Local Government Energy Audit:
Energy Audit Report

John C. Bartlett Jr. Hall (#2)

Ocean County College

1 College Drive
Toms River, New Jersey 08754

October 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 John C. Bartlett Jr. Hall (#2).

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

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

1.1 Facility Summary

John C. Bartlett Jr. Hall (#2) is a 31,754 square foot, three story facility comprised of various space types such as classrooms, conference halls, hallways and a mechanical space. This is building operates all year including Saturdays. The building remains closed on Sundays.

This building is heated using four (4) gas-fired condensing hot water boilers and warm air unit heaters. Space cooling in the building is provided using an air-cooled reciprocating chiller. The lighting in the building is provided mostly by linear T8 tube fixtures and some compact fluorescent fixtures. 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 one (1) project that represents an opportunity for John C. Bartlett Jr. Hall (#2) to reduce annual energy costs by roughly $7,023 and annual greenhouse gas emissions by 51,818 lbs CO_2e. The measures would pay for themselves in roughly 5 years. The breakdown of existing and potential utility costs is illustrated in Figure 1 and Figure 2, respectively. These projects represent an opportunity to reduce John C. Bartlett Jr. Hall (#2)'s annual energy use by 4.1%.

Please Note: Though the building has no utility natural gas service, the heat provided to the building comes from gas-fired boilers and a combined heat and power (CHP) system at the CHP Building (which is supplied by NJ Natural Gas). For this study, we estimated the portion of each utility service that is supplied to CHP Building, which is ultimately used by each campus building in the form of thermal energy or electric power. We assigned the associated costs for main utility account to each campus building, based on estimates of end-usage. In this way, energy costs and resultant savings from recommended ECMs could be attributed to each building.

Figure 1 – Previous 12 Month Utility Costs

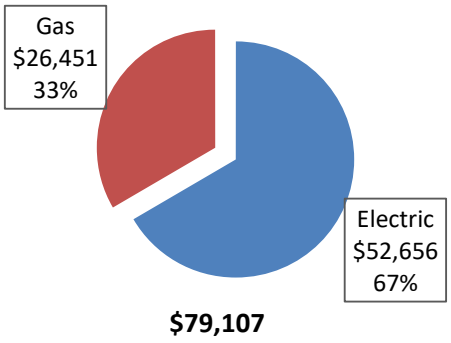
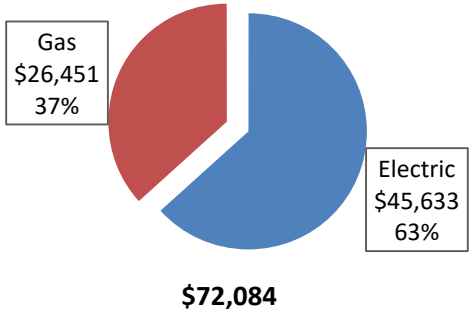


Figure 2 – Potential Post-Implementation Costs



A detailed description of John C. Bartlett Jr. Hall (#2)'s existing energy use can be found in Section 3.

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

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			51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818
ECM 1	Retrofit Fixtures with LED Lamps	Yes	51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818
TOTALS			51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818

* - 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.

Energy Efficient Practices

TRC also identified six (6) low or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at John C. Bartlett Jr. Hall (#2) include:

- Reduce Air Leakage
- Close Doors and Windows
- Ensure Lighting Controls Are Operating Properly
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls

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 sources for John C. Bartlett Jr. Hall (#2). 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 the 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, the equipment changes outlined for each ECM need to be selected and installed through project implementation. One of the first considerations is if there is capital available for project implementation. Another consideration is whether to pursue individual ECMs, a group of ECMs, or a comprehensive approach wherein all ECMs are pursued, potentially in conjunction with other facility projects or improvements.

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

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

- SmartStart
- SREC (Solar Renewable Energy Certificate) Registration Program (SRP)
- Energy Savings Improvement Program (ESIP)

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

For facilities without capital available to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with external project development, design, and implementation services as well as financing for implementing ECMs. This LGEA report is the first step for participating in ESIP and should help you determine next steps. Refer to Section 8.3 for additional information on the ESIP Program.

Additional descriptions of all relevant incentive programs are located in Section 8. You may also check the following website for further information on available rebates and incentives: www.njcleanenergy.com/ci.

