Local Government Energy Audit:
Energy Audit Report

Advanced Technology Center

Brookdale Community College

765 Newman Springs Road

Lincroft, NJ 07738

March 26, 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 Advanced Technology Center.

The goal of an LGEA report is to provide public facilities and local governments with valuable information on their facilities' energy usage. The LGEA program identifies energy conservation measures (ECMs) and energy management options that may benefit public facilities and to provides information on financial incentives from New Jersey's Clean Energy Programs (NJCEP) and other sources assistance which may be available to help with ECM implementation.

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey community colleges in controlling their energy costs and help to protect our environment by promoting more efficient use of energy resources statewide.

1.1 Facility Summary

The Advanced Technology Center (ATeC) is a 58,220 square foot facility comprised of various space types within a single building. The building was built in 1989. The building is three floors and includes classrooms, offices, a television studio, restrooms, and mechanical spaces. It is open year round and typically occupied by about 250 staff and students.

Lighting is comprised of aging and inefficient fluorescent fixtures; including a large quantity of fixtures with T12 lamps.

The building is conditioned by numerous small constant volume air handling units (AHUs). The AHUs receive chilled water and hot water from the campus central utility plant. 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 four energy conservation measures, which together represent an opportunity for the ATeC to reduce its annual energy costs by approximately $18,140 and annual its greenhouse gas emissions by about 162,622 lbs CO_2e. We estimate that if all high priority measures are implemented as recommended, then the project would pay for itself in about 3.6 years. TRC has defined high priority measures as measures that have a simple payback which is less than the rated useful lifetime of the proposed equipment. The breakdown of existing utility costs and projected annual savings following implementation of all measures are shown in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce ATeC 's annual energy usage by about 9% overall.

Figure 1 – Previous 12 Month Utility Costs

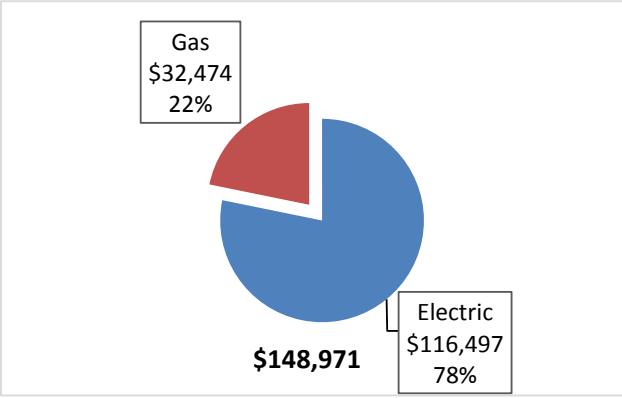
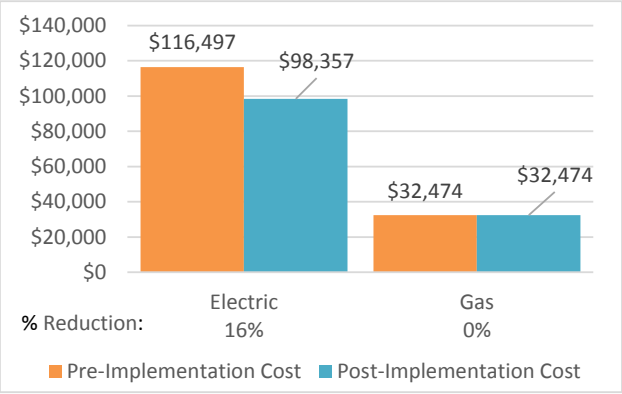


Figure 2 – Potential Post-Implementation Costs



A detailed description of ATeC's existing energy usage can be found in Section 3.

Estimates of total cost, energy savings, and financial incentives which may be available for each ECM are summarized below in Figure 3. A brief description of each measure category can be found below. A detailed description of each ECM 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			**142,612**	**26.0**	**0.0**	**$16,018.87**	**$61,232.41**	**$6,195.00**	**$55,037.41**	**3.4**	**143,609**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	95,897	18.0	0.0	$10,771.60	$41,495.50	$4,195.00	$37,300.50	3.5	96,567
ECM 2	Retrofit Fixtures with LED Lamps	Yes	46,574	7.9	0.0	$5,231.42	$19,521.80	$2,000.00	$17,521.80	3.3	46,900
ECM 3	Install LED Exit Signs	Yes	141	0.0	0.0	$15.84	$215.11	$0.00	$215.11	13.6	142
Lighting Control Measures			**18,881**	**3.6**	**0.0**	**$2,120.80**	**$12,742.00**	**$1,670.00**	**$11,072.00**	**5.2**	**19,013**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	18,881	3.6	0.0	$2,120.80	$12,742.00	$1,670.00	$11,072.00	5.2	19,013
TOTALS			**161,492**	**29.5**	**0.0**	**$18,139.67**	**$73,974.41**	**$7,865.00**	**$66,109.41**	**3.6**	**162,622**

* - 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.

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

Energy Efficient Practices

TRC also identified 12 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 ATeC include:

- Reduce Air Leakage
- Close Doors and Windows
- Ensure Lighting Controls Are Operating Properly
- Reduce Motor Short Cycling
- Perform Routine Motor Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Ensure Economizers are Functioning Properly
- Check for and Seal Duct Leakage
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Replace Computer Monitors
- 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 ATeC. Based on the configuration of the site and its loads there appears to be a low potential for cost-effective installation of any solar PV or combined heat and power self-generation measures.

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

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

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

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

- SmartStart
- Energy Savings Improvement Program (ESIP)
- Demand Response Energy Aggregator

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

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.2 for additional information on the ESIP Program.

Additional information on relevant incentive programs is located in Section 8 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Tim Drury	Director of Facilities Management & Construction	tdrury@brookdalecc.edu	732-224-2217
TRC Energy Services			
Tom Page	Auditor	tpage@TRCsolutions.com	(732) 855-0033

2.2 General Site Information

On December 8, 2016, TRC performed an energy audit at ATeC located in Lincroft, New Jersey. TRC's team met Tim Drury, Director of Facilities Management & Construction to review the facility operations and help focus our investigation on specific energy-using systems.

