Local Government Energy Audit:
Energy Audit Report

Vehicle Base Facility

261 Grove Street

Bloomfield, NJ 07003

NJ Transit

August 23, 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 saving are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Vehicle Base Facility.

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.

1.1 Facility Summary

Vehicle Base Facility is a 95,740 square foot facility constructed in 2000. The building is a two story commercial facility including but not limited to private offices, shop floors, hallways, and locker/rest room areas.

Lighting at the facility consists mainly of fluorescent T8 and T12 linear lamp fixtures. All the linear fluorescent fixtures have 4-foot lamps. In addition to the fluorescent fixtures, the facility also has a few compact fluorescent and incandescent fixtures. Shop areas are mainly illuminated by HID sources including metal halide and high pressure sodium lamps. All the exit signs are LED fixtures. Interior lighting control is primarily provided by a combination of manual switches and occupancy sensors. Exterior lighting is provided by a combination of 250-Watt high pressure sodium fixtures, 50-Watt LED fixtures, and 100-Watt pole fixtures. Exterior fixture control is provided by photocells.

Heating, ventilation, and cooling is provided by a variety of gas fired heating ventilating (HV) units and package air conditioning (AC). A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 13 measures and recommended 11 measures which together represent an opportunity for Vehicle Base Facility to reduce annual energy costs by roughly $111,714 and annual greenhouse gas emissions by 853,419 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 2.7 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 Vehicle Base Facility's annual energy use by 44%.

Figure 1 – Previous 12 Month Utility Costs

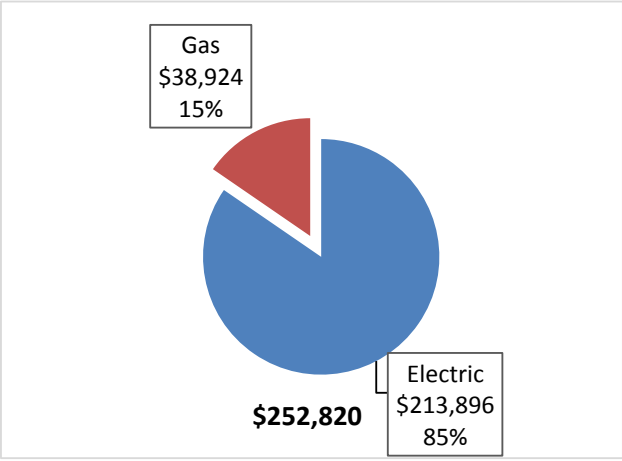
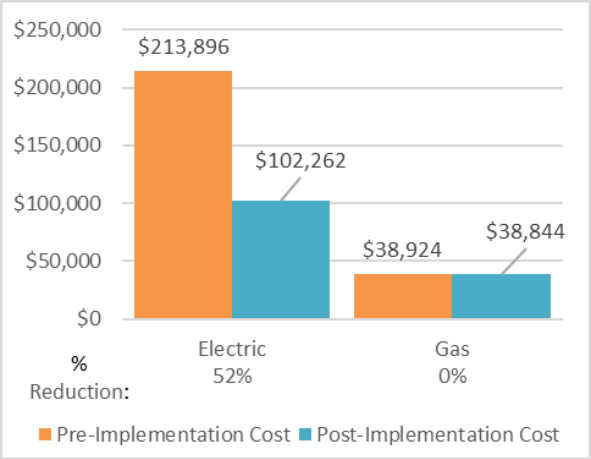


Figure 2 – Potential Post-Implementation Costs



A detailed description of Vehicle Base Facility'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 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**636,463**	**65.2**	**0.0**	**0.0**	**$84,053.23**	**$246,150.79**	**$25,695.00**	**$220,455.79**	**2.6**	**640,913**
ECM 1	Install LED Fixtures	Yes	369,054	41.2	0.0	0.0	$48,738.42	$186,682.66	$16,450.00	$170,232.66	3.5	371,634
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	102,920	7.4	0.0	0.0	$13,591.92	$15,536.00	$1,920.00	$13,616.00	1.0	103,639
ECM 3	Retrofit Fixtures with LED Lamps	Yes	164,489	16.6	0.0	0.0	$21,722.90	$43,932.12	$7,325.00	$36,607.12	1.7	165,639
Lighting Control Measures			**2,187**	**0.4**	**0.0**	**0.0**	**$288.80**	**$2,160.00**	**$280.00**	**$1,880.00**	**6.5**	**2,202**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,013	0.4	0.0	0.0	$265.86	$1,890.00	$245.00	$1,645.00	6.2	2,027
ECM 5	Install Daylight Dimming Controls	Yes	174	0.1	0.0	0.0	$22.94	$270.00	$35.00	$235.00	10.2	175
Motor Upgrades			**22,209**	**4.9**	**0.0**	**0.0**	**$2,932.95**	**$23,429.88**	**$0.00**	**$23,429.88**	**8.0**	**22,364**
ECM 6	Premium Efficiency Motors	Yes	22,209	4.9	0.0	0.0	$2,932.95	$23,429.88	$0.00	$23,429.88	8.0	22,364
Variable Frequency Drive (VFD) Measures			**161,245**	**44.3**	**0.0**	**0.0**	**$21,294.56**	**$66,854.78**	**$12,800.00**	**$54,054.78**	**2.5**	**162,373**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	154,450	43.5	0.0	0.0	$20,397.12	$58,496.20	$12,800.00	$45,696.20	2.2	155,530
ECM 8	Install VFDs on Hot Water Pumps	Yes	6,795	0.9	0.0	0.0	$897.43	$8,358.58	$0.00	$8,358.58	9.3	6,843
Electric Unitary HVAC Measures			**17,638**	**11.5**	**0.0**	**0.0**	**$2,329.35**	**$135,360.84**	**$1,460.00**	**$133,900.84**	**57.5**	**17,761**
	Install High Efficiency Electric AC	No	17,638	11.5	0.0	0.0	$2,329.35	$135,360.84	$1,460.00	$133,900.84	57.5	17,761
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**35.8**	**35.8**	**$153.86**	**$149,611.70**	**$0.00**	**$149,611.70**	**972.4**	**4,190**
	Install High Efficiency Unit Heaters	No	0	0.0	35.8	35.8	$153.86	$149,611.70	$0.00	$149,611.70	972.4	4,190
HVAC System Improvements			**21,247**	**4.8**	**0.0**	**0.0**	**$2,805.92**	**$4,000.00**	**$750.00**	**$3,250.00**	**1.2**	**21,395**
ECM 9	Install Dual Enthalpy Outside Economizer Control	Yes	21,247	4.8	0.0	0.0	$2,805.92	$4,000.00	$750.00	$3,250.00	1.2	21,395
Domestic Water Heating Upgrade			**0**	**0.0**	**18.8**	**18.8**	**$80.91**	**$585.99**	**$0.00**	**$585.99**	**7.2**	**2,203**
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	18.8	18.8	$80.91	$585.99	$0.00	$585.99	7.2	2,203
Plug Load Equipment Control - Vending Machine			**1,954**	**0.0**	**0.0**	**0.0**	**$258.10**	**$460.00**	**$0.00**	**$460.00**	**1.8**	**1,968**
ECM 11	Vending Machine Control	Yes	1,954	0.0	0.0	0.0	$258.10	$460.00	$0.00	$460.00	1.8	1,968
TOTALS			**862,943**	**131.2**	**54.6**	**54.6**	**$114,197.68**	**$628,613.97**	**$40,985.00**	**$587,628.97**	**5.1**	**875,370**
TOTALS (Recommended Only Measures)			**845,305**	**119.7**	**18.8**	**18.8**	**$111,714.48**	**$343,641.44**	**$39,525.00**	**$304,116.44**	**2.7**	**853,419**

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

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

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

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

Motor Upgrades generally involve replacing older standard efficiency motors with high efficiency standard (NEMA Premium). Motors replacements generally assume the same size motors, just higher efficiency. Although occasionally additional savings can be achieved by downsizing motors to better meet current load requirements. This measure saves energy by reducing the power used by the motors, due to improved electrical efficiency.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates, or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

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.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand during periods of reduced demand. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperature conditions. These measures save energy by reducing the demand on HVAC systems and the amount of time systems operate.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into an electric outlets when not in use.

