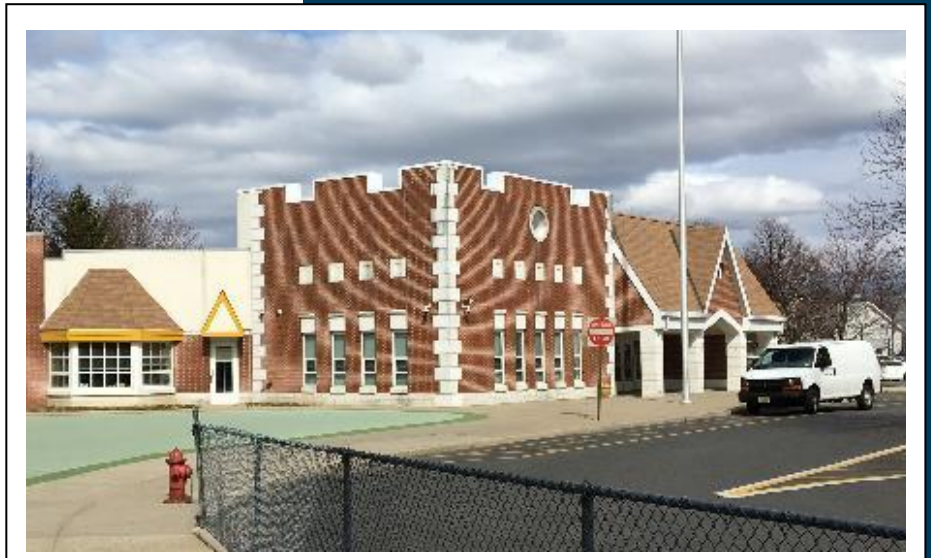




Local Government Energy Audit: Energy Audit Report



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AP Morris Early Childhood Center

143 Coe Ave.

Hillside, NJ 07205

Hillside Board of Education

September 25, 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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I EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for the AP Morris Early Childhood Center.

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

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

I.1 Facility Summary

The AP Morris Early Childhood Center is a 131,861 square foot, three-story early childhood elementary school (Pre-Kindergarten through First Grade). The school consists of classrooms, administrative offices, gym, and cafeteria/kitchen. The various spaces are connected by covered corridors/hallways and stairwells.

Lighting at the AP Morris Early Childhood Center consists primarily of T8 fluorescent sources, which are inefficient as compared to currently available alternatives. Heating in the classrooms/offices is provided by unit ventilators fed from a steam boiler, and by package unit ACs equipped with gas furnaces. Cooling is provided by window A/C units, package unit ACs, and split system ACs. A thorough description of the facility and our observations are in Section 2.

I.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated nine measures and recommends six measures which together represent an opportunity for the AP Morris Early Childhood Center to reduce annual energy costs by \$15,240 and annual greenhouse gas emissions by 113,511 lbs CO₂e. We estimate that if all measures were implemented as recommended, the project would pay for itself in 5.8 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce the AP Morris Early Childhood Center's annual energy use by 9%.

Figure 1 – Previous 12 Month Utility Costs

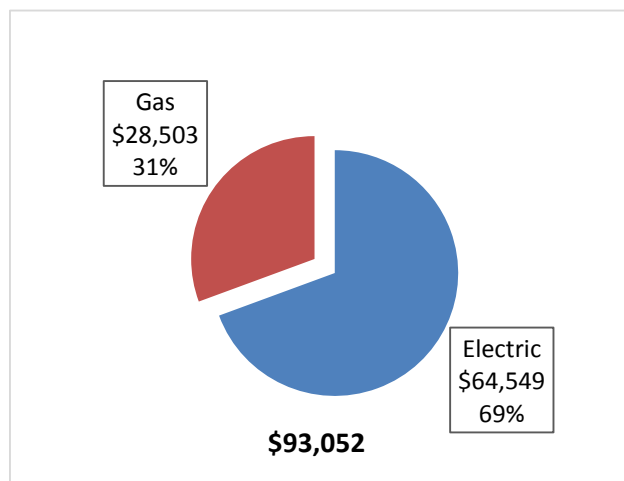
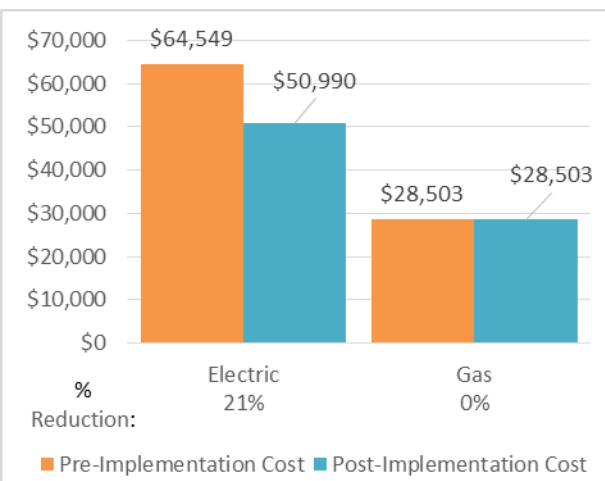


Figure 2 – Potential Post-Implementation Costs



A detailed description of the AP Morris Early Childhood Center’s existing energy use can be found in Section 3.

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

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			100,297	26.3	0.0	\$13,559.70	\$85,977.89	\$13,725.00	\$72,252.89	5.3	100,998
ECM 1	Install LED Fixtures	Yes	4,795	1.2	0.0	\$648.29	\$2,133.75	\$260.00	\$1,873.75	2.9	4,829
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and	Yes	405	0.1	0.0	\$54.80	\$468.00	\$40.00	\$428.00	7.8	408
ECM 3	Retrofit Fixtures with LED Lamps	Yes	94,956	25.0	0.0	\$12,837.66	\$83,268.58	\$13,425.00	\$69,843.58	5.4	95,620
ECM 4	Install LED Exit Signs	Yes	140	0.0	0.0	\$18.95	\$107.56	\$0.00	\$107.56	5.7	141
Lighting Control Measures			12,426	3.2	0.0	\$1,679.91	\$17,550.00	\$1,890.00	\$15,660.00	9.3	12,513
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	10,450	2.7	0.0	\$1,412.77	\$14,580.00	\$1,890.00	\$12,690.00	9.0	10,523
ECM 6	Install High/Low Lighting Controls	Yes	1,976	0.5	0.0	\$267.15	\$2,970.00	\$0.00	\$2,970.00	11.1	1,990
Electric Unitary HVAC Measures			21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
	Install High Efficiency Electric AC	No	21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Gas Heating (HVAC/Process) Replacement			0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
	Install High Efficiency Steam Boilers	No	0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
EVALUATED PROJECTS TOTALS			134,627	52.2	8.7	\$18,291.71	\$472,901.00	\$23,992.00	\$448,909.00	24.5	136,592
RECOMMENDED PROJECTS TOTALS			112,723	29.6	0.0	\$15,239.62	\$103,527.89	\$15,615.00	\$87,912.89	5.8	113,511

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

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

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

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

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

Energy Efficient Practices

TRC also identified 12 low cost (or no cost) energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at the AP Morris Early Childhood Center include:

- Reduce Air Leakage
- Close Doors and Windows
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Repair/Replace Steam Traps
- Perform Proper Boiler Maintenance
- 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 for the AP Morris Early Childhood Center. Based on the configuration of the site and its loads there is a low potential for installing any PV and combined heat and power self-generation measures.

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

I.3 Implementation Planning

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

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

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

- SmartStart
- Direct Install
- Energy Savings Improvement Program (ESIP)

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

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.3 for additional information on the ESIP Program.

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

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

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Darice Gonzalez	School Business Administrator/Bd Sec	dgonzalez@hillsidek12.org	908-352-7664 ext 6429
TRC Energy Services			
Alexander Klieverik	Auditor	AKlieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On February 22, 2018, TRC performed an energy audit at the AP Morris Early Childhood Center located in Hillside, New Jersey. TRC’s team met with David DeFluri, District Facility Manager to review the facility operations and help focus our investigation on specific energy-using systems.

