Local Government Energy Audit:
Energy Audit Report

Brooklawn Board of Education Office

401 Community Road

Brooklawn, NJ 08030

Brooklawn BOE

May 18, 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 Brooklawn Board of Education Office.

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 school districts in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

The Brooklawn Board of Education Office is a 2,000 square foot residential facility comprised of a kitchen, kitchenette, conference room, storage rooms, restrooms and mechanical space. The facility operates from 8:00 AM to 3:00 PM all year on weekdays. The space heating in the building is provided by one gas-fired furnace, and the space cooling is provided by a split system AC unit. The lighting consists of aging and inefficient T12 linear tubes and incandescent light fixtures in need of replacement. 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 five measures and recommends three measures which together represent an opportunity for Brooklawn Board of Education Office to reduce annual energy costs by $832 and annual greenhouse gas emissions by 6,529 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 9.4 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 Brooklawn Board of Education Office's annual energy use by 16%.

Figure 1 – Previous 12 Month Utility Costs

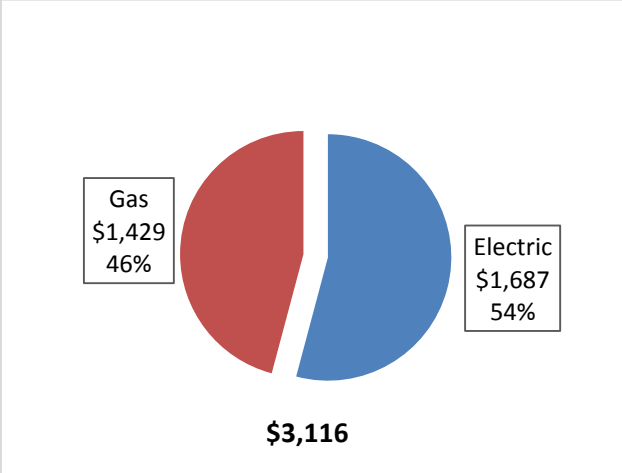
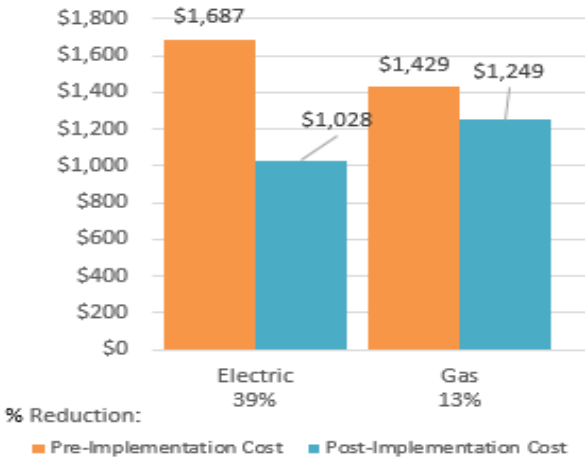