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

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
James Calamia	Director of Facilities	jcalamia@ocean.edu	732-255-0400 x 2066
TRC Energy Services			
Iyunade Oduneye	Auditor	ioduneye@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On June 8, 2016, TRC performed an energy audit at John C. Bartlett Jr. Hall (#2) located in Toms River, New Jersey. TRC met with Eugene Caulfield to review the facility operations and focus the investigation on specific energy-using systems.

John C. Bartlett Jr. Hall (#2) is a 31,754 square foot, three-story facility comprised of various space types including classrooms, conference halls, hallways, and a mechanical space. This is building operates all year including the weekends. The building remains closed on Sundays.

The building is fairly new and was constructed in 2009. This building is heated using four (4) gas-fired condensing hot water boilers and warm air unit heaters. Space cooling in the building is provided using an air-cooled reciprocating chiller. The lighting in the building is provided mostly by linear T-8 tube fixtures and some compact fluorescent fixtures.

2.3 Building Occupancy

The typical schedule is presented in the table below. The building operates round the year including Saturday. The number of occupants and the staff in the building varies with classes.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
John C. Bartlett Jr. Hall	Weekday	7AM - 10PM
John C. Bartlett Jr. Hall	Weekend	9AM - 6PM

2.4 Building Envelope

The building is constructed of concrete block and structural steel with a brick and concrete façade. The building has flat roofs covered with white TPO coating and was in decent condition. There are solar panels installed on the roof. The buildings have double-pane windows with blinds that are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition.

Figure 6 – Building Envelope

2.5 On-site Generation

The campus has a 1.1-MW Waukesha reciprocating engine combined heat and power (CHP) power plant at the central plant. The CHP plant generates a significant portion of the power used by the central campus buildings. John C. Bartlett Jr. Hall (#2) also has solar panels on the roof as in some of the other buildings on campus. The specific generating capacity of the panels on this roof is unknown.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the facility is provided predominately by linear 32-Watt fluorescent T-8 lamps with electronic ballasts as well as compact fluorescent lamps (CFL). Most of the building tenant spaces use 2-lamp, 2-foot wide by 4-foot long troffers.

The building entrance spaces and some corridor and storage spaces are primarily lit with 13-Watt CFL lamps in recessed can fixtures with electronic ballasts.

Lighting control in most spaces is provided by occupancy sensors. The occupancy sensors are either wall or ceiling mounted depending on the space layout. Stairwells, elevator lobbies and main lobby areas do not contain any occupancy sensors and are on 24 hours per day throughout the year. The building has exterior lighting, which are primarily canopy fixtures consisting of compact fluorescent lamps and are controlled using timers.

Hot Water / Steam System

All heating is provided to John C. Bartlett Jr. Hall (#2) by the CHP Building. Hot water generated at the CHP Building is distributed to this and ten (10) other campus buildings via thermal distribution loop. Hot water is generated at the CHP building by a high-efficiency, gas-fired AERCO BMK-6000 boiler system. A gas-fired Waukesha reciprocating engine CHP system at the CHP Building also provides heat to the thermal distribution system. The heated air is distributed in the respective spaces using air handlers and unit ventilators.

Figure 7 – Hot Water / Steam System

Air Conditioning Systems (CHW and DX)

The chiller serving the building is an air-cooled reciprocating chiller of 43-ton capacity from Multistack. The chilled water is circulated through the building using two (2) 5-hp chilled water pumps that are controlled using variable frequency drives. Apart from the chiller there are two (2) rooftop packaged units (20-ton and 30-ton) from Trane that are also providing space cooling to the building. The chilled air is distributed in the classrooms using the chilled beams and in other common areas using the air handling units. The chiller and the rooftop packaged units are seven years old, well maintained, and are in good condition.

There is a tech closet in the building and is provided cooling using a dedicated split system. This unit operates in the winter, as the heat dissipation from the room is high and the temperature of the room needs to be maintained.

Figure 8 – Air Conditioning Equipment

Domestic Hot Water

The domestic hot water system for the facility consists of three (3) gas fired electric hot water heaters from AO Smith with an input capacity of 3kW each. Each of the heaters have a tank capacity of 40 gallon and serve the restrooms and sinks. The equipment are all eight years old and are in good condition.