The AP Morris Early Childhood Center is a 131,861 square foot, three-story early childhood elementary school serving Pre-Kindergarten through First Grade. The school consists of classrooms, administrative offices, gym, and cafeteria/kitchen. The various spaces are connected by covered corridors/hallways and stairwells.

Lighting at the AP Morris Early Childhood Center consists primarily of T8 fluorescent sources, which are inefficient as compared to currently available alternatives. Heating in the classrooms/offices is provided by unit ventilators fed from a steam boiler, and by package unit ACs equipped with gas furnaces. Cooling is provided by window A/C units, package unit ACs, and split system ACs.

The building was constructed in 1917. There was a renovation in 2000 and a 150 kW solar system was added to the roof of the school in 2012.

2.3 Building Occupancy

The school building is open Monday through Friday from approximately 7:00 AM through 3:30 PM during the school year, September through June. The building is closed on the weekend. During a typical day, the facility is occupied by 60 staff and 670 students.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
AP Morris Early Childhood Center	Weekday	7:00 am - 3:30 pm
AP Morris Early Childhood Center	Weekend	Closed

2.4 Building Envelope

The AP Morris Early Childhood Center main building was constructed in 1917 and renovated in 2000. The main building is constructed of brick and the building which was added in later years is made of concrete block and structural steel with a brick façade. The buildings have flat roof sections. There are operable double paned windows which are in good condition. The exterior doors are constructed of aluminum and tempered glass and are in good condition.



Image 1 – Building Envelope/Windows



Image 2 – Roof

2.5 On-Site Generation

The AP Morris Early Childhood Center has a 150 kW solar PV system on the roof of the school. The systems provide 31% of the electric energy (kWh) for the facility. The energy is purchased through a PPA.

2.6 Energy-Using Systems

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

Lighting System

Interior lighting at the facility is provided mostly by linear fluorescent T8 lamps with electronic ballasts, incandescent lamps, and compact fluorescent (CFL) with 2-pin lamps. The linear fluorescent fixtures are located in all areas of the building. The exterior lighting is provided by a mixture of LED wall packs, high pressure sodium (HPS) wall packs, and CFL fixtures. The LED and HPS wall packs are controlled by photocell light sensors, while the compact fluorescent fixtures are controlled by schedule timers.



Image 3 – T8 Fluorescent Lighting
(classroom-new section)



Image 4 – T8 Fluorescent Lighting
(classroom-old section)

Lighting control in all interior spaces is provided mainly by manual switches. There are occupancy sensor controls in the classrooms and gym. The LED exit signs operate 24 hours per day for security reasons.

Heating System

The steam heating system (SHS) consists of two Weil McClain steam boilers, each with an output capacity of 3,835 kBtu/hr. The boilers are forced draft and have a nominal combustion efficiency of about 81%. The boilers provide steam to the radiators, unit ventilators and fan coil units throughout the building via a two-pipe distribution system.



Image 5 – Steam Boilers



Image 6 Radiator in Classroom

The boilers are 60 years old which is well past the useful life.

Please see below for a discussion of the gas fired furnaces which heat the remainder of the building

Direct Expansion Air Conditioning System (DX)

There are 29 window air conditioners (ACs) located throughout the school building (classrooms, offices, etc.). The systems are generally 3/4-ton capacity and about 15 years old.

There are package DX systems located on the roof sections of the newer building. The systems provide ventilation, cooling and heating via natural gas furnaces to classrooms, hallways and offices. There is one 30 ton split-system AC (condenser on the roof above cafeteria) that serves the cafeteria. The package and split-system ACs are 19 to 25 years old.



Image 7 – Window AC (Classroom 1)



*Image 8 – Package Terminal Unit
(RTU1- serves classrooms)*

Domestic Hot Water Heating System

The domestic hot water (DHW) heating systems for the school consist of five natural gas-fired storage tank water heaters. The water heaters are all the same make and model (AO Smith, Cyclone XHE). The input capacities are 199.9 kBTU/hr and all units have a 100 gallon storage capacity. The nominal efficiency for the “Cyclone XHE” is about 95%. Two of the water heaters serve restrooms throughout the building while three serve the kitchen.

Food Service and Refrigeration

The school has a kitchen that is used to prepare 750 lunches per day for the students and staff. Most of the cooking is done using the gas ovens, steamers and a large stove.

The kitchen has several refrigerators and coolers as well as one walk-in freezer and a walk-in cooler. These appliances appear to be new.

Building Plug Load

There are 128 laptops and desktop computers throughout the facility. Most of the classrooms have smart-boards (44) and projectors (44). There is also various office equipment (copiers, printers, etc.) and small refrigerators located throughout the school.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the “typical” energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

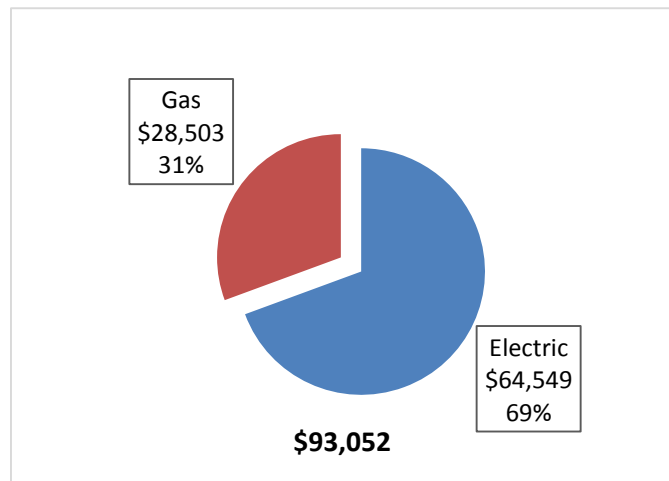
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for AP Morris Early Childhood Center		
Fuel	Usage	Cost
Electricity	477,451 kWh	\$64,549
Natural Gas	27,466 Therms	\$28,503
Total		\$93,052

The current annual energy cost for this facility is \$93,052 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G from the utility grid, and by self-generated solar PV. There is a 150 kW solar system on the roof of the school. The solar energy is sold to the District by Tioga Solar (PPA). The average electric cost (solar and grid) over the past 12 months was \$0.135/kWh, which is the blended rate that includes energy supply, distribution, and other charges (for solar and grid). This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