Energy Efficient Practices

TRC also identified 10 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 Vehicle Base Facility include:

- Close Doors and Windows
- Ensure Lighting Controls Are Operating Properly
- Turn Off Unneeded Motors
- Install Destratification Fans
- Ensure Economizers are Functioning Properly
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Maintenance on Compressed Air Systems
- 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 Vehicle Base Facility. Based on the configuration of the site and its loads there is a high potential for installing a photovoltaic (PV) array and moderate potential for installing a combined heat and power system.

Figure 4 – Photovoltaic Potential

Potential	High	
System Potential	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	$11,090	/yr
Installed Cost	$445,100	

Figure 5 – Combined Heat and Power Potential

Potential	Medium	
System Type	Fuel Cell	
System Potential	20	kW
Electric Generation	120,394	kWh/yr
Thermal Generation	2,273,322	MBtu/yr
Displaced Cost	$6,138	/yr
Installed Cost	$65,000	

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

1.3 Implementation Planning

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

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

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

- SmartStart
- Pay for Performance - Existing Building (P4P)
- SREC (Solar Renewable Energy Certificate) Registration Program (SRP)
- Combined Heat & Power Program
- 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.

Larger facilities with an interest in a more comprehensive whole building approach to energy conservation should consider participating in the Pay for Performance (P4P) program. Projects eligible for this project program must meet minimum savings requirements. Final incentives are calculated based on actual measured performance achieved at the end of the project. The application process is more involved, and it requires working with a qualified P4P contractor, but the process may result in greater energy savings overall and more lucrative incentives, up to 50% of project's total cost.

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 8.5 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 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 6 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Steven Jenks	Manager, Energy and Sustainability	sjenks@njtransit.com	(973) 491-8589
TRC Energy Services			
Vish Nimbalkar	Auditor	VNaikNimbalkar@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On November 6, 2017, TRC performed an energy audit at Vehicle Base Facility located in Bloomfield, New Jersey. TRC's team met with Rene to review the facility operations and help focus our investigation on specific energy-using systems.

Vehicle Base Facility is a 95,740 square foot facility constructed in 2000. The building is a two story commercial facility including but not limited to private offices, shop floors, hallways, and locker/rest room areas.

2.3 Building Occupancy

The typical schedule is presented in the table below.

Figure 7 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Vehicle Base Facility	Weekday	12: 00 AM to 12:00 AM
Vehicle Base Facility	Weekend	12: 00 AM to 12:00 AM

2.4 Building Envelope

Vehicle Base Facility is a two story building. The construction is of concrete masonry block with concrete finish exterior and double pane tinted windows with fixed frames. The flat roof is constructed of built-up roofing material.

Figure 8 – Building Façade

2.5 On-Site Generation

Vehicle Base Facility does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

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

Lighting System

Lighting is provided mostly by 32-Watt linear fluorescent T8 lamps with electronic ballasts. Most of the fixtures are 2-lamp or 3-lamp, 4-foot long troffers with diffusers. Shop areas are illuminated by HID sources including 250 Watt and 400 Watt metal halide lamps.

Small areas of the building have 24-Watt compact fluorescent, 60-Watt incandescent, and U-bend fluorescent fixtures. All the exit signs are LED fixtures.

Figure 9 - Building Lighting Systems

Linear Fluorescent Fixtures	*Exterior Fixtures*
	

Lighting control at the facility is provided by a combination of occupancy sensors and manual switches. The occupancy sensors are either wall or ceiling mounted depending on the space layout.

Exterior lighting is provided by a combination of 250-Watt high pressure sodium fixtures, 50-Watt LED fixtures, and 100-Watt LED pole fixtures. Exterior fixture control is provided by photocells.

Heating Ventilation and Unit Heater Systems

The facility has several natural gas fired rooftop heating ventilation (HV) units. The HV units operate using 100% outside air and are predominantly used in high bay areas with high outside air ventilation requirements. The gas fired furnaces at VBF have capacities between 112 MBH and 5,670 MBH with operating efficiencies of approximately 80% on average. Maintenance shops are served by natural gas fired warm air unit heaters of capacities 82 MBH and 320 MBH with operating efficiencies of approximately 80% on average.

Figure 10 – Air Side Heating System

Heating Ventilation Unit	*HV Unit Nameplate*
	

Direct Expansion Air Conditioning System (DX)

Selected areas of the facility, including offices and server rooms, are served by a combination of rooftop package units, ductless mini-split heat pumps, and split system AC units. The package units have capacities ranging between 10-ton and 45-ton includes an outside air economizing section. Mechanical cooling is provided to the shop areas.

Figure 11 – Direct Expansion AC System

Rooftop Package Unit	*Package Unit Nameplate*
	

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of one Bradford White gas fired hot water heater with an input rating of 250 kBtu/hr and a nominal efficiency of 84%. The water heater has a 98 gallon storage tank. In addition, the facility also has a Rinnai 199 kBtu/hr tankless water heater.

Figure 12 – Domestic Hot Water System

Domestic Hot Water Heater	*Tankless Water Heater*
	

Building Plug Load

The facility has several types of process equipment used for vehicle maintenance. This includes several process air compressors, dryers, blowers, process pumps, process fans, and water supply pumps. All the process equipment combined contributes significantly to the building load and energy use.

Figure 13 – Process Equipment

Air Compressor	*Air Dryer*
	

2.7 Water-Using Systems

The facility has seven faucet aerators with a flow capacity of 1.5 gallons per minute (gpm) and 2.2 gpm and six showerheads of 2.5 gpm flow capacity each. Significant water use is attributed to cleaning and other process tasks.

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

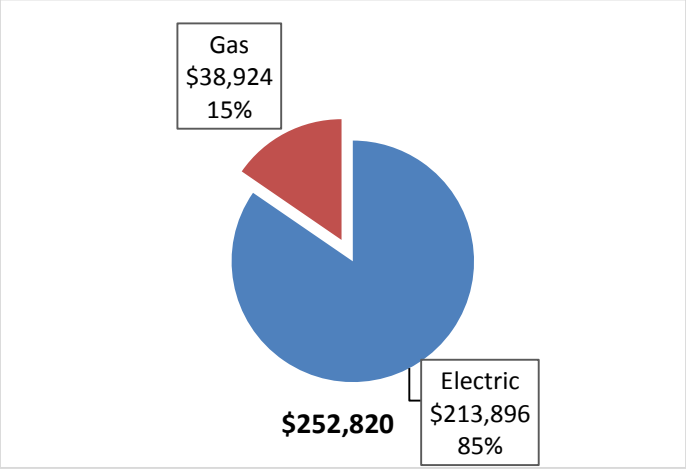
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 14 - Utility Summary

Utility Summary for Vehicle Base Facility		
Fuel	**Usage**	**Cost**
Electricity	1,619,649 kWh	$213,896
Natural Gas	90,533 Therms	$38,924
Total		**$252,820**

The current annual energy cost for this facility is $252,820 as shown in the chart below.

