	$1,104
3/2/17	30	770	$798
3/31/17	29	902	$796
5/2/17	32	284	$252
6/1/17	30	113	$114
6/30/17	29	30	$49
8/1/17	32	16	$37
8/30/17	29	11	$34
9/29/17	30	13	$35
10/30/17	31	97	$101
12/1/17	32	618	$559
1/2/18	32	1,045	$964
Totals	**366**	**4,912**	**$4,844**
Annual	**365**	**4,899**	**$4,830**

3.4 Benchmarking

This facility was benchmarked using Portfolio Manager®, an online tool created and managed by the United States Environmental Protection Agency (EPA) through the ENERGY STAR® program. Portfolio Manager® analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR® score for select building types.

The EUI is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy." Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Bldg A - Admin & Bldg B - Cottage Barn	National Median Building Type: Office
Source Energy Use Intensity (kBtu/ft^2)	110.5	148.1
Site Energy Use Intensity (kBtu/ft^2)	77.3	67.3

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, 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		
	Bldg A - Admin & Bldg B - Cottage Barn	National Median Building Type: Office
Source Energy Use Intensity (kBtu/ft^2)	99.3	148.1
Site Energy Use Intensity (kBtu/ft^2)	73.7	67.3

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. The buildings share an electric meter and are being benchmarked as one single building with mixed use. Hence the building is not eligible to receive a score. A Portfolio Manager® Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance.

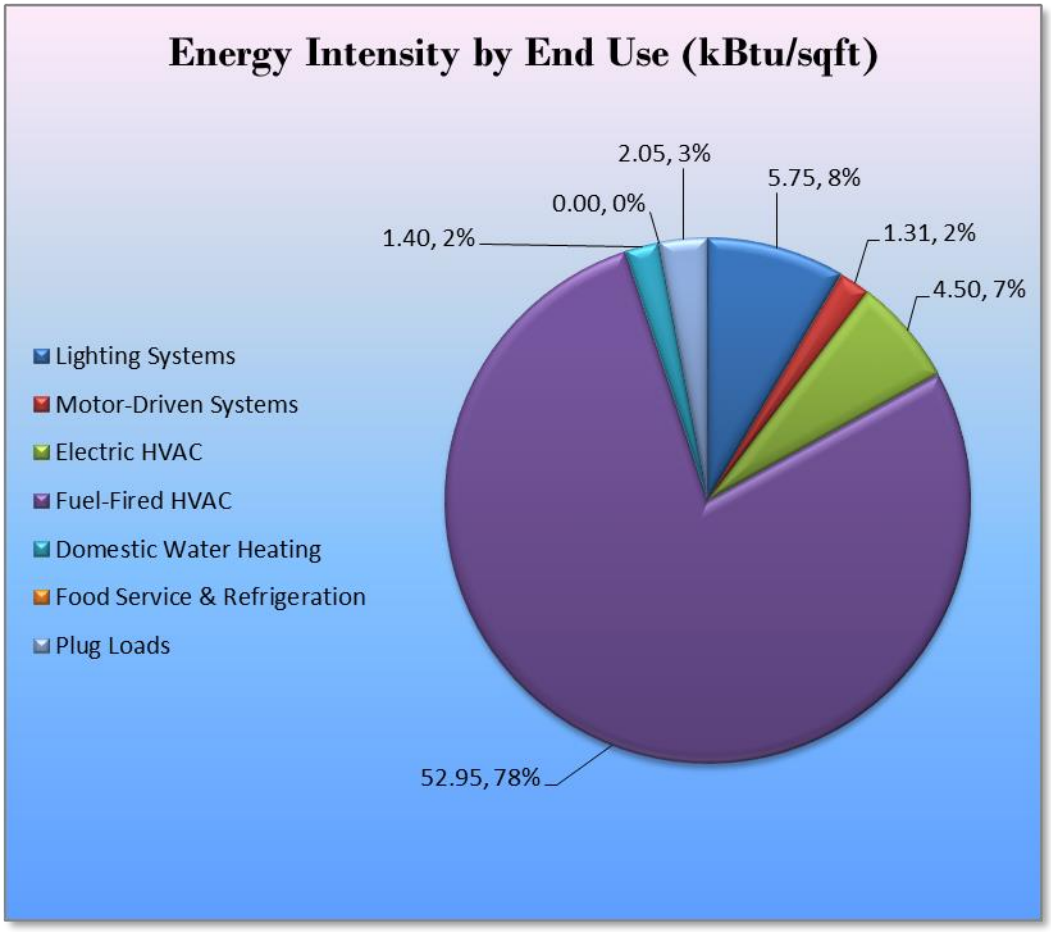
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

A Portfolio Manager® account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance. Free online training is available to help you use ENERGY STAR® Portfolio Manager® to track your building's performance at: https://www.energystar.gov/buildings/training.