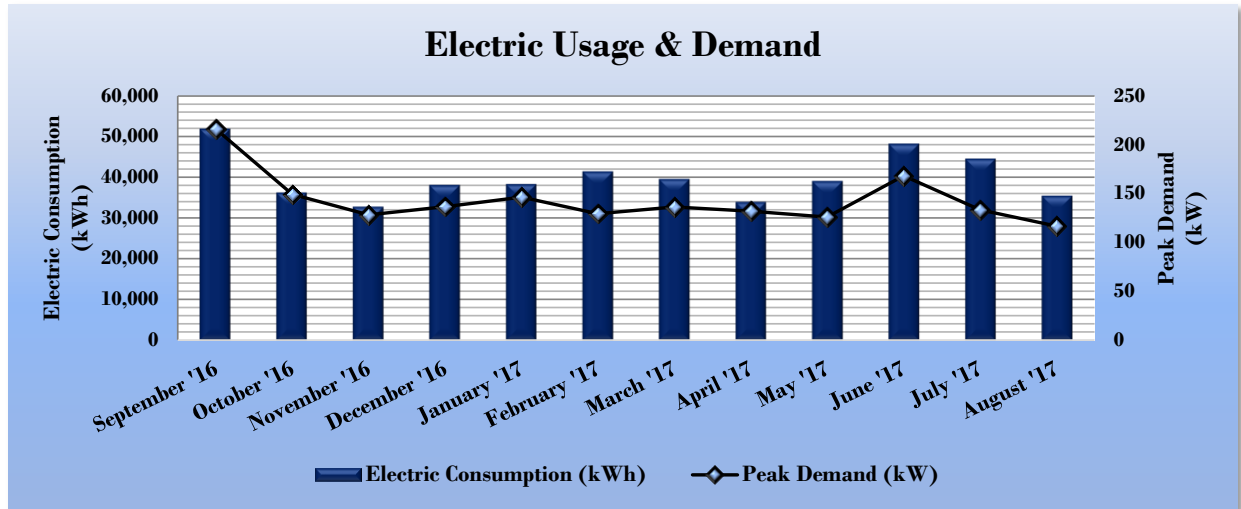


Figure 9 - Electric Usage & Demand

Electric Billing Data for AP Morris Early Childhood Center					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
9/23/16	30	51,668	216		\$8,001
10/24/16	31	36,057	149		\$4,523
11/22/16	29	32,614	128		\$4,127
12/23/16	31	37,953	136		\$4,492
1/25/17	33	38,133	146		\$4,612
2/24/17	30	41,260	129		\$4,850
3/27/17	31	39,399	136		\$4,858
4/26/17	30	33,794	132		\$4,600
5/25/17	29	38,927	126		\$5,113
6/26/17	32	47,997	168		\$7,345
7/26/17	30	44,340	133		\$6,502
8/24/17	29	35,309	117		\$5,526
Totals	365	477,451	216	\$0	\$64,549
Annual	365	477,451	216	\$0	\$64,549

3.3 Natural Gas Usage

Natural gas is provided by Elizabethtown Gas. The average gas cost for the past 12 months is \$1.038/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

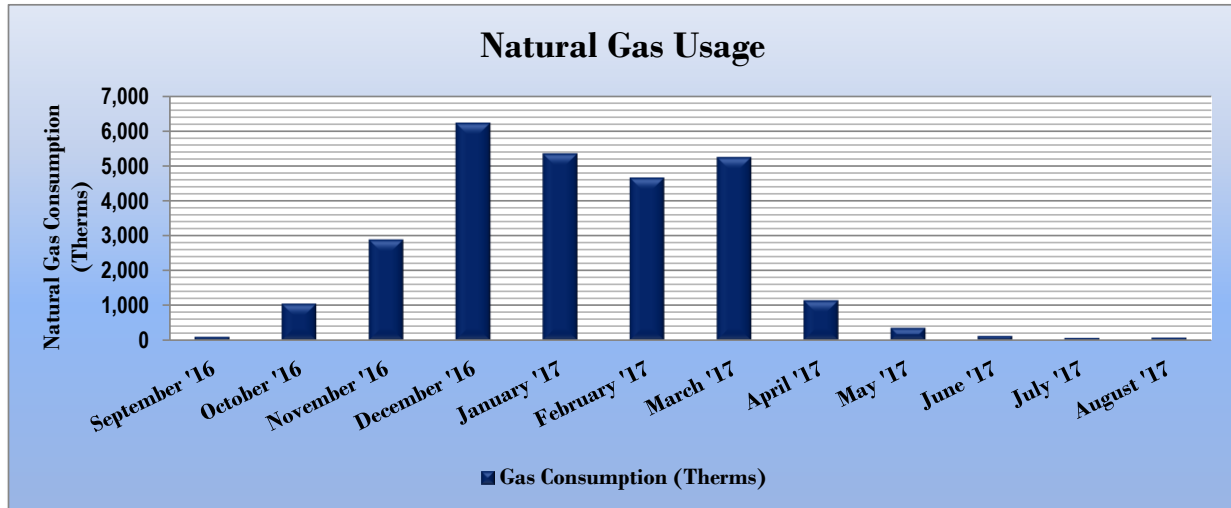


Figure 11 - Natural Gas Usage

Gas Billing Data for AP Morris Early Childhood Center			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
10/4/16	32	105	\$675
11/2/16	29	1,054	\$1,375
12/3/16	31	2,886	\$2,683
1/4/17	32	6,234	\$5,489
2/1/17	28	5,350	\$5,129
3/2/17	29	4,660	\$4,255
4/3/17	32	5,245	\$4,307
5/2/17	29	1,151	\$1,540
6/2/17	31	357	\$867
7/3/17	31	128	\$713
8/2/17	30	73	\$657
8/31/17	29	74	\$657
Totals	363	27,315	\$28,347
Annual	365	27,466	\$28,503

3.4 Benchmarking

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

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

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	AP Morris Early Childhood Center	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft ²)	60.7	141.4
Site Energy Use Intensity (kBtu/ft ²)	33.2	58.2

Implementation of all recommended measures in this report would improve the building’s estimated EUI significantly, as shown in the table below:

Figure 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	AP Morris Early Childhood Center	National Median Building Type: School (K-12)
Source Energy Use Intensity (kBtu/ft ²)	52.5	141.4
Site Energy Use Intensity (kBtu/ft ²)	30.6	58.2

Many types of commercial buildings are also eligible to receive an ENERGY STAR[®] score. This score is a percentile ranking from 1 to 100. It compares your building’s energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75% of all similar buildings nationwide and may be eligible for ENERGY STAR[®] certification. This facility has a current score of 94.

A Portfolio Manager[®] Statement of Energy Performance (SEP) was generated for this facility, see Appendix

B: ENERGY STAR[®] Statement of **Energy Performance**.

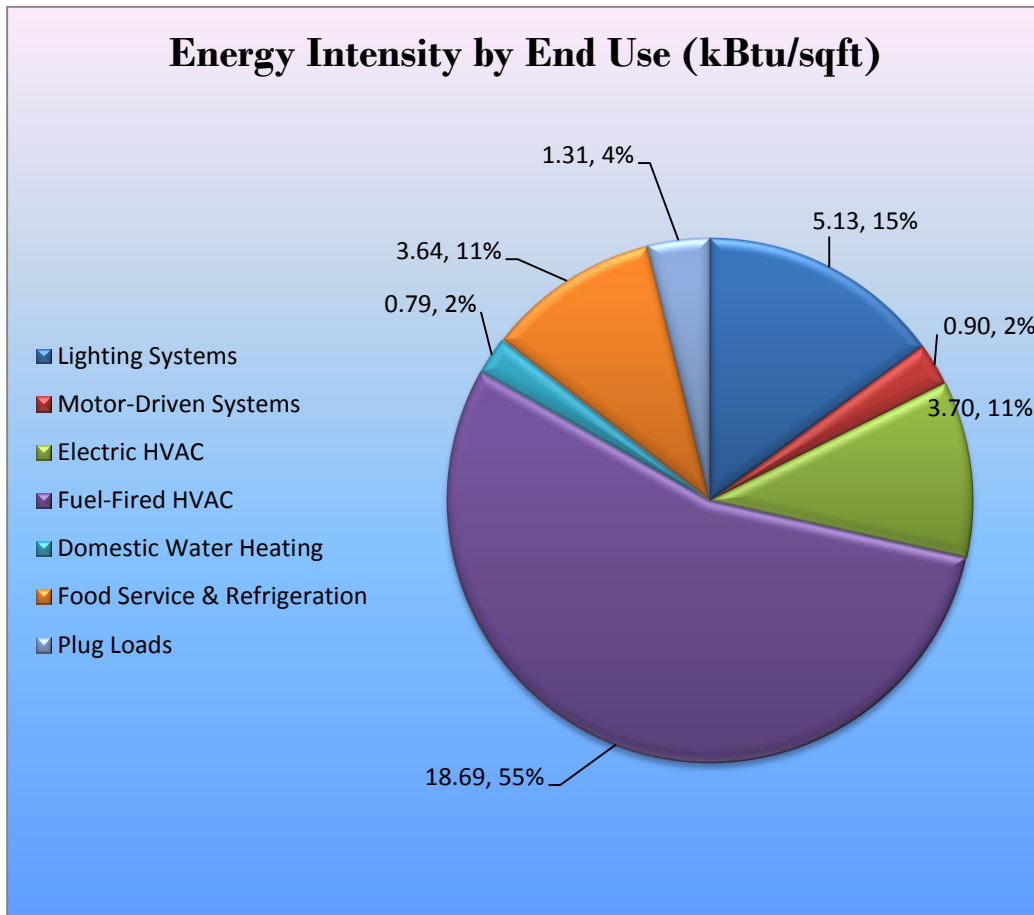
For more information on ENERGY STAR certification go to: <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1>.