Figure 15 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G. The average electric cost over the past 12 months was $0.132/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 16 - Electric Usage & Demand

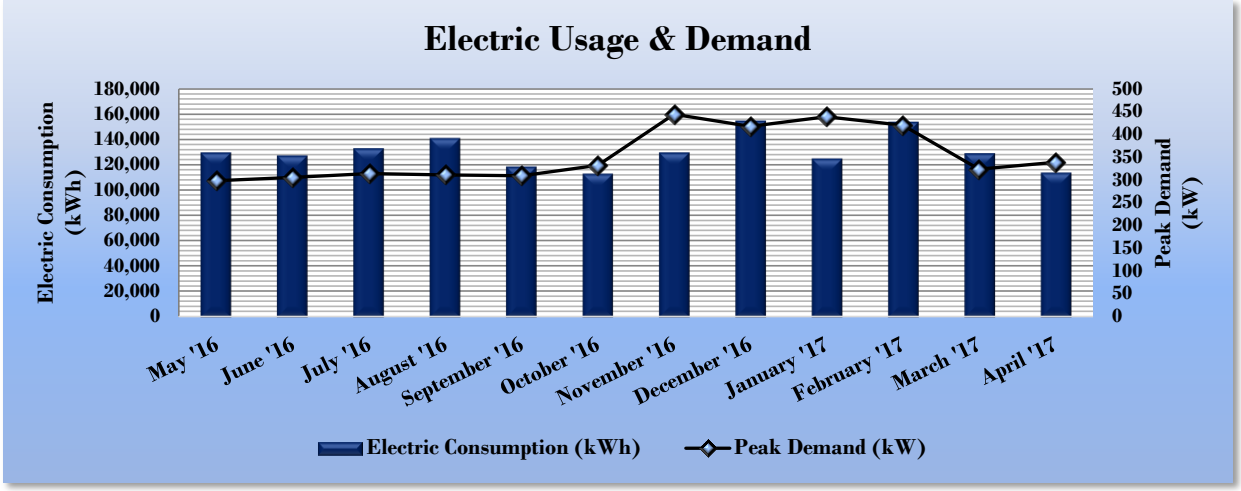


Figure 17 - Electric Usage & Demand

Electric Billing Data for Vehicle Base Facility					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/13/16	31	129,600	299		$17,115
7/13/16	29	127,200	306		$16,798
8/11/16	28	132,800	314		$17,538
9/12/16	31	140,800	311		$18,594
10/11/16	28	118,400	309		$15,636
11/9/16	28	112,800	332		$14,897
12/12/16	32	129,600	444		$17,115
1/12/17	30	154,400	418		$20,391
2/10/17	28	124,800	439		$16,481
3/14/17	31	153,600	420		$20,285
4/12/17	28	128,800	324		$17,010
5/12/17	29	113,600	339		$15,002
Totals	**353**	**1,566,400**	**444.1**	**$0**	**$206,864**
Annual	**365**	**1,619,649**	**444.1**	**$0**	**$213,896**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.430/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 18 - Natural Gas Usage

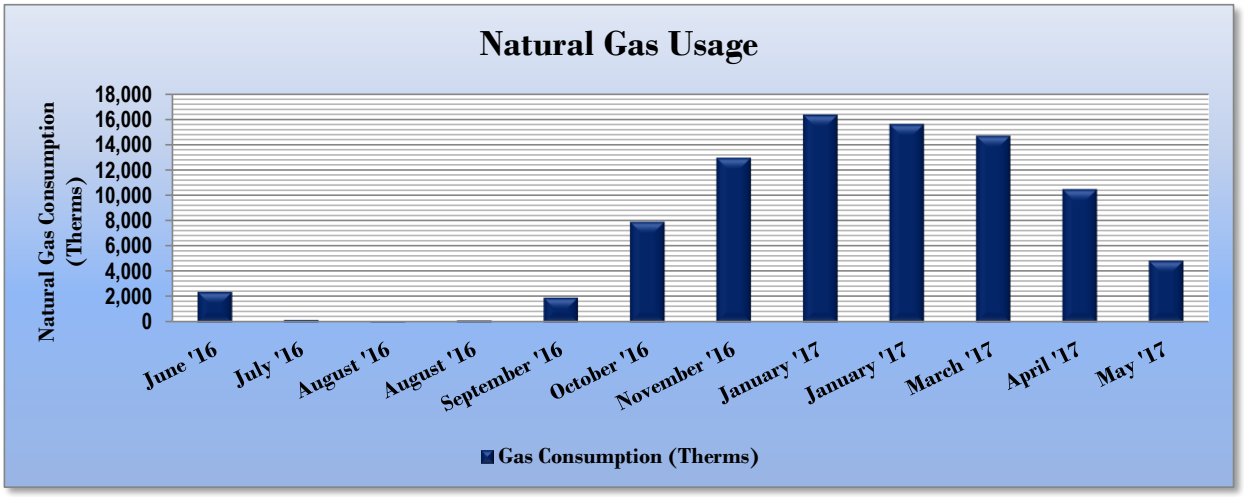


Figure 19 - Natural Gas Usage

Gas Billing Data for Vehicle Base Facility			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/16/16	29	2,395	$622
7/18/16	31	183	$182
8/16/16	28	69	$141
9/15/16	29	144	$150
10/14/16	28	1,953	$574
11/14/16	30	7,910	$4,257
12/15/16	30	12,950	$5,293
1/18/17	33	16,340	$6,490
2/15/17	27	15,596	$6,322
3/17/17	29	14,697	$6,212
4/18/17	31	10,477	$6,110
5/17/17	28	4,843	$1,291
Totals	**353**	**87,557**	**$37,645**
Annual	**365**	**90,533**	**$38,924**

3.4 Benchmarking

The 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.

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. There is no Statement of Energy Performance (SEP) for this property based on the applicant's request. NJ Transit is working with a 3rd party utility manager to update their web-based platform to include dashboard metrics for each individual building account which can track EUIs over time and other key energy metrics.

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 20 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Vehicle Base Facility	National Median Building Type: Garage
Source Energy Use Intensity (kBtu/ft^2)	280.5	123.1
Site Energy Use Intensity (kBtu/ft^2)	152.3	78.8

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

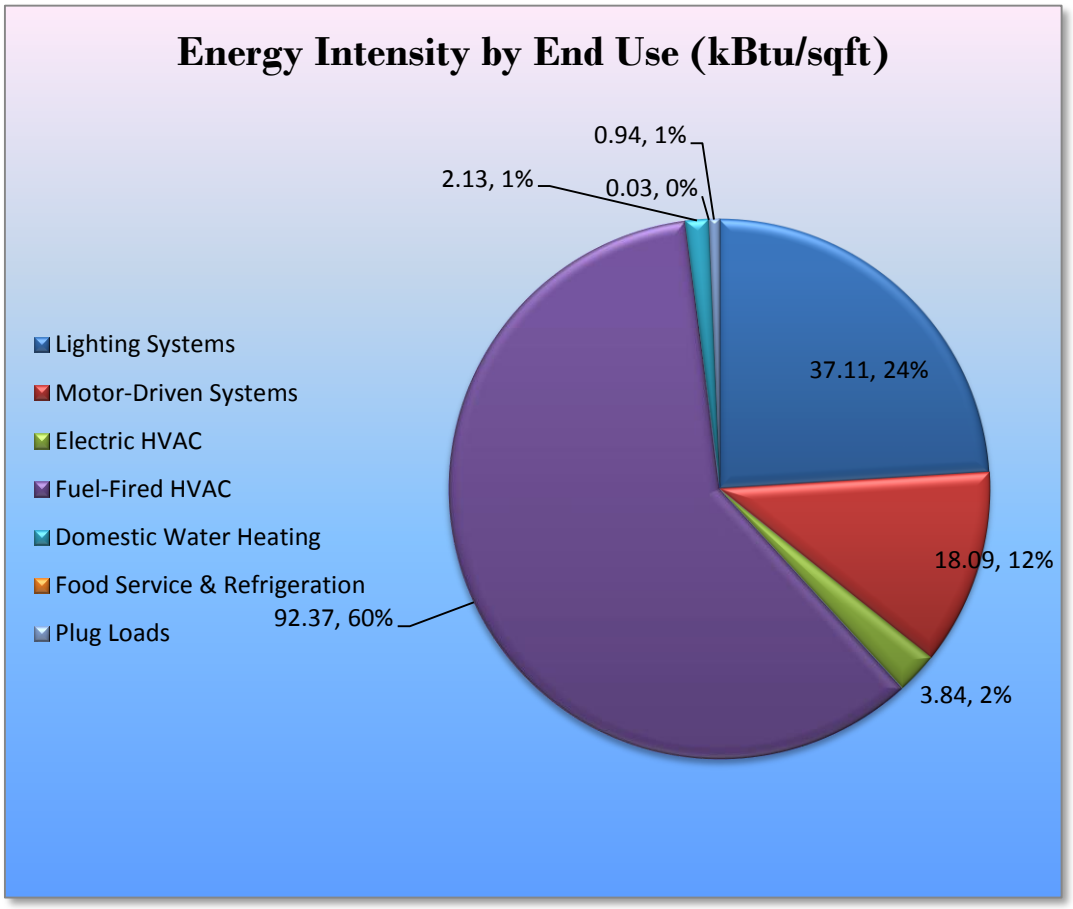
Figure 21 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Vehicle Base Facility	National Median Building Type: Garage
Source Energy Use Intensity (kBtu/ft^2)	185.7	123.1
Site Energy Use Intensity (kBtu/ft^2)	122.0	78.8