ATeC is a 58,220 square foot facility comprised of various space types within a single building. The building was constructed in 1989. The building is three floors and includes classrooms, offices, a television studio, and mechanical space.

Lighting is comprised of aging and inefficient fluorescent fixtures; including a large quantity of fixtures with T12 lamps. The building is conditioned by numerous small constant volume air handling units (AHU). The AHU receives chilled water and hot water from the campus central utility plant.

2.3 Building Occupancy

The building is open Monday through Friday and closed on the weekends. The typical schedule is presented in the table below. During a typical day, the facility is occupied by approximately 250 staff and students.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Advanced Technology Center (ATeC)	Weekday	7am-10pm
Advanced Technology Center (ATeC)	Weekend	Closed

2.4 Building Envelope

The building is constructed of concrete with a stone and metal siding façade. The visible portion of the building's roof is slightly pitched and covered with standing seam metal paneling. The building has double pane windows which are in good condition. The exterior doors are constructed of aluminum and glass. There were no signs of excessive infiltration.

2.5 On-Site Generation

ATeC does not have any on-site electric generating capacity.

2.6 Energy-Using Systems

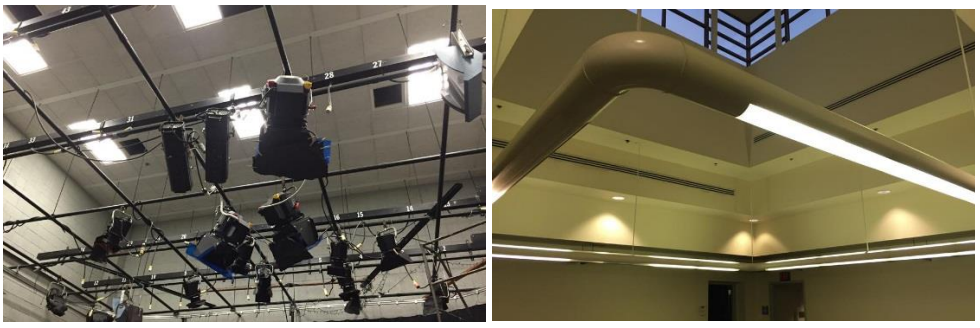
Please see Appendix A: Equipment Inventory & Recommendations for an inventory of the facility's equipment.

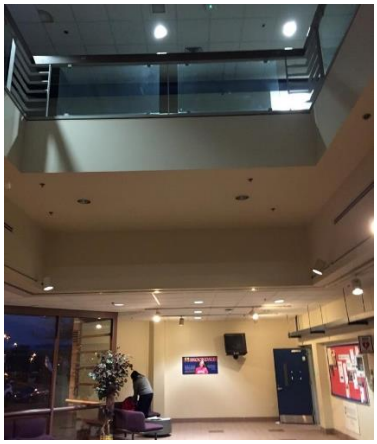
Lighting System

Lighting is provided mostly by 40-Watt linear fluorescent T12 lamps with magnetic ballasts, some 32-Watt linear fluorescent T8 lamps, plus many compact fluorescent lamps (CFL). Most of the fixtures are 2-lamp or 3-lamp, 4-foot long troffers with diffusers. Lighting control in most spaces is provided by wall switches. Nearly all of the buildings exit signs have been upgraded to LED fixtures.

The building's exterior lighting is minimal and consists primarily of LED surface mounted fixtures that are controlled by photocells.

Image 1: Building Area Lighting





Chilled Water System

The building is served by the campus's central chilled water plant. The central chilled water plant is comprised of three (3) 740 ton water cooled centrifugal chillers. The chillers are included in this report to facilitate the development of an energy balance for the ATeC. See the Central Utility Plant report for a full description of the chilled water system.

Hot Water Heating System

The building is served by the campus's central hot water plant. The central hot water plant is comprised of eight(8) 2,850 MBh condensing hot water boilers. The boilers are included in this report to facilitate the development of an energy balance for ATeC. See the Central Utility Plant report for a full description of the hot water system.

Air Conditioning System (CHW & HHW)

There are 47 air handling units (AHU) that serve the building. Each AHU draws air from its own return air shaft and supplies air to its own air shaft.

The AHUs are located throughout the building in open ceilings and above drop ceilings. The AHUs are single zone constant air volume (CAV) systems. AHU fan motor sizes could not be determined, but most are believed to have a single 1-HP supply fan, some of which are controlled by VFDs. The AHUs have both a chilled water cooling coil and a hot water heating coil. The coils use 2-way valves to modulate the volume of water suppled and the AHU supply air temperature. Supply air temperature modulates to maintain the zone temperature setpoint. The AHUs appear to be in good condition.

Image 2: Ceiling-Mounted AHU

Refrigeration

The kitchen has two 20-cu.ft. stand-up refrigerators and one 24-cu.ft. stand-up refrigerator.

Building Plug Load

There are over 200 computer work stations throughout the building. Most of the computers are desktop units with LCD monitors (some having multiple monitors). There is no centralized PC power management software installed.

All vending machines are controlled by Vending Miser occupancy sensors.

In addition to the typical class room projectors and copy room equipment, we observed nine large CRT televisions in the video conference room. Older CRT televisions can use up to three times more electric power compared to new flat panel LCD displays of similar size. To reduce classroom plug load, the Advanced Technology Building should consider replacing older technology equipment with new ENERGY STAR® rated flat panel displays.

Image 3: Vending Machines on Occupancy Controls.

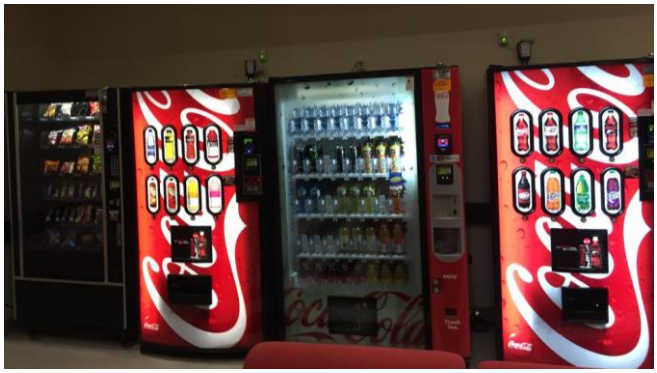


Image 4: Older CRT TVs

2.7 Water-Using Systems

There are seven (7) restrooms at this facility. A sampling of restrooms found that the faucets, toilets and urinals are low-flow water conserving fixtures.