Figure 2 – Potential Post-Implementation Costs



A detailed description of Brooklawn Board of Education Office's 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		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		**3,476**	**1.6**	**0.0**	**$652.82**	**$4,644.83**	**$0.00**	**$4,644.83**	**7.1**	**3,500**
ECM 1	Install LED Fixtures	505	0.4	0.0	$94.78	$1,709.24	$0.00	$1,709.24	18.0	508
ECM 2	Retrofit Fixtures with LED Lamps	2,971	1.3	0.0	$558.05	$2,935.59	$0.00	$2,935.59	5.3	2,992
Electric Unitary HVAC Measures		**600**	**1.1**	**0.0**	**$112.68**	**$7,481.10**	**$0.00**	**$7,481.10**	**66.4**	**604**
	Install High Efficiency Electric AC	600	1.1	0.0	$112.68	$7,481.10	$0.00	$7,481.10	66.4	604
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**25.9**	**$179.56**	**$3,172.03**	**$0.00**	**$3,172.03**	**17.7**	**3,028**
ECM 3	Install High Efficiency Furnaces	0	0.0	25.9	$179.56	$3,172.03	$0.00	$3,172.03	17.7	3,028
Domestic Water Heating Upgrade		**0**	**0.0**	**0.8**	**$5.49**	**$2,461.20**	**$0.00**	**$2,461.20**	**447.9**	**93**
	Install High Efficiency Gas Water Heater	0	0.0	0.8	$5.49	$2,461.20	$0.00	$2,461.20	447.9	93
TOTALS OF ALL ECMS		**4,076**	**2.8**	**26.7**	**$950.57**	**$17,759.16**	**$0.00**	**$17,759.16**	**18.7**	**7,225**
TOTALS OF RECOMMENDED ECMS		**3,476**	**1.6**	**25.9**	**$832.39**	**$7,816.86**	**$0.00**	**$7,816.86**	**9.4**	**6,529**
TOTAL OF NON-RECOMMENDED ECMS		**600**	**1**	**1**	**$ 118.18**	**$ 9,942.30**	**$ -**	**$ 9,942.30**	**84.1**	**697**

* - 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.

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 11 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 identified at Brooklawn Board of Education Office include:

- Reduce Air Leakage
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Check for and Seal Duct Leakage
- Perform Proper Furnace 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 for Brooklawn Board of Education Office. Based on the configuration of the site and its loads there is a low potential for installing any 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 unavailable from NJCEP for this building as this is residentially metered. Only commercial buildings paying the Societal Benefits Charge are eligible to be qualified for the NJCEP incentive programs.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Bud Rutter	Facilites Manager	brutter@audubonschools.org	609-820-0917
TRC Energy Services			
Smruti Srinvasan	Auditor	ssrinivasan@trcsolutions.com	732-855-0033

2.2 General Site Information

On March 29, 2017, TRC performed an energy audit at Brooklawn Board of Education Office located in Brooklawn, New Jersey. TRC's team met with Bud Rutter to review the facility operations and help focus our investigation on specific energy-using systems.

Brooklawn Board of Education Office is a 2,000 square foot residential facility comprised of a kitchen, kitchenette, conference room, storage rooms, restrooms and mechanical space. The facility operates from 8:00 AM to 3:00 PM all year on weekdays. The building was constructed in 1954. The space heating in the building is provided by one gas-fired furnace, and the space cooling is provided by a split system AC unit. The lighting consists of aging and inefficient T12 linear tubes and incandescent light fixtures in need of replacement.

2.3 Building Occupancy

The typical schedule is presented in the table below. On a typical day there are approximately four occupants in the building.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
BOE Office	Weekday	8 AM - 3 PM
BOE Office	Weekend	No operation

2.4 Building Envelope

The building is constructed of wood, poured concrete and brick with a brick façade. The roof of the building is pitched with asphalt shingles and was found to be in good condition. The building has single pane windows that are at least 12 years old. The exterior doors are constructed of aluminum and in good condition.

Building Exterior, Doors, and Windows

2.5 On-Site Generation

Brooklawn Board of Education Office does not have any on-site electric generation systems currently installed.

2.6 Energy-Using Systems

Please see Appendix A: Equipment Inventory & Recommendations for an inventory of the facility's equipment.

Lighting System

Lighting at the facility is provided mostly by 44-Watt linear fluorescent T12 lamps as well as 60-Watt incandescent lamp fixtures. Lighting control in most spaces is provided by wall switches.

The building's exterior lighting is minimal and consists primarily of 70-Watt metal halide controlled by photo cells.

Direct Expansion Air Conditioning System (DX)

The heating in the building is provided by one gas-fired forced air furnace with an output capacity of 140MBh and an efficiency of 80%. The heated air is distributed in the respective rooms using ceiling vents. The furnace is at least 15 years old and has been evaluated for replacement.