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 22 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Vehicle Base Facility 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 23 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**636,463**	**65.2**	**0.0**	**$84,053.23**	**$246,150.79**	**$25,695.00**	**$220,455.79**	**2.6**	**640,913**
ECM 1	Install LED Fixtures	369,054	41.2	0.0	$48,738.42	$186,682.66	$16,450.00	$170,232.66	3.5	371,634
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	102,920	7.4	0.0	$13,591.92	$15,536.00	$1,920.00	$13,616.00	1.0	103,639
ECM 3	Retrofit Fixtures with LED Lamps	164,489	16.6	0.0	$21,722.90	$43,932.12	$7,325.00	$36,607.12	1.7	165,639
Lighting Control Measures		**2,187**	**0.4**	**0.0**	**$288.80**	**$2,160.00**	**$280.00**	**$1,880.00**	**6.5**	**2,202**
ECM 4	Install Occupancy Sensor Lighting Controls	2,013	0.4	0.0	$265.86	$1,890.00	$245.00	$1,645.00	6.2	2,027
ECM 5	Install Daylight Dimming Controls	174	0.1	0.0	$22.94	$270.00	$35.00	$235.00	10.2	175
Motor Upgrades		**22,209**	**4.9**	**0.0**	**$2,932.95**	**$23,429.88**	**$0.00**	**$23,429.88**	**8.0**	**22,364**
ECM 6	Premium Efficiency Motors	22,209	4.9	0.0	$2,932.95	$23,429.88	$0.00	$23,429.88	8.0	22,364
Variable Frequency Drive (VFD) Measures		**161,245**	**44.3**	**0.0**	**$21,294.56**	**$66,854.78**	**$12,800.00**	**$54,054.78**	**2.5**	**162,373**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	154,450	43.5	0.0	$20,397.12	$58,496.20	$12,800.00	$45,696.20	2.2	155,530
ECM 8	Install VFDs on Hot Water Pumps	6,795	0.9	0.0	$897.43	$8,358.58	$0.00	$8,358.58	9.3	6,843
HVAC System Improvements		**21,247**	**4.8**	**0.0**	**$2,805.92**	**$4,000.00**	**$750.00**	**$3,250.00**	**1.2**	**21,395**
ECM 9	Install Dual Enthalpy Outside Economizer Control	21,247	4.8	0.0	$2,805.92	$4,000.00	$750.00	$3,250.00	1.2	21,395
Domestic Water Heating Upgrade		**0**	**0.0**	**18.8**	**$80.91**	**$585.99**	**$0.00**	**$585.99**	**7.2**	**2,203**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	18.8	$80.91	$585.99	$0.00	$585.99	7.2	2,203
Plug Load Equipment Control - Vending Machine		**1,954**	**0.0**	**0.0**	**$258.10**	**$460.00**	**$0.00**	**$460.00**	**1.8**	**1,968**
ECM 11	Vending Machine Control	1,954	0.0	0.0	$258.10	$460.00	$0.00	$460.00	1.8	1,968
TOTALS		**845,305**	**119.7**	**18.8**	**$111,714.48**	**$343,641.44**	**$39,525.00**	**$304,116.44**	**2.7**	**853,419**

* - 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 24 below.

Figure 24 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**636,463**	**65.2**	**0.0**	**$84,053.23**	**$246,150.79**	**$25,695.00**	**$220,455.79**	**2.6**	**640,913**
ECM 1	Install LED Fixtures	369,054	41.2	0.0	$48,738.42	$186,682.66	$16,450.00	$170,232.66	3.5	371,634
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	102,920	7.4	0.0	$13,591.92	$15,536.00	$1,920.00	$13,616.00	1.0	103,639
ECM 3	Retrofit Fixtures with LED Lamps	164,489	16.6	0.0	$21,722.90	$43,932.12	$7,325.00	$36,607.12	1.7	165,639

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	331,974	33.4	0.0	$43,841.54	$164,414.08	$10,750.00	$153,664.08	3.5	334,295
Exterior	37,080	7.8	0.0	$4,896.88	$22,268.59	$5,700.00	$16,568.59	3.4	37,339

Measure Description

We recommend replacing existing shop fixtures containing metal halide and high pressure sodium lamps with new high performance LED light fixtures. Additionally, we recommend replacing remaining exterior HID fixtures with LED sources. 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 a HID lamp.

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_2e Emissions Reduction (lbs)
Interior	102,920	7.4	0.0	$13,591.92	$15,536.00	$1,920.00	$13,616.00	1.0	103,639
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

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

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

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_2e Emissions Reduction (lbs)
Interior	164,489	16.6	0.0	$21,722.90	$43,932.12	$7,325.00	$36,607.12	1.7	165,639
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent, compact fluorescent, T8 linear fluorescent, and U-bend lighting technologies throughout the facility with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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

4.1.2 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure 25 below.

Figure 25 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**2,187**	**0.4**	**0.0**	**$288.80**	**$2,160.00**	**$280.00**	**$1,880.00**	**6.5**	**2,202**
ECM 4	Install Occupancy Sensor Lighting Controls	2,013	0.4	0.0	$265.86	$1,890.00	$245.00	$1,645.00	6.2	2,027
ECM 5	Install Daylight Dimming Controls	174	0.1	0.0	$22.94	$270.00	$35.00	$235.00	10.2	175

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

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,013	0.4	0.0	$265.86	$1,890.00	$245.00	$1,645.00	6.2	2,027

Measure Description

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

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

ECM 5: Install Daylight Dimming Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
174	0.1	0.0	$22.94	$270.00	$35.00	$235.00	10.2	175

Measure Description

We recommend installing daylight dimming controls that use photosensors to reduce electric lighting in areas when ample daylight lighting is present. Photosensor controls are recommended for fixtures that are adjacent to windows that receive lots of sunlight. As sunlight level increase in the room, fixture lighting is decreased or turned off. This measure reduces energy use in spaces where sufficient lighting levels can be met by ambient daylight, and could be considered for the front lobby.

Optimum light levels and the method of dimming should be determined during lighting design. 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.

4.1.3 Motor Upgrades

Our recommendations for motor upgrade measures are summarized in Figure 26 below.

