Local Government Energy Audit:
Energy Audit Report

Grunin Center for Performing Arts (#11)

Ocean County College

1 College Drive
Toms River, New Jersey 08754

October 18, 2018

Final Report by:
TRC Energy Services

Disclaimer

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

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Grunin Center for Performing Arts (#11).

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

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

1.1 Facility Summary

Grunin Center for Performing Arts (#11) is a 64,403 square foot facility comprised of various space types such as classrooms, auditorium, closets, lobby, theatre, computer labs, offices, conference rooms and a mechanical space within two buildings, which are connected by a walkway. The building operates all year, seven days a week. During the weekdays the building is open from 7:00 AM to 10:00 PM and in the weekends from 9:00 AM to 11:00 PM. This is a three-story building.

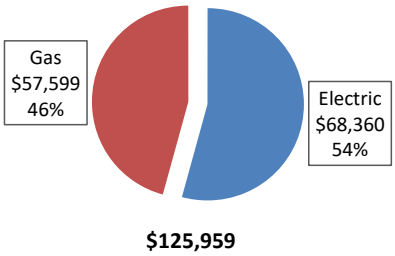
The building is heated using a gas fired non-condensing hot water boiler and space cooling is provided by a 60 ton air cooled chiller, rooftop packaged units and split AC units in dedicated areas. The lighting in the building primarily consists of linear T-8 tubes, CFL lamps for the interior lighting and high pressure sodium fixtures for exterior lighting. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

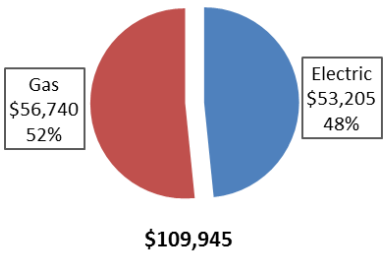
TRC evaluated six (6) measures and recommends five (5) measures that represent an opportunity for Grunin Center for Performing Arts (#11) to reduce annual energy costs by roughly $14,460 and annual greenhouse gas emissions by 72,127 lbs CO_2e. The measures would pay for themselves in roughly 3.2 years. The breakdown of existing and potential utility costs is illustrated in Figure 1 and Figure 2, respectively. These projects represent an opportunity to reduce Grunin Center for Performing Arts (#11)'s annual energy use by 5.1%.

Figure 1 – Previous 12 Month Utility Costs



$125,959

Figure 2 – Potential Post-Implementation Costs



$109,945

A detailed description of Grunin Center for Performing Arts (#11)'s existing energy use can be found in Section 3.

The evaluated measures have been listed and grouped into major categories as shown in Figure 3. Brief descriptions of the categories can be found below and descriptions of the individual opportunities can be found in Section 4. Measures without an "ECM #" in the table below have been evaluated but are not recommended for implementation.

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			58,770	19.8	0.0	$12,748.43	$47,178.30	$5,690.00	$41,488.30	3.25	59,181
ECM 1	Install LED Fixtures	Yes	5,490	0.8	0.0	$1,190.96	$2,344.06	$600.00	$1,744.06	1.46	5,529
ECM 2	Retrofit Fixtures with LED Lamps	Yes	53,280	19.0	0.0	$11,557.46	$44,834.24	$5,090.00	$39,744.24	3.44	53,652
Lighting Control Measures			709	0.3	0.0	$153.71	$580.00	$100.00	$480.00	3.12	714
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	709	0.3	0.0	$153.71	$580.00	$100.00	$480.00	3.12	714
Variable Frequency Drive (VFD) Measures			7,160	7.5	0.0	$1,553.21	$43,864.90	$3,306.67	$40,558.24	26.11	7,210
	Install VFDs on Constant Volume (CV) HVAC	No	7,160	7.5	0.0	$1,553.21	$43,864.90	$3,306.67	$40,558.24	26.11	7,210
Domestic Water Heating Upgrade			0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987
Plug Load Equipment Control - Vending Machine			3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246
ECM 5	Vending Machine Control	Yes	3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246
TOTALS			69,863	27.6	76.8	$16,013.65	$93,318.92	$9,096.67	$84,222.25	5.26	79,338
TOTAL OF ALL RECOMMENDED ECMS			62,702	20	77	$ 14,460.44	$ 49,454.02	$ 5,790.00	$ 43,664.02	3.02	72,127

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

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

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

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when conditions allow. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Variable Frequency Drives measures generally involve controlling the speed of a motor to achieve a flow or temperature rather than using a valve, damper, or no means at all. These measures save energy by slowing a motor which is an extremely efficient method of control.

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

Plug Load Equipment control measures generally involve installing automation that limits the power use or operation of equipment plugged into an electrical receptacle based on occupancy.

Energy Efficient Practices

TRC also identified eight (8) low or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at Grunin Center for Performing Arts (#11) include:

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

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

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation sources for Grunin Center for Performing Arts (#11). A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If Grunin Center for Performing Arts is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted. For details on our evaluation and the on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

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

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

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

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

For facilities with capital available for implementation of selected individual measures or phasing implementation of selected measures over multiple years, incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to design the ECM(s), select the equipment and apply for the incentive(s). Program pre-approval is required for some SmartStart incentives, so only after receiving approval may the ECM(s) be

installed. The incentive values listed above in Figure 3 represent the SmartStart program and will be explained further in Section 8, as well as the other programs as mentioned below.

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

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

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

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

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

2.2 General Site Information

On June 15, 2016, TRC performed an energy audit at Grunin Center for Performing Arts (#11) located in Toms River, New Jersey. TRC met with Eugene Caulfield to review the facility operations and focus the investigation on specific energy-using systems.

Grunin Center for Performing Arts (#11) is a 64,403 square foot facility comprised of various space types such as classrooms, auditorium, closets, a lobby, a theatre, computer labs, offices, conference rooms, and a mechanical space within two buildings that are connected by a walkway. The building operates all year, seven days a week. During the weekdays, the building is open from 7:00 AM to 10:00 PM and on the weekends from 9:00 AM to 11:00 PM. This is a three-story building.

The building is heated using a gas fired non-condensing hot water boiler and space cooling is provided by a 60-ton air cooled chiller, rooftop packaged units and split AC units in dedicated areas. The lighting in the building primarily consists of linear T8 tubes, CFL lamps for the interior lighting, and high pressure sodium fixtures for exterior lighting

2.3 Building Occupancy

The typical schedule is presented in the table below. The number of occupants in the building at any given time depends and varies with classes and performances scheduled.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Grunin Center - Building 11 and 12	Weekday	7AM - 10PM
Grunin Center - Building 11 and 12	Weekend	9AM - 11PM

2.4 Building Envelope

The building is constructed using concrete and structural steel with a brick and concrete façade. The buildings have flat roofs covered with rubber and white membrane. The roof appears to be in a decent condition. The buildings have double-pane windows and aluminum exterior doors, which are in good condition and show little sign of excessive infiltration.

Figure 6: Building Envelope

2.5 On-site Generation

Grunin Center for Performing Arts (#11) does not have any on-site electric generation systems currently installed in the building.

2.6 Energy-Using Systems

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

Lighting System

Lighting at the facility is provided predominately by 32-Watt linear fluorescent T8 lamps with electronic ballasts as well as compact fluorescent lamps (CFL). Most of the building tenant spaces use 2-lamp or 3-lamp, 2-foot wide by 4-foot long troffers. Areas such as the corridors, stairwell, hallways, and canopy fixtures in the entrances are primarily lit with 26-Watt CFL lamps in recessed can fixtures or wall hanging fixtures with electronic ballasts.