Heating System and Distribution

Direct Expansion Air Conditioning System (DX)

Space cooling is provided by a split system AC unit manufactured by Carrier. This capacity of the unit is 5 tons and the unit is 16 years old. The space temperature is controlled using a programmable thermostat.

Air Conditioning and Controls

Domestic Water Heating System

Domestic hot water is provided by one State Industries gas-fired water heater with an input capacity of 35 MBh and a system efficiency of 70%. The equipment has a tank capacity of 40 gallons. The equipment is 15 years old and has been evaluated for replacement.

Domestic Water Heating

Building Plug Load

Plug load primarily consists of kitchenette equipment such as refrigerators, coffee machine, microwave oven, dishwasher, and an induction stove with four stove tops. The office plug loads include one computer, a couple of laptops, a printer, a paper shredder and ceiling fans.

2.7 Water-Using Systems

A sampling of restrooms found that the faucets are rated for 2.2 gallons per minute (gpm) or lower, the toilets are rated at 1.6 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 3.4 for additional information.

3.1 Total Cost of Energy

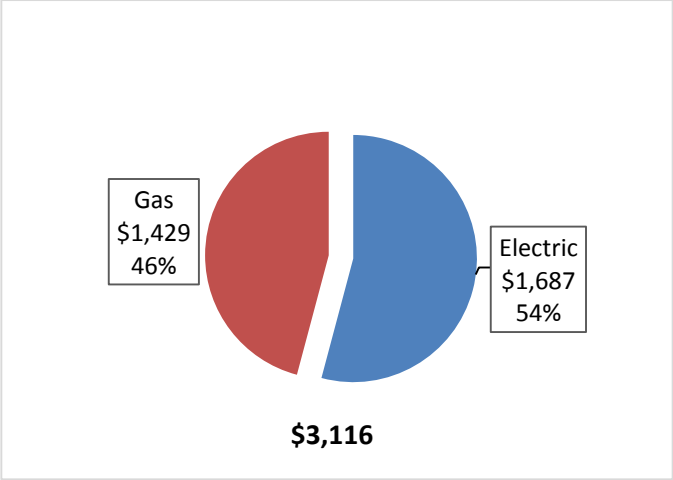
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Brooklawn Board of Education Office		
Fuel	**Usage**	**Cost**
Electricity	8,983 kWh	$1,687
Natural Gas	2,058 Therms	$1,429
Total		**$3,116**

The current annual energy cost for this facility is $3,116 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 $0.188/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 third party electric supply is provided by Hudson Energy Services. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