Figure 9 – Electric Hot Water Heater

Plug load & Vending Machines

There are approximately 77 laptops noted throughout the building apart from the laptops that the students bring in for the classes. Other plug loads in the facility includes printers, projectors, microwave ovens, televisions, and coffee makers. There is no centralized PC power management software installed.

There is one (1) refrigerated and one (1) non-refrigerated vending machine in the building, which do not have controls installed.

2.7 Water-Using Systems

There are 20 restrooms at Bartlett Hall. A sampling of restrooms found that all of the faucets are rated for 2.2 gallons per minute (gpm) or lower, and the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 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/ft^2 and energy use/ft^2. These energy use indices are indicative of the relative energy effectiveness of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy use for other facilities identified as: Higher Education - Public. Specific local climate conditions, daily occupancy hours of the facility, seasonal fluctuations in occupancy, daily operating hours of energy use systems, and the behavior of the occupants with regard to operating systems that impact energy use such as turning off appliances and leaving windows open. Please refer to the Benchmarking section within Section 0 for additional information.

3.1 Total Cost of Energy

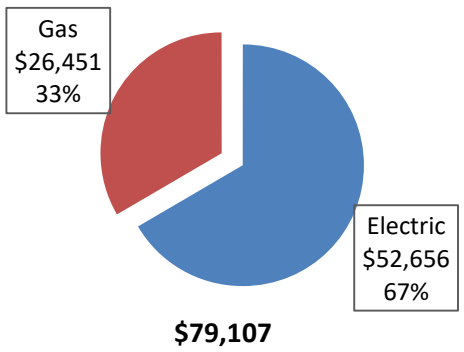
The following energy consumption and cost data is based on the last 12-month period of utility usage data that was provided for each utility. The annual consumption and cost was developed from this information.

Figure 10 - Utility Summary

Utility Summary for John C. Bartlett Jr. Hall #2		
Fuel	Usage	Cost
Electricity	385,823 kWh	$52,656
Natural Gas	29,974 Therms	$26,451
Total		$79,107

The current utility cost for this site is $79,107 as shown in the chart below.

Figure 11 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost (combined for commodity, transmission, and distribution) for the past 12 months is $0.136/kWh, which is the blended rate used throughout the analyses in this report. The monthly electricity consumption and peak demand is represented graphically in the chart below.