Lighting control in most spaces is provided by occupancy sensors. The occupancy sensors are either wall or ceiling mounted depending on the space layout. Stairwells, elevator lobbies, and main lobby areas do not contain any occupancy sensors and are on twenty-four hours per day throughout the year

The building has minimal exterior lighting, which primarily consists of efficient high-pressure sodium fixtures that are controlled with photocells. The exit lights are 2-watt LED fixtures.

Figure 7: Lighting Fixtures

Hot Water / Steam System

The hot water system consists of one (1) gas fired non-condensing hot water boiler from Weil McLain with an output capacity of 2176 MBh and a combustion efficiency of 85%. The hot water in the facility is circulated using three (3) 7.5 hp pumps that are controlled using variable frequency drives. Two (2) of these pumps operate in lead/lag fashion and one (1) of serves as a backup. The hot water is distributed in the spaces through the air handling units. The exact age on the boiler is unknown.

Figure 8: Hot Water / Steam System

Air Conditioning (Chiller & DX)

The space cooling in the building is provided using a 60-ton air cooled centrifugal chiller from Trane, eight (8) rooftop packaged units, and eight (8) split AC units. The chiller is air-cooled centrifugal chiller from Trane. The chilled water is circulated using four (4) 7.5 hp pumps controlled using VFDs. The conditioned air is distributed via eight (8) air handling units.

The rooftop packaged units are from AAON and range in weight from 3-26 tons. The units serve specific large areas such as the auditorium, library, and conference rooms. There are eight (8) split AC systems. Areas such as the tech closets have their own dedicated split systems to provide space cooling.

Figure 9: HVAC Equipment

Domestic Hot Water

The domestic hot water system for the facility consists of one (1) gas fired water heater from AO Smith with an input capacity of 120 MBh and an efficiency of 94%. The water heater has a tank capacity of 60 gallons. The restrooms and sinks are supplied hot water from this heater. Upon installing low-flow fixtures, the demand on the water heater reduces.

Plug load & Vending Machines

There are roughly 64 computer work stations throughout the facility. Other office plug loads include projectors, various size printers, shredders, and televisions. The kitchenette equipment in the building include a microwave oven, coffee machines, refrigerators, a washing machine, and dryers. Other plug loads are found in the wood shop such as saws, planers, and drillers. The classrooms for nursing practices have machines like false teeth machines, sterilizers, and ECG machines. There is no centralized PC power management software installed. There are two (2) refrigerated and two (2) non-refrigerated vending machines at the facility.

2.7 Water-Using Systems

A sampling of restrooms found that all of the faucets are rated for 2.5 gallons per minute (gpm) or lower, the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 gpf.

3 SITE ENERGY USE AND COSTS

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

3.1 Total Cost of Energy

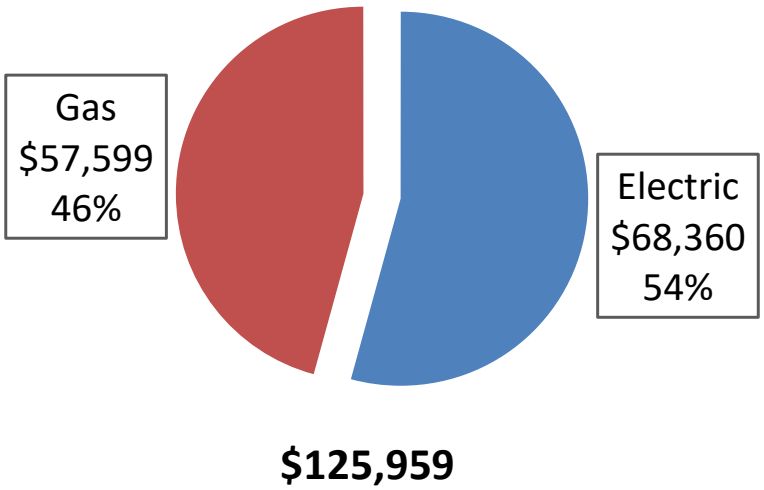
The following energy consumption and cost data is based on the last 12-month period of utility usage data that was provided for each utility. The annual consumption and cost was developed from this information.

Figure 10 - Utility Summary

Utility Summary for Grunin Center for Performing Arts #11		
Fuel	Usage	Cost
Electricity	315,137 kWh	$68,360
Natural Gas	51,463 Therms	$57,599
Total		$125,959

The current utility cost for this site is $125,959 as shown in the chart below.

Figure 11 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost (combined for commodity, transmission, and distribution) for the past 12 months is $0.217/kWh, which is the blended rate used throughout the analyses in this report. The electric third-party supply is provided by Direct Energy. The monthly electricity consumption and peak demand is represented graphically in the chart below.

Figure 12 - Electric Usage & Demand

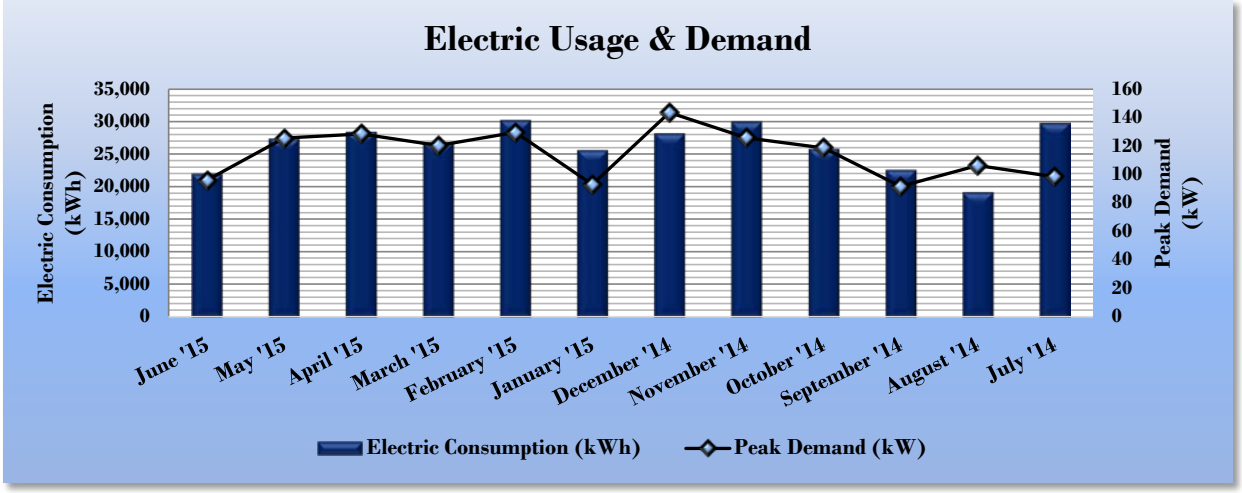


Figure 13 - Electric Usage & Demand

Electric Billing Data for Grunin Center for Performing Arts #11						
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost	TRC Estimated Usage?
7/8/15	29	22,000	96		$4,810	Yes
6/9/15	33	27,400	126		$6,042	Yes
5/7/15	29	28,400	128		$6,082	Yes
4/8/15	30	26,800	120		$5,779	Yes
3/9/15	33	30,200	130		$6,563	Yes
2/4/15	29	25,600	93		$5,455	Yes
1/6/15	32	28,200	144		$6,272	Yes
12/5/14	31	30,000	126		$6,378	Yes
11/4/14	29	25,800	119		$5,559	Yes
10/6/14	31	22,600	92		$4,798	Yes
9/5/14	30	19,200	106		$4,414	Yes
8/6/14	30	29,800	98		$6,396	Yes
Totals	366	316,000	143.6	$0	$68,547	12
Annual	365	315,137	143.6	$0	$68,360	

3.3 Natural Gas Usage

Natural gas is provided by NJ Natural Gas. The average gas cost for the past 12 months is $1.119/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is represented graphically in the chart below.

