Local Government Energy Audit:
Energy Audit Report

Main Treatment Plant

110 Continental Dr. N

Budd Lake, NJ 07828

Musconetcong Sewerage Authority

June 7, 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 Main Treatment Plant.

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 sewer authorities in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

The Musconetcong Main Treatment Plant is a 28,882 square foot facility comprised of various space types within 13 buildings. The administration/service building is one story and includes offices, a laboratory, bathrooms, lunch room with small kitchen, a garage, and mechanical space. The other buildings contain mechanical spaces for equipment specific to the treatment of waste water.

Lighting at the Main Treatment Plant consists of aging and inefficient fluorescent interior lighting, and high pressure sodium exterior lighting. Heating is supplied by two different systems. The administration/service building contains a propane fired hot water boiler, while the other buildings contain electric unit heaters hanging from the ceiling. The only cooling at the plant is in the administration/service building and consists of multiple Trane split-system AC units which are original to the building. 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 10 measures and recommends eight which together represent an opportunity for Main Treatment Plant to reduce annual energy costs by roughly $25,410 and annual greenhouse gas emissions by 219,352 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 9.1 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 Main Treatment Plant's annual energy use by 7%.

Figure 1 – Previous 12 Month Utility Costs

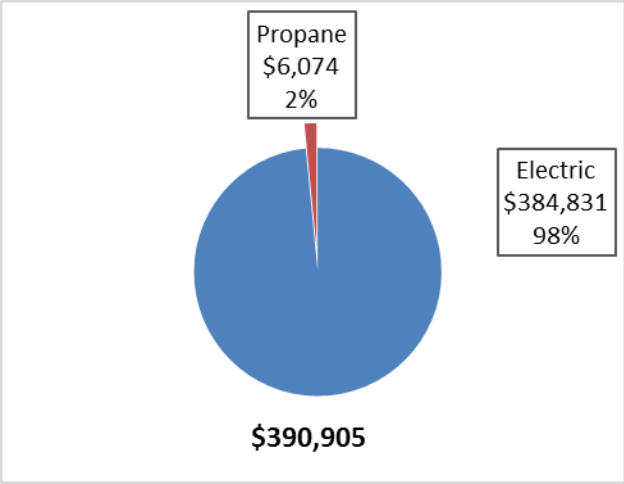
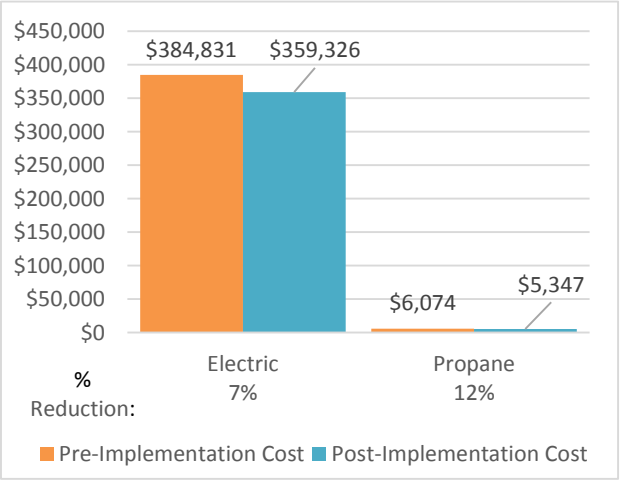


Figure 2 – Potential Post-Implementation Costs



A detailed description of Main Treatment Plant'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 Propane 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			**110,140**	**46.0**	**0.0**	**0.0**	**$13,171.58**	**$193,802.57**	**$14,535.00**	**$179,267.57**	**13.6**	**110,910**
ECM 1	Install LED Fixtures	Yes	49,617	8.2	0.0	0.0	$5,933.72	$110,540.42	$6,700.00	$103,840.42	17.5	49,964
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	57,262	37.3	0.0	0.0	$6,848.00	$80,519.67	$7,800.00	$72,719.67	10.6	57,663
ECM 3	Retrofit Fixtures with LED Lamps	Yes	211	0.3	0.0	0.0	$25.25	$376.27	$35.00	$341.27	13.5	213
ECM 4	Install LED Exit Signs	Yes	3,049	0.3	0.0	0.0	$364.61	$2,366.21	$0.00	$2,366.21	6.5	3,070
Lighting Control Measures			**7,018**	**4.5**	**0.0**	**0.0**	**$839.28**	**$15,660.00**	**$1,890.00**	**$13,770.00**	**16.4**	**7,067**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	7,018	4.5	0.0	0.0	$839.28	$15,660.00	$1,890.00	$13,770.00	16.4	7,067
Motor Upgrades			**86,418**	**8.8**	**0.0**	**0.0**	**$10,334.69**	**$26,944.00**	**$0.00**	**$26,944.00**	**2.6**	**87,022**
ECM 6	Premium Efficiency Motors	Yes	86,418	8.8	0.0	0.0	$10,334.69	$26,944.00	$0.00	$26,944.00	2.6	87,022
Electric Unitary HVAC Measures			**3,972**	**2.4**	**0.0**	**0.0**	**$474.95**	**$16,507.68**	**$920.00**	**$15,587.68**	**32.8**	**3,999**
	Install High Efficiency Electric AC	No	3,972	2.4	0.0	0.0	$474.95	$16,507.68	$920.00	$15,587.68	32.8	3,999
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**89.1**	**89.1**	**$857.83**	**$12,384.25**	**$966.00**	**$11,418.25**	**13.3**	**12,615**
ECM 7	Install High Efficiency Hot Water Boilers	Yes	0	0.0	89.1	89.1	$857.83	$12,384.25	$966.00	$11,418.25	13.3	12,615
Domestic Water Heating Upgrade			**5,728**	**9.0**	**-13.7**	**-13.7**	**$553.49**	**$6,166.39**	**$204.00**	**$5,962.39**	**10.8**	**3,834**
	Install High Efficiency Gas Water Heater	No	4,003	9.0	-13.7	-13.7	$347.15	$5,894.58	$204.00	$5,690.58	16.4	2,096
ECM 8	Install Low-Flow Domestic Hot Water Devices	Yes	1,725	0.0	0.0	0.0	$206.34	$271.81	$0.00	$271.81	1.3	1,737
TOTAL FOR ALL MEASURES			**213,275**	**70.6**	**75.4**	**75.4**	**$26,231.83**	**$271,464.89**	**$18,515.00**	**$252,949.89**	**9.6**	**225,447**
TOTAL FOR RECOMMENDED MEASURES			**205,301**	**59.3**	**89.1**	**89.1**	**$25,409.73**	**$249,062.63**	**$17,391.00**	**$231,671.63**	**9.1**	**219,352**