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

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



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Bldg A - Admin & Bldg B - Cottage Art Barn regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 15 – Summary of Recommended ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**7,608**	**1.8**	**0.0**	**$1,214.22**	**$4,633.23**	**$650.00**	**$3,983.23**	**3.3**	**7,661**
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Lighting Control Measures			**473**	**0.1**	**0.0**	**$75.56**	**$888.00**	**$130.00**	**$758.00**	**10.0**	**477**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	473	0.1	0.0	$75.56	$888.00	$130.00	$758.00	10.0	477
TOTALS FOR HIGH PRIORITY MEASURES			**8,081**	**2.0**	**0.0**	**$1,289.78**	**$5,521.23**	**$780.00**	**$4,741.23**	**3.7**	**8,138**

4.1.1 Lighting Upgrades

Our recommendations for upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**7,608**	**1.8**	**0.0**	**$1,214.22**	**$4,633.23**	**$650.00**	**$3,983.23**	**3.3**	**7,661**
ECM 1	Install LED Fixtures	1,005	0.2	0.0	$160.40	$1,896.53	$200.00	$1,696.53	10.6	1,012
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	257	0.1	0.0	$41.08	$194.32	$30.00	$164.32	4.0	259
ECM 3	Retrofit Fixtures with LED Lamps	6,345	1.6	0.0	$1,012.74	$2,542.39	$420.00	$2,122.39	2.1	6,390

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	1,005	0.2	0.0	$160.40	$1,896.53	$200.00	$1,696.53	10.6	1,012

Measure Description

We recommend replacing pole and wall mounted metal halide fixtures with new high-performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of metal halide lamps.

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 Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	257	0.1	0.0	$41.08	$194.32	$30.00	$164.32	4.0	259
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers (if necessary), which are designed to be used retrofitted fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting technology. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space. This measure pertains to the facilities' few remaining T12 lamps, located in the 2nd basement.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of fluorescent tubes.

ECM 3: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	5,675	1.5	0.0	$905.78	$2,490.71	$405.00	$2,085.71	2.3	5,715
Exterior	670	0.1	0.0	$106.96	$51.68	$15.00	$36.68	0.3	675

Measure Description

We recommend retrofitting incandescent, compact fluorescent, and linear fluorescent lighting technologies with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. Plug in or screw based LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a fluorescent tube and more than 10 times longer than many incandescent lamps.

4.1.2 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**473**	**0.1**	**0.0**	**$75.56**	**$888.00**	**$130.00**	**$758.00**	**10.0**	**477**
ECM 4	Install Occupancy Sensor Lighting Controls	473	0.1	0.0	$75.56	$888.00	$130.00	$758.00	10.0	477

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
473	0.1	0.0	$75.56	$888.00	$130.00	$758.00	10.0	477

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in offices, conference rooms, and common areas, etc. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

4.2 ECMs Evaluated But Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 18 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**456**	**0.5**	**0.0**	**$72.78**	**$4,488.66**	**$276.00**	**$4,212.66**	**57.9**	**459**
Install High Efficiency Electric AC	456	0.5	0.0	$72.78	$4,488.66	$276.00	$4,212.66	57.9	459
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**1.5**	**$14.76**	**$5,437.76**	**$1,200.00**	**$4,237.76**	**287.1**	**175**
Install High Efficiency Furnaces	0	0.0	1.5	$14.76	$5,437.76	$1,200.00	$4,237.76	287.1	175
Domestic Water Heating Upgrade	**0**	**0.0**	**1.5**	**$15.00**	**$5,625.60**	**$100.00**	**$5,525.60**	**368.5**	**178**
Install High Efficiency Gas Water Heater	0	0.0	1.5	$15.00	$5,625.60	$100.00	$5,525.60	368.5	178
TOTALS OF NON-RECOMMENDED MEASURES	**456**	**1**	**3**	**103**	**15,552**	**1,576**	**13,976**	**136.3**	**813**