Figure 12 - Electric Usage & Demand

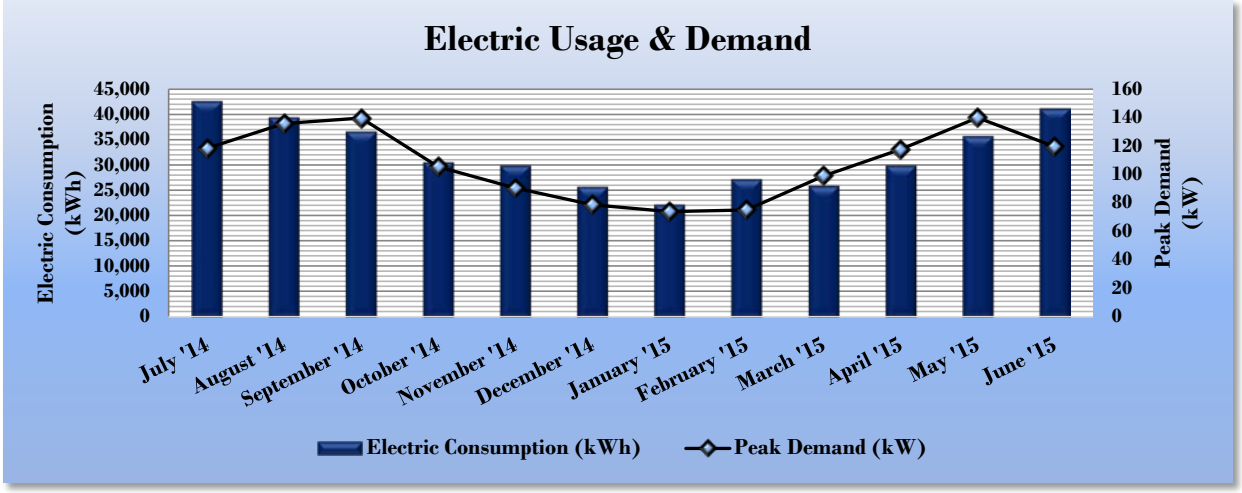


Figure 13 - Electric Usage & Demand

Electric Billing Data for John C. Bartlett Jr. Hall #2					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost	TRC Estimated Usage?
8/6/14	30	42,560	118	$5,817	Yes
9/5/14	30	39,360	136	$5,554	Yes
10/6/14	31	36,640	140	$4,998	Yes
11/4/14	29	30,560	105	$4,085	Yes
12/5/14	31	29,920	90	$3,936	Yes
1/6/15	32	25,760	79	$3,474	Yes
2/4/15	29	22,240	74	$3,041	Yes
3/9/15	33	27,200	75	$3,614	Yes
4/8/15	30	25,920	99	$3,553	Yes
5/7/15	29	29,920	118	$4,084	Yes
6/9/15	33	35,680	140	$5,072	Yes
7/8/15	29	41,120	120	$5,573	Yes
Totals	366	386,880	139.8	$52,801	12
Annual	365	385,823	139.8	$52,656	

3.3 Natural Gas Usage

The average gas cost for the past 12 months is $0.882/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is represented graphically in the chart below.

Figure 14 - Natural Gas Usage

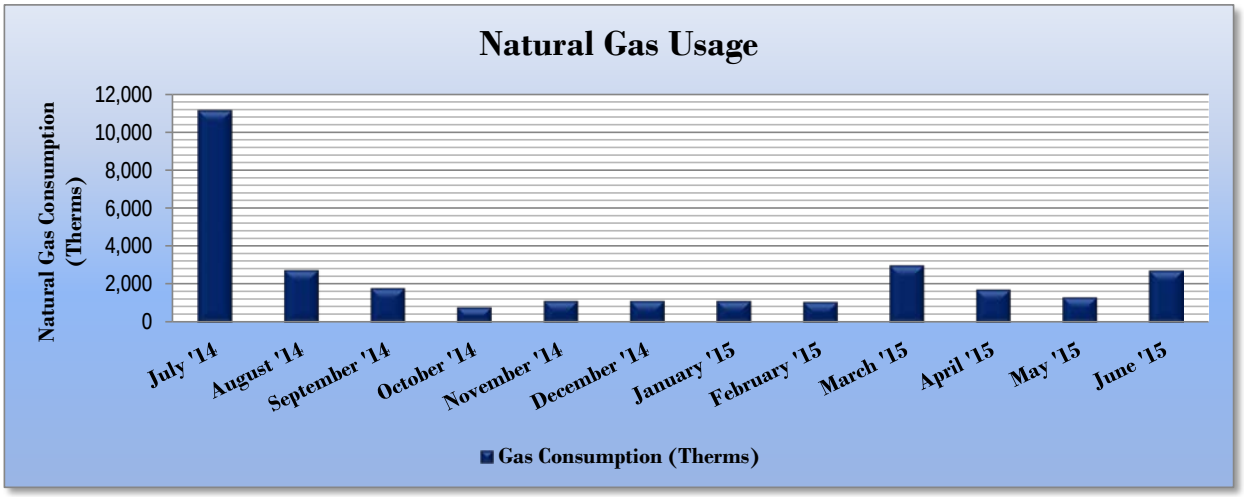


Figure 15 - Natural Gas Usage

Gas Billing Data for John C. Bartlett Jr. Hall #2				
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost	TRC Estimated Usage?
8/1/14	31	11,168	$9,855	Yes
9/1/14	31	2,767	$2,442	Yes
10/1/14	30	1,822	$1,608	Yes
11/1/14	31	819	$723	Yes
12/1/14	30	1,155	$1,020	Yes
1/1/15	31	1,155	$1,020	Yes
2/1/15	31	1,155	$1,020	Yes
3/1/15	28	1,099	$970	Yes
4/1/15	31	3,014	$2,659	Yes
5/1/15	30	1,741	$1,536	Yes
6/1/15	31	1,336	$1,179	Yes
7/1/15	30	2,742	$2,420	Yes
Totals	365	29,974	$26,451	12
Annual	365	29,974	$26,451	

3.4 Benchmarking

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

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 energy than similar buildings on a square foot basis or if that building performs better than the median. EUI is presented in both site energy and source energy. Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy is the raw fuel consumed to generate the energy consumed at the site, factoring in energy production and distribution losses.