3 SITE ENERGY USE AND COSTS

Nearly the entire campus receives electricity through a master electric meter. Some buildings, such as ATeC receive hot or chilled water from the Central Utility Plant, as well. Usage on the main electric and gas accounts were prorated for individual buildings based on building size, function, and occupancy to estimate energy usage.

Prorated utility 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

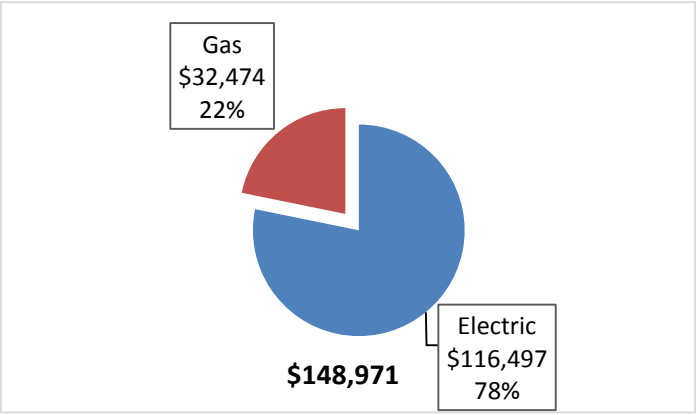
The following energy consumption and cost data was prorated from main campus account for a recent 12-month period of master metered utility billing data. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Advanced Technology Center		
Fuel	**Usage**	**Cost**
Electricity	1,037,138 kWh	$116,497
Natural Gas	28,278 Therms	$32,474
Total		**$148,971**

The current annual energy cost for this facility is $148,971 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric rate over a recent 12-month period was found to be $0.112/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The prorated monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

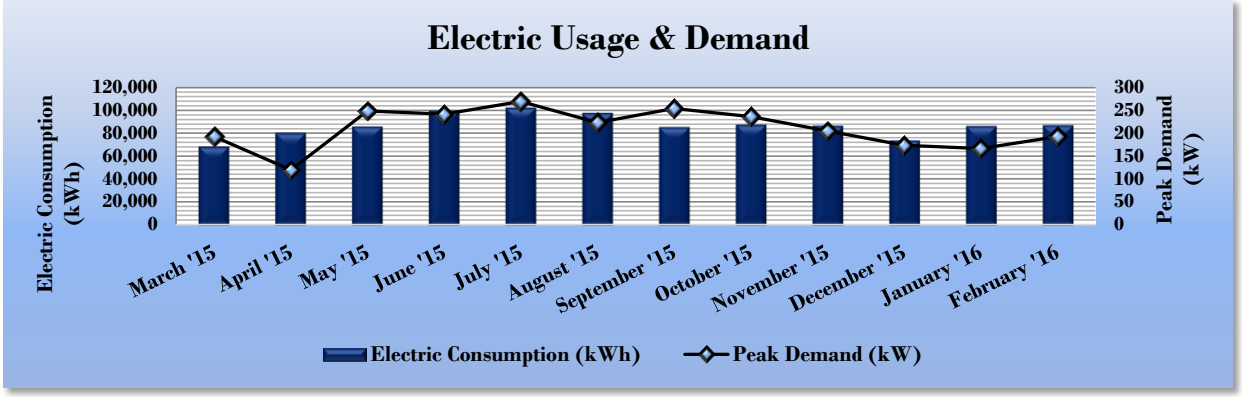


Figure 9 - Electric Usage & Demand

Electric Billing Data for Advanced Technology Center					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost	TRC Estimated Usage?
4/13/15	32	68,245	192.2	$7,666	Yes
5/12/15	29	80,125	119.8	$9,000	Yes
6/11/15	30	85,432	248.7	$9,596	Yes
7/13/15	32	99,245	241.9	$11,148	Yes
8/12/15	30	101,953	269.6	$11,452	Yes
9/11/15	30	97,318	223.4	$10,931	Yes
10/13/15	32	85,101	254.1	$9,559	Yes
11/12/15	30	87,298	236.3	$9,806	Yes
12/14/15	32	86,177	204.8	$9,680	Yes
1/13/16	30	73,482	173.6	$8,254	Yes
2/11/16	29	86,130	166.2	$9,675	Yes
3/11/16	29	86,631	192.2	$9,731	Yes
Totals	**365**	**1,037,138**	**269.6**	**$116,497**	12
Annual	**365**	**1,037,138**	**269.6**	**$116,497**	

3.3 Natural Gas Usage

Natural gas is provided by New Jersey Natural Gas. The average rate for natural gas service over a recent 12-month period was found to be $1.148/therm, which is the blended rate used throughout the analyses in this report. The monthly prorated gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