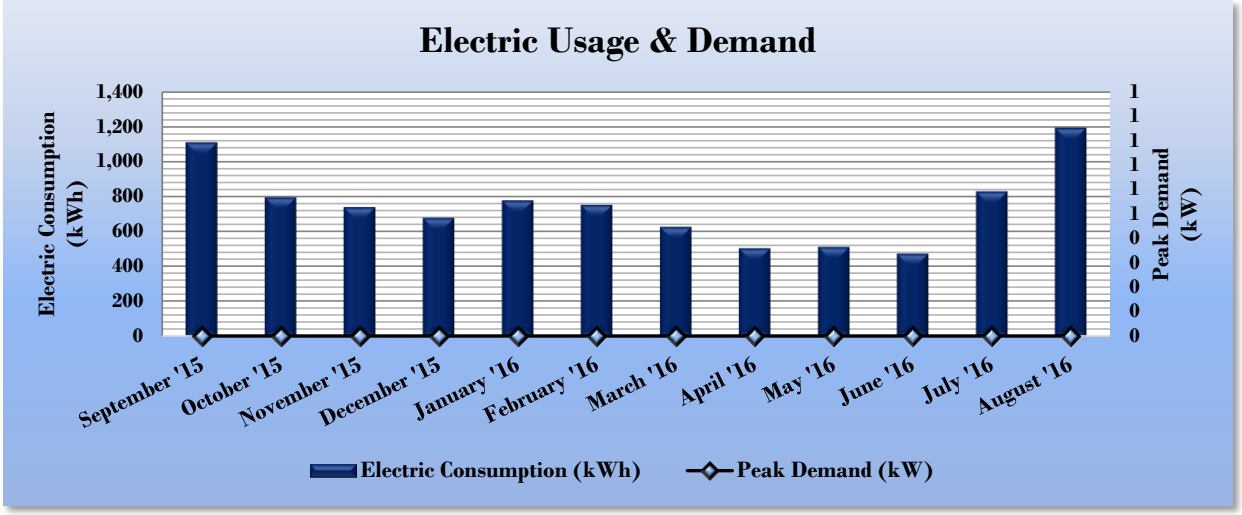


Figure 9 - Electric Usage & Demand

Electric Billing Data for Brooklawn Board of Education Office					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
9/29/15	30	1,109			$213
10/28/15	29	795			$137
11/30/15	33	738			$124
12/30/15	30	677			$114
1/29/16	30	777			$128
3/1/16	32	751			$124
3/31/16	30	626			$105
4/29/16	29	504			$89
5/31/16	32	511			$87
6/29/16	29	473			$113
7/29/16	30	829			$181
8/29/16	31	1,193			$273
Totals	**365**	**8,983**	**0**	**$0**	**$1,687**
Annual	**365**	**8,983**	**0**	**$0**	**$1,687**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.694/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

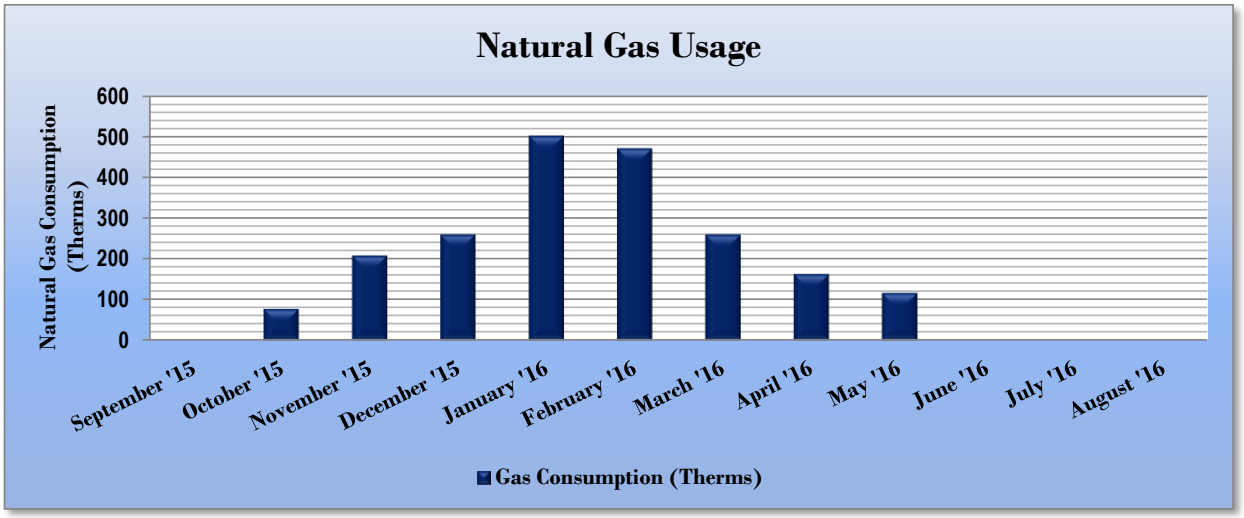


Figure 11 - Natural Gas Usage

Gas Billing Data for Brooklawn Board of Education Office			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
9/29/15	30	0	$6
10/28/15	29	77	$64
11/30/15	33	208	$177
12/30/15	30	260	$154
1/29/16	30	502	$293
3/1/16	32	471	$277
3/31/16	30	260	$218
4/29/16	29	163	$129
5/31/16	32	117	$94
6/29/16	29	0	$6
7/29/16	30	0	$6
8/29/16	31	0	$6
Totals	**365**	**2,058**	**$1,429**
Annual	**365**	**2,058**	**$1,429**