* - 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.

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.

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.

Energy Efficient Practices

TRC also identified eight 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 Main Treatment Plant include:

- Reduce Air Leakage
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Clean Evaporator/Condenser Coils on AC Systems
- Install Plug Load Controls
- Replace Computer Monitors

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 Main Treatment Plant. Based on the configuration of the site and its loads there is medium potential for installing a photovoltaic (PV) array.

Figure 4 – Photovoltaic Potential

Potential	Medium	
System Potential	172	kW DC STC
Electric Generation	129,421	kWh/yr
Displaced Cost	$11,260	/yr
Installed Cost	$715,500	

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

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

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

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

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

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 5 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
James Schilling	Director	jschilling@msa-nj.org	973-347-1525
Designated Representative			
James Schilling	Director	jschilling@msa-nj.org	973-347-1525
TRC Energy Services			
Alexander Klieverik	Auditor	aklieverik@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On November 30, 2017, TRC performed an energy audit at Main Treatment Plant located in Budd Lake, New Jersey. TRC's team met with James Schilling to review the facility operations and help focus our investigation on specific energy-using systems.

The Musconetcong Main Treatment Plant is a 28,882 square foot facility comprised of various space types within 13 buildings. The administration/service building is one story and includes offices, a laboratory, bathrooms, lunch room with small kitchen, a garage, and mechanical space. The other buildings contain mechanical spaces for equipment specific to the treatment of waste water.

The plant was originally constructed in 1992. There were additional buildings constructed and equipment installed in 1995 to expand the capacity of the plant. In September of 2005 there was another expansion built in anticipation of increased demand, however that portion of the plant has not been in operation since its construction. For a full description of the wastewater treatment process, see Section 2.6.

2.3 Building Occupancy

The administration/service building is open Monday through Friday from 7:00 AM to 3:30 PM. The rest of the plant is in operation 24 hours a day, seven days a week. The entire facility is used year round. During a typical day, the facility is occupied by approximately 11 employees.

Figure 6 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Main Treatment Plant	Weekday	12:00 AM - 12:00 AM
Main Treatment Plant	Weekend	12:00 AM - 12:00 AM
Admin Building	Weekday	7:00 AM - 3:30 PM
Admin Building	Weekend	7:00 AM - 3:30 PM

2.4 Building Envelope

All the buildings are constructed of concrete block and structural steel. The buildings have flat roof sections covered with black membrane and stones in fair condition. The buildings have double pane windows which are in good condition and show little sign of excessive infiltration. The exterior doors are constructed of aluminum and in good condition except that the door seals have worn out which increases the level of outside air infiltration.

Image 1: Building Envelope

2.5 On-Site Generation

Main Treatment Plant has three emergency backup generators on site that are tested monthly.

Make / Model	Capacity
Cummins Gen Set / 750KTA31	750 kW
Caterpillar / SR4	750 kW
Caterpillar / SR4B	550 kW

2.6 Energy-Using Systems

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

Lighting System

Lighting at the facility is provided mostly by 40-Watt linear fluorescent T12 lamps with varying ballast types as well as some incandescent lamps. Most of the fluorescent fixtures are 2-lamp or 4-lamp, 4-foot long ceiling mounted fixtures with diffusers. Lighting control in most spaces is provided by wall switches.

The building's exterior lighting consists primarily of high pressure sodium (HPS) fixtures that are controlled by timers.

Image 2: Lighting

Heating System

The heating system at the administration/service building consists of one Weil-McClain 552 kBtu/hr output atmospheric boiler. The boiler has a nominal combustion efficiency of 70%. The system is configured in a constant flow primary distribution with one hot water pump. Hot water is supplied at a constant 180°F to the perimeter radiant heaters, a rooftop unit with hot water coils, as well as ten unit heaters equipped with hot water coils. The boiler operates on/off based on outdoor temperature. The boiler is very old and at the end of its useful life.