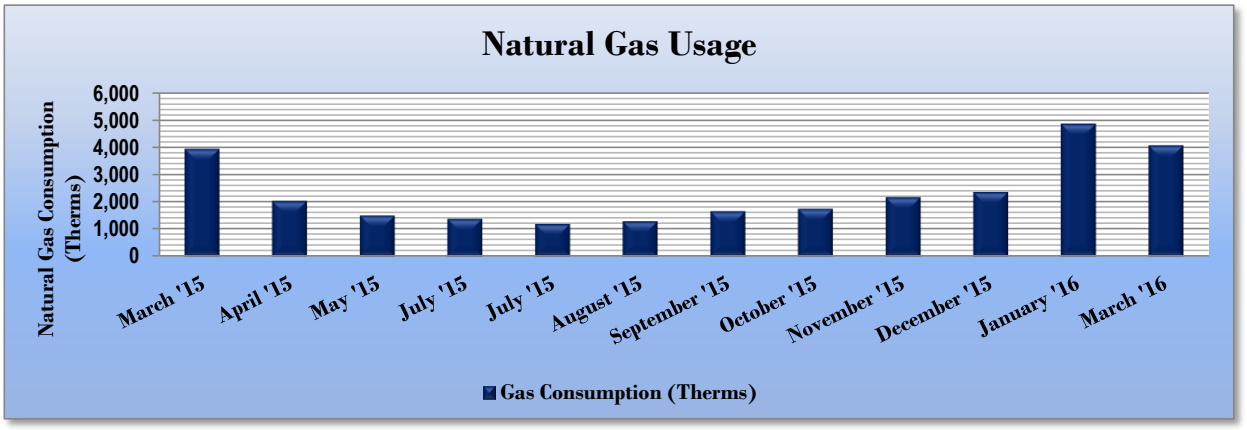


Figure 11 - Natural Gas Usage

Gas Billing Data for Advanced Technology Center				
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost	TRC Estimated Usage?
4/15/15	29	3,952	$4,538	Yes
5/14/15	29	2,043	$2,346	Yes
6/11/15	28	1,502	$1,725	Yes
7/16/15	30	1,379	$1,584	Yes
8/12/15	32	1,188	$1,365	Yes
9/10/15	29	1,292	$1,484	Yes
10/8/15	28	1,657	$1,903	Yes
11/9/15	32	1,752	$2,013	Yes
12/11/15	32	2,177	$2,500	Yes
1/12/16	31	2,371	$2,722	Yes
2/11/16	31	4,882	$5,606	Yes
3/17/16	34	4,083	$4,689	Yes
Totals	**365**	**28,278**	**$32,474**	12
Annual	**365**	**28,278**	**$32,474**	

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		
	Advanced Technology Center	National Median Building Type: Higher Education - Public
Source Energy Use Intensity (kBtu/ft^2)	241.9	262.6
Site Energy Use Intensity (kBtu/ft^2)	109.4	130.7

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		
	Advanced Technology Center	National Median Building Type: Higher Education - Public
Source Energy Use Intensity (kBtu/ft^2)	212.1	262.6
Site Energy Use Intensity (kBtu/ft^2)	99.9	130.7

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.

This building is not is not eligible to receive an ENERGY STAR® score, because it shares electric and gas end usage with the other central campus buildings – which are all served by the Central Utility Plant's main electric and gas accounts. Without individual submeters to measure each building's actual electric and thermal energy usage, we cannot be certain that the assumptions on which we based our estimates of building performance are accurate for this building and other central campus buildings. Because of this limitation, a Portfolio Manager Statement of Energy Performance (SEP) was generated for all of the BCC - Lincroft central campus buildings combined, based on the utility data provided for the master electric and gas accounts, 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.

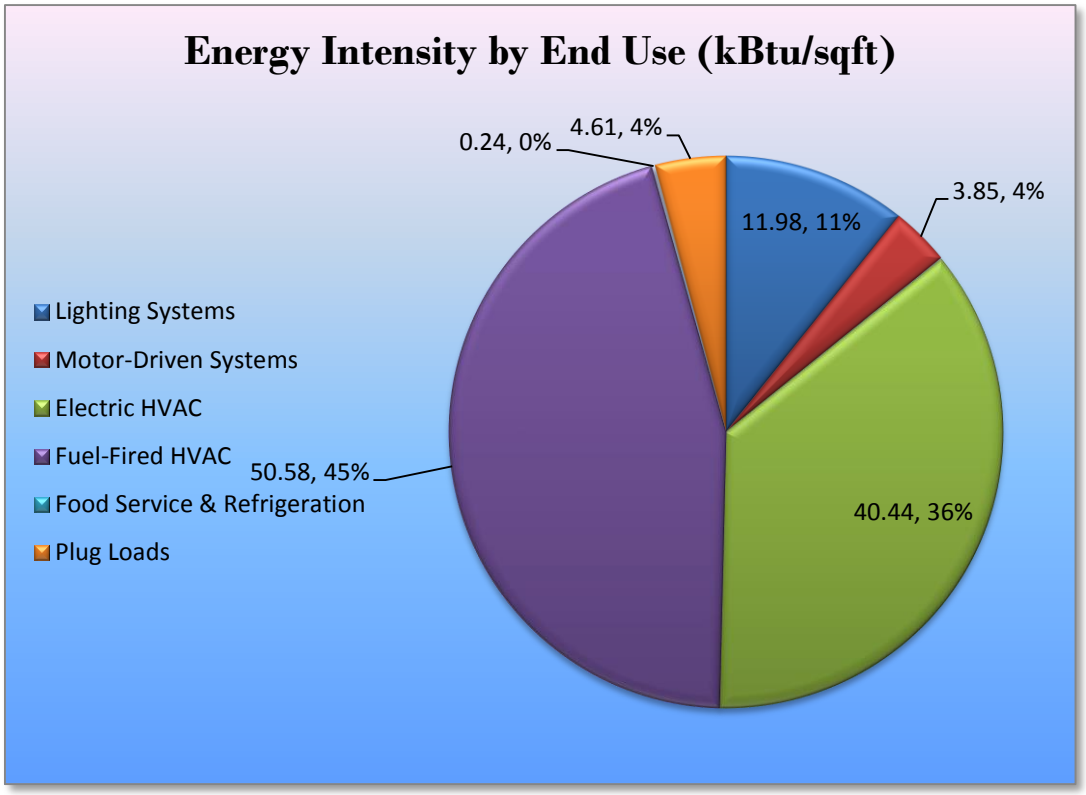
A Portfolio Manager account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager regularly, so that you can keep track of your building's performance. Free online training 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. The central utility plant chillers and boilers are included in the analysis but the operating hours were scaled to be consistent with the prorated historical energy use.