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

3.5 Energy End-Use Breakdown

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

Figure 14 - Energy Balance (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 AP Morris Early Childhood Center regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 15 – Summary of Recommended ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			100,297	26.3	0.0	0.0	\$13,559.70	\$85,977.89	\$13,725.00	\$72,252.89	5.3	100,998
ECM 1	Install LED Fixtures	Yes	4,795	1.2	0.0	0.0	\$648.29	\$2,133.75	\$260.00	\$1,873.75	2.9	4,829
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	405	0.1	0.0	0.0	\$54.80	\$468.00	\$40.00	\$428.00	7.8	408
ECM 3	Retrofit Fixtures with LED Lamps	Yes	94,956	25.0	0.0	0.0	\$12,837.66	\$83,268.58	\$13,425.00	\$69,843.58	5.4	95,620
ECM 4	Install LED Exit Signs	Yes	140	0.0	0.0	0.0	\$18.95	\$107.56	\$0.00	\$107.56	5.7	141
Lighting Control Measures			12,426	3.2	0.0	0.0	\$1,679.91	\$17,550.00	\$1,890.00	\$15,660.00	9.3	12,513
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	10,450	2.7	0.0	0.0	\$1,412.77	\$14,580.00	\$1,890.00	\$12,690.00	9.0	10,523
ECM 6	Install High/Low Lighting Controls	Yes	1,976	0.5	0.0	0.0	\$267.15	\$2,970.00	\$0.00	\$2,970.00	11.1	1,990
Electric Unitary HVAC Measures			21,905	22.6	0.0	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
	Install High Efficiency Electric AC	No	21,905	22.6	0.0	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Gas Heating (HVAC/Process) Replacement			0	0.0	8.7	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
	Install High Efficiency Steam Boilers	No	0	0.0	8.7	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
EVALUATED PROJECTS TOTALS			134,627	52.2	8.7	8.7	\$18,291.71	\$472,901.00	\$23,992.00	\$448,909.00	24.5	136,592
RECOMMENDED PROJECTS TOTALS			100,297	26.3	0.0	0.0	\$13,559.70	\$85,977.89	\$13,725.00	\$72,252.89	5.3	100,998

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

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

4.1.1 Lighting Upgrades

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

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)	Estimated Net Cost (\$)	Simple Payback Period (yrs)	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		100,297	26.3	0.0	\$13,559.70	\$85,977.89	\$13,725.00	\$72,252.89	5.3	100,998
ECM 1	Install LED Fixtures	4,795	1.2	0.0	\$648.29	\$2,133.75	\$260.00	\$1,873.75	2.9	4,829
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	405	0.1	0.0	\$54.80	\$468.00	\$40.00	\$428.00	7.8	408
ECM 3	Retrofit Fixtures with LED Lamps	94,956	25.0	0.0	\$12,837.66	\$83,268.58	\$13,425.00	\$69,843.58	5.4	95,620
ECM 4	Install LED Exit Signs	140	0.0	0.0	\$18.95	\$107.56	\$0.00	\$107.56	5.7	141

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 I: 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 ₂ e Emissions Reduction (lbs)
Interior	4,213	1.1	0.0	\$569.54	\$1,352.40	\$60.00	\$1,292.40	2.3	4,242
Exterior	583	0.1	0.0	\$78.76	\$781.35	\$200.00	\$581.35	7.4	587

Measure Description

We recommend replacing the interior metal-halide fixtures in the Auditorium and the exterior high-pressure sodium wall packs with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

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

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)	Estimated Net Cost (\$)	Simple Payback Period (yrs)	CO ₂ e Emissions Reduction (lbs)
Interior	405	0.1	0.0	\$54.80	\$468.00	\$40.00	\$428.00	7.8	408
Exterior	0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0

Measure Description

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

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

ECM 3: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)	Estimated Net Cost (\$)	Simple Payback Period (yrs)	CO ₂ e Emissions Reduction (lbs)
Interior	92,754	24.7	0.0	\$12,539.87	\$80,097.15	\$13,420.00	\$66,677.15	5.3	93,402
Exterior	2,203	0.3	0.0	\$297.80	\$3,171.43	\$5.00	\$3,166.43	10.6	2,218

Measure Description

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

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

ECM 4: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)	Estimated Net Cost (\$)	Simple Payback Period (yrs)	CO ₂ e Emissions Reduction (lbs)
Interior	140	0.0	0.0	\$18.95	\$107.56	\$0.00	\$107.56	5.7	141
Exterior	0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0

Measure Description

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

4.1.2 Lighting Control Measures

Our recommendations for upgrades to existing lighting controls are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Control Measures		12,426	3.2	0.0	\$1,679.91	\$17,550.00	\$1,890.00	\$15,660.00	9.3	12,513
ECM 5	Install Occupancy Sensor Lighting Controls	10,450	2.7	0.0	\$1,412.77	\$14,580.00	\$1,890.00	\$12,690.00	9.0	10,523
ECM 6	Install High/Low Lighting Controls	1,976	0.5	0.0	\$267.15	\$2,970.00	\$0.00	\$2,970.00	11.1	1,990

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 5: 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 ₂ e Emissions Reduction (lbs)
10,450	2.7	0.0	\$1,412.77	\$14,580.00	\$1,890.00	\$12,690.00	9.0	10,523

Measure Description

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

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

ECM 6: Install High/Low 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 ₂ e Emissions Reduction (lbs)
1,976	0.5	0.0	\$267.15	\$2,970.00	\$0.00	\$2,970.00	11.1	1,990

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are interior corridors, parking lots, and parking garages.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. In parking lots and parking garages with significant ambient lighting this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylighting. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.2 ECMs Evaluated But Not Recommended

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

Figure 18 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Install High Efficiency Electric AC	21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Gas Heating (HVAC/Process) Replacement	0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
Install High Efficiency Steam Boilers	0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
TOTALS	21,905	22.6	8.7	\$3,052.09	\$369,373.11	\$8,377.00	\$360,996.11	118.3	23,081

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)	Estimated Net Cost (\$)	Simple Payback Period (yrs)	CO ₂ e Emissions Reduction (lbs)
21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058

Measure Description

Typically we recommend replacing standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Reasons for not Recommending

We assessed the AC units to be at the end of their life. We evaluated recommending replacement of the AC units, but the measure did not make economic sense on the basis of energy savings alone. The projected measure simple payback exceeds the expected useful life of the replacement equipment. We have included a rough estimate of project cost to assist the District with capital planning needs.

Install High Efficiency Steam Boilers

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 ₂ e Emissions Reduction (lbs)
0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023

Measure Description

Typically we recommend replacing older inefficient steam boilers with high efficiency steam boilers. Significant improvements have been made in combustion technology resulting in increases in overall boiler efficiency. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

Reasons for not Recommending

We assessed the boilers to be at the end of their life. We evaluated recommending replacement of the boilers, but the measure did not make economic sense on the basis of energy savings alone. The projected measure simple payback exceeds the expected useful life of the replacement equipment. We have included a rough estimate of project cost to assist the District with capital planning needs.

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

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

Close Doors and Windows

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

Perform Proper Lighting Maintenance

In order to sustain optimal lighting levels, lighting fixtures should undergo routine maintenance. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust on lamps, fixtures and reflective surfaces. Together, these factors can reduce total illumination by 20%-60% or more, while operating fixtures continue drawing full power. To limit this reduction, lamps, reflectors and diffusers should be thoroughly cleaned of dirt, dust, oil, and smoke film buildup approximately every 6–12 months.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

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.