Figure 14 - Natural Gas Usage

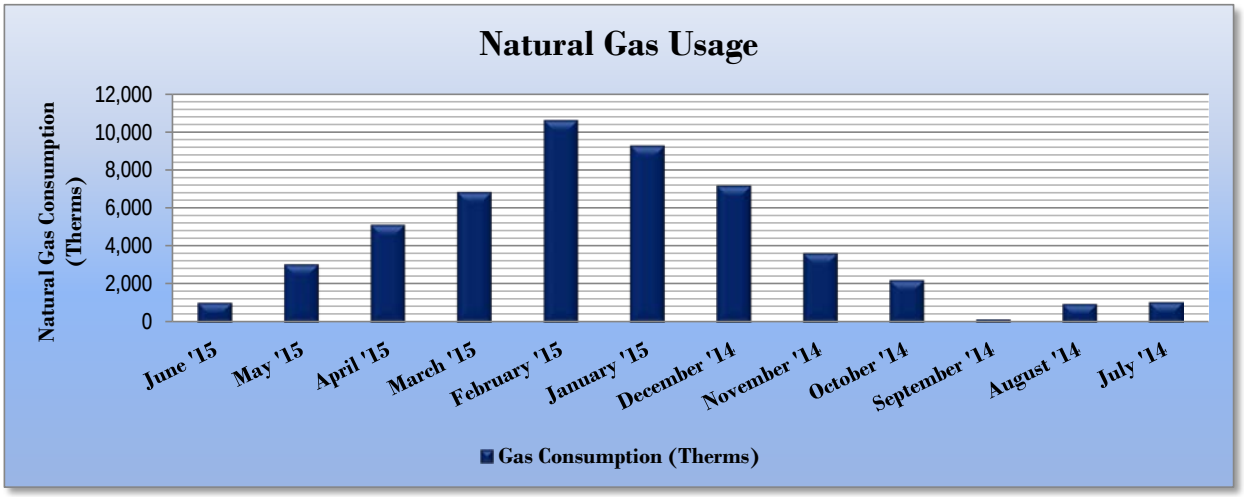


Figure 15 - Natural Gas Usage

Gas Billing Data for Grunin Center for Performing Arts #11				
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost	TRC Estimated Usage?
6/24/15	29	1,050	$1,573	Yes
5/26/15	34	3,066	$3,664	Yes
4/22/15	30	5,137	$5,783	Yes
3/23/15	25	6,849	$7,535	Yes
2/26/15	31	10,621	$11,394	Yes
1/26/15	34	9,291	$10,034	Yes
12/23/14	35	7,194	$7,993	Yes
11/18/14	26	3,644	$3,580	Yes
10/23/14	34	2,244	$2,559	Yes
9/19/14	30	168	$695	Yes
8/20/14	28	980	$1,588	Yes
7/23/14	28	1,079	$1,044	Yes
Totals	364	51,322	$57,442	12
Annual	365	51,463	$57,599	

3.4 Benchmarking

This facility was benchmarked through 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 compares its performance against a yearly baseline, national medians, or similar buildings in your portfolio. Metrics used in this comparison are the energy use intensity (EUI) and ENERGY STAR® score.

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

Figure 16 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Grunin Center for Performing Arts #11	National Median Building Type: Higher Education - Private
Source Energy Use Intensity (kBtu/ft^2)	136.3	262.6
Site Energy Use Intensity (kBtu/ft^2)	96.6	130.7

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

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

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Grunin Center for Performing Arts #11	National Median Building Type: Higher Education - Private
Source Energy Use Intensity (kBtu/ft^2)	124.6	262.6
Site Energy Use Intensity (kBtu/ft^2)	92.1	130.7

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

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

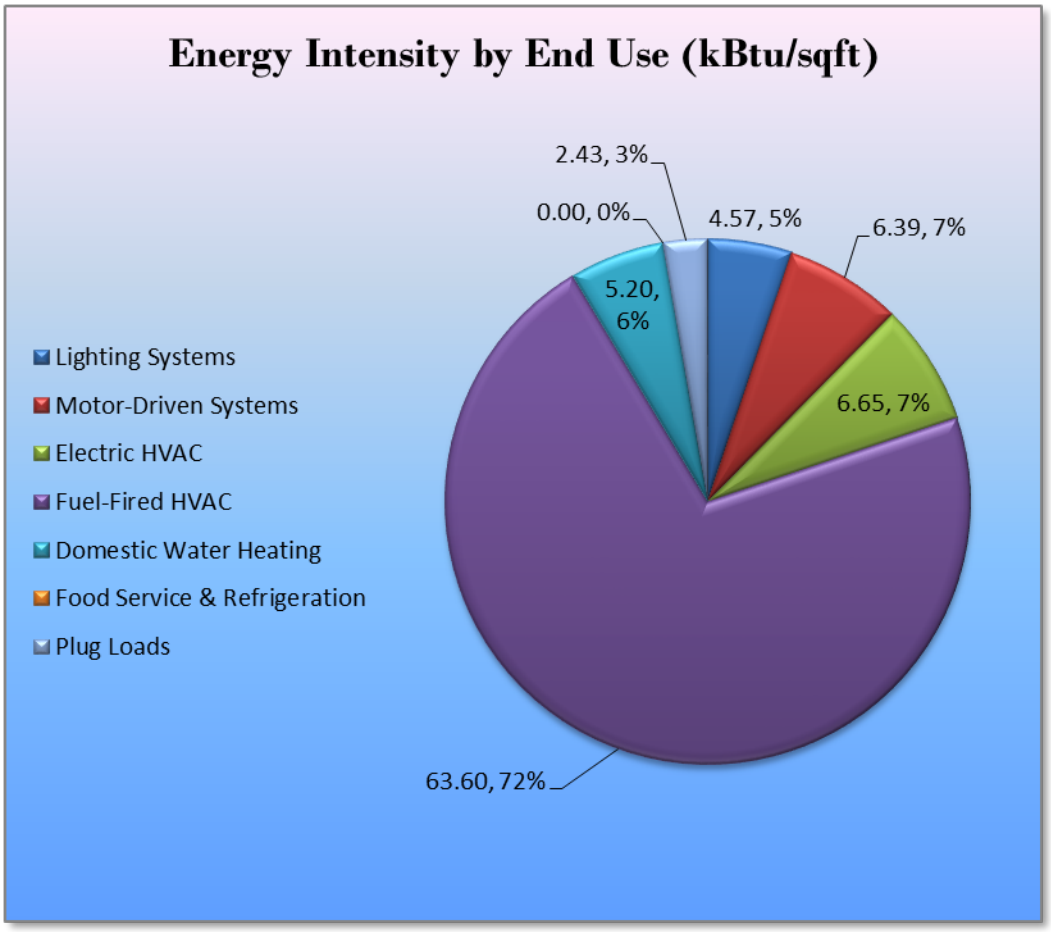
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-Use Breakdown

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

Figure 18 - Energy Balance (kBtu/SF, %)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Grunin Center for Performing Arts (#11)regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 19 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		58,770	19.8	0.0	$12,748.43	$47,178.30	$5,690.00	$41,488.30	3.25	59,181
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ECM 4	Install Low-Flow Domestic Hot Water Devices	0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987
Plug Load Equipment Control - Vending Machine		3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246
ECM 5	Vending Machine Control	3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246
TOTALS		69,863	27.6	76.8	$16,013.65	$93,318.92	$9,096.67	$84,222.25	5.26	79,338
TOTAL OF ALL RECOMMENDED ECMS		62,702	20	77	$ 14,460.44	$ 49,454.02	$ 5,790.00	$ 43,664.02	3.02	72,127

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

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

4.2 Lighting Upgrades

Our recommendations for lighting upgrades are summarized in Figure 20 below.