Figure 26 – Summary of Motor Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**22,209**	**4.9**	**0.0**	**$2,932.95**	**$23,429.88**	**$0.00**	**$23,429.88**	**8.0**	**22,364**
ECM 6	Premium Efficiency Motors	22,209	4.9	0.0	$2,932.95	$23,429.88	$0.00	$23,429.88	8.0	22,364

ECM 6: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
22,209	4.9	0.0	$2,932.95	$23,429.88	$0.00	$23,429.88	8.0	22,364

Measure Description

We recommend replacing standard efficiency motors with *NEMA Premium™* efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2016)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours. Two candidate systems for replacement include older motors such as the heating hot water pump motors and the building supply fan motors.

4.1.4 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 27 below.

Figure 27 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**161,245**	**44.3**	**0.0**	**$21,294.56**	**$66,854.78**	**$12,800.00**	**$54,054.78**	**2.5**	**162,373**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	154,450	43.5	0.0	$20,397.12	$58,496.20	$12,800.00	$45,696.20	2.2	155,530
ECM 8	Install VFDs on Hot Water Pumps	6,795	0.9	0.0	$897.43	$8,358.58	$0.00	$8,358.58	9.3	6,843

ECM 7: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
154,450	43.5	0.0	$20,397.12	$58,496.20	$12,800.00	$45,696.20	2.2	155,530

Measure Description

We recommend installing variable frequency drives (VFDs) to control supply fan motor speeds to convert a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. Consideration is given to VFD control of the building supply fans at this facility. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing will have to be determined during the final project design. The control system should be programmed to maintain the minimum air flow whenever the compressor is operating.

ECM 8: Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
6,795	0.9	0.0	$897.43	$8,358.58	$0.00	$8,358.58	9.3	6,843

Measure Description

We recommend installing variable frequency drives (VFD) to control the hot water pumps. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.1.5 HVAC System Upgrades

Our recommendation for HVAC system improvement are summarized in Figure 28 below.

Figure 28 - Summary of HVAC System Improvement ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**21,247**	**4.8**	**0.0**	**$2,805.92**	**$4,000.00**	**$750.00**	**$3,250.00**	**1.2**	**21,395**
ECM 9	Install Dual Enthalpy Outside Economizer Control	21,247	4.8	0.0	$2,805.92	$4,000.00	$750.00	$3,250.00	1.2	21,395

ECM 9: Install Dual-Enthalpy Economizers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
21,247	4.8	0.0	$2,805.92	$4,000.00	$750.00	$3,250.00	1.2	21,395

Measure Description

Dual enthalpy economizers are used to control a ventilation system's outside air intake in order to reduce a facility's total cooling load. A dual-enthalpy economizer monitors the air temperature and humidity of both the outside and return air. The control supplies the lowest energy (temperature and humidity) air to the air handling system. When outside air conditions allow, outside air can be used for cooling instead of running the air handling system's compressor. This reduces the demand on the cooling system, lowering its usage hours and saving energy.

Savings result from using outside air instead of mechanical cooling when outside air conditions permit. The measure pertains to the building package units.

4.1.6 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 29 below.

Figure 29 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**18.8**	**$80.91**	**$585.99**	**$0.00**	**$585.99**	**7.2**	**2,203**
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	18.8	$80.91	$585.99	$0.00	$585.99	7.2	2,203

ECM 10: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	18.8	$80.91	$585.99	$0.00	$585.99	7.2	2,203

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators and low-flow showerheads can reduce hot water usage, relative to standard showerheads and aerators, which saves energy. Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.1.7 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment controls are summarized in Figure 30 below.

Figure 30 - Summary of Plug Load Equipment Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Plug Load Equipment Control - Vending Machine		**1,954**	**0.0**	**0.0**	**$258.10**	**$460.00**	**$0.00**	**$460.00**	**1.8**	**1,968**
ECM 11	Vending Machine Control	1,954	0.0	0.0	$258.10	$460.00	$0.00	$460.00	1.8	1,968

ECM 11: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,954	0.0	0.0	$258.10	$460.00	$0.00	$460.00	1.8	1,968

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

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 31 – Summary of Measures Evaluated, But Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Electric Unitary HVAC Measures	**17,638**	**11.5**	**0.0**	**$2,329.35**	**$135,360.84**	**$1,460.00**	**$133,900.84**	**57.5**	**17,761**
Install High Efficiency Electric AC	17,638	11.5	0.0	$2,329.35	$135,360.84	$1,460.00	$133,900.84	57.5	17,761
Gas Heating (HVAC/Process) Replacement	**0**	**0.0**	**35.8**	**$153.86**	**$149,611.70**	**$0.00**	**$149,611.70**	**972.4**	**4,190**
Install High Efficiency Unit Heaters	0	0.0	35.8	$153.86	$149,611.70	$0.00	$149,611.70	972.4	4,190
TOTALS	**17,638**	**11.5**	**35.8**	**$2,483.20**	**$284,972.53**	**$1,460.00**	**$283,512.53**	**114.2**	**21,951**

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

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

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
17,638	11.5	0.0	$2,329.35	$135,360.84	$1,460.00	$133,900.84	57.5	17,761

Measure Description

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

Reasons for not Recommending

Replacing existing air conditioning units with more efficient units will result in energy savings, however, the cost of installation will outweigh the energy saving advantages resulting in a very long payback. This makes the measure financially not viable therefore not recommended based on energy savings alone.

Install High Efficiency Unit Heaters

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	35.8	$153.86	$149,611.70	$0.00	$149,611.70	972.4	4,190

Measure Description

We evaluated replacing existing standard gas-fired unit heaters with high efficiency gas-fired unit heaters. Improved combustion technology and heat exchanger design optimize the heat recovery from the combustion gases which can significantly improve unit heater efficiency. Savings result from improved system efficiency.

Reasons for not Recommending

Replacing existing unit heaters with more efficient units will result in energy savings, however, the cost of installation will outweigh the energy saving advantages resulting in a very long payback. This makes the measure financially not viable therefore not recommended based on energy savings alone.

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.

Close Doors and Windows

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

Ensure Lighting Controls Are Operating Properly

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

Turn Off Unneeded Motors

Electric motors often run unnecessarily, and this is an overlooked opportunity to save energy. These motors should be identified and turned off when appropriate. For example, exhaust fans often run unnecessarily when ventilation requirements are already met. Reducing run hours for these motors can result in significant energy savings. Whenever possible, use automatic devices such as twist timers or occupancy sensors to ensure that motors are turned off when not needed.

Install Destratification Fans

Allowing air to thermally stratify in spaces with high ceilings results in additional energy consumption by requiring the heating system to heat a volume of space much larger than the actual occupied space. Additional inefficiencies also occur because there are higher temperatures at the ceiling level than at the floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, requiring additional energy consumption by the heating equipment in order to compensate for the accelerated heat transfer.

Destratification fans are specially designed to deliver a columnar, laminar flow of air balancing the air temperature from floor to ceiling. In addition to fuel savings, the use of destratification fans will reduce the recovery time necessary to warm the space after nightly temperature setbacks and will increase the comfort level of the occupants.

Ensure Economizers are Functioning Properly

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

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.

Perform Maintenance on Compressed Air Systems

Like all electro-mechanical equipment, compressed air systems require periodic maintenance to operate at peak efficiency. A maintenance plan should be developed for process related compressed air systems to include inspection, cleaning, and replacement of inlet filter cartridges, cleaning of drain traps, daily inspection of lubricant levels to reduce unwanted friction, inspection of belt condition and tension, checking for system leaks and adjustment of loose connections, and overall system cleaning. Contact a qualified technician for help with setting up periodic maintenance schedule.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Water Conservation

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

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

Refer to Section 4.1.6 for any low-flow ECM recommendations.