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
456	0.5	0.0	$72.78	$4,488.66	$276.00	$4,212.66	57.9	459

Measure Description

We evaluated replacing each of the standard efficiency (3-ton) split air conditioning units with high efficiency packaged air conditioning units in the Admin Building and the Cottage Art Barn. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older units versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Reasons for not Recommending

The investment required to replace these units are not justified by the payback period associated with direct energy savings. These measures are thus being identified as non-cost-effective measures. When the equipment is due for replacement, it is suggested that they be replaced with high efficiency equipment.

Install High Efficiency Gas Water Heater

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	1.5	$15.00	$5,625.60	$100.00	$5,525.60	368.5	178

Measure Description

We evaluated replacing each of the existing tank water heaters with high efficiency tank water heaters at the Admin Building and the Cottage Art Barn. Improvements in combustion efficiency and reductions in heat losses have improved the overall efficiency of storage water heaters. Energy savings results from using less gas to heat water, due to higher unit efficiency, and fewer run hours to maintain the tank water temperature.

Reasons for not Recommending

The investment required to replace these units are not justified by the payback period associated with direct energy savings. These measures are thus being identified as non-cost effective measures. When the equipment is due for replacement, it is suggested that they be replaced with high efficiency equipment.

Install High Efficiency Furnaces

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	1.5	$14.76	$5,437.76	$1,200.00	$4,237.76	287.1	175

Measure Description

We recommend replacing existing standard efficiency furnaces at the Admin Building (Ultra V – Enhanced 95) with condensing furnaces. Improved combustion technology and heat exchanger design optimize heat recovery from the combustion gases which can significantly improve furnace efficiency. Savings result from improved system efficiency.

Reasons for not Recommending

Although these units are nearing the end of useful life, the investment required to replace these units are not justified by the payback period associated with direct energy savings. These measures are thus being identified as non-cost effective measures. When the equipment is due for replacement, it is suggested that they be replaced with high efficiency equipment.

5 ENERGY EFFICIENT PRACTICES

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

Use Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Perform Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Water Conservation

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

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

6 On-Site Generation Measures

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

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

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

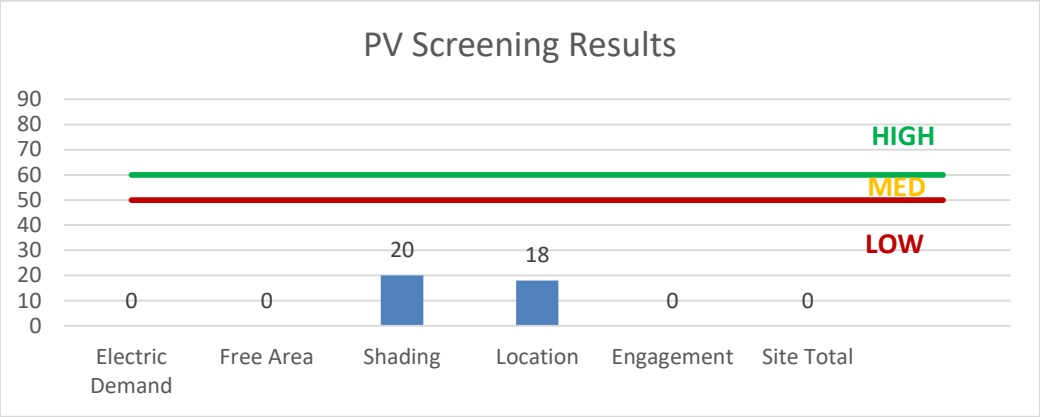
6.1 Photovoltaic

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

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **Low** potential for installing a PV array.