Clean Evaporator/Condenser Coils on AC Systems

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

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.

Repair/Replace Steam Traps

Properly functioning steam traps ensure that all latent heat in the steam is delivered to the end use by preventing pressurized steam from leaking. Steam traps should be inspected as part of the regular steam system maintenance. Traps that are blocked, venting, or allowing steam to leak through should be repaired or replaced. Repairing or replacing existing steam traps will reduce steam losses.

Perform Proper Boiler Maintenance

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

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 gallons per minute (gpm) for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

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

6 ON-SITE GENERATION MEASURES

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

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

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

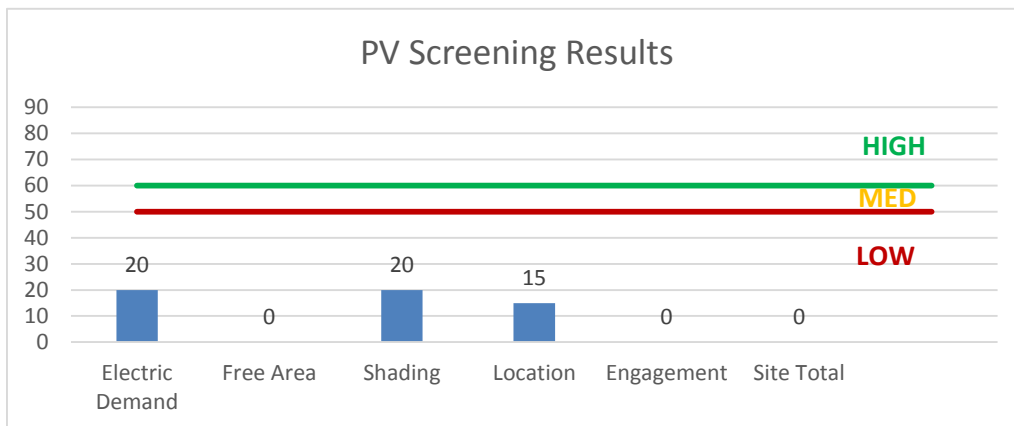
6.1 Photovoltaic

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

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

In order to be cost-effective, a solar PV array needs certain minimum criteria, such as flat or south-facing rooftop or other unshaded space on which to place the PV panels. It appears the available space combined with shading could be issues restricting further expansion of the existing solar system. If the AP Morris Early Childhood Center is interested in pursuing the installation of additional PV, we recommended a full feasibility study be conducted.

Figure 19 - Photovoltaic Screening



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

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

6.2 Combined Heat and Power

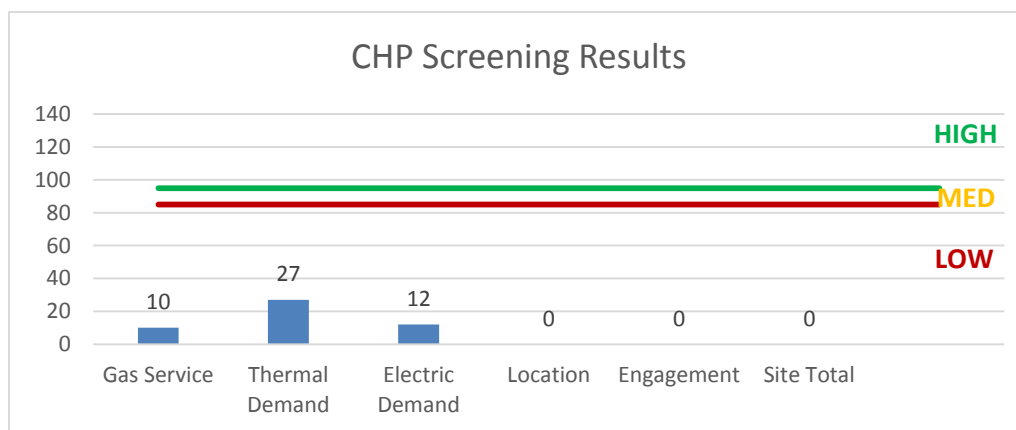
Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric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

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

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a Low potential for installing a cost-effective CHP system.

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

Figure 20 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

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

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

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

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

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

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

8 PROJECT FUNDING / INCENTIVES

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

Figure 21 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	x		x			
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x		x			
ECM 3	Retrofit Fixtures with LED Lamps	x		x			
ECM 4	Install LED Exit Signs						

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

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

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers

Electric Unitary HVAC

Gas Cooling

Gas Heating

Gas Water Heating

Ground Source Heat Pumps

Lighting

Lighting Controls

Refrigeration Doors

Refrigeration Controls

Refrigerator/Freezer Motors

Food Service Equipment

Variable Frequency Drives

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

Incentives

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

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

How to Participate

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

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

8.2 Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures, up to \$125,000 per project. Each entity is limited to incentives up to \$250,000 per fiscal year.

How to Participate

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

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

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 description and application can be found at: www.njcleanenergy.com/ESIP.