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 (kBtu/ft² and %)



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 ATeC 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 High Priority ECMs

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

Figure 15 – Summary of High Priority 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		**142,612**	**26.0**	**0.0**	**$16,018.87**	**$61,232.41**	**$6,195.00**	**$55,037.41**	**3.4**	**143,609**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	95,897	18.0	0.0	$10,771.60	$41,495.50	$4,195.00	$37,300.50	3.5	96,567
ECM 2	Retrofit Fixtures with LED Lamps	46,574	7.9	0.0	$5,231.42	$19,521.80	$2,000.00	$17,521.80	3.3	46,900
ECM 3	Install LED Exit Signs	141	0.0	0.0	$15.84	$215.11	$0.00	$215.11	13.6	142
Lighting Control Measures		**18,881**	**3.6**	**0.0**	**$2,120.80**	**$12,742.00**	**$1,670.00**	**$11,072.00**	**5.2**	**19,013**
ECM 4	Install Occupancy Sensor Lighting Controls	18,881	3.6	0.0	$2,120.80	$12,742.00	$1,670.00	$11,072.00	5.2	19,013
TOTALS		**161,492**	**29.5**	**0.0**	**$18,139.67**	**$73,974.41**	**$7,865.00**	**$66,109.41**	**3.6**	**162,622**

* - 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

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 Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	95,897	18.0	0.0	$10,771.60	$41,495.50	$4,195.00	$37,300.50	3.5	96,567
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing T12 fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers, which are designed to be used retrofitted fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting technology. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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 ten 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	46,574	7.9	0.0	$5,231.42	$19,521.80	$2,000.00	$17,521.80	3.3	46,900
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing T8 fluorescent, incandescent, halogen, and compact fluorescent lamps 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 ten times longer than many incandescent lamps.

ECM 3: Install LED Exit Signs

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	141	0.0	0.0	$15.84	$215.11	$0.00	$215.11	13.6	142
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing the exit signs with incandescent or compact fluorescent bulbs with new LED exit signs. LED exit signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.1.2 Lighting Control Measures

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

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
18,881	3.6	0.0	$2,120.80	$12,742.00	$1,670.00	$11,072.00	5.2	19,013

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in all restrooms, storage rooms, classrooms, offices areas.

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

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without

local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

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.

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.

Reduce Motor Short Cycling

Frequent stopping and starting of motors subjects rotors and other parts to substantial stress. This can result in component wear, reducing efficiency, and increasing maintenance costs. Adjust the load on the motor to limit the amount of unnecessary stopping and starting to improve motor performance.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

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.

Ensure Economizers are Functioning Properly

Economizers, when properly configured, can be used to significantly reduce mechanical cooling. However, if the outdoor thermostat or enthalpy control is malfunctioning or the damper is stuck or improperly adjusted, benefits from the economizer may not be fully realized. As such, periodic inspection and maintenance is required to ensure proper operation. This maintenance should be scheduled with maintenance of the facility's air conditioning system and should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position. A malfunctioning economizer can significantly increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air.

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 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 "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Replace Computer Monitors

Replacing old computer monitors or displays with efficient monitors will reduce energy use. ENERGY STAR® rated monitors have specific requirements for on mode power consumption as well as idle and sleep mode power. According to the ENERGY STAR® website monitors that have earned the ENERGY STAR® label are 25% more efficient than standard monitors.

Water Conservation

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

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

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.

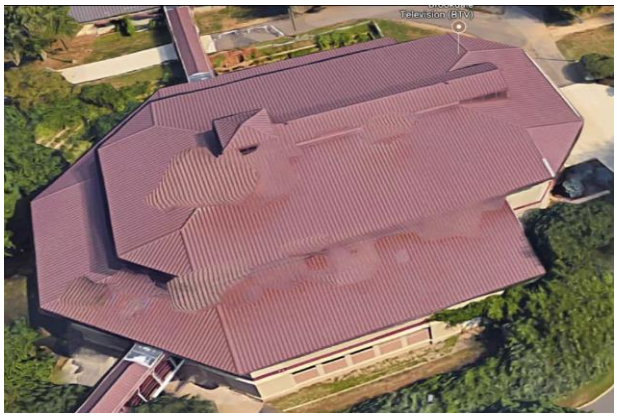
Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, 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, location, and unshaded free area, shows that the facility has a Low potential for installing a PV array. The rooftop is not ideal for solar development. The amount of free area, ease of installation (location), and the lack of shading elements contribute to the potential for PV at the site.

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 might not meet these minimum criteria for cost-effective PV installation.



We used *PV-Watts, (*http://pvwatts.nrel.gov/pvwatts.php)an online solar calculator from the United States Department of Energy, to conduct an analysis of the site. Based on our calculations, a relatively small rooftop PV array might be feasible, but the shape and orientation of the rooftop might make installation more difficult. There appears to be only about 5,400 ft^2 of south-facing roof space. We estimate that the available space might support up to a 75-kW solar array. Such an array might produce up to 104,700 kWh per year, which could save the college up to $11,731 per year in electric purchases. Based on average costs for commercial solar installation and current SREC prices, such an installation might pay for itself in energy savings and SREC income in less than 8 years. However, these are just rough estimates, because the actual costs for solar development of the ATeC building's irregularly shaped roof is not known. The available roof space needs to be properly accessed by a qualified solar installer to determine feasibility. A structural analysis of the roof may be necessary as well. Roof conditions might make available roof space smaller than we assumed, or too costly to develop, which might make a solar array not economically viable for the site.

If the Brookdale Community College is interested in developing the solar potential of the Advanced Technology Center and/or other campus buildings, we recommended a full feasibility study be conducted.

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing.

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

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

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

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

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

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

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

In our opinion, this building is not a good candidate for participation in a DR program, because it is not separately metered. Though the college might benefit from participation in a DR program, if the electric demand all of the buildings on the campus' main account could be combined.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 16 for a list of the eligible programs identified for each recommended ECM.

Figure 16 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings
ECM 1	Install LED Fixtures	X			
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X			
ECM 3	Retrofit Fixtures with LED Lamps	X			
ECM 4	Install LED Exit Signs	X			
ECM 5	Install Occupancy Sensor Lighting Controls	X			

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. This facility does not meet all of the criteria for participating in the P4P program based on the measures identified in this study. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

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

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

8.1 SmartStart

Overview

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.