6 On-Site Generation Measures

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

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

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

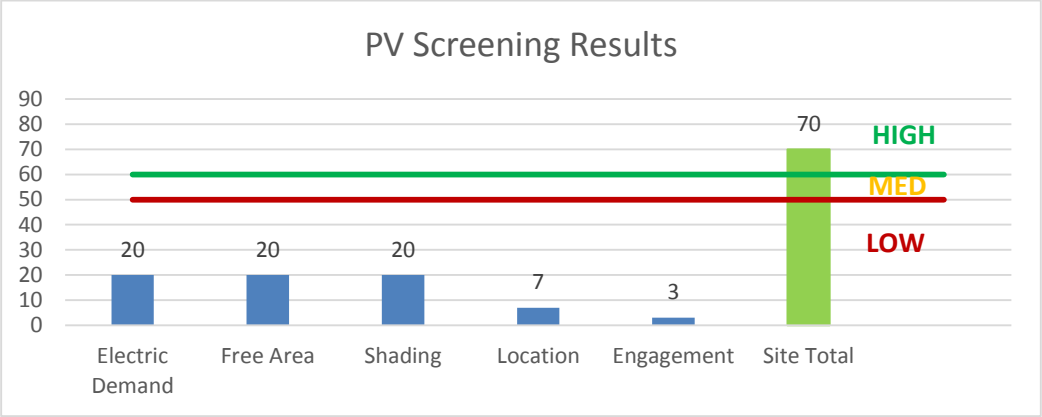
6.1 Photovoltaic

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

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 High potential for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **high** potential for PV at the site. A PV array located on the roof of the building, ground, and parking lot may be feasible. If Vehicle Base Facility is interested in pursuing the installation of PV, we recommended a full feasibility study be conducted.

Figure 32 - Photovoltaic Screening



Solar projects must register their projects in the SREC (Solar Renewable Energy Certificate) Registration Program (SRP) prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.4 for additional information.

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

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

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.

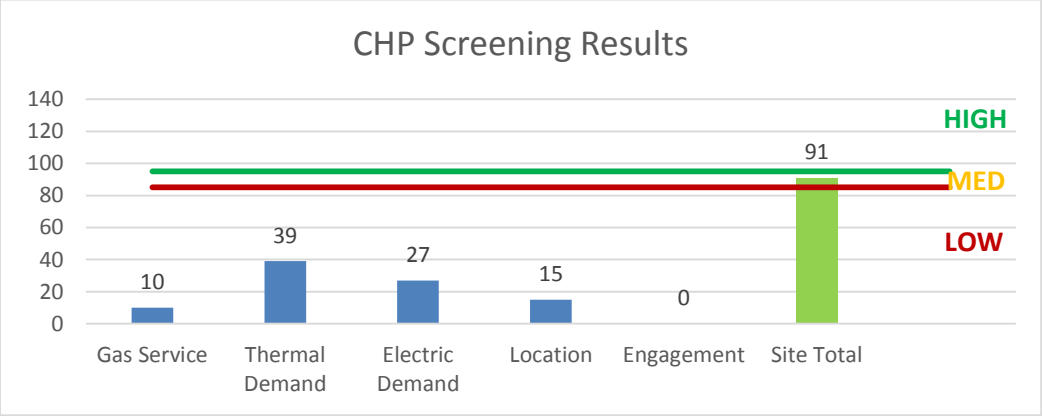
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste 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 **medium** potential for installing a cost-effective CHP system.

The magnitude, type, and duration of the thermal demand, the coincident electric load, and the ease of interconnection contribute to the potential for CHP at the site. Based on the amount of hot water used throughout the year and the concurrent electric demand a gas turbine may be feasible. If Vehicle Base Facility is interested in pursuing the installation of CHP, we recommended a more detailed feasibility study be conducted.

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 33 - Combined Heat and Power Screening



Please see Section 8.3 for additional information in the Combined Heat & Power Program.

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.

This facility is not a good candidate for DR curtailment.

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 34 for a list of the eligible programs identified for each recommended ECM.

Figure 34 - 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 Occupancy Sensor Lighting Controls	X			X		
ECM 5	Install Daylight Dimming Controls	X			X		
ECM 6	Premium Efficiency Motors				X		
ECM 7	Install VFDs on Constant Volume (CV) HVAC	X			X		
ECM 8	Install VFDs on Hot Water Pumps	X			X		
ECM 9	Install Dual Enthalpy Outside Economizer Control				X		
ECM 10	Install Low-Flow Domestic Hot Water Devices				X		
ECM 11	Vending Machine Control	X			X		

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts, but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. 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 SS 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 Pay for Performance - Existing Buildings

Overview

The Pay for Performance – Existing Buildings (P4P EB) program is designed for larger customers with a peak demand over 200 kW in any of the preceding 12 months. Under this program the minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings. P4P is a generally a good option for medium to large sized facilities looking to implement as many measures as possible under a single project in order to achieve deep energy savings. This program has an added benefit of evaluating a broad spectrum of measures that may not otherwise qualify under other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also utilize the P4P program.

Incentives

Incentives are calculated based on estimated and achieved energy savings ranging from $0.18-$0.22/kWh and $1.80-$2.50/therm, capped at the lesser of 50% total project cost, or $1 million per electric account and $1 million per natural gas account, per fiscal year, not to exceed $2 million per project. An incentive of $0.15/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

To participate in the P4B EB program you will need to contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, the Partner will help further evaluate the measures identified in this report through development of the Energy Reduction Plan (ERP), assist you in implementing selected measures, and verify actual savings one year after the installation. At each of these three milestones your Partner will also facilitate securing program incentives.

Approval of the final scope of work is required by the program prior to installation completion. Although installation can be accomplished by a contractor of your choice (some P4P Partners are also contractors) or by internal personnel, the Partner must remain involved to ensure compliance with the program guidelines and requirements.

Detailed program descriptions, instructions for applying, applications and list of Partners can be found at: www.njcleanenergy.com/P4P.

8.3 Combined Heat and Power Program

Overview

One of the goals of the State of New Jersey is to enhance energy efficiency through on-site power generation with recovery and productive use of waste heat, and to reduce existing and new demands to the electric power grid. The Combined Heat & Power (CHP) program provides incentives for eligible CHP or Waste Heat to Power (WHP) projects. Eligible CHP or Waste Heat to Power (WHP) projects must achieve an annual system efficiency of at least 65% (Lower Heating Value - LHV), based on total energy input and total utilized energy output. Mechanical energy may be included in the efficiency evaluation.

Incentives

Eligible Technologies	Size (Installed Rated Capacity)	Incentive ($/kW)	% of Total Cost Cap per Project[3]	$ Cap per Project[3]
Powered by non-renewable or renewable fuel source[4]	≤500 kW	$2,000	30-40%[2]	$2 million
Gas Internal Combustion Engine	>500 kW - 1 MW	$1,000		
Gas Combustion Turbine	> 1 MW - 3 MW	$550	30%	$3 million
Microturbine Fuel Cells with Heat Recovery	>3 MW	$350		
Waste Heat to Power*	<1 MW	$1,000	30%	$2 million
	> 1MW	$500		$3 million

*Waste Heat to Power: Powered by non-renewable fuel source, heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine).

Check the NJCEP website for details on program availability, incentive levels, and requirements.

How to Participate

You work with a qualified developer or consulting firm to complete the CHP Application. Once the application is approved the project can be installed. Information about the CHP program can be found at: www.njcleanenergy.com/CHP.