Figure 20 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		58,770	19.8	0.0	$12,748.43	$47,178.30	$5,690.00	$41,488.30	3.25	59,181
ECM 1	Install LED Fixtures	5,490	0.8	0.0	$1,190.96	$2,344.06	$600.00	$1,744.06	1.46	5,529
ECM 2	Retrofit Fixtures with LED Lamps	53,280	19.0	0.0	$11,557.46	$44,834.24	$5,090.00	$39,744.24	3.44	53,652

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0
Exterior	5,490	0.8	0.0	$1,190.96	$2,344.06	$600.00	$1,744.06	1.46	5,529

Measure Description

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

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

ECM 2: Retrofit 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	49,423	18.5	0.0	$10,720.75	$42,472.19	$5,090.00	$37,382.19	3.49	49,768
Exterior	3,857	0.5	0.0	$836.71	$2,362.05	$0.00	$2,362.05	2.82	3,884

Measure Description

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

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

4.3 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure21 below.

Figure 21 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		709	0.3	0.0	$153.71	$580.00	$100.00	$480.00	3.12	714
ECM 3	Install Occupancy Sensor Lighting Controls	709	0.3	0.0	$153.71	$580.00	$100.00	$480.00	3.12	714

ECM 3: 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)
709	0.3	0.0	$153.71	$580.00	$100.00	$480.00	3.12	714

Measure Description

This measure evaluates installing occupancy sensors to control light fixtures that are currently manually controlled in restrooms, storage rooms, and private offices. Sensors detect occupancy using ultrasonic and/or infrared wave technologies. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Occupants will also be able to manually turn off fixtures. Energy savings result 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. Ceiling-mounted or remote-mounted sensors require the use of low voltage switching relays or a wireless signal to the switch. In general, use wall switch replacement sensors for single occupant offices and other small rooms. Install ceiling-mounted or remote mounted sensors in locations without local switching, in situations where the existing wall switches are not in the line-of-sight of the main work area, and in large spaces. We recommend a holistic design approach that considers both the technology of the lighting sources and how they are controlled.

Maintenance savings are anticipated due to reduced lamp operation; however, additional maintenance costs may be incurred because the occupancy sensors may require periodic adjustment; it is anticipated that the net effect on maintenance costs will be negligible.

4.4 Domestic Water Heating Upgrade

Our recommendations for domestic water heating measures are summarized in Figure 22 below.

Figure 22 - Summary of Domestic Water Heating 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)
Domestic Water Heating Upgrade		0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987
ECM 5	Install Low-Flow Domestic Hot Water Devices	0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987

ECM 4: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	76.8	$859.02	$258.12	$0.00	$258.12	0.30	8,987

Measure Description

This measure evaluates the savings from installing low flow domestic water devices to reduce overall water flow in general and hot water flow in particular. Low flow showerheads and faucet aerators reduce the water flow, relative to standard showerheads and aerators, from the fixture. Pre-rinse spray valves—often used in commercial and institutional kitchens—are designed to remove food waste from dishes prior to dishwashing. Replacing standard pre-rinse spray valves with low flow valves will reduce water use. All of the low flow devices reduce the overall water flow from the fixture which generally reduces the amount of hot water used resulting in energy and water savings.

4.5 Plug Load Equipment Control- Vending Machines

Figure 23-Summary of Plug Load Equipment 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)
Plug Load Equipment Control - Vending Machine		3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246
ECM 5	Vending Machine Control	3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246

ECM 5: Vending Machine Control

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)
3,224	0.0	0.0	$699.28	$1,437.60	$0.00	$1,437.60	2.06	3,246

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor based controls to reduce the energy use. These controls power down the machine when the surrounding area is vacant, then monitor the surrounding temperature and power up the cooling system at regular intervals to keep the product cool. Savings are a function of the activity level around the vending machine.

4.6 ECMS Evaluated But Not Recommended

Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 24 below.

Figure 24 – Summary of Variable Frequency Drive 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)
Variable Frequency Drive (VFD) Measures	7,160	7.5	0.0	$1,553.21	$43,864.90	$3,306.67	$40,558.24	26.11	7,210
Install VFDs on Constant Volume (CV) HVAC	7,160	7.5	0.0	$1,553.21	$43,864.90	$3,306.67	$40,558.24	26.11	7,210

ECM 6: Install VFDs on CV HVAC

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)
7,160	7.5	0.0	$1,553.21	$43,864.90	$3,306.67	$40,558.24	26.11	7,210

Measure Description

This measure evaluates installing a variable frequency drive (VFD) to control the air handlers supply fan motor speed and converting the constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is required to control the return fan motor or dedicated exhaust fan motor if the air handler has one. The zone thermostats will modulate the VFD speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings result from reducing fan speed (and power) when there is a reduced load in the zone. The magnitude of energy savings is based on the amount of time at reduced loads.

Reasons for not recommending

The evaluated measure was not recommended as the payback period of the measure itself is more than the useful life of the equipment itself.

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

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

Close Doors and Windows

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

Ensure Lighting Controls Are Operating Properly

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

Practice Proper Use of Thermostat Schedules and Temperature Resets

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

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

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.

Water Conservation

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

Installing dual flush or low flow toilets and low flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense ratings for urinals is 0.5 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).

Refer to Section 4.4 for any low-flow ECM recommendations.

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.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the potential for PV at the site. A PV array located on the roof of the main building/ground next to the building/over the main parking lot may be feasible. If Grunin Center for Performing Arts (#11) is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

TRC analyzed the potentially available rooftop areas for each of the central campus buildings, in order to determine the potential cost and energy savings for installing a campus-wide solar PV array at Ocean County College. Based on our analysis, we estimate that Ocean County College has about 106,687 square feet of available unshaded roof space for all buildings combined. We estimate that the Grunin Center for Performing Arts has approximately 20,480 square feet of unshaded roof space available, representing about 19.1% of the total array. See rooftop image below.

We estimate that the available rooftop space could support up to **1,487 kW** of solar generating capacity (~4,956 PV panels @300-W_{DC} each).[1] The combined PV array could generate nearly 2 million kWh on an annual basis. This could potentially offset $326,719 of annual electric purchases from the grid. In addition, Ocean County College could receive during the first 15 years of the solar project's lifetime, up to $795,309 per year in Solar Renewable Energy Certificate (SREC) income (@ $235/MWh). We estimate that the

[1] Our estimate was based on the National Renewable Energy Lab's *PVWatts*® Online Calculator (http://pvwatts.nrel.gov/), plus TRC's analysis of current market conditions for commercial solar power development in New Jersey.

installed cost of such an array would be about $5.2 million. Based on these numbers, we estimate that such an investment would have a simple payback period of about 6.5 years.

Figure 25 - Photovoltaic Screening

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

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

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

7 DEMAND RESPONSE

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

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

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

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

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

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

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding the program rules and requirements for metering and controls, a facility's ability to temporarily reduce electric load, as well as the payments involved in participating in the program. Also, these providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment to help ensure compliance of all terms and conditions of a DR contract.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and others, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's 1999 Electricity Restructuring Law which requires all customers of investor-owned electric and gas utilities to pay this charge on their monthly energy bills. As a contributor to the fund you were able to participate in the LGEA program and are also eligible to utilize the equipment incentive programs. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 26 for a list of the eligible programs identified for each recommended ECM.