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey local governments and public facilities 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 NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

8.3 Demand Response Energy Aggregator

The first step toward participation in a Demand Response (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 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.

See Section 7 for additional information.

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
Lower Level Corridors	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,750	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,750	0.10	569	0.0	$63.94	$234.00	$40.00	3.03
Lower Level Corridors	18	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,750	Relamp & Reballast	No	18	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,750	0.78	4,580	0.0	$514.44	$2,106.00	$180.00	3.74
Lower Level Corridors	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
Breaker Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	250	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	250	0.02	9	0.0	$1.07	$58.50	$10.00	45.51
Rm 007	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.15	788	0.0	$88.54	$467.00	$50.00	4.71
ATC 008	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.20	1,051	0.0	$118.06	$584.00	$60.00	4.44
ATC 008	4	Incandescent: 60W Spotlights	Wall Switch	60	3,375	Relamp	No	4	LED Screw-In Lamps: 9W LED Bulbs	Wall Switch	9	3,375	0.15	792	0.0	$88.94	$215.01	$20.00	2.19
ATC 010	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.18	971	0.0	$109.08	$416.80	$80.00	3.09
TV Studio	23	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	No	23	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,375	0.56	2,946	0.0	$330.90	$1,345.50	$230.00	3.37
TV Studio	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,375	0.01	68	0.0	$7.63	$35.90	$5.00	4.05
Rm 012	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.18	971	0.0	$109.08	$467.00	$80.00	3.55
Rm 011	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.12	647	0.0	$72.72	$350.00	$60.00	3.99
Rm 011	4	Incandescent: 60W Spotlights	Wall Switch	60	3,375	Relamp	No	4	LED Screw-In Lamps: 9W LED Bulbs	Wall Switch	9	3,375	0.15	792	0.0	$88.94	$215.01	$20.00	2.19
Storage Rm	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	3,375	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,363	0.32	1,709	0.0	$192.00	$686.80	$140.00	2.85
Comm Media	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.55	2,913	0.0	$327.23	$1,172.40	$215.00	2.93
Rm 006	6	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	88	2,363	Relamp & Reballast	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.26	962	0.0	$108.03	$702.00	$60.00	5.94
Rm 006	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,363	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.02	90	0.0	$10.07	$58.50	$10.00	4.82
Rm 004	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.51	2,670	0.0	$299.96	$1,097.20	$200.00	2.99
Rm 004	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,375	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,375	0.01	37	0.0	$4.14	$75.20	$15.00	14.54
Rm 004	1	Compact Fluorescent: 13W CFL Screw-In	None	13	3,375	Relamp	No	1	LED Screw-In Lamps: 9W LED Bulbs	None	9	3,375	0.00	16	0.0	$1.74	$53.75	$0.00	30.82
Rm 003	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.51	2,670	0.0	$299.96	$1,097.20	$200.00	2.99
Rm 003	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,375	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	3,375	0.02	107	0.0	$11.99	$61.70	$15.00	3.90
Office Rm 001	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.60	3,156	0.0	$354.50	$1,247.60	$230.00	2.87
Office Rm 001	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	None	32	3,375	Relamp	No	6	LED - Linear Tubes: (1) 4' Lamp	None	15	3,375	0.08	408	0.0	$45.78	$215.40	$30.00	4.05
Radio Station	6	Incandescent: 60W Spotlights	Wall Switch	60	4,368	Relamp	No	6	LED Screw-In Lamps: 9W LED Bulbs	Wall Switch	9	4,368	0.23	1,537	0.0	$172.66	$322.52	$30.00	1.69

	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
Rm 002	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.10	509	0.0	$57.15	$331.40	$50.00	4.92
Rm 002	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	3,375	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.03	175	0.0	$19.66	$150.40	$30.00	6.12
Rm 002	2	Incandescent: 60W Spotlights	Wall Switch	60	3,375	Relamp	No	2	LED Screw-In Lamps: 9W LED Bulbs	Wall Switch	9	3,375	0.08	396	0.0	$44.47	$107.51	$10.00	2.19
Storage	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.10	526	0.0	$59.03	$350.00	$40.00	5.25
Men's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.05	254	0.0	$28.58	$377.70	$15.00	12.69
Men's Rm	1	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,375	Relamp	No	1	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,375	0.01	39	0.0	$4.36	$57.51	$0.00	13.19
Women's Rm	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.03	170	0.0	$19.05	$341.80	$10.00	17.42
Comp Lab Rm 002	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.55	2,913	0.0	$327.23	$1,172.40	$215.00	2.93
Front Stairwell	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,760	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,760	0.24	3,324	0.0	$373.42	$585.00	$100.00	1.30
Rear Stairwell	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,760	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,760	0.24	3,324	0.0	$373.42	$585.00	$100.00	1.30
Entrance to MAS	1	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	1	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.01	43	0.0	$4.84	$57.51	$0.00	11.87
Rm 111	5	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.36	1,874	0.0	$210.46	$773.50	$95.00	3.22
1st Flr Corridors	24	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	24	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.18	1,035	0.0	$116.26	$1,380.24	$0.00	11.87
1st Flr Corridors	11	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,750	Relamp & Reballast	No	11	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,750	0.68	3,961	0.0	$444.92	$1,446.50	$165.00	2.88
1st Flr Corridors	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Central Lounge	8	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	8	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.06	345	0.0	$38.75	$460.08	$0.00	11.87
Central Lounge	4	Compact Fluorescent: 19W CFL Spotlight Bulbs	Wall Switch	19	3,750	Relamp	No	4	LED Screw-In Lamps: 12W LED Spotlight Bulbs	Wall Switch	13	3,750	0.02	104	0.0	$11.63	$62.00	$0.00	5.33
Central Lounge	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 112	8	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.57	2,998	0.0	$336.74	$1,168.00	$140.00	3.05
Janitor Closet	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	500	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.04	34	0.0	$3.81	$117.00	$10.00	28.08
Men's Rm	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.02	85	0.0	$9.53	$35.90	$5.00	3.24
Men's Rm	1	Compact Fluorescent: 17W CFL Screw-in Bulb	Wall Switch	17	3,375	Relamp	No	1	LED Screw-In Lamps: 12W LED Bulbs	Wall Switch	12	3,375	0.00	19	0.0	$2.18	$15.50	$0.00	7.11
Men's Rm	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.06	302	0.0	$33.92	$396.40	$35.00	10.66
Men's Rm	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,375	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.02	92	0.0	$10.33	$71.80	$10.00	5.98
Women's Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	3,375	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.05	254	0.0	$28.58	$377.70	$15.00	12.69