Figure 16 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	John C. Bartlett Jr. Hall #2	National Median Building Type: Higher Education - Public
Source Energy Use Intensity (kBtu/ft^2)	229.3	262.6
Site Energy Use Intensity (kBtu/ft^2)	135.9	130.7

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

Figure 17 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	John C. Bartlett Jr. Hall #2	National Median Building Type: Higher Education - Public
Source Energy Use Intensity (kBtu/ft^2)	211.9	262.6
Site Energy Use Intensity (kBtu/ft^2)	130.3	130.7

Many buildings can also receive a 1 – 100 ENERGY STAR® score. This score compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide — and may be eligible for ENERGY STAR® certification. Because final end-usage of energy could not be precisely apportioned for each building, we have provided a combined benchmarking score for the whole campus. While this does not qualify for an ENERGY STAR® score, it may be useful to compare this average campus score to EUI scores available for similar college campuses.

The Portfolio Manager®, Statement of Energy Performance can be found in Appendix B: ENERGY STAR® Statement of Energy Performance.

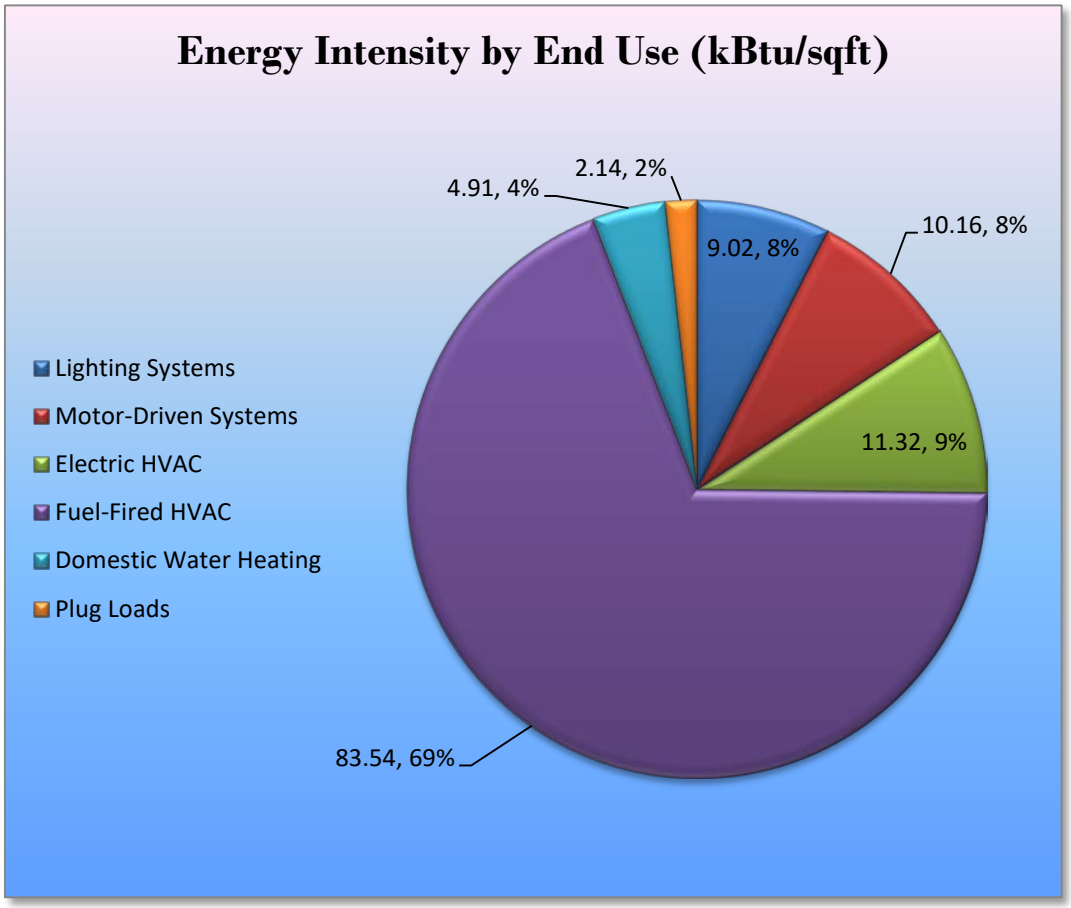
For more information on ENERGY STAR® certification go to:
https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building and determine their proportional contribution to overall building energy usage. This visual representation of energy end uses highlights systems that may benefit most from energy efficiency projects.