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		
	Brooklawn Board of Education Office	National Median Building Type: Office
Source Energy Use Intensity (kBtu/ft^2)	156.2	148.1
Site Energy Use Intensity (kBtu/ft^2)	118.2	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		
	Brooklawn Board of Education Office	National Median Building Type: Office
Source Energy Use Intensity (kBtu/ft^2)	123.8	148.1
Site Energy Use Intensity (kBtu/ft^2)	99.3	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. Your building is not is one of the building categories that are eligible to receive a score as the gross floor area of the building is too small.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance.

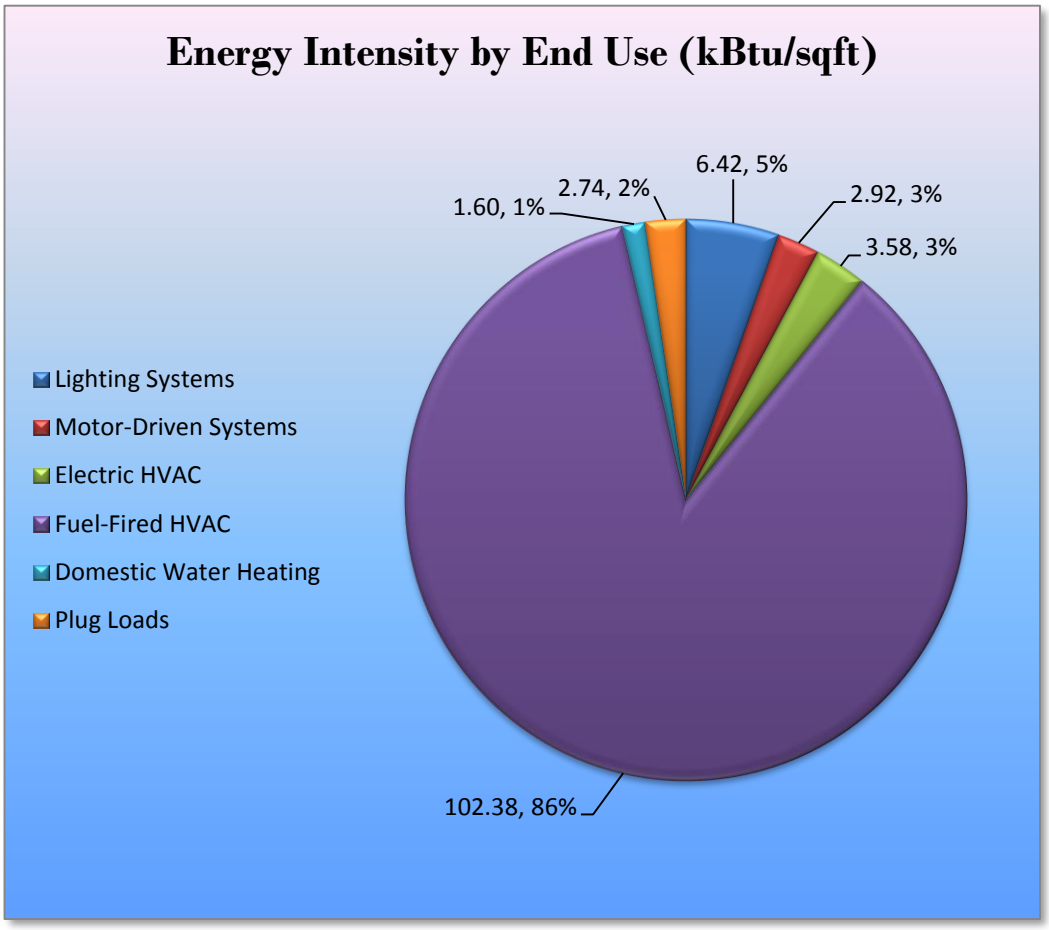
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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 to the Brooklawn Board of Education Office. 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. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. 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		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		**3,476**	**1.6**	**0.0**	**$652.82**	**$4,644.83**	**$0.00**	**$4,644.83**	**7.1**	**3,500**
ECM 1	Install LED Fixtures	505	0.4	0.0	$94.78	$1,709.24	$0.00	$1,709.24	18.0	508
ECM 2	Retrofit Fixtures with LED Lamps	2,971	1.3	0.0	$558.05	$2,935.59	$0.00	$2,935.59	5.3	2,992
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**25.9**	**$179.56**	**$3,172.03**	**$0.00**	**$3,172.03**	**17.7**	**3,028**
ECM 3	Install High Efficiency Furnaces	0	0.0	25.9	$179.56	$3,172.03	$0.00	$3,172.03	17.7	3,028
TOTALS OF RECOMMENDED ECMS		**3,476**	**1.6**	**25.9**	**$832.39**	**$7,816.86**	**$0.00**	**$7,816.86**	**9.4**	**6,529**