	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
Women's Rm	3	Compact Fluorescent: 17W CFL Bulb	Wall Switch	17	3,375	Relamp	Yes	3	LED Screw-In Lamps: 12W LED Bulbs	Occupancy Sensor	12	2,363	0.02	100	0.0	$11.25	$46.50	$0.00	4.13
Lobby	21	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	21	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.15	906	0.0	$101.72	$1,207.71	$0.00	11.87
Lobby	22	Compact Fluorescent: 19W CFL Spotlight Bulbs	Wall Switch	19	3,750	Relamp	No	22	LED Screw-In Lamps: 12W LED Spotlight Bulbs	Wall Switch	13	3,750	0.10	569	0.0	$63.94	$341.00	$0.00	5.33
1st Flr Main Office	7	Compact Fluorescent: 26W Plug-In CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	7	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.05	302	0.0	$33.91	$402.57	$0.00	11.87
1st Flr Main Office	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,750	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,750	0.09	500	0.0	$56.19	$252.80	$0.00	4.50
1st Flr Main Office	6	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,750	Relamp & Reballast	No	6	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,750	0.37	2,161	0.0	$242.69	$789.00	$90.00	2.88
1st Flr Main Office	2	Exit Signs: Fluorescent	None	9	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	2	8,760	0.01	141	0.0	$15.84	$215.11	$0.00	13.58
Accounting Rm 114	5	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.36	1,874	0.0	$210.46	$773.50	$95.00	3.22
Rm 115	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 116	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 117	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 118	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 119	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 120	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Rm 121	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91
Copy Rm	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.04	223	0.0	$25.09	$247.50	$15.00	9.27
Pantry	1	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.07	375	0.0	$42.09	$247.50	$15.00	5.52
Classroom 101	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 102	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 103	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 104	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 105	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 106	10	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.71	3,747	0.0	$420.92	$1,585.00	$185.00	3.33
Classroom 107	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 108	11	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.78	4,122	0.0	$463.01	$1,716.50	$200.00	3.28

	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
Classroom 109	10	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.71	3,747	0.0	$420.92	$1,585.00	$185.00	3.33
Classroom 110	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 111	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 112	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 113	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 114	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 115	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
Classroom 116	9	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.64	3,373	0.0	$378.83	$1,453.50	$170.00	3.39
2nd Flr Office Area	10	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	No	10	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,375	0.29	1,514	0.0	$170.03	$1,170.00	$0.00	6.88
2nd Flr Office Area	6	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	3,375	Relamp	No	6	LED - Fixtures: Downlight Recessed	Wall Switch	21	3,375	0.14	722	0.0	$81.09	$288.78	$0.00	3.56
2nd Flr Office Area	2	Compact Fluorescent: 1x 26W CFL (recessed cans)	Wall Switch	26	3,375	Relamp	No	2	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,375	0.01	78	0.0	$8.72	$115.02	$0.00	13.19
2nd Flr Office Area	2	Compact Fluorescent: 19W CFL Spotlight Bulbs	Wall Switch	19	3,375	Relamp	No	2	LED Screw-In Lamps: 12W LED Spotlight Bulbs	Wall Switch	13	3,375	0.01	47	0.0	$5.23	$31.00	$0.00	5.93
Office Rm 201	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,363	0.10	526	0.0	$59.03	$277.83	$20.00	4.37
Office Rm 202	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,363	0.10	526	0.0	$59.03	$277.83	$20.00	4.37
Office Rm 203	2	Halogen Incandescent: 75W Spotlight Bulbs	Wall Switch	75	3,375	Relamp	Yes	2	LED Screw-In Lamps: 12W LED Spotlight Bulbs	Occupancy Sensor	12	2,363	0.10	517	0.0	$58.07	$147.00	$30.00	2.01
Office Rm 204	2	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.07	380	0.0	$42.64	$350.00	$20.00	7.74
Office Rm 205	2	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.07	380	0.0	$42.64	$350.00	$20.00	7.74
Office Rm 206	2	Halogen Incandescent: 75W Spotlight Bulbs	Wall Switch	75	3,375	Relamp	Yes	2	LED Screw-In Lamps: 12W LED Spotlight Bulbs	Occupancy Sensor	12	2,363	0.10	517	0.0	$58.07	$147.00	$30.00	2.01
Conf Rm 207	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,363	0.10	526	0.0	$59.03	$277.83	$40.00	4.03
Office Rm 208	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.06	302	0.0	$33.92	$242.40	$20.00	6.56
Office Rm 209	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.10	526	0.0	$59.03	$350.00	$40.00	5.25
Kitchen	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.15	788	0.0	$88.54	$467.00	$50.00	4.71
Kitchen	2	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	22	3,375	Relamp	Yes	2	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	2,363	0.02	125	0.0	$13.99	$179.80	$30.00	10.70
Elevator	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,375	0.04	229	0.0	$25.72	$117.00	$10.00	4.16
Rm 211	2	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	749	0.0	$84.18	$379.00	$50.00	3.91