Figure 18 - 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 John C. Bartlett Jr. Hall (#2) 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 19 – 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		51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818
ECM 1	Retrofit Fixtures with LED Lamps	51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818
TOTALS		51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818

* - 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).

4.2 Lighting Upgrades

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

Figure 20 – 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		51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818
ECM 1	Retrofit Fixtures with LED Lamps	51,458	10.6	0.0	$7,022.85	$41,570.97	$4,365.00	$37,205.97	5.30	51,818

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: 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	48,956	10.3	0.0	$6,681.45	$36,813.47	$4,365.00	$32,448.47	4.86	49,299
Exterior	2,502	0.4	0.0	$341.41	$4,757.51	$0.00	$4,757.51	13.94	2,519

Measure Description

This measure evaluates replacing linear T8 fluorescent lamps with LED tube lamps and replacing incandescent and halogen screw-in/plug-in based lamps with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed although there is a fluorescent fixture ballast in place. Other tube lamps require that fluorescent fixture ballasts be removed or replaced with LED drivers. Screw-in/plug-in LED lamps can be used as a direct replacement for most other screw-in/plug-in lamps. This measure saves energy by installing LED sources, which use less power than other technologies with a comparable light output.

Maintenance savings are anticipated since LED sources have burn hours that are more than twice that of a fluorescent source and more than 10 times incandescent sources. LED lamps that use the existing fluorescent fixture ballast will be constrained by the remaining hours of the ballast. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

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 low or no-cost efficiency strategies. By employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

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.

Close Doors and Windows

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

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

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.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

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 "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices

6 SELF-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.

The building already has solar PV installed in the roof. Expansion of the existing system has not been evaluated for the building.

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC (Solar Renewable Energy Certificate) Registration Program (SRP) prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing. Refer to Section 8.2 for additional information.

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

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

7 DEMAND RESPONSE

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

By enabling grid operators to call upon Curtailment Service Providers and energy consumers 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 will receive payments whether or not their facility is called upon to curtail their load.

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 program often find it to be a valuable source of revenue for their facility(ies) because the payments can significantly offset annual utility 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 event cycle. DR program participants often have to install smart meters and 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 the program rules and requirements for metering and controls, a facility's ability to temporarily reduce electric load, as well as the payments involved in participating in the program. Also, these providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment to help ensure compliance of all terms and conditions of a DR contract.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and others, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's 1999 Electricity Restructuring Law which requires all customers of investor-owned electric and gas utilities to pay this charge on their monthly energy bills. As a contributor to the fund you were able to participate in the LGEA program and are also eligible to utilize the equipment incentive programs. Also available through the NJBPU 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	Retrofit Fixtures with LED Lamps	x					

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

Generally, the incentive values provided throughout the report assume the 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 alternative financing and incentive programs are located in the sections below. You may also check the following website for further information, including most current program availability, requirements, and incentive levels: www.njcleanenergy.com/ci.

8.1 SmartStart

Overview

The SmartStart 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.

Prescriptive Equipment Incentives Available:

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

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

Incentives

The 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 SREC Registration Program

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

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

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

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

Information about the SRP can be found at: www.njcleanenergy.com/srec.