* - 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).

4.1.1 Lighting Upgrades

Our recommendated 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		**3,476**	**1.6**	**0.0**	**$652.82**	**$4,644.83**	**$0.00**	**$4,644.83**	**7.1**	**3,500**
ECM 1	Install LED Fixtures	505	0.4	0.0	$94.78	$1,709.24	$0.00	$1,709.24	18.0	508
ECM 2	Retrofit Fixtures with LED Lamps	2,971	1.3	0.0	$558.05	$2,935.59	$0.00	$2,935.59	5.3	2,992

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	77	0.2	0.0	$14.40	$537.21	$0.00	$537.21	37.3	77
Exterior	428	0.1	0.0	$80.38	$1,172.03	$0.00	$1,172.03	14.6	431

Measure Description

We recommend replacing existing fixtures containing T12 linear fluorescent tubes and exterior wall pack fixtures containing HID lamps 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.

The combined project payback for this measure, 18 years, approaches the useful life of the equipment being replaced (light fixtures). We believe that recapitalization of these lighting assets is warranted as they are near the end of useful life and the replacement fixtures will provide higher quality, uniform lighting.

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

ECM 2: 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	2,689	1.1	0.0	$505.06	$2,642.03	$0.00	$2,642.03	5.2	2,708
Exterior	282	0.1	0.0	$52.99	$293.56	$0.00	$293.56	5.5	284

Measure Description

We recommend retrofitting existing incandescent 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. 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 tubes and more than 10 times longer than many incandescent lamps.

4.1.2 Gas-Fired Heating System Replacements

Our recommendations for gas-fired heating system replacements are summarized in Figure 17 below.

Figure 17 - Summary of Gas-Fired Heating Replacement 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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**25.9**	**$179.56**	**$3,172.03**	**$0.00**	**$3,172.03**	**17.7**	**3,028**
ECM 3	Install High Efficiency Furnaces	0	0.0	25.9	$179.56	$3,172.03	$0.00	$3,172.03	17.7	3,028

ECM 3: 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	25.9	$179.56	$3,172.03	$400.00	$2,772.03	15.4	3,028

Measure Description

We recommend replacing existing standard efficiency furnaces 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.

The project payback for this measure, 15.4 years, approaches the useful life of the equipment being replaced (furnace). We believe that recapitalization of this heating asset is warranted as it is near the end of useful life and the replacement unit will ensure greater reliability in addition to providing energy savings.