The other buildings at the plant are heated via electric unit heaters that hang from the ceiling. There are 63 individual unit heaters throughout the plant. The heaters have three different heating capacities depending on the size of the space; 7.5 kW, 10 kW, and 30 kW. Each heater is set to maintain approximately 55°F to prevent freezing in the winter months.

Image 3: Heating Systems

Direct Expansion Air Conditioning System (DX)

The administration building is the only building at the plant with cooling equipment. There are two 2-ton Trane direct-expansion (DX) package units (AC2 and AC4), a 2-ton Trane cooling-only split system (AC3), and a Trane heat/cool rooftop unit. All the cooling equipment is inefficient and original to the building. The rooftop mounted units provide constant air volume using a damper system allowing for individual room comfort control. The cooling equipment is manually controlled by zone thermostats. The units operate on demand to maintain a space temperature setpoint around 75°F (adjustable by staff).

Image 4: Cooling Systems

Domestic Hot Water Heating System

The domestic hot water heating system for the facility consists of multiple electric storage tank water heaters. The administration/service building has a 119 gallon Ruud electric water heater with an input rating of 30 kW. There is a small 1/12 HP circulation pump which distributes 120°F water to the building for kitchen and bathroom faucets, and employee showers.

There are seven other buildings at the facility that have Rheem water heaters model 81VP10S. The buildings are as follows: Primary Clarifier Building 1 & 2, Secondary Clarifier Building 1 & 2, Sludge Thickener Building 1 & 2, and the Grit Building. These water heaters have an input rating of 2 kW and a capacity of 10 gallons. These heaters supply hot water for cleaning purposes.

Image 5: Domestic Water Heating

Building Plug Load

There are seven computer work stations throughout administration/service building. Six of the computers are desktop units with LCD monitors, while there is only one laptop computer. There are also two desk printers and one large photocopier in the offices. There is no centralized PC power management software installed. The kitchen has a refrigerator, microwave, toaster oven, and electric stove. The laboratory contains a refrigerator, mini fridge, and incubator.

Image 6: Misc Building Plug Load

Wastewater Treatment

The main treatment plant consists of three lines of treatment equipment, and has a total design flow rate of 4.3 million gallons per day (MGD). The average flow for the plant is 2.3 MGD, which only requires the use of 2 of the 3 lines of plant equipment. The 3rd line installed in 2005 has not been used since its construction and will not be included in this report.

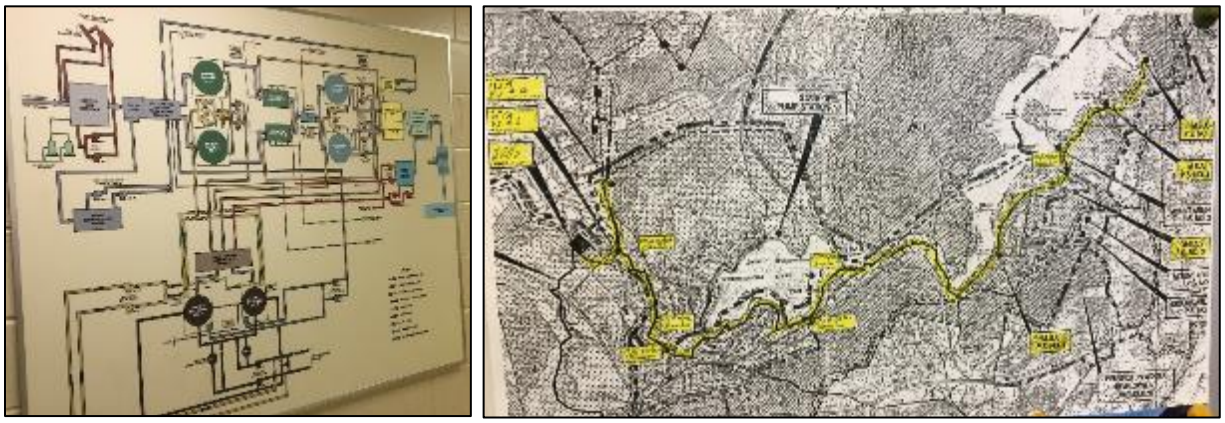


Image 7: Wastewater Treatment (Schematic)

The following paragraphs detail the wastewater treatment process at this facility with the major motors and pumps associated with each stage.

Influent from six pump stations enters the plant at the grit chamber to begin the grit removal process. Grit consists of rocks, sand, gravel, or other heavy non-biodegradable solids which are removed from the wastewater before entering the primary clarifier. For each line, the grit removal process consists of two 5 HP blowers to aerate the influent and two 7.5 HP pumps to remove the grit for disposal. The wastewater from line 1 then enters the equalization basin which contains two 15 HP pumps, and four 10 HP aerators. The second line equalization basin has two 10 HP pumps and four 10 HP aerators.