Figure 26 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x		x			
ECM 2	Retrofit Fixtures with LED Lamps	x		x			
ECM 3	Install Occupancy Sensor Lighting Controls	x		x			
ECM 4	Install Low-Flow Domestic Hot Water Devices	x		x			
ECM 5	Vending Machine Control						

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

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

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

8.1 SmartStart

Overview

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

Prescriptive Equipment Incentives Available:

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

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 SREC Registration Program

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

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

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

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

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

8.3 Energy Savings Improvement Program

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

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

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

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

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

If your facility is not purchasing electricity from a third-party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third-party supplier, review and compare prices at the end of the current contract or every couple of 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
#12 - Room A223 - Classrom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.15	355	0.0	$77.05	$351.00	$60.00	3.78
#12 - Room A224 - Computer lab	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.22	533	0.0	$115.58	$526.50	$90.00	3.78
#12 - Corridor	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.07	178	0.0	$38.65	$175.50	$30.00	3.76
#12 - Corridor	3	Exit Signs: LED - 2 W Lamp	Occupancy Sensor	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	Occupancy Sensor	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Room A222 - Classroom	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.15	355	0.0	$77.05	$351.00	$60.00	3.78
#12 - Room A221 - Computer Lab	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.10	237	0.0	$51.37	$234.00	$40.00	3.78
#12 - Room A220 - IT room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	26	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	26	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Room A219 - Classroom	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	9	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	1,560	0.31	767	0.0	$166.36	$323.10	$45.00	1.67
#12 - Room A118 - Elecvator Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	20	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	20	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A217 - Classroom	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.24	592	0.0	$128.42	$585.00	$100.00	3.78
#12 - Corrodor	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.27	653	0.0	$141.73	$643.50	$110.00	3.76
#12 - A216 - Classroom	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.24	592	0.0	$128.42	$585.00	$100.00	3.78
#12- Women's Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.05	118	0.0	$25.68	$117.00	$20.00	3.78
#12 - Allied Health Advising	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.02	59	0.0	$12.84	$58.50	$10.00	3.78
#12 - Corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.02	59	0.0	$12.88	$58.50	$10.00	3.76
#12 - Elevator Machine room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	20	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	20	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Corridor	29	CFL Screw-In Lamps: Spot light fixtures	Occupancy Sensor	50	1,565	Relamp	No	29	LED Screw-In Lamps: Spot Fixtures	Occupancy Sensor	7	1,565	0.92	2,245	0.0	$486.89	$1,558.84	$0.00	3.20
#12 - Corridor	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.41	1,010	0.0	$219.04	$994.50	$170.00	3.76
#12 - Corridor	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Men's Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,840	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,840	0.07	209	0.0	$45.44	$175.50	$30.00	3.20
#12 - A228 - IT Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	20	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	20	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A202 - Stage Control Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	96	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	96	0.07	11	0.0	$2.37	$175.50	$30.00	61.37
#12 - A202 - Stage Control Room	7	CFL Screw-In Lamps: Spot light fixtures	Wall Switch	40	96	Relamp	No	7	LED Screw-In Lamps: Spot fixtures	Wall Switch	7	96	0.17	26	0.0	$5.53	$376.27	$0.00	68.02
#12 - Theatre Balcony	1	Incandescent: Skylight fixture	Wall Switch	40	15	None	No	1	Incandescent: Skylight fixture	Wall Switch	40	15	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Corridor	21	CFL Screw-In Lamps: Spot light fixtures	Occupancy Sensor	50	1,565	Relamp	No	21	LED Screw-In Lamps: Spot fixtures	Occupancy Sensor	7	1,565	0.66	1,625	0.0	$352.58	$1,128.81	$0.00	3.20

	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
#12 - Corridor	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
#12 - Corridor	14	CFL Screw-In Lamps: Recessed Fixtures	Occupancy Sensor	13	1,565	Relamp	No	14	LED Screw-In Lamps: Recessed Ficture	Occupancy Sensor	10	1,565	0.04	88	0.0	$19.13	$752.54	$0.00	39.33
#12 - A203 - Piano Laboratory	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.17	414	0.0	$89.89	$409.50	$70.00	3.78
#12 - A208 - Mechanical Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	32	13	None	No	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Occupancy Sensor	32	13	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - IT closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	13	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	13	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Piano Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,560	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,560	0.04	89	0.0	$19.26	$75.20	$15.00	3.13
#12 - Stairwell	4	CFL Screw-In Lamps: Wall Mount fixture	Wall Switch	26	2,236	Relamp	No	4	LED Screw-In Lamps: Wall Mount	Wall Switch	7	2,236	0.06	195	0.0	$42.39	$215.01	$0.00	5.07
#12 - Stairwell	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,236	0.09	298	0.0	$64.70	$252.80	$0.00	3.91
#12 - Stairwell	2	CFL Screw-In Lamps: Focus Lights	Wall Switch	75	2,236	Relamp	No	2	LED Screw-In Lamps: Focus lights	Wall Switch	11	2,236	0.09	329	0.0	$71.40	$195.71	$0.00	2.74
#12 - Theatre Balcony Hallway	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.07	178	0.0	$38.65	$175.50	$30.00	3.76
#12 - Theatre Balcony Hallway	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A226 - Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.07	178	0.0	$38.65	$175.50	$30.00	3.76
Hallway	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.15	356	0.0	$77.31	$351.00	$60.00	3.76
#12 - garden State PhilHarmonic	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.15	356	0.0	$77.31	$351.00	$60.00	3.76
#12 - A209 - office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.07	178	0.0	$38.53	$175.50	$30.00	3.78
#12 - Corridor	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.02	59	0.0	$12.88	$58.50	$10.00	3.76
#12 - Corridor	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,565	0.03	100	0.0	$21.70	$179.20	$20.00	7.34
#12 - Floor 1 - Corridor Lights	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.24	594	0.0	$128.85	$585.00	$100.00	3.76
#12 - Floor 1 - Corridor Lights	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
#12 - Stairwell	3	CFL Screw-In Lamps: Hanging Fixtures	Wall Switch	60	4,380	Relamp	No	3	LED Screw-In Lamps: Hanging Fixture	Wall Switch	10	4,380	0.11	763	0.0	$165.53	$161.26	$0.00	0.97
#12 - A121 - Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	13	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	13	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A119 - Music Practice Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	780	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	780	0.05	59	0.0	$12.84	$117.00	$20.00	7.55
#12 - A119 - Music Practice Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	780	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	780	0.05	59	0.0	$12.84	$117.00	$20.00	7.55
#12 - A119 - Music Practice Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	780	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	780	0.05	59	0.0	$12.84	$117.00	$20.00	7.55
#12 - A117 - Band Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,040	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,040	0.02	39	0.0	$8.56	$58.50	$10.00	5.66