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	**600**	**1.1**	**0.0**	**$112.68**	**$7,481.10**	**$460.00**	**$7,021.10**	**62.3**	**604**
Install High Efficiency Electric AC	600	1.1	0.0	$112.68	$7,481.10	$460.00	$7,021.10	62.3	604
Domestic Water Heating Upgrade	**0**	**0.0**	**0.8**	**$5.49**	**$2,461.20**	**$50.00**	**$2,411.20**	**438.8**	**93**
Install High Efficiency Gas Water Heater	0	0.0	0.8	$5.49	$2,461.20	$50.00	$2,411.20	438.8	93
TOTALS	**600**	**1.1**	**0.8**	**$118.18**	**$9,942.30**	**$510.00**	**$9,432.30**	**79.8**	**697**

* - 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)
600	1.1	0.0	$112.68	$7,481.10	$460.00	$7,021.10	62.3	604

Measure Description

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. 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 unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

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	0.8	$5.49	$2,461.20	$50.00	$2,411.20	438.8	93

Measure Description

We evaluated replacing the existing tank water heater with a high efficiency tank water heater. Improvements in combustion efficiency and reductions in heat losses have improved the overall efficiency of storage water heaters. Energy savings result from using less gas to heat water due to higher unit efficiency and fewer run hours required to maintain the tank water temperature.

Reasons for not Recommending

Although the AC unit and the domestic hot water heater were both evaluated for replacement, the payback period for the investment exceeds the useful life of the equipment in both cases. When these pieces of equipment need to be replaced in the future, we recommend 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.

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Practice Proper Use of 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.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Check for and Seal Duct Leakage

Duct leakage in commercial buildings typically accounts for 5% to 25% 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.

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™ https://www.epa.gov/watersense/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.

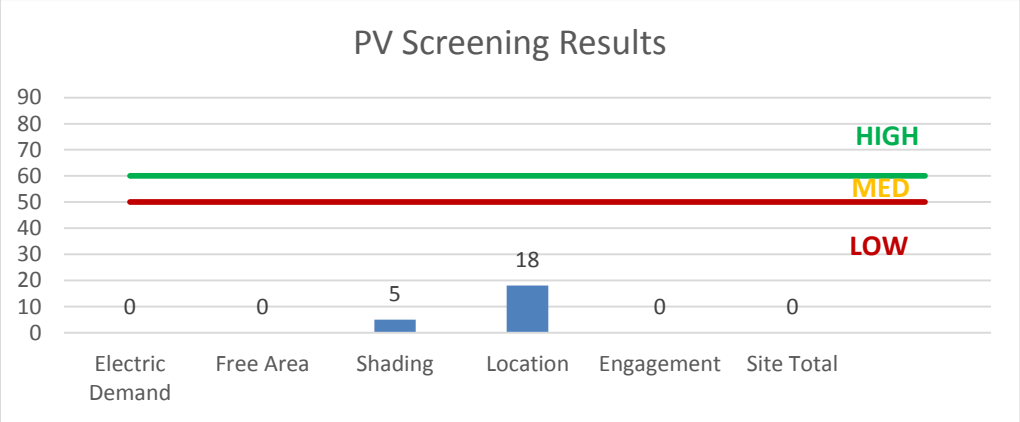
6.1 Photovoltaic

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.

Lack of gas service, low or infrequent thermal load, and lack of space near the existing boilers are 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/

7 PROJECT FUNDING / INCENTIVES

The NJCEP provides program incentives to commercial buildings contributing to 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. Although the Brooklawn BOE building was provided a waiver to pursue LGEA program audit services, the building is residentially metered and would not be eligible to apply for energy efficiency equipment incentives via the commercial programs.

8 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

8.1 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.