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
Main Floor_Old Boiler Room	2	Incandescent A Lamp (60 W)	Wall Switch	60	2,190	Relamp	No	2	LED Screw-In Lamps: A type lamp	Wall Switch	10	2,190	0.06	221	0.0	\$29.90	\$107.51	\$10.00	3.26
Main Floor_Old Boiler Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Main Floor_New Boiler Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Main Floor_New Boiler Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.09	332	0.0	\$44.94	\$234.00	\$40.00	4.32
Main Floor_Mech Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.09	332	0.0	\$44.94	\$234.00	\$40.00	4.32
Janitor Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.08	315	0.0	\$42.60	\$445.50	\$65.00	8.93
Above Gym	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.27	1,050	0.0	\$141.98	\$1,395.00	\$205.00	8.38
Above Gym	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
Under Gym-Storage	1	Incandescent A Lamp (60 W)	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	10	300	0.03	17	0.0	\$2.36	\$53.75	\$5.00	20.70
Under Gym	2	Incandescent A Lamp (60 W)	Wall Switch	60	2,190	Relamp	No	2	LED Screw-In Lamps: A type lamp	Wall Switch	10	2,190	0.07	254	0.0	\$34.39	\$107.51	\$10.00	2.84
Gym Stairwell	1	Compact Fluorescent: screw-in , 1 Lamp,	Wall Switch	18	2,190	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	13	2,190	0.00	14	0.0	\$1.84	\$53.75	\$0.00	29.24
Gym Stairwell	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Gym-Storage	1	Compact Fluorescent: screw-in , 1 Lamp,	Wall Switch	18	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	13	300	0.00	2	0.0	\$0.25	\$53.75	\$0.00	213.42
Gym-Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.02	83	0.0	\$11.24	\$58.50	\$10.00	4.32
Gym-Storage	1	Compact Fluorescent: screw-in , 1 Lamp,	Wall Switch	23	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	16	300	0.00	2	0.0	\$0.32	\$53.75	\$0.00	167.02
Gym-Stairwell 2	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
Gym-Stairwell 2	1	Incandescent A Lamp (60 W)	Wall Switch	60	2,190	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	10	2,190	0.03	127	0.0	\$17.19	\$53.75	\$5.00	2.84
Under Gym Storage 2	2	Incandescent A Lamp (60 W)	Wall Switch	60	300	Relamp	No	2	LED Screw-In Lamps: A type lamp	Wall Switch	10	300	0.07	35	0.0	\$4.71	\$107.51	\$10.00	20.70
Under Gym Storage 2	1	Compact Fluorescent: screw-in , 1 Lamp,	Wall Switch	13	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	9	300	0.00	1	0.0	\$0.18	\$53.75	\$0.00	295.50
Gym	16	Linear Fluorescent - T5: 4' T5 (28W) - 4L	Occupancy Sensor	120	2,190	Relamp	No	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,190	0.65	2,498	0.0	\$337.77	\$1,522.13	\$320.00	3.56
Gym	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
New Section_CR 104	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,190	Relamp	Yes	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,533	0.41	1,575	0.0	\$212.98	\$1,562.00	\$255.00	6.14
New Section_CR 104-Storage Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 104-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 104	3	Compact Fluorescent: pin based	Occupancy Sensor	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Occupancy Sensor	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section_Speech Therapy	5	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	Yes	5	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,533	0.12	443	0.0	\$59.84	\$578.50	\$110.00	7.83
New Section_Main Office	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	Yes	9	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,533	0.21	797	0.0	\$107.71	\$1,095.30	\$205.00	8.27
New Section_Main Office-Conf.Room	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	1,533	0.09	354	0.0	\$47.87	\$516.80	\$95.00	8.81
New Section_Principals Office	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,533	0.15	588	0.0	\$79.47	\$919.20	\$70.00	10.69
New Section_Nurse's Office	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,533	0.10	392	0.0	\$52.98	\$522.80	\$35.00	9.21
New Section_Nurse's Office -Storage	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	300	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	300	0.01	6	0.0	\$0.75	\$48.20	\$10.00	51.19
New Section_Main Office-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_Foyer/Security Desk	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
New Section_Foyer/Security Desk	9	Compact Fluorescent: pin based	Wall Switch	13	2,190	Relamp	No	9	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	9	2,190	0.02	88	0.0	\$11.95	\$483.78	\$0.00	40.48
New Section_165 Pre-K	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_165 Pre-K-StorageCloset	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_165 Pre-K-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_165 Pre-K	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_Rm 117-Kindergarten	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_Rm 117-Kindergarten-StorageCloset	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	300	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	300	0.03	17	0.0	\$2.31	\$75.20	\$15.00	26.07
New Section_Rm 117-Kindergarten-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_Rm 117-Kindergarten	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 168	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 168-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 168-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 168	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 171	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 171-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 171-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 171	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section_CR 126	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.29	1,122	0.0	\$151.69	\$676.80	\$135.00	3.57
New Section_CR 126-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 126-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 126	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 132	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 132-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 132-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 132-bump out	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 129	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.29	1,122	0.0	\$151.69	\$676.80	\$135.00	3.57
New Section_CR 129-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 129-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 129	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 135	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 135-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 135-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 135	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 135	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
New Section_CR 178	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 178	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 178-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 178-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 178	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
New Section_CR 141	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 141-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 141-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section_CR 141	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 144	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 144-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 144-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 144	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 147	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.29	1,122	0.0	\$151.69	\$676.80	\$135.00	3.57
New Section_CR 147-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 147-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 147	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 150	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.29	1,122	0.0	\$151.69	\$676.80	\$135.00	3.57
New Section_CR 150-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 150-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 150	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 174	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 174-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 174-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 174	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 177	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 177-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 177-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 177	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 153	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 153-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 153-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 153	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section_CR 156	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 156-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 156-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 156	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 162	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 162-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 162-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 162	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 159	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 159-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 159-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 159	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 101	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 101-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 101-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 101	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 114	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 114-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 114-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 114	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 120	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57
New Section_CR 120-Closet	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 120-RR	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 120	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
New Section_CR 123	10	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	2,190	Relamp	No	10	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,190	0.32	1,247	0.0	\$168.54	\$752.00	\$150.00	3.57

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section_CR 123-Closet	1	Linear Fluorescent - T8: 2 T8 (17W) - 3L	Wall Switch	53	300	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	300	0.02	9	0.0	\$1.28	\$61.70	\$15.00	36.41
New Section_CR 123-RR	1	Linear Fluorescent - T8: 2 T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,190	0.02	69	0.0	\$9.36	\$61.70	\$15.00	4.99
New Section_CR 123	3	Compact Fluorescent: pin based	Wall Switch	32	2,190	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	22	2,190	0.02	73	0.0	\$9.81	\$161.26	\$0.00	16.44
1stFlr_CR 1	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 2	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 3	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 4	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_Balcony Storage	3	Compact Fluorescent: pin based, 2 Lamp	Wall Switch	46	300	Relamp	No	3	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	32	300	0.03	14	0.0	\$1.93	\$161.26	\$0.00	83.51
1stFlr_Teachers Lounge (Rm5)	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_Boy RR (Gym)	3	Linear Fluorescent - T8: 2 T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.03	121	0.0	\$16.34	\$144.60	\$30.00	7.01
1stFlr_CR 6	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 11	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 7	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 10	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 8	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_CR 9	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	2,190	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,190	0.48	1,828	0.0	\$247.20	\$1,287.00	\$220.00	4.32
1stFlr_Room 9A	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.22	840	0.0	\$113.59	\$1,008.00	\$150.00	7.55
1stFlr_StorageCloset	1	Incandescent: A Lamp (60 W)	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	10	300	0.03	17	0.0	\$2.36	\$53.75	\$5.00	20.70
1stFlr_Girls RR	3	Linear Fluorescent - T8: 2 T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.03	121	0.0	\$16.34	\$144.60	\$30.00	7.01
1stFlr_Hall	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
1stFlr_Hall	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.38	1,470	0.0	\$198.78	\$1,899.00	\$280.00	8.14
2ndFlr_CR 12	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFlr_CR 13	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFlr_CR 14	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFlr_CR 15	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
2ndFIR_CR 16	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFIR_Boys RR	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.03	121	0.0	\$16.34	\$144.60	\$30.00	7.01
2ndFIR_CR 17	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFIR_Rooms 18-19 (library)	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	1.20	4,621	0.0	\$624.73	\$6,354.00	\$930.00	8.68
2ndFIR_Custodial Closet	1	Incandescent A Lamp (60 W)	Wall Switch	60	300	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	10	300	0.03	17	0.0	\$2.36	\$53.75	\$5.00	20.70
2ndFIR_Girls RR	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.03	121	0.0	\$16.34	\$144.60	\$30.00	7.01
2ndFIR_Nurses Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.14	525	0.0	\$70.99	\$562.50	\$85.00	6.73
2ndFIR_Nurses Office-RR	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,190	0.02	73	0.0	\$9.87	\$63.20	\$0.00	6.40
2ndFIR_CR 20	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFIR_CR 21	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.30	1,155	0.0	\$156.18	\$1,453.50	\$215.00	7.93
2ndFIR_CR 22	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	25	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.68	2,626	0.0	\$354.96	\$3,622.50	\$530.00	8.71
2ndFIR_Hall	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.60	2,310	0.0	\$312.37	\$3,177.00	\$465.00	8.68
2ndFIR_Hall	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
2ndFIR_Hall	1	Exit Signs: Fluorescent	None	22	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	161	0.0	\$21.79	\$107.56	\$0.00	4.94
Stairwell B	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.11	420	0.0	\$66.79	\$504.00	\$75.00	7.55
Stairwell A	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.16	630	0.0	\$85.19	\$891.00	\$130.00	8.93
Stairwell A-TopFIRRoom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.02	83	0.0	\$11.24	\$58.50	\$10.00	4.32
1stFIR_CR 1A	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.22	840	0.0	\$113.59	\$1,008.00	\$150.00	7.55
1stFIR_Therapy Room	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.49	1,890	0.0	\$255.57	\$2,673.00	\$390.00	8.93
1stFIR_Girls RR	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,533	0.08	294	0.0	\$39.74	\$459.60	\$35.00	10.69
1stFIR_New Section Hallway	50	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	53	2,190	Relamp	Yes	50	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	1,533	1.15	4,426	0.0	\$598.41	\$5,245.00	\$750.00	7.51
New Section Hallway-side vestibule	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.02	81	0.0	\$10.90	\$96.40	\$20.00	7.01
New Section Hallway-side vestibule	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
New Section Hallway	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	2,190	0.02	73	0.0	\$9.87	\$63.20	\$0.00	6.40
New Section Hallway	33	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	33	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
New Section Hallway	54	Compact Fluorescent: pin based	Wall Switch	42	2,190	Relamp	Yes	54	LED Screw-In Lamps: CFL Pin-Based Replacement	High/Low Control	29	1,533	0.76	2,913	0.0	\$393.84	\$5,062.66	\$0.00	12.85
Gym Hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	2,190	Relamp	Yes	10	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	1,533	0.14	550	0.0	\$74.40	\$899.00	\$50.00	11.41
Gym Hallway	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Gym Hallway	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,190	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,533	0.08	315	0.0	\$42.60	\$150.40	\$30.00	2.83
Gym Hallway	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	2,190	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,190	0.01	40	0.0	\$5.45	\$48.20	\$10.00	7.01
Gym Hallway	32	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	32	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.87	3,361	0.0	\$454.35	\$4,572.00	\$670.00	8.59
Stainwell C	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.16	630	0.0	\$85.19	\$891.00	\$130.00	8.93
1stFir_Boys RR	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,190	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,533	0.08	315	0.0	\$42.60	\$150.40	\$30.00	2.83
1stFir_Boys RR-Bathroom Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.02	83	0.0	\$11.24	\$58.50	\$10.00	4.32
1stFir_Hallway	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.27	1,050	0.0	\$141.98	\$1,395.00	\$205.00	8.38
1stFir_Hallway	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
OldSection_StorageRoom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	300	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	300	0.02	11	0.0	\$1.49	\$96.40	\$20.00	51.19
OldSection_VP Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.16	630	0.0	\$85.19	\$891.00	\$130.00	8.93
OldSection_VP Office-Storage	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	300	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	300	0.02	11	0.0	\$1.49	\$96.40	\$20.00	51.19
OldSection_Main Office (3 rooms)	18	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	18	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.49	1,890	0.0	\$255.57	\$2,673.00	\$390.00	8.93
OldSection_Main Office (3 rooms)-Storage	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	300	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	300	0.01	6	0.0	\$0.75	\$48.20	\$10.00	51.19
OldSection_Main Office (3 rooms)-BackStorage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	300	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	210	0.08	43	0.0	\$5.83	\$445.50	\$65.00	65.21
OldSection_Main Office (3 rooms)-BackStorage	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	300	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	300	0.04	20	0.0	\$2.75	\$117.00	\$10.00	38.88
Auditorium	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,533	0.08	315	0.0	\$42.60	\$445.50	\$65.00	8.93
Auditorium	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Auditorium	6	Metal Halide: (1) 400W Lamp	Wall Switch	458	2,190	Fixture Replacement	Yes	6	LED - Fixtures: Ceiling Mount	Occupancy Sensor	137	1,533	1.42	5,467	0.0	\$739.18	\$2,432.40	\$200.00	3.02
Stage	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	2,190	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.12	446	0.0	\$60.27	\$351.00	\$30.00	5.33
Stage	3	Incandescent A Lamp (60 W)	Wall Switch	60	2,190	Relamp	No	3	LED Screw-In Lamps: A type lamp	Wall Switch	10	2,190	0.10	382	0.0	\$51.58	\$161.26	\$15.00	2.84
Cafeteria	29	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	Yes	29	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,533	1.40	5,361	0.0	\$724.77	\$4,378.87	\$790.00	4.95
Cafeteria	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