	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
Rm 211	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.10	526	0.0	$59.03	$350.00	$40.00	5.25
Rm 213	4	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.14	759	0.0	$85.27	$584.00	$20.00	6.61
Rm 214	4	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.14	759	0.0	$85.27	$584.00	$20.00	6.61
Rm 215	2	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,363	0.07	380	0.0	$42.64	$350.00	$20.00	7.74
2nd Flr Corridors	16	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,750	Relamp & Reballast	No	16	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,750	0.69	4,071	0.0	$457.28	$1,872.00	$160.00	3.74
2nd Flr Corridors	13	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	3,750	Relamp	No	13	LED - Fixtures: Downlight Recessed	Wall Switch	21	3,750	0.30	1,738	0.0	$195.21	$625.69	$0.00	3.21
2nd Flr Corridors	3	Compact Fluorescent: 1x 26W CFL (recessed cans)	Wall Switch	26	3,750	Relamp	No	3	LED - Fixtures: Downlight Recessed	Wall Switch	16	3,750	0.02	129	0.0	$14.53	$172.53	$0.00	11.87
2nd Flr Corridors	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rm 216	1	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.07	375	0.0	$42.09	$247.50	$35.00	5.05
Rm 216	1	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	3,375	Relamp	Yes	1	LED - Fixtures: Downlight Recessed	Occupancy Sensor	21	2,363	0.03	145	0.0	$16.26	$48.13	$0.00	2.96
Rm 216	1	Compact Fluorescent: 1x 26W CFL (recessed cans)	Wall Switch	26	3,375	Relamp	Yes	1	LED - Fixtures: Downlight Recessed	Occupancy Sensor	16	2,363	0.01	57	0.0	$6.45	$57.51	$0.00	8.91
Video Conf Rm	20	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	3,375	Relamp	Yes	20	LED - Fixtures: Downlight Recessed	Occupancy Sensor	21	2,363	0.55	2,895	0.0	$325.23	$1,502.60	$70.00	4.40
Video Conf Rm	10	Compact Fluorescent: 3x 2-ft Linear CFLs	Wall Switch	150	3,375	Relamp	Yes	10	LED Screw-In Lamps: 23W LED PL-L Lamps	Occupancy Sensor	69	2,363	0.75	3,947	0.0	$443.37	$953.80	$35.00	2.07
Kitchen	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,375	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.03	162	0.0	$18.18	$174.50	$10.00	9.05
Electrical Rm	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	500	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	500	0.02	17	0.0	$1.87	$63.20	$0.00	33.74
Rm 218	14	Compact Fluorescent: 2x 26W CFL (recessed cans)	Wall Switch	52	3,375	Relamp	Yes	14	LED - Fixtures: Downlight Recessed	Occupancy Sensor	21	2,363	0.38	2,027	0.0	$227.66	$943.82	$35.00	3.99
Rm 218	6	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.43	2,248	0.0	$252.55	$789.00	$90.00	2.77
Rm 219	1	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.07	375	0.0	$42.09	$247.50	$15.00	5.52
Rm 220A	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.05	263	0.0	$29.51	$117.00	$10.00	3.63
Rm 220A	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	3,375	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.14	728	0.0	$81.81	$341.60	$65.00	3.38
Rm 220A	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,363	0.10	526	0.0	$59.03	$234.00	$20.00	3.63
Rm 222	7	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.50	2,623	0.0	$294.65	$1,036.50	$125.00	3.09
Rm 223	6	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.43	2,248	0.0	$252.55	$905.00	$110.00	3.15
Rm 224	6	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.43	2,248	0.0	$252.55	$905.00	$110.00	3.15
Rm 225	6	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,375	Relamp & Reballast	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,363	0.43	2,248	0.0	$252.55	$905.00	$110.00	3.15

	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
Men's Rm	1	Compact Fluorescent: 17W CFL Screw-in Bulb	Wall Switch	17	3,375	Relamp	No	1	LED Screw-In Lamps: 12W LED Bulbs	Wall Switch	12	3,375	0.00	19	0.0	$2.18	$15.50	$0.00	7.11
Men's Rm	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	46	3,375	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.03	139	0.0	$15.63	$368.00	$5.00	23.23
Women's Rm	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	46	3,375	Relamp & Reballast	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,363	0.05	278	0.0	$31.26	$196.00	$10.00	5.95
Women's Rm	1	Compact Fluorescent: 17W CFL Screw-in Bulb	Wall Switch	17	3,375	Relamp	No	1	LED Screw-In Lamps: 12W LED Bulbs	Wall Switch	12	3,375	0.00	19	0.0	$2.18	$15.50	$0.00	7.11
Bridge to MAS	6	LED - Fixtures: Downlight Surface Mount	None	18	3,750	None	No	6	LED - Fixtures: Downlight Surface Mount	None	18	3,750	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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
Ceiling	AHUs #1-47	47	Supply Fan	1.0	82.5%	No	2,745	No	82.5%	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
Central Utility Plant	ATeC Building	3	Water-Cooled Centrifugal Chiller	740.00	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
Central Utility Plant	ATeC Building	8	Condensing Hot Water Boiler	2,850.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condit	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	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
ATeC Building	2	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	No	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
ATeC Building	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes	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?
ATeC Building	202	Desktop Computers	120.0	Yes
ATeC Building	219	Computer Monitors	28.0	Yes
ATeC Building	7	Printers	13.0	Yes
ATeC Building	4	Copy Machines	380.0	Yes
ATeC Building	5	Microwaves	800.0	No
ATeC Building	9	CRT TVs (32")	150.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	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
ATeC	3	Refrigerated	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
ATeC	2	Non-Refrigerated	No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Brookdale Community College - Lincroft Campus

Primary Property Type: College/University
Gross Floor Area (ft²): 900,381
Built: 1967

For Year Ending: February 29, 2016
Date Generated: June 28, 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
Brookdale Community College - Lincroft Campus 765 Newman Springs Road Lincroft, New Jersey 07738	Brookdale Community College 765 Newman Springs Road Lincroft, NJ 07738 (732) 224-2217	Timothy Drury 765 Newman Springs Road Lincroft, NJ 07738 (732) 224-2217 tdrury@brookdalecc.edu

Property ID: 5733170

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
95.4 kBtu/ft²

Source EUI
211.9 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	48,132,581 (56%)
Natural Gas (kBtu)	37,799,044 (44%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	118.2
National Median Source EUI (kBtu/ft²)	262.6
% Diff from National Median Source EUI	-19%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	7,528

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)