8.2 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
Side walls	2	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	910	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	36	910	0.09	126	0.0	$23.60	$781.35	$200.00	24.64
Entrance walls	2	Incandescent: 1 Lamp	Wall Switch	60	1,820	Relamp	No	2	LED Screw-In Lamps: 1 Lamp	Wall Switch	7	1,820	0.08	226	0.0	$42.39	$195.71	$10.00	4.38
Entrance pole	1	Incandescent: 1 Lamp	Daylight Dimming	60	910	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Daylight Dimming	7	910	0.04	56	0.0	$10.60	$97.85	$5.00	8.76
Attic	1	Incandescent: 1 Lamp	Wall Switch	60	104	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Wall Switch	7	104	0.04	6	0.0	$1.21	$97.85	$5.00	76.66
Book room	1	Incandescent: 1 Lamp	Wall Switch	60	104	Relamp	No	1	LED Screw-In Lamps: 1 Lamp	Wall Switch	7	104	0.04	6	0.0	$1.21	$97.85	$5.00	76.66
Kitchenette lavatory, room and storage	3	Incandescent: 1 Lamp	Wall Switch	60	1,040	Relamp	No	3	LED Screw-In Lamps: 1 Lamp	Wall Switch	7	1,040	0.13	193	0.0	$36.34	$293.56	$15.00	7.67
Storage, Hallway	2	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	25	1,040	Fixture Replacement	No	2	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	1,040	0.03	40	0.0	$7.54	$120.06	$0.00	15.92
Lavatory, Room, hallways, Lower level, and closets	22	Incandescent: 1 Lamp	Wall Switch	60	1,820	Relamp	No	22	LED Screw-In Lamps: 1 Lamp	Wall Switch	7	1,820	0.93	2,483	0.0	$466.30	$2,152.77	$110.00	4.38
Exit signs	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Office, Kitchenette, Furnace room	5	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	208	Fixture Replacement	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	208	0.23	72	0.0	$13.48	$417.15	$0.00	30.94
Back entrance	1	Metal Halide: (1) 70W Lamp	Daylight Dimming	95	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	36	4,380	0.05	302	0.0	$56.78	$390.68	$100.00	5.12

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
Roof	BOE office	2	Exhaust Fan	0.3	60.0%	No	780	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Furnace	All building	1	Other	1.0	85.5%	No	2,745	No	85.5%	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
Backside building	All building	1	Split-System AC	5.00		Yes	1	Split-System AC	5.00		14.00		No	1.15	600	0.0	$112.68	$7,481.10	$460.00	62.31

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
Boiler room	All building	1	Furnace	140.00	Yes	1	Furnace	140.00	95.00%	AFUE	0.00	0	25.9	$179.56	$3,172.03	$400.00	15.44

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
Boiler room	All building	1	Storage Tank Water Heater (≤ 50 Gal)	Yes	1	Storage Tank Water Heater (≤ 50 Gal)	Natural Gas	93.00%	EF	0.00	0	0.8	$5.49	$2,461.20	$50.00	438.84

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
BOE Office	1	Computer	150.0	Yes
BOE Office	2	Laptop	45.0	Yes
BOE Office	1	Printer - Medium	20.0	No
BOE Office	1	Printer - large	200.0	No
BOE Office	1	Paper Shredder	200.0	No
BOE Office	1	Microwave	900.0	No
BOE Office	1	Refrigerator - Medium	70.0	No
BOE Office	1	Coffee machine	400.0	No
BOE Office	8	Ceiling fan	60.0	No
BOE Office	1	Dishwasher	1,000.0	No

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

Brooklawn BOE Office

Primary Property Type: Office
Gross Floor Area (ft²): 2,000
Built: 1954

For Year Ending: September 30, 2016
Date Generated: December 19, 2017

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
Brooklawn BOE Office 401, Community Road Brooklawn, New Jersey 08030	_____ , (___)___-_____	___ _____ , (___)___-_____ _____

Property ID: 6175674

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
118.1 kBtu/ft²

Source EUI
155.8 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	30,420 (13%)
Natural Gas (kBtu)	205,706 (87%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	112.2
National Median Source EUI (kBtu/ft²)	148.1
% Diff from National Median Source EUI	5%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	14

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)