8.4 SREC Registration Program

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

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

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

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

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

8.5 Energy Savings Improvement Program

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

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

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

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

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

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize 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

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Server Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,460	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,022	0.25	570	0.0	$75.26	$721.20	$125.00	7.92
Operations Center	11	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	6,115	Relamp	No	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	6,115	0.36	3,463	0.0	$457.32	$827.20	$165.00	1.45
Hallway	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.43	5,996	0.0	$791.90	$1,170.00	$200.00	1.22
Conference Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,460	Relamp	No	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,460	0.26	601	0.0	$79.41	$601.60	$120.00	6.06
Depot Master	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.10	297	0.0	$39.16	$225.60	$45.00	4.61
Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,095	0.02	33	0.0	$4.36	$63.20	$0.00	14.49
Restroom Hallway	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.09	1,199	0.0	$158.38	$234.00	$40.00	1.22
Safety Training Manager Office	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	No	7	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,920	0.23	692	0.0	$91.37	$526.40	$105.00	4.61
Mechanical	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	6,115	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	6,115	0.06	630	0.0	$83.15	$150.40	$30.00	1.45
Mechanical	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	6,115	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	6,115	0.04	369	0.0	$48.71	$126.40	$0.00	2.59
Joe Ward Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,920	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,920	0.04	132	0.0	$17.40	$117.00	$20.00	5.57
Reyes Colen Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.06	198	0.0	$26.11	$150.40	$30.00	4.61
Angelo Aprile Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.06	198	0.0	$26.11	$150.40	$30.00	4.61
Ronnie Brumet Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,920	0.06	198	0.0	$26.11	$150.40	$30.00	4.61
Exit	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
Women's Restroom	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,095	0.28	489	0.0	$64.52	$760.50	$130.00	9.77
Women's Restroom	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	3	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,095	0.06	99	0.0	$13.08	$189.60	$0.00	14.49
Men's Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,095	0.02	33	0.0	$4.36	$63.20	$0.00	14.49
Men's Restroom	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,095	0.17	301	0.0	$39.70	$468.00	$80.00	9.77
Men's Restroom Locker Room	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,095	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,095	0.45	789	0.0	$104.22	$1,052.80	$210.00	8.09
Men's Restroom Locker Room	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
Men's Restroom Locker Room	4	Incandescent: Screw-In (60W) - 1L	Wall Switch	60	1,095	Relamp	No	4	LED Screw-In Lamps: LED A19 Bulb	Wall Switch	9	1,095	0.13	232	0.0	$30.68	$215.01	$20.00	6.36
General Superintendant	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.16	494	0.0	$65.27	$376.00	$75.00	4.61
General Superintendant	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,920	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,920	0.04	116	0.0	$15.29	$126.40	$0.00	8.26
Conference Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,460	Relamp	No	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,460	0.29	676	0.0	$89.33	$676.80	$135.00	6.06

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Break Room	7	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,920	Relamp	No	7	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,920	0.13	405	0.0	$53.53	$442.40	$0.00	8.26
Break Room	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	No	14	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,920	0.45	1,384	0.0	$182.75	$1,052.80	$210.00	4.61
Break Room	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
Electrical Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	6,115	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.09	839	0.0	$110.87	$234.00	$40.00	1.75
Telephone Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	6,115	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.09	839	0.0	$110.87	$234.00	$40.00	1.75
Mezzanine	53	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,650	Relamp	No	53	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,650	1.15	6,639	0.0	$876.79	$3,100.50	$530.00	2.93
Mezzanine	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
Mezzanine Private Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,920	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,344	0.11	333	0.0	$43.99	$504.00	$75.00	9.75
Stairwell	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.17	2,399	0.0	$316.76	$468.00	$80.00	1.22
Private Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,920	0.06	198	0.0	$26.11	$150.40	$30.00	4.61
Library	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.19	593	0.0	$78.32	$451.20	$90.00	4.61
Library	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,920	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,920	0.13	395	0.0	$52.21	$351.00	$60.00	5.57
Back Room 1st Floor	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	93	1,920	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,920	0.10	297	0.0	$39.16	$225.60	$45.00	4.61
Toilet	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,095	0.02	33	0.0	$4.36	$63.20	$0.00	14.49
Front Lobby	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,920	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Daylight Dimming	29	960	0.19	569	0.0	$75.16	$621.00	$95.00	7.00
Front Lobby	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
Front Lobby	4	Compact Fluorescent: Screw-In (24W) - 1L	Wall Switch	24	1,920	Relamp	No	4	LED Screw-In Lamps: LED A19 Bulb	Wall Switch	15	1,920	0.02	72	0.0	$9.49	$215.01	$0.00	22.65
Foyer	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	8,736	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	8,736	0.10	1,349	0.0	$178.18	$225.60	$45.00	1.01
Stairwell	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.15	2,099	0.0	$277.17	$409.50	$70.00	1.22
Stairwell	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
Shop Floor 1	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
Shop Floor Women's Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,095	0.04	75	0.0	$9.93	$117.00	$20.00	9.77
Shop Floor Women's Restroom	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,095	0.06	99	0.0	$13.08	$189.60	$0.00	14.49
Shop Floor Men's Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,095	0.04	75	0.0	$9.93	$117.00	$20.00	9.77
Shop Floor Men's Restroom	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,095	0.06	99	0.0	$13.08	$189.60	$0.00	14.49

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Janitor Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,920	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,920	0.02	66	0.0	$8.70	$58.50	$10.00	5.57
Electrical Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,920	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,920	0.04	132	0.0	$17.40	$117.00	$20.00	5.57
Shop Floor 1	84	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	8,736	Relamp	No	84	LED - Linear Tubes: (2) 4' Lamps	None	29	8,736	1.82	25,185	0.0	$3,325.99	$4,914.00	$840.00	1.22
Shop Floor 1	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
Shop Floor 2	168	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	8,736	Relamp	No	168	LED - Linear Tubes: (2) 4' Lamps	None	29	8,736	3.63	50,370	0.0	$6,651.98	$9,828.00	$1,680.00	1.22
Shop Floor 2	106	Metal Halide: (1) 400W Lamp	None	458	8,736	Fixture Replacement	No	106	LED - Fixtures: 164W LED	None	164	8,736	20.42	283,139	0.0	$37,392.17	$37,100.00	$0.00	0.99
Shop Floor 2	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	6	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Paint Room	96	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	8,736	Relamp & Reballast	No	96	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	8,736	7.42	102,920	0.0	$13,591.92	$15,536.00	$1,920.00	1.00
Paint Room	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.43	5,996	0.0	$791.90	$1,170.00	$200.00	1.22
Paint Room	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
Shop Floor	4	Metal Halide: (1) 400W Lamp	Wall Switch	458	8,736	Fixture Replacement	No	4	LED - Fixtures: 164W LED	Wall Switch	164	8,736	0.77	10,684	0.0	$1,411.03	$1,400.00	$0.00	0.99
Shop Floor Pit	102	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	8,736	Relamp	No	102	LED - Linear Tubes: (2) 4' Lamps	None	29	8,736	2.21	30,582	0.0	$4,038.70	$5,967.00	$1,020.00	1.22
Shop Floor Pit	10	Metal Halide: (1) 250W Lamp	None	295	8,736	Fixture Replacement	No	10	LED - Fixtures: Low-Bay	None	86	8,736	1.37	18,989	0.0	$2,507.69	$14,197.75	$1,500.00	5.06
Stairwell	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None	62	8,736	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	None	29	8,736	0.11	1,499	0.0	$197.98	$292.50	$50.00	1.22
Stairwell	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
Boiler Room	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.24	3,298	0.0	$435.55	$643.50	$110.00	1.22
Spare Room	11	Metal Halide: (1) 250W Lamp	Wall Switch	295	2,080	Fixture Replacement	Yes	11	LED - Fixtures: Low-Bay	Occupancy Sensor	86	1,456	1.69	5,587	0.0	$737.85	$16,157.53	$1,720.00	19.57
Oil Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.22	3,031	0.0	$400.27	$738.00	$115.00	1.56
Spare Room 2nd Floor	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.16	2,273	0.0	$300.20	$621.00	$95.00	1.75
Space Room 2nd Floor	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
Private Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,920	0.06	198	0.0	$26.11	$150.40	$30.00	4.61
Room 118	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	6,115	Relamp	No	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	6,115	0.06	553	0.0	$73.07	$189.60	$0.00	2.59
Room 118	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
Exterior Wall Packs	34	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	295	4,368	Fixture Replacement	No	34	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	86	4,368	4.66	32,281	0.0	$4,263.07	$13,283.02	$3,400.00	2.32
Main Electrical Room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.17	2,399	0.0	$316.76	$468.00	$80.00	1.22