The following stage is the primary treatment, which consists of clarification stage and an aeration basin for each line. An example of the mechanical equipment is provided for treatment plant #1 and combined processes. The clarifier separates the heavy and light solids and the aeration basin is where the microbiology treatment occurs. The primary clarifier stage consists of two 5 HP scum removal pumps, and two 10 HP sludge removal pumps in the first line. The second line consists of two 3 HP scum pumps, and three 5 HP sludge pumps. After the clarification stage, the wastewater enters another aeration basin where bacteria is added for the microbiology treatment. Eight 20 HP variable speed surface aerators agitate the wastewater on the first line. The second line aeration basin contains eight 15 HP motors to agitate the wastewater. After the microbiology treatment is complete, each line has two 7.5 HP pumps drain the basin to the secondary treatment stage.

The secondary treatment stage is an enhanced separation process similar the primary clarification. This process includes two 5 HP scum pumps, three 7.5 HP return activated sludge pumps, and two 10 HP waste activated sludge pumps. The second line contains two 3 HP scum pumps, three 7.5 HP return activated sludge pumps, and two 7.5 HP waste activated sludge pumps.

The scum and sludge removed from the primary and secondary clarifiers on lines 1 & 2 is sent to the thickener building, which gets this material ready for shipment to a different facility for disposal. The thickener building contains six 10 HP sludge pumps, four 5 HP overflow pumps, and two 10 HP sludge mixer motors.

The wastewater from lines 1 & 2 then travels to the micro-strainer stage, which filters out the smallest particles. The filtering process consists of two large rotating drums with one 5 HP motor in each. There are also two 5 HP backwash pumps which lead back to the equalization basin.

The final stage of wastewater treatment is the UV pathogen destruction. The wastewater enters a chamber which contains ultra-violet lamps which kills any disease-causing organisms in the water.

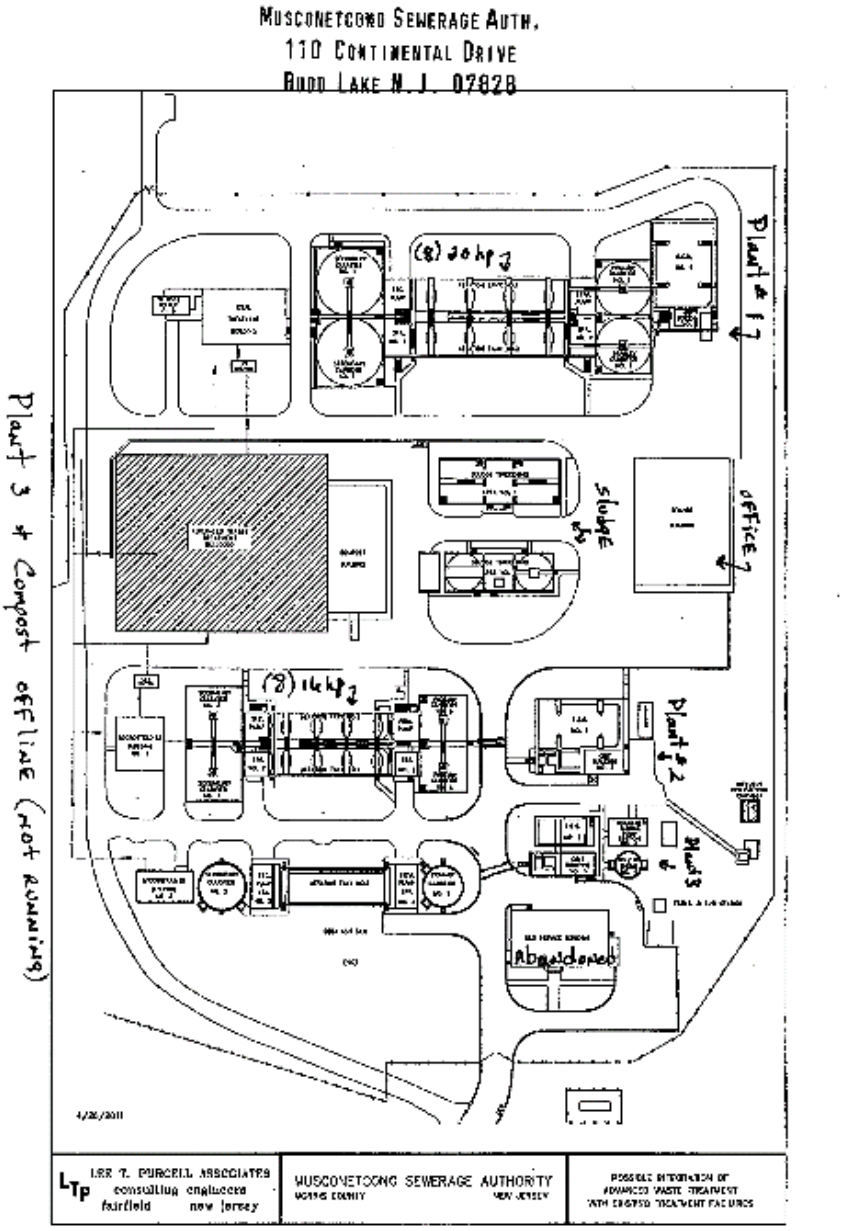


Image 8: Wastewater Treatment (Plan)