8.3 Energy Savings Improvement Program

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

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

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

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

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Floor 1 corridor	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.17	812	0.0	$110.85	$409.50	$70.00	3.06
Floor 1 corridor	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Floor 1 corridor	8	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	33	3,058	Relamp	No	8	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,058	0.09	450	0.0	$61.43	$385.60	$80.00	4.98
Floor 1 fire pump room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Floor 1 - 2 stairwell	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	None	33	8,760	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	None	17	8,760	0.01	161	0.0	$22.00	$48.20	$10.00	1.74
Floor 1 corridor	16	CFL Screw-In Lamps: 2 Lamps 13W Double Tube	Occupancy Sensor	13	3,058	Relamp	No	16	LED Screw-In Lamps: 4 Pin LED Plugin	Occupancy Sensor	7	3,058	0.07	338	0.0	$46.07	$11,277.06	$0.00	244.78
Floor 2 corridor	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	33	3,058	Relamp	No	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,058	0.18	844	0.0	$115.17	$723.00	$150.00	4.98
Floor 2 corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.02	116	0.0	$15.84	$58.50	$10.00	3.06
Floor 2 - pendant lights	3	CFL Screw-In Lamps: Pendant Lights	None	26	4,368	Relamp	No	3	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.03	211	0.0	$28.79	$396.46	$0.00	13.77
Floor 3 corridor	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	33	3,058	Relamp	No	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	3,058	0.18	844	0.0	$115.17	$723.00	$150.00	4.98
Floor 3 Corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.02	116	0.0	$15.84	$58.50	$10.00	3.06
Room #103 - Employee Lounge	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.15	696	0.0	$95.02	$351.00	$60.00	3.06
Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.02	116	0.0	$15.84	$58.50	$10.00	3.06
Ladies Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Room #106 - Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	4,368	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,368	0.04	249	0.0	$33.93	$75.20	$15.00	1.77
Men's Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Room #119 - Computer lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.36	1,741	0.0	$237.54	$877.50	$150.00	3.06
Elevator Machine room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	52	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	52	0.02	2	0.0	$0.27	$58.50	$10.00	180.08
Room #119 - Computer lab	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Mechanical room	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.44	2,089	0.0	$285.05	$1,053.00	$180.00	3.06
Fire Pump room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #118 - Faculty office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.15	696	0.0	$95.02	$351.00	$60.00	3.06
Room #111 - Data Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$2.69	$58.50	$10.00	18.01
Room #117 - Faculty office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.15	696	0.0	$95.02	$351.00	$60.00	3.06
Room #112 - Custodial Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.02	20	0.0	$2.69	$58.50	$10.00	18.01

	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
Room #116 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #113 - Student lounge	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.19	928	0.0	$126.69	$468.00	$80.00	3.06
Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Stairwell - Emergency	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	4,368	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	None	29	4,368	0.12	829	0.0	$113.12	$292.50	$50.00	2.14
Room #215 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #216 - Faculty office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.05	232	0.0	$31.67	$117.00	$20.00	3.06
Room #217 - Academic admi	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.05	232	0.0	$31.67	$117.00	$20.00	3.06
Room #214 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #213 - Faculty office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.12	580	0.0	$79.18	$292.50	$50.00	3.06
Room #212 - Faculty office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.12	580	0.0	$79.18	$292.50	$50.00	3.06
Room #218 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #211 - Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	520	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	520	0.05	38	0.0	$5.22	$58.50	$10.00	9.29
Room #219 - office	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.22	1,044	0.0	$142.53	$526.50	$90.00	3.06
Room #221 - office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #220 - Main Server Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	3,058	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.05	225	0.0	$30.71	$58.50	$10.00	1.58
Room #208 - Storage	1	CFL Screw-In Lamps: Can light	Wall Switch	13	4,368	Relamp	No	1	LED Screw-In Lamps: 4 Pin LED Plugin	Wall Switch	7	4,368	0.00	30	0.0	$4.11	$44.05	$0.00	10.71
Room #207 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #203 - Classroom	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	28	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.68	3,249	0.0	$443.42	$1,638.00	$280.00	3.06
Ladies Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Mens Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	52	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	52	0.04	3	0.0	$0.40	$75.20	$15.00	149.01
Stairwell	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	4,368	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	None	29	4,368	0.12	829	0.0	$113.12	$292.50	$50.00	2.14
Ladies Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Mens Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.07	348	0.0	$47.51	$175.50	$30.00	3.06
Room #306 - Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	52	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	52	0.04	3	0.0	$0.40	$75.20	$15.00	149.01