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Electrical 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
Stairwell	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.19	2,698	0.0	$356.36	$526.50	$90.00	1.22
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
Foreman's Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	93	1,920	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,344	0.16	500	0.0	$65.98	$570.80	$95.00	7.21
Restrooms (2)	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	1,095	0.08	132	0.0	$17.45	$252.80	$0.00	14.49
Restrooms (2)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	62	1,095	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,095	0.09	150	0.0	$19.85	$234.00	$40.00	9.77
Restroom	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	1,095	0.04	66	0.0	$8.72	$126.40	$0.00	14.49
Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	1,095	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,095	0.04	75	0.0	$9.93	$117.00	$20.00	9.77
Storage Building	16	High-Pressure Sodium: (1) 250W Lamp	None	295	960	Fixture Replacement	No	16	LED - Fixtures: Low-Bay	None	86	960	2.19	3,339	0.0	$440.91	$22,716.40	$2,400.00	46.08
Storage Building Restroom	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	1	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	8,736	0.02	263	0.0	$34.80	$63.20	$0.00	1.82
Storage Building Wallpack	1	LED - Fixtures: 50W LED	Daylight Dimming	50	4,368	None	No	1	LED - Fixtures: 50W LED	Daylight Dimming	50	4,368	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Train Storage Building	52	High-Pressure Sodium: (1) 250W Lamp	None	295	960	Fixture Replacement	No	52	LED - Fixtures: Parking Garage Fixture	None	86	960	7.12	10,851	0.0	$1,432.97	$73,382.40	$5,200.00	47.58
Train Storage Building	23	High-Pressure Sodium: (1) 250W Lamp	Daylight Dimming	295	960	Fixture Replacement	No	23	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Daylight Dimming	86	960	3.15	4,799	0.0	$633.81	$8,985.57	$2,300.00	10.55
Train Storage Building	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
Exterior Pole Lights	112	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Daylight Dimming	105	4,368	None	No	112	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Daylight Dimming	105	4,368	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Maintenance Shop	Maintenance Shop	1	Air Compressor	4.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	1.0	86.0%	No	2,745	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Air Compressor	15.0	91.0%	No	2,190	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	16	Other	7.0	84.0%	No	50	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Whole Building	2	Air Compressor	3.0	84.0%	No	4,957	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Whole Building	2	Air Compressor	50.0	86.0%	No	1,400	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Whole Building	1	Process Blower	0.5	86.0%	No	2,745	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Whole Building	2	Heating Hot Water Pump	3.0	82.0%	No	2,745	Yes	89.5%	Yes	2	0.98	6,819	0.0	$900.57	$8,152.44	$0.00	9.05
Boiler Room	Whole Building	1	Heating Hot Water Pump	0.8	75.0%	No	2,745	Yes	81.1%	Yes	1	0.13	928	0.0	$122.52	$2,879.70	$0.00	23.50
Boiler Room	Whole Building	1	Other	0.8	75.0%	No	2,745	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	4	Other	5.4	75.0%	No	100	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	2	Other	12.5	75.0%	No	100	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	2.0	78.0%	No	100	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	12.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	3.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	3.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	5.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	6.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	8.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	3.0	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Maintenance Shop	Maintenance Shop	2	Other	1.5	78.5%	No	100	No	78.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	1.5	86.0%	No	100	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	0.3	75.0%	No	100	No	75.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	3.0	82.0%	No	100	No	82.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Maintenance Shop	1	Other	78.0	93.0%	No	0	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	2	Supply Fan	50.0	86.0%	No	0	No	86.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	10	Supply Fan	15.0	86.0%	No	3,391	Yes	92.4%	Yes	10	45.19	166,927	0.0	$22,044.96	$70,858.70	$12,000.00	2.67
Roof	Whole Building	2	Supply Fan	5.0	86.0%	No	2,745	Yes	89.5%	Yes	2	2.97	8,780	0.0	$1,159.46	$8,393.82	$800.00	6.55

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof/Server Room	Server Room	1	Split-System AC	2.80		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Server Room	1	Ductless Mini-Split HP	1.00	13.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Server Room	1	Ductless Mini-Split HP	1.35	18.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Office	1	Through-The-Wall AC	1.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	1	Packaged AC	10.00		Yes	1	Packaged AC	10.00		12.00		Yes	2.82	6,468	0.0	$854.22	$18,571.06	$980.00	20.59
Roof	Whole Building	1	Packaged AC	10.00		Yes	1	Packaged AC	10.00		12.00		Yes	2.82	6,468	0.0	$854.22	$18,571.06	$980.00	20.59
Roof	Whole Building	1	Packaged AC	45.00		Yes	1	Packaged AC	45.00		9.50		Yes	10.68	25,948	0.0	$3,426.83	$102,218.73	$250.00	29.76

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Maintenance Shop	Whole Building	7	Warm Air Unit Heater	82.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Maintenance Shop	Whole Building	16	Warm Air Unit Heater	320.00	Yes	16	Warm Air Unit Heater	320.00	93.00%	Et	0.00	0	35.8	$153.86	$149,611.70	$0.00	972.41
Boiler Room	Whole Building	1	Non-Condensing Hot Water Boiler	642.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	2	Furnace	5,670.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	7	Furnace	259.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	3	Furnace	112.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Roof	Whole Building	1	Furnace	500.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

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

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Whole Building	6	Showerhead	2.50	2.00	0.00	0	5.7	$24.44	$535.80	$0.00	21.92
Restrooms	6	Faucet Aerator (Lavatory)	2.20	1.00	0.00	0	12.3	$52.80	$43.02	$0.00	0.81
Restrooms	1	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	0.9	$3.67	$7.17	$0.00	1.96

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Condi	Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Control Room	1	Stand-Up Refrigerator, Solid Door (≤15 cu. ft.)	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?
Office	2	Laser Printer	600.0	Yes
Offices / Conf Room	2	Projector	200.0	No
Office	3	Medium Printer	200.0	No
Office	2	Small Printers	60.0	No
Office	29	Computers	150.0	No
Whole Building	9	Microwave	1,000.0	No
Whole Building	3	Small Refrigerator	153.0	No
Whole Building	9	Medium Refrigerator	156.0	No
Whole Building	2	Large Refrigerator	173.0	No
Whole Building	1	Cofee Maker	900.0	No
Whole Building	3	Toaster	850.0	No
Whole Building	1	Toaster Oven	1,200.0	No
Whole Building	2	CRT TV	120.0	No
Whole Building	9	LED TV	120.0	Yes
Whole Building	5	Space Heaters	1,500.0	No
Whole Building	5	Standing Fan	100.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Break Room	1	Refrigerated	Yes	0.00	1,612	0.0	$212.86	$230.00	$0.00	1.08
Break Room	1	Non-Refrigerated	Yes	0.00	343	0.0	$45.23	$230.00	$0.00	5.08

Appendix B: ENERGY STAR® Statement of Energy Performance

There is no Statement of Energy Performance (SEP) for this property based on the applicant's request. NJ Transit is working with a 3rd party utility manager to update their web-based platform to include dashboard metrics for each individual building account which can track EUIs over time and other key energy metrics.