2.7 Water-Using Systems

There are two restrooms, a kitchen, a laboratory, and seven slop sinks at this facility. A sampling of faucets found that all of the slop sink faucets are rated for 2.5 gallons per minute (gpm) or higher. The kitchen and laboratory faucets are rated at 2.2 gpm, the restroom faucets are rated at 1.5 gpm, and the showerheads are rated at 2.0 gpm. The toilets are rated at 2.5 gallons per flush (gpf). The restroom faucets and slop sink faucets are recommended for replacement with low-flow faucet aerators.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and propane was analyzed to identify opportunities for savings. In addition, data for electricity and propane 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

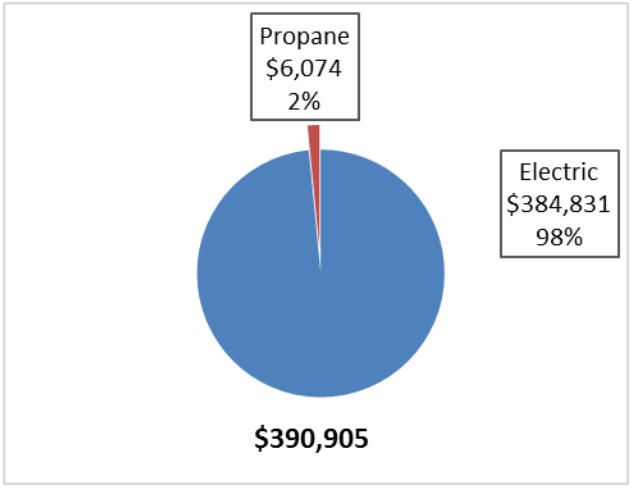
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 7 - Utility Summary

Utility Summary for Main Treatment Plant		
Fuel	**Usage**	**Cost**
Electricity	3,217,928 kWh	$384,831
Propane	6,884 Gallons	$6,074
Total		**$390,905**

The current annual energy cost for this facility is $390,905 as shown in the chart below.

Figure 8 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by JCP&L. The average electric cost over the past 12 months was $0.120/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. Higher winter use is generally associated with increased treatment due to seasonal runoff, although longer runtime hours for outdoor lighting and electric space heating additionally contribute to greater winter use.

Figure 9 - Electric Usage & Demand

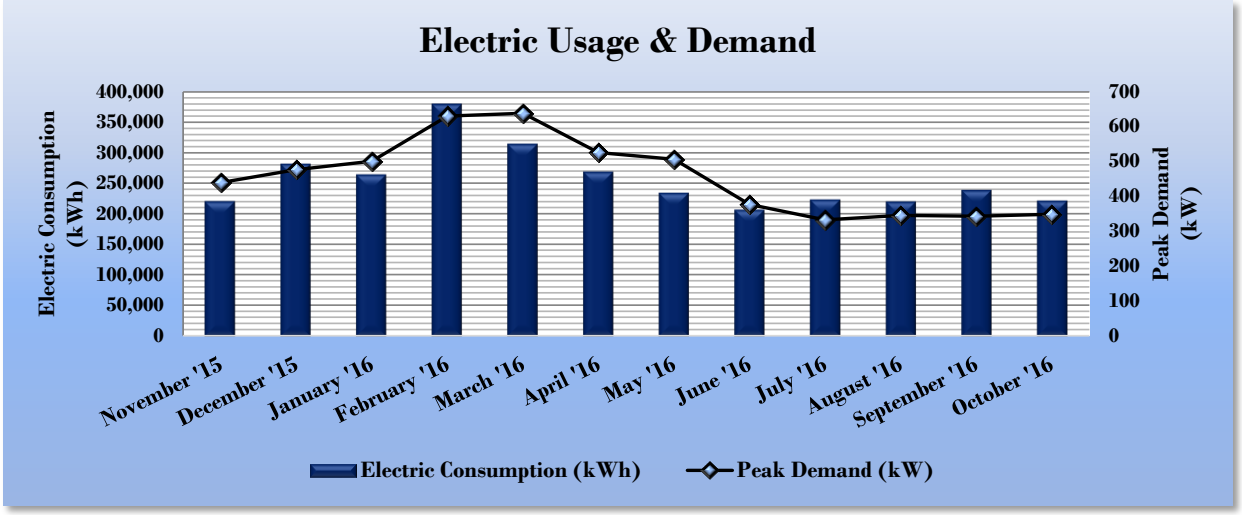


Figure 10 - Electric Usage & Demand

Electric Billing Data for Main Treatment Plant					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
11/30/15	29	220,893	440	$0	$23,931
12/31/15	28	281,736	477	$0	$51,213
1/31/16	30	264,444	501	$0	$28,495
2/29/16	28	379,861	630	$0	$40,426
3/31/16	30	314,466	639	$0	$34,090
4/28/16	27	269,251	525	$0	$63,297
5/27/16	28	234,330	506	$0	$20,497
6/28/16	31	207,144	376	$0	$20,589
7/28/16	29	223,588	332	$0	$20,315
8/29/16	31	220,125	345	$0	$21,684
9/27/16	28	239,291	343	$0	$20,902
10/28/16	30	221,739	349	$0	$22,522
Totals	**349**	**3,076,868**	**638.8**	**$0**	**$367,962**
Annual	**365**	**3,217,928**	**638.8**	**$0**	**$384,831**

3.3 Propane Usage

Propane is provided by AmeriGas. The average propane cost for the past 12 months is $0.882/Gallon, which is the blended rate used throughout the analyses in this report. The propane consumption is shown in the table below. Winter propane use is attributed to space heating.