	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
Room #303 - Computer Lab	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.36	1,741	0.0	$237.54	$877.50	$150.00	3.06
Room #302 - Classroom	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.36	1,741	0.0	$237.54	$877.50	$150.00	3.06
Room #307 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #316 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #308 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #309 - Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #310 - Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #311 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #315 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Room #314 - Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #313 - Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.10	464	0.0	$63.35	$234.00	$40.00	3.06
Room #312 - Classroom	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	3,058	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.34	1,625	0.0	$221.71	$819.00	$140.00	3.06
Back entrance	1	CFL Screw-In Lamps: Gardco 32W Triple Tube Fluorescent	None	36	4,368	Relamp	No	1	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.02	121	0.0	$16.45	$44.05	$0.00	2.68
Back entrance canopy	5	CFL Screw-In Lamps: 2 lamps 13 W Quad tube	None	52	4,368	Relamp	No	5	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.15	1,005	0.0	$137.11	$1,101.28	$0.00	8.03
Side Entrance	1	CFL Screw-In Lamps: Gardco 32W Triple Tube Fluorescent	None	36	4,368	Relamp	No	1	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.02	121	0.0	$16.45	$44.05	$0.00	2.68
Student Lounge Entrance	2	CFL Screw-In Lamps: Gardco 32W Triple Tube Fluorescent	None	36	4,368	Relamp	No	2	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.04	241	0.0	$32.91	$176.20	$0.00	5.35
Student Lounge Entrance	3	CFL Screw-In Lamps: 2 lamps 13 W Quad tube	None	26	4,368	Relamp	No	3	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.03	211	0.0	$28.79	$396.46	$0.00	13.77
Front Entrance	2	CFL Screw-In Lamps: Gardco 32W Triple Tube Fluorescent	None	36	4,368	Relamp	No	2	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.04	241	0.0	$32.91	$176.20	$0.00	5.35
Front Entrance	8	CFL Screw-In Lamps: Flush mount	None	26	4,368	Relamp	No	8	LED Screw-In Lamps: 4 Pin LED Plugin	None	12	4,368	0.08	563	0.0	$76.78	$2,819.26	$0.00	36.72

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	Indoor Spaces	1	Exhaust Fan	0.5	78.2%	No	2,745	No	78.2%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Indoor Spaces	1	Exhaust Fan	0.5	78.2%	No	2,745	No	78.2%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Indoor Spaces/Chiller	2	Chilled Water Pump	5.0	85.5%	Yes	2,745	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Indoor Spaces/Chiller	2	Heating Hot Water Pump	7.5	91.7%	Yes	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Heatcraft condenser - walk in refrigeration	4	Supply Fan	0.3	73.4%	No	2,745	No	73.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Elevator Room	Elevator	1	Other	20.0	93.0%	No	3,391	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Restrooms and classrooms	Restrooms and classrooms	8	Supply Fan	0.8	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
Roof	Building	1	Packaged Terminal AC	20.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Building	1	Packaged Terminal AC	30.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Tech closet	Tech closet	1	Split-System AC	0.75		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	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
Mechanical Room	Building	1	Air-Cooled Reciprocating Chiller	42.80	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
Stairway	Stairway	1	Warm Air Unit Heater	25.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stairway	Stairway	1	Warm Air Unit Heater	46.80	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Stairway	Stairway	1	Warm Air Unit Heater	46.80	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Ground, 1st & 2nd	Women's Restrooms	1	Warm Air Unit Heater	25.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Ground, 1st & 2nd	Men's Restrooms	1	Warm Air Unit Heater	25.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
1st Floor	Entrances	1	Warm Air Unit Heater	25.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
2nd Floor	2nd Floor	1	Warm Air Unit Heater	46.80	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
In front of Elevator	1st Floor	1	Warm Air Unit Heater	25.70	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Central Plant	Library	4	Condensing Hot Water Boiler	5,580.00	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
1st floor custodial closet	Male & Female Restrooms	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
2nd floor custodial closet	Male & Female Restrooms	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
3rd floor custodial closet	Male & Female Restrooms	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Employee Lounge	1	Coffee Maker	400.0	Yes
Employee Lounge	1	Microwave	1,000.0	Yes
Employee Lounge	1	Small Fridge	20.0	Yes
Building	77	Laptops	75.0	Yes
Building	2	Printer	40.0	Yes
Classrooms	18	Projector	200.0	Yes
Office	1	Large Printer	200.0	Yes

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]

Ocean County College

Primary Property Type: College/University
Gross Floor Area (ft²): 526,034
Built: 1966

For Year Ending: June 30, 2015
Date Generated: June 21, 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
Ocean County College 1 College Drive Toms River, New Jersey 08754	Ocean County College 1 College Drive Toms River, NJ 08754 732-255-0533	James Calamia 1 College Drive Toms River, NJ 08754 732-255-0533 jcalamia@ocean.edu

Property ID: 5093695

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
173.3 kBtu/ft²

Source EUI
324 kBtu/ft²

Annual Energy by Fuel	
Other: (kBtu)	4,536,360 (5%)
Natural Gas (kBtu)	50,787,318 (56%)
Electric - Grid (kBtu)	35,847,151 (39%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	140.5
National Median Source EUI (kBtu/ft²)	262.6
% Diff from National Median Source EUI	23%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	N/A

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)