In order to be cost-effective, a solar PV array needs certain minimum criteria, such as flat or south-facing rooftop 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 19 - Photovoltaic Screening



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

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

6.2 Combined Heat and Power

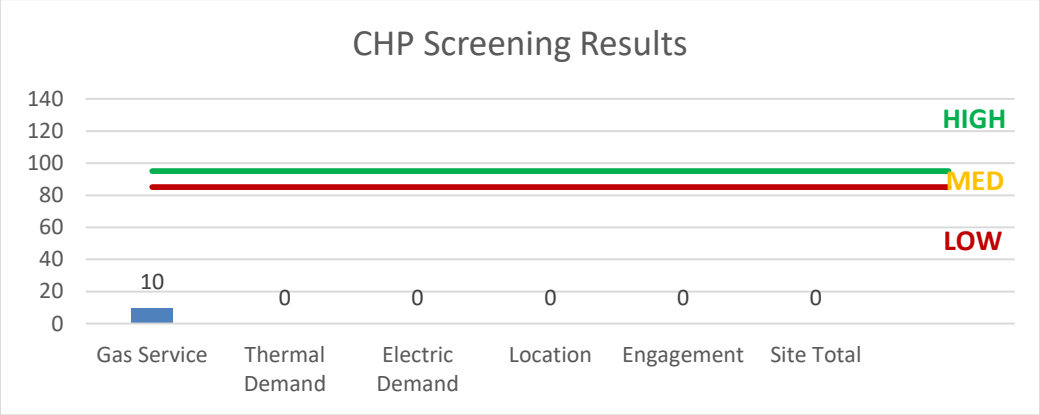
Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

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

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **Low** potential for installing a cost-effective CHP system. Low or infrequent thermal load is the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

Figure 20 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically, an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (http://www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (http://www.pjm.com/training/training%20material.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion, these buildings are not a good candidate for demand response program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 21 for a list of the eligible programs identified for each recommended ECM.

Figure 21 - 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		x			
ECM 3	Retrofit Fixtures with LED Lamps	x		x			
ECM 4	Install Occupancy Sensor Lighting Controls	x		x			
ECM 5	Install High Efficiency Furnaces	x		x			

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

Generally, the incentive values provided throughout the report assume the SmartStart program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci.

8.1 SmartStart

Overview

SmartStart program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SmartStart prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SmartStart program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

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

How to Participate

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

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

8.2 Direct Install

Overview

Direct Install is a turnkey program available to existing small to medium-sized facilities with a peak electric demand that does not exceed 200 kW for any recent 12-month period. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and provide a clear scope of work for installation of selected measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

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

How to Participate

To participate in the Direct Install program you will need to contact the participating contractor who the region of the state where your facility is located. A complete list of Direct Install program partners is provided on the Direct Install website linked below. The contractor will be paid the measure incentives directly by the program which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps and eligibility, while the remaining 30% of the cost is paid to the contractor by the customer.

Since Direct Install offers a free assessment of eligible measures, Direct Install is also available to small businesses and other commercial facilities too that may not be eligible for the more detailed facility audits provided by LGEA.