Figure 11 –Propane Usage

Propane Billing Data for Main Treatment Plant			
Period Ending	Days in Period	Propane Usage (Gallons)	Fuel Cost
11/30/15	29	501	$455
12/31/15	28	814	$713
1/31/16	30	1,684	$1,399
2/29/16	28	704	$598
3/31/16	30	893	$667
4/28/16	27	695	$667
5/27/16	28	939	$929
6/28/16	31	0	$0
7/28/16	29	0	$0
8/29/16	31	0	$0
9/27/16	28	0	$0
10/28/16	30	354	$379
Totals	**349**	**6,582**	**$5,807**
Annual	**365**	**6,884**	**$6,074**

3.4 Benchmarking

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

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

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Main Treatment Plant	National Median Building Type: Water/Wastewater Treatment/Pumping
Source Energy Use Intensity (kBtu/ft^2)	1215.7	123.1
Site Energy Use Intensity (kBtu/ft^2)	402.0	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 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Main Treatment Plant	National Median Building Type: Water/Wastewater Treatment/Pumping
Source Energy Use Intensity (kBtu/ft^2)	1136.5	123.1
Site Energy Use Intensity (kBtu/ft^2)	374.6	78.8

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. Your building is not is one of the building categories that are eligible to receive a score.

A Portfolio Manager Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance.

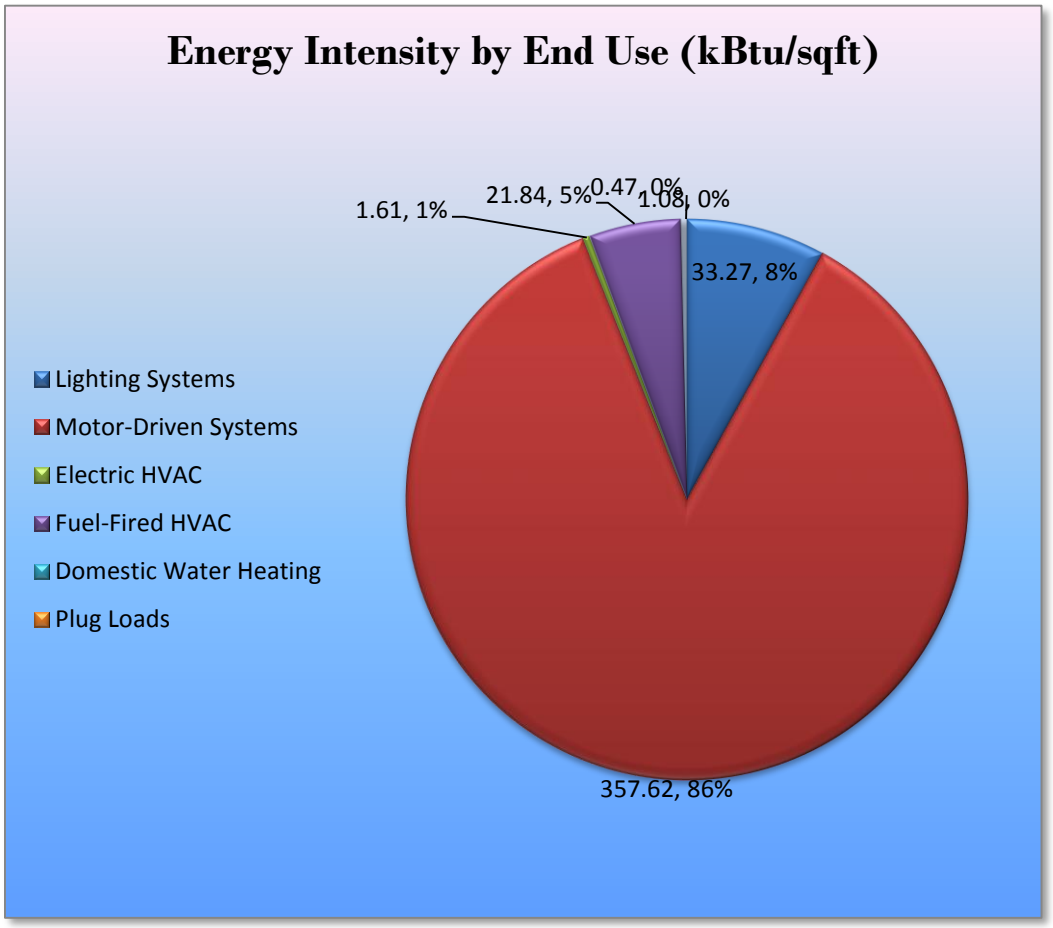
For more information on ENERGY STAR® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

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

3.5 Energy End-Use Breakdown

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

Figure 14 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

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

The following sections describe the evaluated measures.