	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
#12 - A117 - Band Room	30	Linear Fluorescent - T5: 4' T5 (28W) - 2L	Occupancy Sensor	60	1,040	Relamp	No	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,040	0.68	1,112	0.0	$241.28	$1,755.00	$300.00	6.03
#12 - A116 - Music Storage room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	13	None	No	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	13	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A116 - Music Storage room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	13	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	13	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Stairway	1	CFL Screw-In Lamps: Wall Mount fixture	Wall Switch	26	4,380	Relamp	No	1	LED Screw-In Lamps: Wall Mount fixture	Wall Switch	10	4,380	0.01	83	0.0	$18.03	$53.75	$0.00	2.98
#12 - Dressing Suite - Men	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	48	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	48	0.07	5	0.0	$1.19	$175.50	$30.00	122.74
#12 - Dressing Suite - Men	44	LED Screw-In Lamps: Wall Screw in	Wall Switch	11	48	None	No	44	LED Screw-In Lamps: Wall Screw in	Wall Switch	11	48	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Dressing Suite - Women	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	48	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	48	0.10	7	0.0	$1.58	$234.00	$40.00	122.74
#12 - Dressing Suite - Women	44	LED Screw-In Lamps: Wall Screw in	Wall Switch	11	48	None	No	44	LED Screw-In Lamps: Wall Screw in	Wall Switch	11	48	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Dressing Suite	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.05	4	0.0	$0.79	$117.00	$20.00	122.74
#12 - Dressing Suite Corridor	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	48	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	48	0.10	7	0.0	$1.58	$234.00	$40.00	122.74
#12 - Dressing Suite Corridor	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A112 - Carpenter shop	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.41	31	0.0	$6.72	$994.50	$170.00	122.74
#12 - Storage Tool	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.05	118	0.0	$25.68	$117.00	$20.00	3.78
#12 - A111	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.02	59	0.0	$12.84	$58.50	$10.00	3.78
#12 - A110 - Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.02	2	0.0	$0.40	$58.50	$10.00	122.74
#12 - Men's bathroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,840	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,840	0.07	209	0.0	$45.44	$175.50	$30.00	3.20
#12 - Women's bathroom	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,840	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,840	0.12	349	0.0	$75.74	$292.50	$50.00	3.20
#12 - A106 - Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	52	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	52	0.02	2	0.0	$0.43	$58.50	$10.00	113.30
#12 - Corridor Lights	18	CFL Screw-In Lamps: Hanging Fixtures	Occupancy Sensor	40	1,565	Relamp	No	18	LED Screw-In Lamps: Hanging fixture	Occupancy Sensor	7	1,565	0.44	1,069	0.0	$231.93	$967.55	$0.00	4.17
#12 - Corridor Lights	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Corridor Lights	2	CFL Screw-In Lamps: Ceiling Mount	Occupancy Sensor	13	1,565	Relamp	No	2	LED Screw-In Lamps: Hanging fixture	Occupancy Sensor	4	1,565	0.01	32	0.0	$7.03	$215.01	$0.00	30.59
#12 - Corridor Lights	4	CFL Screw-In Lamps: Recessed Fixtures	Occupancy Sensor	13	1,565	Relamp	No	4	LED Screw-In Lamps: Recessed fixture	Occupancy Sensor	4	1,565	0.03	65	0.0	$14.06	$860.05	$0.00	61.19
#12 - Theatre Entrance	1	Incandescent: Wall Mount fixture	Wall Switch	40	2,236	Relamp	No	1	LED Screw-In Lamps: Wall mount fixture	Wall Switch	7	2,236	0.02	85	0.0	$18.41	$53.75	$10.00	2.38
#12 - A103 - Ticketing area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,560	0.02	59	0.0	$12.84	$58.50	$10.00	3.78
#12 - Hallway	6	CFL Screw-In Lamps: Ceiling Mount	Occupancy Sensor	26	1,565	Relamp	No	6	LED Screw-In Lamps: Wall mount fixture	Occupancy Sensor	7	1,565	0.08	205	0.0	$44.51	$322.52	$0.00	7.25

	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
#12 - Hallway	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
#12 - A122 - Storage	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	48	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	48	0.04	3	0.0	$0.59	$75.20	$15.00	101.57
#12 - office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.05	118	0.0	$25.68	$117.00	$20.00	3.78
#12 - Storage Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.02	2	0.0	$0.40	$58.50	$10.00	122.74
#12 - Stairway	3	CFL Screw-In Lamps: Hanging Fixtures	Wall Switch	60	2,236	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,236	0.07	239	0.0	$51.87	$175.50	$0.00	3.38
#12 - Boiler room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.12	99	0.0	$21.40	$292.50	$50.00	11.33
#12 - Boiler room	1	Exit Signs: LED - 2 W Lamp	None	6	520	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	520	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 -A123 - Storage Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	48	None	No	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	48	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Theatre	42	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	No	42	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,236	1.02	3,564	0.0	$773.10	$2,457.00	$420.00	2.63
#12 - Theatre	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Theatre - Above the Catwalk	14	Incandescent: Hanging Fixtures	Wall Switch	200	3	Relamp	No	14	LED Screw-In Lamps: Hanging fixture	Wall Switch	30	3	1.75	8	0.0	$1.78	$752.54	$0.00	422.51
#12 - Follow spot room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.05	4	0.0	$0.79	$117.00	$20.00	122.74
#12 - Follow spot room	4	Incandescent: Hanging Fixtures	Wall Switch	200	48	Relamp	No	4	LED Screw-In Lamps: Hanging fixture	Wall Switch	30	48	0.50	38	0.0	$8.14	$215.01	$40.00	21.49
#12 - A301 - Mechanical Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	5	None	No	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	5	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - A301 - Mechanical Room	2	Incandescent: Hanging Fixtures	Wall Switch	200	520	None	No	2	Incandescent: Hanging Fixtures	Wall Switch	200	520	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Theatre - Above the Catwalk	2	Incandescent: Hanging Fixtures	Wall Switch	200	10	None	No	2	Incandescent: Hanging Fixtures	Wall Switch	200	10	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Theatre - Above the Catwalk	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	10	None	No	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	10	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Theatre - Above the Catwalk	2	CFL Screw-In Lamps: Ceiling Mount	Wall Switch	26	5	None	No	2	CFL Screw-In Lamps: Ceiling Mount	Wall Switch	26	5	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12- A005 - Fire pump room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	5	None	No	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	5	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 A006 - Storage Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	520	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	520	0.15	118	0.0	$25.68	$351.00	$60.00	11.33
#12 - Dimmer Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	48	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	48	0.10	7	0.0	$1.58	$234.00	$40.00	122.74
#12 - Prop Storage room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	204	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	204	0.19	62	0.0	$13.43	$468.00	$80.00	28.88
#12 - Prop Storage room	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	204	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	204	0.05	16	0.0	$3.56	$143.60	$20.00	34.70
#12 - Center mall bldg, wall breezeway steps	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	150	2,236	None	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	150	2,236	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
#12 - Over door A	2	CFL Screw-In Lamps: Recessed Fixtures	None	26	2,236	Relamp	No	2	LED Screw-In Lamps: Recessed fixture	None	10	2,236	0.02	85	0.0	$18.41	$139.52	$0.00	7.58