Location	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
	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
Kitchen_Walk-Ins	2	Incandescent A Lamp (60 W)	Wall Switch	60	2,190	Relamp	No	2	LED Screw-In Lamps: A type lamp	Wall Switch	10	2,190	0.07	254	0.0	\$34.39	\$107.51	\$10.00	2.84
Kitchen_Walk-In Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Walk-In Area	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	2,190	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,533	0.08	315	0.0	\$42.60	\$150.40	\$30.00	2.83
Kitchen_Walk-In Area	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
Kitchen_Walk-In Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.02	83	0.0	\$11.24	\$58.50	\$10.00	4.32
Kitchen_Serving Area	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	2,190	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,190	0.04	166	0.0	\$22.47	\$117.00	\$20.00	4.32
Kitchen_Serving Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Serving Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Serving Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Dishwash Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Dishwash Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Kitchen_Dishwash Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	2,190	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,190	0.04	141	0.0	\$19.07	\$95.13	\$20.00	3.94
Exterior_Sides of Bldg	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	40	4,380	None	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	40	4,380	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Exterior_Sides of Bldg	1	Incandescent A Lamp (60 W)	Wall Switch	60	4,380	Relamp	No	1	LED Screw-In Lamps: A type lamp	Wall Switch	10	4,380	0.03	254	0.0	\$34.39	\$53.75	\$5.00	1.42
Exterior_Sides of Bldg	2	High-Pressure Sodium: (1) 70W Lamp	Wall Switch	95	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	29	4,380	0.09	670	0.0	\$90.57	\$781.35	\$200.00	6.42
Exterior_CFLs	36	Compact Fluorescent: pin based, 2 Lamp	Wall Switch	26	4,380	Relamp	No	36	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	18	4,380	0.18	1,414	0.0	\$191.22	\$1,935.11	\$0.00	10.12
Exterior_NewSection_MainEntry	18	Compact Fluorescent: pin based, 2 Lamp	Wall Switch	26	4,380	Relamp	No	18	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	18	4,380	0.09	707	0.0	\$95.61	\$967.55	\$0.00	10.12
Exterior_NewSection_Overhang	4	Compact Fluorescent: pin based, 2 Lamp	Wall Switch	26	4,380	Relamp	No	4	LED Screw-In Lamps: CFL Pin-Based Replacement	Wall Switch	18	4,380	0.02	157	0.0	\$21.25	\$215.01	\$0.00	10.12
Exterior_NewSection_Front	1	LED Screw-In Lamps: A type - 9.5W	Wall Switch	10	4,380	None	No	1	LED Screw-In Lamps: A type - 9.5W	Wall Switch	10	4,380	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Motor Inventory & Recommendations

Location	Area(s)/System(s) Served	Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
		Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Restrooms	8	Exhaust Fan	0.3	65.0%	No	2,745	No	65.0%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof	Kitchen	5	Exhaust Fan	1.0	82.5%	No	2,745	No	82.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Boiler Room	Boiler	2	Boiler Feed Water Pump	0.5	70.0%	No	300	No	70.0%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Boiler Room	Boiler	2	Combustion Air Fan	0.5	70.0%	No	400	No	70.0%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Above Gym	Gym	2	Ventilation Fan	3.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Cafeteria	Cafeteria	1	Supply Fan	10.0	89.5%	No	500	No	89.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (#11)	Hallways	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (#8)	Hallways	1	Supply Fan	3.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU1)	CRs 151,153,150	1	Supply Fan	3.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU2)	CRs 162,177,174	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU5)	CRs 150,144,141	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU6)	CRs 138,135,132	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU9)	Hallways	1	Supply Fan	3.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU3)	CRs 126,120,123	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU4)	CRs 117,114,171,168	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU7)	Office, CR 101, Speech Rm	1	Supply Fan	5.0	87.5%	No	500	No	87.5%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Boiler Room	pneumatic controls	2	Air Compressor	2.0	84.0%	No	100	No	84.0%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Boiler Room	condensate return	2	Process Pump	0.8	70.0%	No	2,745	No	70.0%	No		0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Electric HVAC Inventory & Recommendations