4.1 Recommended ECMs

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

Figure 15 – Summary of Recommended ECMs

Energy Conservation Measure		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		**110,140**	**46.0**	**0.0**	**$13,171.58**	**$193,802.57**	**$14,535.00**	**$179,267.57**	**13.6**	**110,910**
ECM 1	Install LED Fixtures	49,617	8.2	0.0	$5,933.72	$110,540.42	$6,700.00	$103,840.42	17.5	49,964
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	57,262	37.3	0.0	$6,848.00	$80,519.67	$7,800.00	$72,719.67	10.6	57,663
ECM 3	Retrofit Fixtures with LED Lamps	211	0.3	0.0	$25.25	$376.27	$35.00	$341.27	13.5	213
ECM 4	Install LED Exit Signs	3,049	0.3	0.0	$364.61	$2,366.21	$0.00	$2,366.21	6.5	3,070
Lighting Control Measures		**7,018**	**4.5**	**0.0**	**$839.28**	**$15,660.00**	**$1,890.00**	**$13,770.00**	**16.4**	**7,067**
ECM 5	Install Occupancy Sensor Lighting Controls	7,018	4.5	0.0	$839.28	$15,660.00	$1,890.00	$13,770.00	16.4	7,067
Motor Upgrades		**86,418**	**8.8**	**0.0**	**$10,334.69**	**$26,944.00**	**$0.00**	**$26,944.00**	**2.6**	**87,022**
ECM 6	Premium Efficiency Motors	86,418	8.8	0.0	$10,334.69	$26,944.00	$0.00	$26,944.00	2.6	87,022
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**89.1**	**$857.83**	**$12,384.25**	**$966.00**	**$11,418.25**	**13.3**	**12,615**
ECM 7	Install High Efficiency Hot Water Boilers	0	0.0	89.1	$857.83	$12,384.25	$966.00	$11,418.25	13.3	12,615
Domestic Water Heating Upgrade		**1,725**	**0.0**	**0.0**	**$206.34**	**$271.81**	**$0.00**	**$271.81**	**1.3**	**1,737**
ECM 8	Install Low-Flow Domestic Hot Water Devices	1,725	0.0	0.0	$206.34	$271.81	$0.00	$271.81	1.3	1,737
TOTALS		**205,301**	**59.3**	**89.1**	**$25,409.73**	**$249,062.63**	**$17,391.00**	**$231,671.63**	**9.1**	**219,352**

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

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

4.1.1 Lighting Upgrades

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

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**110,140**	**46.0**	**0.0**	**$13,171.58**	**$193,802.57**	**$14,535.00**	**$179,267.57**	**13.6**	**110,910**
ECM 1	Install LED Fixtures	49,617	8.2	0.0	$5,933.72	$110,540.42	$6,700.00	$103,840.42	17.5	49,964
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	57,262	37.3	0.0	$6,848.00	$80,519.67	$7,800.00	$72,719.67	10.6	57,663
ECM 3	Retrofit Fixtures with LED Lamps	211	0.3	0.0	$25.25	$376.27	$35.00	$341.27	13.5	213
ECM 4	Install LED Exit Signs	3,049	0.3	0.0	$364.61	$2,366.21	$0.00	$2,366.21	6.5	3,070

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

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	49,617	8.2	0.0	$5,933.72	$110,540.42	$6,700.00	$103,840.42	17.5	49,964

Measure Description

We recommend replacing existing fixtures containing HID lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output. High pressure sodium lamps generally illuminate the building exteriors and processing areas.

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

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	56,678	37.2	0.0	$6,778.15	$80,285.67	$7,780.00	$72,505.67	10.7	57,075
Exterior	584	0.1	0.0	$69.84	$234.00	$20.00	$214.00	3.1	588

Measure Description

We recommend retrofitting the existing T12 fluorescent fixtures 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	211	0.3	0.0	$25.25	$376.27	$35.00	$341.27	13.5	213
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend retrofitting existing incandescent lighting technologies with LED lamps. Many LED screw-in lamps are direct replacements for existing incandescent lamps and can easily be installed without replacing the fixture base. 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 10 times longer than many incandescent lamps.

ECM 4: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	3,049	0.3	0.0	$364.61	$2,366.21	$0.00	$2,366.21	6.5	3,070
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

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

4.1.2 Lighting Control Measures

Our recommendation for lighting control measures is summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**7,018**	**4.5**	**0.0**	**$839.28**	**$15,660.00**	**$1,890.00**	**$13,770.00**	**16.4**	**7,067**
ECM 5	Install Occupancy Sensor Lighting Controls	7,018	4.5	0.0	$839.28	$15,660.00	$1,890.00	$13,770.00	16.4	7,067

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

ECM 5: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
7,018	4.5	0.0	$839.28	$15,660.00	$1,890.00	$13,770.00	16.4	7,067

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in restrooms, storage rooms, offices areas, maintenance areas, pump rooms, and various rooms associated with the treatment of wastewater. 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.

4.1.3 Motor Upgrades

Our recommendation for motor upgrades is summarized in Figure 18 below.