	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
#12 - Over Door E	1	CFL Screw-In Lamps: Recessed Fixtures	None	26	2,236	Relamp	No	1	LED Screw-In Lamps: Recessed fixture	None	10	2,236	0.01	42	0.0	$9.20	$69.76	$0.00	7.58
#12 - Over Breezeway	14	CFL Screw-In Lamps: Ceiling Mount	None	32	2,236	Relamp	No	14	LED Screw-In Lamps: Ceiling mount fixture	None	10	2,236	0.23	810	0.0	$175.70	$1,369.94	$0.00	7.80
#12 - Loading dock soffit	4	CFL Screw-In Lamps: Ceiling Mount	None	32	2,236	Relamp	No	4	LED Screw-In Lamps: Ceiling mount fixture	None	10	2,236	0.07	231	0.0	$50.20	$391.41	$0.00	7.80
#12 - Outside wall by door E	2	CFL Screw-In Lamps: Ceiling Mount	None	57	2,236	Relamp	No	2	LED Screw-In Lamps: Ceiling mount fixture	None	11	2,236	0.07	237	0.0	$51.32	$195.71	$0.00	3.81
#12 - Outside wall b boiler room door	2	CFL Screw-In Lamps: Ceiling Mount	None	70	2,236	Relamp	No	2	LED Screw-In Lamps: Ceiling mount fixture	None	11	2,236	0.09	303	0.0	$65.82	$195.71	$0.00	2.97
#12 - Over rolling dock roll up door	1	High-Pressure Sodium: (1) 150W Lamp	None	188	2,236	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	40	2,236	0.11	381	0.0	$82.55	$390.68	$100.00	3.52
#12 - Rooftop flood by door A	1	High-Pressure Sodium: (1) 150W Lamp	None	188	2,236	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	40	2,236	0.11	381	0.0	$82.55	$390.68	$100.00	3.52
#12 - Rooftop floods over breezeway	2	High-Pressure Sodium: (1) 250W Lamp	None	295	2,236	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	46	2,236	0.37	1,281	0.0	$277.78	$781.35	$200.00	2.09
Bldg 11 Vestibule	2	CFL Screw-In Lamps: Canned fixtures	None	13	2,236	Relamp	No	2	LED Screw-In Lamps: Canned fixtures	None	7	2,236	0.01	31	0.0	$6.69	$107.51	$0.00	16.06
Lobby Area	7	CFL Screw-In Lamps: Hanging Pendant CFL 4 Pin	None	55	2,236	Relamp	No	7	LED Screw-In Lamps: Hanging pendant CFL 4 pin	None	7	2,236	0.25	864	0.0	$187.42	$479.17	$0.00	2.56
Black Box Theatre	1	CFL Screw-In Lamps: Recessed CFL	Wall Switch	13	2,236	Relamp	No	1	LED Screw-In Lamps: Recessed fixture	Wall Switch	7	2,236	0.00	15	0.0	$3.35	$53.75	$0.00	16.06
Black Box Theatre	24	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,236	Relamp	No	24	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,236	0.87	3,055	0.0	$662.65	$1,804.80	$360.00	2.18
Prefunction Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,236	Relamp	No	4	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,236	0.15	509	0.0	$110.44	$300.80	$60.00	2.18
Men's Prefunction Room B129A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,236	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,236	0.07	255	0.0	$55.22	$150.40	$30.00	2.18
Women's Prefunction Room B129B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,236	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	2,236	0.07	255	0.0	$55.22	$150.40	$30.00	2.18
Hallway	11	CFL Screw-In Lamps: Canned fixtures	Wall Switch	13	2,236	Relamp	No	11	LED Screw-In Lamps: Canned fixtures	Wall Switch	10	2,236	0.03	99	0.0	$21.47	$591.28	$0.00	27.53
Hallway	3	CFL Screw-In Lamps: Hanging Pendant CFL 4 Pin	None	55	2,236	Relamp	No	3	LED Screw-In Lamps: Hanging pendant CFL 4 pin	None	11	2,236	0.10	339	0.0	$73.63	$205.36	$0.00	2.79
B130 Women's Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,840	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,840	0.07	209	0.0	$45.44	$175.50	$30.00	3.20
B131 Men's Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,840	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,840	0.05	140	0.0	$30.29	$117.00	$20.00	3.20
B130 Women's Restroom	1	CFL Screw-In Lamps: Recessed CFL	Occupancy Sensor	13	1,840	Relamp	No	1	LED Screw-In Lamps: Recessed fixture	Occupancy Sensor	10	1,840	0.00	6	0.0	$1.38	$53.75	$0.00	39.04
B131 Men's Restroom	2	CFL Screw-In Lamps: Recessed CFL	Occupancy Sensor	13	1,840	Relamp	No	2	LED Screw-In Lamps: Recessed fixture	Occupancy Sensor	10	1,840	0.00	13	0.0	$2.75	$107.51	$0.00	39.04
B103 Main Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.10	238	0.0	$51.54	$234.00	$40.00	3.76
B102 School of Language Arts	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.10	238	0.0	$51.54	$234.00	$40.00	3.76
B104 Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.10	238	0.0	$51.54	$234.00	$40.00	3.76
B105 Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,565	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,565	0.10	238	0.0	$51.54	$234.00	$40.00	3.76

	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
B128 2D Drawing Studio	12	CFL Screw-In Lamps: Double tube Pendant Fixture	Wall Switch	26	2,236	Relamp	No	12	LED Screw-In Lamps: Double pendant fixture	Wall Switch	7	2,236	0.17	586	0.0	$127.18	$528.61	$0.00	4.16
B106 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
B107 Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
B127 Classroom	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,092	0.37	898	0.0	$194.73	$818.00	$140.00	3.48
B127 Classroom	6	CFL Screw-In Lamps: Recessed CFL	Wall Switch	13	1,560	Relamp	No	6	LED Screw-In Lamps: Recessed fixture	Wall Switch	7	1,560	0.03	65	0.0	$14.01	$322.52	$0.00	23.02
B108 IT Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	520	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	520	0.01	10	0.0	$2.27	$35.90	$5.00	13.61
B126 Painting Studio	9	CFL Screw-In Lamps: Double tube Pendant Fixture	Wall Switch	26	2,236	Relamp	No	9	LED Screw-In Lamps: Double pendant fixture	Wall Switch	12	2,236	0.09	324	0.0	$70.28	$396.46	$0.00	5.64
Back Entrance Vestibule	2	CFL Screw-In Lamps: Canned fixtures	None	13	2,236	Relamp	No	2	LED Screw-In Lamps: Canned fixtures	None	7	2,236	0.01	31	0.0	$6.69	$107.51	$0.00	16.06
B124 Computer Lab	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,092	0.31	748	0.0	$162.28	$701.00	$120.00	3.58
B124 Computer Lab	4	CFL Screw-In Lamps: Recessed CFL	Wall Switch	13	1,560	Relamp	No	4	LED Screw-In Lamps: Recessed fixture	Wall Switch	7	1,560	0.02	43	0.0	$9.34	$215.01	$0.00	23.02
B109 Mechanical/Electrical Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	520	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	520	0.07	59	0.0	$12.84	$175.50	$30.00	11.33
B123 Computer Lab	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,092	0.31	748	0.0	$162.28	$701.00	$120.00	3.58
B123 Computer Lab	4	CFL Screw-In Lamps: Recessed CFL	Wall Switch	13	1,560	Relamp	No	4	LED Screw-In Lamps: Recessed fixture	Wall Switch	11	1,560	0.01	14	0.0	$3.11	$215.01	$0.00	69.06
Hallway	14	CFL Screw-In Lamps: Double tube Pendant Fixture	None	26	2,236	Relamp	No	14	LED Screw-In Lamps: Double pendant fixture	None	7	2,236	0.20	684	0.0	$148.37	$616.71	$0.00	4.16
Hallway	3	CFL Screw-In Lamps: Recessed CFL	None	13	2,236	Relamp	No	3	LED Screw-In Lamps: Recessed fixture	None	10	2,236	0.01	27	0.0	$5.86	$161.26	$0.00	27.53
B110 Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
B111 Faculty Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
B112	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,080	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,456	0.25	798	0.0	$173.10	$584.00	$100.00	2.80
B113 Adjunct Faculty Office	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.24	789	0.0	$171.23	$585.00	$100.00	2.83
B115 Ceramics Lab	15	CFL Screw-In Lamps: Double tube Pendant Fixture	Wall Switch	26	2,080	Relamp	No	15	LED Screw-In Lamps: Double pendant fixture	Wall Switch	11	2,080	0.17	538	0.0	$116.75	$660.77	$0.00	5.66
Ceramics Lab Exit	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,236	Relamp	No	9	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,236	0.37	1,296	0.0	$281.13	$856.20	$180.00	2.41
Outside Ceramics lab	2	High-Pressure Sodium: (1) 150W Lamp	None	188	2,236	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	None	40	2,236	0.22	761	0.0	$165.11	$781.35	$200.00	3.52
B119 Ceramics Drying	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,236	0.02	85	0.0	$18.41	$58.50	$10.00	2.63
B120 Damp Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,236	0.02	85	0.0	$18.41	$58.50	$10.00	2.63
B120 Damp Room Hall Space	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,236	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,236	0.02	85	0.0	$18.41	$58.50	$10.00	2.63