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Building A- Admin Basement	5	Incandescent: Screw in - 1 Lamp	Wall Switch	60	2,600	Relamp	No	5	LED Screw-In Lamps: Incandescent: Screw in - 1 Lamp	Wall Switch	9	2,600	0.17	663	0.0	$105.82	$86.13	$25.00	0.58
Admin Basement	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Basement Stairwell	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,600	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,600	0.03	97	0.0	$15.54	$65.03	$20.00	2.90
1st Floor Conference Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,600	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,820	0.07	254	0.0	$40.49	$343.03	$55.00	7.11
Front Desk	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,600	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,600	0.09	341	0.0	$54.38	$146.06	$40.00	1.95
Front Desk	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Lobby	6	Compact Fluorescent: Recessend Can - Smaller Plug in - 2 lamps	Wall Switch	36	2,600	Relamp	No	6	LED Screw-In Lamps: Compact Fluorescent: Recessend Can - Smaller Plug in - 2 lamps	Wall Switch	25	2,600	0.05	197	0.0	$31.46	$206.70	$0.00	6.57
Lobby	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Lobby	1	Incandescent: 2 Lamps	Wall Switch	120	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: 2 Lamps	Wall Switch	18	2,600	0.08	310	0.0	$49.52	$34.45	$10.00	0.49
Lobby Corridor	2	Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	36	2,600	Relamp	No	2	LED Screw-In Lamps: Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	25	2,600	0.02	66	0.0	$10.49	$68.90	$0.00	6.57
Women's restroom	1	Incandescent: Screw in - 1 Lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 1 Lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
Men's restroom	1	Incandescent: Screw in - 1 Lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 1 Lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
Office Area	2	Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	36	2,600	Relamp	No	2	LED Screw-In Lamps: Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	25	2,600	0.02	66	0.0	$10.49	$68.90	$0.00	6.57
Office Area	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office Area	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,600	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,820	0.29	1,116	0.0	$178.18	$635.15	$135.00	2.81
2nd Basement	3	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	2,600	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,600	0.08	301	0.0	$48.07	$194.32	$30.00	3.42
2nd Basement	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stairwell	1	Incandescent: Screw in - 2 Lamps	Wall Switch	120	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 2 Lamps	Wall Switch	18	2,600	0.08	310	0.0	$49.52	$34.45	$10.00	0.49
2nd floor stairwell	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,600	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,600	0.04	146	0.0	$23.30	$97.55	$30.00	2.90
2nd floor stairwell	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Storage 1	1	Incandescent: Screw in - 2 Lamps	Wall Switch	120	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 2 Lamps	Wall Switch	18	2,600	0.08	310	0.0	$49.52	$34.45	$10.00	0.49
Storage 2	1	Incandescent: Screw in - 1 Lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 1 Lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
RB	1	Incandescent: Screw in - 1 Lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw in - 1 Lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
Offices	2	Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	36	2,600	Relamp	No	2	LED Screw-In Lamps: Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	25	2,600	0.02	66	0.0	$10.49	$68.90	$0.00	6.57
Offices	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Offices	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,600	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,820	0.12	447	0.0	$71.27	$262.06	$60.00	2.84
Paul's Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,600	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,820	0.12	447	0.0	$71.27	$262.06	$60.00	2.84
Paul's Office	3	Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	36	2,600	Relamp	No	3	LED Screw-In Lamps: Compact Fluorescent: Smaller plug-in - 2 lamps	Wall Switch	25	2,600	0.03	99	0.0	$15.73	$103.35	$0.00	6.57
Door Lights	3	Incandescent: Screw in - 1 lamp	Wall Switch	60	4,380	Relamp	No	3	LED Screw-In Lamps: Incandescent: Screw in - 1 lamp	Wall Switch	9	4,380	0.12	784	0.0	$125.14	$51.68	$15.00	0.29
Door Lights	2	LED Screw-In Lamps: Screw in	Wall Switch	7	4,380	None	No	2	LED Screw-In Lamps: Screw in	Wall Switch	7	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Wall light	1	Metal Halide: (1) 175W Lamp	Wall Switch	215	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	65	4,380	0.12	771	0.0	$123.09	$965.97	$100.00	7.04
Building B - Cottage Barn - Basement	1	Incandescent: Screw-in lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw-in lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
Basement	1	Compact Fluorescent: Plug-in 1 Lamp	Wall Switch	13	2,600	Relamp	No	1	LED Screw-In Lamps: Compact Fluorescent: Plug-in 1 Lamp	Wall Switch	9	2,600	0.00	12	0.0	$1.89	$25.22	$0.00	13.32
Kitchen	8	Compact Fluorescent: Pluig-in - Recessed can - 2 lamps	Wall Switch	26	2,600	Relamp	No	8	LED Screw-In Lamps: Compact Fluorescent: Pluig-in - Recessed can - 2 lamps	Wall Switch	18	2,600	0.05	190	0.0	$30.30	$403.52	$0.00	13.32
Dining Area	1	Incandescent: Screw-in lamp - 3 lamps	Wall Switch	180	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw-in lamp - 3 lamps	Wall Switch	27	2,600	0.12	465	0.0	$74.28	$51.68	$15.00	0.49
Dining Area	1	Compact Fluorescent: Plug-in 3 lamps	Wall Switch	39	2,600	Relamp	No	1	LED Screw-In Lamps: Compact Fluorescent: Plug-in 3 lamps	Wall Switch	27	2,600	0.01	36	0.0	$5.68	$75.66	$0.00	13.32
TV room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
TV room	1	Incandescent: Screw-in lamp - 3 lamps	Wall Switch	180	2,600	Relamp	Yes	1	LED Screw-In Lamps: Incandescent: Screw-in lamp - 3 lamps	Occupancy Sensor	27	1,820	0.13	490	0.0	$78.22	$167.68	$35.00	1.70
Basement stairs	1	Incandescent: Screw-in lamp - 1 lamp	Wall Switch	60	2,600	Relamp	No	1	LED Screw-In Lamps: Incandescent: Screw-in lamp - 1 lamp	Wall Switch	9	2,600	0.04	155	0.0	$24.76	$17.23	$5.00	0.49
Stairwell	1	Compact Fluorescent: Screw-in lamp	Wall Switch	26	2,600	Relamp	No	1	LED Screw-In Lamps: Compact Fluorescent: Screw-in lamp	Wall Switch	18	2,600	0.01	24	0.0	$3.79	$34.45	$0.00	9.10
Exterior building	3	LED Screw-In Lamps: Screw-in lamps	Wall Switch	7	2,600	None	No	3	LED Screw-In Lamps: Screw-in lamps	Wall Switch	7	2,600	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Pole light	1	Metal Halide: (1) 150W Lamp	Wall Switch	190	2,600	Fixture Replacement	No	1	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	57	2,600	0.11	405	0.0	$64.57	$930.56	$100.00	12.86