Location	Area(s)/System(s) Served	Existing Conditions										Proposed Conditions						Energy Impact & Financial Analysis							
		System Quantity	System Type	Cooling Capacity per Unit (Tons)	Cooling Mode Efficiency (SEER/EER)	Manufacturer	Model Number	Equipment Age (Years)	Annual Cooling EFLH	Total kW	Total Annual kWh	Total Annual MMBtu	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Cooling Mode Efficiency (SEER/EER)	Install Dual Entropy Economizer?	Proposed HVAC Lookup Table	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Combined Payback w/ Incentives in Years
Windows	Classrooms, Offices	29	Window AC	0.90	9.00	various	various	10	650	34.80	22,620	0.0	No				No		0.00	0	0.0	\$0.00	\$0.00	0.00	
Roof (CU 1)	Cafeteria	1	Split-System AC	30.00	9.00	Carrier	38AH_034	20	650	40.00	26,000	0.0	Yes	1	Split-System AC	30.00	9.50	No	ElecHVAC_SAC	1.41	1,368	0.0	\$185.00	\$33,004.50	178.40
Roof (#10)	Hallways	1	Packaged AC	10.00	9.00	Carrier	48HJ012	25	650	13.33	8,667	0.0	Yes	1	Packaged AC	10.00	11.50	No	ElecHVAC_PAC	1.94	1,884	0.0	\$254.72	\$17,821.06	67.10
Roof (#8)	Hallways	1	Packaged AC	6.00	9.00	Carrier	48HJ007	25	650	8.00	5,200	0.0	Yes	1	Packaged AC	6.00	11.50	No	ElecHVAC_PAC	1.17	1,130	0.0	\$152.83	\$10,692.63	67.10
Roof (RTU 1)	CRs 151,153,150	1	Packaged AC	7.00	9.00	Carrier	48TJD016G	19	650	9.33	6,067	0.0	Yes	1	Packaged AC	7.00	11.50	No	ElecHVAC_PAC	1.36	1,319	0.0	\$178.30	\$12,474.74	67.10
Roof (RTU 2)	CRs 162,177,174	1	Packaged AC	10.00	9.00	Carrier	48HJF012	25	650	13.33	8,667	0.0	Yes	1	Packaged AC	10.00	11.50	No	ElecHVAC_PAC	1.94	1,884	0.0	\$254.72	\$17,821.06	67.10
Roof (RTU 5)	CRs 150,144,141	1	Packaged AC	15.00	9.00	Carrier	48TJD016G	19	650	20.00	13,000	0.0	Yes	1	Packaged AC	15.00	11.50	No	ElecHVAC_PAC	2.91	2,826	0.0	\$382.07	\$20,907.75	51.62
Roof (RTU 6)	CRs 138,135,132	1	Packaged AC	15.00	9.00	Carrier	48TJD016G	19	650	20.00	13,000	0.0	Yes	1	Packaged AC	15.00	11.50	No	ElecHVAC_PAC	2.91	2,826	0.0	\$382.07	\$20,907.75	51.62
Roof (RTU 9)	Hallways	1	Packaged AC	6.00	9.00	Carrier	48HJF007	25	650	8.00	5,200	0.0	Yes	1	Packaged AC	6.00	11.50	No	ElecHVAC_PAC	1.17	1,130	0.0	\$152.83	\$10,692.63	67.10
Roof (RTU 3)	CRs 126,120,123	1	Packaged AC	12.50	9.00	International Comfort Products	PGE150L250AA	25	650	16.67	10,833	0.0	Yes	1	Packaged AC	12.50	11.50	No	ElecHVAC_PAC	2.43	2,355	0.0	\$318.40	\$17,423.13	51.62
Roof (RTU 4)	CRs 117,114,171,168	1	Packaged AC	15.00	9.00	Carrier	48TJD016G	19	650	20.00	13,000	0.0	Yes	1	Packaged AC	15.00	11.50	No	ElecHVAC_PAC	2.91	2,826	0.0	\$382.07	\$20,907.75	51.62
Roof (RTU 7)	Office, CR 101, Speech Rm	1	Packaged AC	12.50	9.00	Carrier	48HJE014	19	650	16.67	10,833	0.0	Yes	1	Packaged AC	12.50	11.50	No	ElecHVAC_PAC	2.43	2,355	0.0	\$318.40	\$17,423.13	51.62

Fuel Heating Inventory & Recommendations

Location	Area(s)/System(s) Served	Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
		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	Old section	2	Forced Draft Steam Boiler	4,940.00	Yes	2	Forced Draft Steam Boiler	4,940.00	81.00%	Et	0.00	0	8.7	\$90.68	\$169,296.98	\$0.00	1866.95
Mech. Room	Cafeteria	2	Furnace	400.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Above Gym	Gym	2	Furnace	280.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (#11)_	Hallways	1	Furnace	160.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (#8)_	Hallways	1	Furnace	160.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU1)_	CRs 151,153,150	1	Furnace	96.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU2)_	CRs 162,177,174	1	Furnace	186.30	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU5)_	CRs 150,144,141	1	Furnace	160.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU6)_	CRs 138,135,132	1	Furnace	186.30	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU9)_	Hallways	1	Furnace	96.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU3)_	CRs 126,120,123	1	Furnace	160.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU4)_	CRs 117,114,171,168	1	Furnace	186.30	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Roof (RTU7)_	Office, CR 101, Speech Rm	1	Furnace	160.00	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

DHW Inventory & Recommendations

Location	Area(s)/System(s) Served	Existing Conditions			Proposed Conditions					Energy Impact & Financial Analysis						
		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
Mechanical Rm	Whole Bldg	2	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Mechanical Rm	Kitchen	3	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Reach-In Cooler/Freezer Inventory & Recommendations

Location	Existing Conditions		Proposed Conditions					Energy Impact & Financial Analysis						
	Cooler/Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Energy Efficient Doors?	Install Door Heater Control?	Install Aluminum Night Covers?	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
Kitchen	1	Medium Temp Freezer (0F to 30F)	No	No	No	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Kitchen	3	Medium Temp Freezer (0F to 30F)	No	No	No	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Walk-In Cooler/Freezer Inventory & Recommendations

Location	Existing Conditions		Proposed Conditions			Energy Impact & Financial Analysis						
	Cooler/Freezer Quantity	Case Type/Temperature	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	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
Kitchen	1	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Kitchen	1	Medium Temp Freezer (0F to 30F)	No	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Commercial Refrigerator/Freezer Inventory & Recommendations

Location	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	2	Refrigerator Chest	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Cooking Equipment Inventory & Recommendations

Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis							
Location	Quantity	Equipment Type	High Efficiency Equipment?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	4	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Kitchen	1	Electric Griddle (4 Feet Width)	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00
Kitchen	1	Insulated Food Holding Cabinet (3/4 Size)	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00


Dishwasher Inventory & Recommendations


Existing Conditions						Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Single Tank Conveyor (High Temp)	Natural Gas	N/A	No	No	0.00	0	0.0	\$0.00	\$0.00	\$0.00	0.00

Plug Load Inventory

Existing Conditions				
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
various	44	Projector	250.0	
various	44	Smartboard	250.0	
various	9	Laptops	100.0	
various	1	Photocopier	500.0	
various	2	Refrigerator	500.0	
various	5	microwave	1,000.0	
various	119	desktop PC	300.0	
various	22	desktop printer	50.0	
various	1	LCD TV	250.0	
various	5	mini-fridge	300.0	
various	1	shredder	500.0	

Appendix B: ENERGY STAR® Statement of Energy Performance


ENERGY STAR® Statement of Energy Performance



ENERGY STAR®
Score¹

A.P. Morris Early Childhood Center

Primary Property Type: K-12 School
Gross Floor Area (ft²): 131,861
Built: 1917

For Year Ending: July 31, 2017
Date Generated: April 02, 2018

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

Property & Contact Information

Property Address A.P. Morris Early Childhood Center 143 Coe Avenue Hillside, New Jersey 07205	Property Owner Hillside Board of Education 195 Virginia Street Hillside, NJ 07205 908-352-7664	Primary Contact Darice Gonzalez 195 Virginia Street Hillside, NJ 07205 908-352-7664 ext 6429 dgonzalez@hillsidek12.org
Property ID: 6276918		

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
33.3 kBtu/ft²	Electric - Grid (kBtu) 1,131,205 (26%)	National Median Site EUI (kBtu/ft²) 60.1
	Natural Gas (kBtu) 2,731,629 (62%)	National Median Source EUI (kBtu/ft²) 95.1
	Electric - Solar (kBtu) 532,791 (12%)	% Diff from National Median Source EUI -44%
Source EUI		Annual Emissions
52.7 kBtu/ft²		Greenhouse Gas Emissions (Metric Tons CO2e/year) 271

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)