	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
Hallway	5	CFL Screw-In Lamps: Canned fixtures	None	13	2,236	Relamp	No	5	LED Screw-In Lamps: Canned fixtures	None	7	2,236	0.02	77	0.0	$16.73	$268.77	$0.00	16.06
Human Resources	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	2,236	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	None	29	2,236	0.07	255	0.0	$55.22	$175.50	$30.00	2.63
C107 Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,560	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,560	0.10	237	0.0	$51.37	$234.00	$40.00	3.78
Large Office Space	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,560	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,560	0.29	710	0.0	$154.11	$702.00	$120.00	3.78
C106 Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.05	158	0.0	$34.25	$117.00	$20.00	2.83
C105 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
C104 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
C103 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
C102 Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.10	316	0.0	$68.49	$234.00	$40.00	2.83
Main Entrance Vestibule	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	2,236	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	None	29	2,236	0.05	170	0.0	$36.81	$117.00	$20.00	2.63
Stairway	1	CFL Screw-In Lamps: CFL	None	13	2,236	Relamp	No	1	LED Screw-In Lamps: Wall mounted fixture	None	7	2,236	0.00	15	0.0	$3.35	$53.75	$0.00	16.06
C109 Records	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,080	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,080	0.05	158	0.0	$34.25	$117.00	$20.00	2.83
C110 Admin	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.05	158	0.0	$34.25	$117.00	$20.00	2.83
C111 Storage	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,080	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,080	0.15	474	0.0	$102.74	$351.00	$60.00	2.83
Storage Closet	1	CFL Screw-In Lamps: Flushmount Dome Fixture	Wall Switch	13	52	Relamp	No	1	LED Screw-In Lamps: Flushmount dome fixture	Wall Switch	7	52	0.00	0	0.0	$0.08	$53.75	$0.00	690.64
C115	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.19	631	0.0	$136.98	$468.00	$80.00	2.83
C114	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,080	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.05	158	0.0	$34.25	$117.00	$20.00	2.83
Exit Signs	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	8	Exit Signs: LED - 2 W Lamp	None	6	8,760	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
Main lobby	Elevator	1	Other	20.0	91.0%	Yes	35	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room - Sewage ejection pump	Grunin Center (#12)	2	Other	0.4	81.1%	No	20	No	81.1%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room - Fire pump	Grunin Center (#12)	1	Other	60.0	93.6%	Yes	10	No	93.6%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Grunin Center (#12)	1	Water Supply Pump	10.0	91.7%	Yes	520	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Grunin Center (#12)	4	Chilled Water Pump	7.5	93.0%	Yes	1,800	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Grunin Center (#12)	3	Heating Hot Water Pump	7.5	89.5%	Yes	1,800	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mechanical Room	Grunin Center (#12)	1	Other	2.0	86.5%	Yes	1,080	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	ACC-AHU	5	Supply Fan	10.0	91.7%	No	1,080	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	ACC-AHU	1	Supply Fan	3.0	86.5%	No	1,080	No	86.5%	Yes	5	0.56	671	0.0	$145.47	$11,716.40	$240.00	78.89
Rooftop	ACC-AHU	1	Return Fan	3.0	89.5%	No	780	No	89.5%	Yes	1	0.54	468	0.0	$101.54	$3,007.65	$240.00	27.26
Rooftop	ACC-AHU	2	Return Fan	2.0	86.5%	No	780	No	86.5%	Yes	1	0.75	646	0.0	$140.08	$3,007.65	$320.00	19.19
Rooftop	ACC-AHU	2	Return Fan	7.5	91.0%	No	780	No	91.0%	Yes	2	2.66	2,302	0.0	$499.34	$7,213.60	$1,200.00	12.04
Rooftop	ACC-AHU	1	Supply Fan	2.0	86.5%	No	1,080	No	86.5%	Yes	2	0.37	447	0.0	$96.98	$5,072.13	$160.00	50.65
Rooftop	ACC-AHU	3	Return Fan	3.0	86.5%	No	780	No	86.5%	Yes	1	1.68	1,453	0.0	$315.19	$3,606.80	$720.00	9.16
Rooftop	ACC-AHU	1	Supply Fan	5.0	89.5%	No	1,080	No	89.5%	Yes	3	0.90	1,080	0.0	$234.33	$7,897.38	$400.00	32.00
Rooftop	Grunin Center	2	Exhaust Fan	0.2	60.0%	No	940	No	60.0%	Yes	1	0.09	93	0.0	$20.28	$2,343.28	$26.67	114.22
Rooftop	Grunin Center	2	Exhaust Fan	0.3	69.5%	No	940	No	69.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Grunin Center	2	Exhaust Fan	0.2	60.0%	No	940	No	60.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Grunin Center	3	Exhaust Fan	0.3	69.5%	No	940	No	69.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Grunin Center	1	Exhaust Fan	1.5	86.5%	No	940	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Above Theatre	AHU #6	1	Packaged AC	26.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AHU #3 and AHU#7	1	Packaged AC	16.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AHU #9	1	Packaged AC	8.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Grunin Center	8	Split-System AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AHU#1	1	Packaged AC	3.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AHU#4 and AHU#5	2	Packaged AC	10.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	AHU#010	1	Packaged AC	9.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
On the side - Loading Dock	Grunin Center (#12)	2	Air-Cooled Centrifugal Chiller	60.00	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
Boiler Room	Grunin Center (#12)	1	Non-Condensing Hot Water Boiler	2,176.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Room - A10	Grunin Centre (#12)	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
B130 Women's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30
B131 Men's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30
#12 - Women's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30
#12 Men's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30
Floor 2 - Men's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30
Floor 2 - Women's Room	6	Faucet Aerator (Lavatory)	2.50	1.00	0.00	0	12.8	$143.17	$43.02	$0.00	0.30

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
#12 - Grunin Center	64	Computers	75.0	No
#12 - Grunin Center	9	Projectors	200.0	No
#12 - Grunin Center	3	Coffee Machine	400.0	No
#12 - Grunin Center	6	Printer Big	515.0	No
#12 - Grunin Center	3	Printer - small	20.0	No
#12 - Grunin Center	1	Shredder	360.0	No
#12 - Grunin Center	5	Microwave	1,000.0	No
#12 - Grunin Center	5	Refrigerator - medium	8.6	No
#12 - Grunin Center	3	Refrigerator - large	600.0	Yes
#12 - Grunin Center	1	Laundry machine	500.0	No
#12 - Grunin Center	1	Cothes dryer	3,000.0	No
#12 - Grunin Center	1	TV Monitor	200.0	No
#12 - Grunin Center	1	Sterilizer	2,200.0	No
#12 - Grunin Center	1	False teeth machine	240.0	No
#12 - Grunin Center	1	Centrifuge	80.0	No
#12 - Grunin Center	1	ECG machine	110.0	No
#12 - Grunin Center	14	Electric Pianos	200.0	No
#12 - Grunin Center	1	Heliodent machine	150.0	No
#12 - Grunin Center	1	Band saw	1,491.0	No
#12 - Grunin Center	1	Electric drill press	372.9	No
#12 - Grunin Center	1	Grinder	1,215.0	No
#12 - Grunin Center	1	Belt sauder	750.0	No
#12 - Grunin Center	1	Table saw	1,800.0	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
#11 Break room	1	Refrigerated	Yes	0.00	1,612	0.0	$349.64	$718.80	$0.00	2.06
#12 Break room	1	Refrigerated	Yes	0.00	1,612	0.0	$349.64	$718.80	$0.00	2.06

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

Grunin Center for Performing Arts Building (#11)

Primary Property Type: College/University
Gross Floor Area (ft²): 64,403
Built: 1970

For Year Ending: June 30, 2015
Date Generated: April 17, 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
Grunin Center for Performing Arts Building (#11) 1 College Drive Toms River, New Jersey 08754 **Property ID:** 5093698	_____ , (___)___-_____	____ _____ , (___)___-_____ _____

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
100.7 kBtu/ft²

Source EUI
140.8 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	5,409,716 (83%)
Electric - Grid (kBtu)	1,078,192 (17%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	187.9
National Median Source EUI (kBtu/ft²)	262.6
% Diff from National Median Source EUI	-46%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	411

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)