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Building A - Admin Building-Basement	Admin building	1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Basement	Admin building	1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Throughout Building	Admin building ceiling fans	2	Supply Fan	0.1	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Building B - Cottage Barn	Furnace	1	Supply Fan	0.3	60.0%	No	2,745	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement	Admin building	1	Split-System AC	3.00		Yes	1	Split-System AC	3.00		14.00		No	0.53	456	0.0	$72.78	$4,488.66	$276.00	57.88
Basement	Admin building	2	Split-System AC	4.83		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Building B - Cottage Barn - grounds	Barn	1	Split-System AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Admin building basement	Admin building	3	Furnace	80.00	Yes	3	Furnace	80.00	95.00%	AFUE	0.00	0	1.5	$14.76	$5,437.76	$1,200.00	287.08
Builsing B - Cottage Barn Basement	Basement	1	Furnace	36.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Admin building	Admin Building	1	Storage Tank Water Heater (≤ 50 Gal)	Yes	1	Storage Tank Water Heater (≤ 50 Gal)	Natural Gas	93.00%	EF	0.00	0	1.1	$11.03	$2,812.80	$50.00	250.55
Building B - Cottage Barn Basement	Barn	1	Storage Tank Water Heater (≤ 50 Gal)	Yes	1	Storage Tank Water Heater (≤ 50 Gal)	Natural Gas	93.00%	EF	0.00	0	0.4	$3.97	$2,812.80	$50.00	695.99

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Admin Building	2	LCD TV	100.0	Yes
Admin Building	5	Desktop	175.0	Yes
Admin Building	3	Desk Printer	60.0	Yes
Admin Building	1	Photo copier	600.0	Yes
Admin Building	2	Mini Fridge	60.0	Yes
Admin Building	1	Microwave	1,000.0	Yes
Admin Building	1	Shredder	40.0	Yes
Admin Building	4	Dehumidifier	280.0	Yes
Building B - Cottage Barn Basement	1	Dehumidifier	250.0	Yes
Kitchen	2	Microwave oven	1,000.0	Yes
Kitchen	1	Coffee machine -	400.0	Yes
Kitchen	1	Refrigerator	200.0	Yes
Kitchen	1	Laundry	900.0	Yes
Kitchen	1	Dryer	1,500.0	Yes

Appendix B: ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Bldg A - Admin and B - Art Barn

Primary Property Type: Office
Gross Floor Area (ft²): 7,750
Built: 1700

For Year Ending: December 31, 2017
Date Generated: August 21, 2018

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

Property & Contact Information

Property Address	Property Owner	Primary Contact
Bldg A - Admin and B - Art Barn 101 SULLIVAN WAY Trenton, New Jersey 08628	Village Charter School 101 SULLIVAN WAY TRENTON, NJ 08628 (____)____-_____	PAUL DEWITT MERCER 101 SULLIVAN WAY TRENTON, NJ 08628 609-695-0110 EXT 116 pdewitt@villagecharter.org

Property ID: 6450464

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
76.1 kBtu/ft²

Source EUI
109.2 kBtu/ft²

Annual Energy by Fuel		
Electric - Grid (kBtu)	108,442 (18%)	
Natural Gas (kBtu)	481,621 (82%)	

National Median Comparison	
National Median Site EUI (kBtu/ft²)	103.2
National Median Source EUI (kBtu/ft²)	148.1
% Diff from National Median Source EUI	-26%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	38

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)