Figure 18 – Summary of Motor Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual Propane Savings (MMBtu)	Annual N/A 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)
Motor Upgrades		**86,418**	**8.8**	**0.0**	**0.0**	**0.0**	**0.0**	**$10,334.69**	**$26,944.00**	**$0.00**	**$26,944.00**	**2.6**	**87,022**
ECM 6	Premium Efficiency Motors	86,418	8.8	0.0	0.0	0.0	0.0	$10,334.69	$26,944.00	$0.00	$26,944.00	2.6	87,022

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)
86,418	8.8	0.0	$10,334.69	$26,944.00	$0.00	$26,944.00	2.6	87,022

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.

4.1.4 Gas-Fired Heating System Replacements

Our recommendation for gas-fired heating system replacements is summarized in Figure 19 below.

Figure 19 - Summary of Gas-Fired Heating Replacement 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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**89.1**	**$857.83**	**$12,384.25**	**$966.00**	**$11,418.25**	**13.3**	**12,615**
ECM 7	Install High Efficiency Hot Water Boilers	0	0.0	89.1	$857.83	$12,384.25	$966.00	$11,418.25	13.3	12,615

ECM 7: Install High Efficiency Hot Water Boilers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	89.1	$857.83	$12,384.25	$966.00	$11,418.25	13.3	12,615

Measure Description

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

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130°F. Condensing hydronic boilers should be considered when the loop return water temperature can be set to less than 130°F during most of the operating hours. High efficiency standard boilers should be considered otherwise.

4.1.5 Domestic Hot Water Heating System Upgrades

Our recommendation for domestic water heating system improvements is summarized in Figure 20 below.

Figure 20 - 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		**1,725**	**0.0**	**0.0**	**$206.34**	**$271.81**	**$0.00**	**$271.81**	**1.3**	**1,737**
ECM 8	Install Low-Flow Domestic Hot Water Devices	1,725	0.0	0.0	$206.34	$271.81	$0.00	$271.81	1.3	1,737

ECM 8: 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)
1,725	0.0	0.0	$206.34	$271.81	$0.00	$271.81	1.3	1,737

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 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.

4.2 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 21 – 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	**3,972**	**2.4**	**0.0**	**$474.95**	**$16,507.68**	**$920.00**	**$15,587.68**	**32.8**	**3,999**
Install High Efficiency Electric AC	3,972	2.4	0.0	$474.95	$16,507.68	$920.00	$15,587.68	32.8	3,999
Domestic Water Heating Upgrade	**4,003**	**9.0**	**-13.7**	**$347.15**	**$5,894.58**	**$204.00**	**$5,690.58**	**16.4**	**2,096**
Install High Efficiency Gas Water Heater	4,003	9.0	-13.7	$347.15	$5,894.58	$204.00	$5,690.58	16.4	2,096
TOTALS	**7,974**	**11.4**	**-13.7**	**$822.11**	**$22,402.26**	**$1,124.00**	**$21,278.26**	**25.9**	**6,096**

* - 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)
3,972	2.4	0.0	$474.95	$16,507.68	$920.00	$15,587.68	32.8	3,999

Measure Description

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

Reasons for not Recommending

We are not currently recommending the installation of high efficiency AC units due to the long payback period, which exceeds the useful life of the equipment.

Install High Efficiency Water Heater

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)
4,003	9.0	-13.7	$347.15	$5,894.58	$204.00	$5,690.58	16.4	2,096

Measure Description

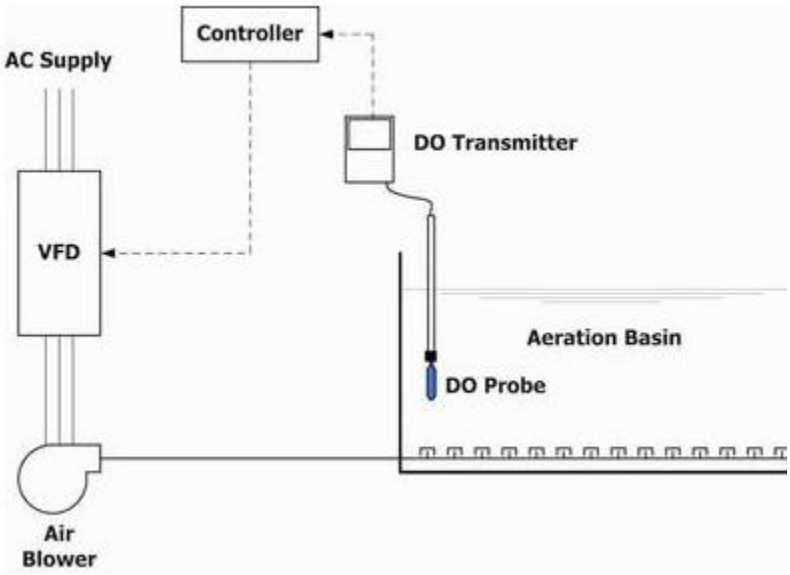
We evaluated replacement of the existing Admin Building electric tank water heater with a high efficiency propane tank water heater. Improvements in combustion efficiency and reductions in heat losses have improved the overall efficiency of storage water heaters. Savings results from using a cheaper fuel to heat water.

Reasons for not Recommending

We are not currently recommending the installation of high efficiency gas water heaters due to the long payback period, which exceeds the useful life of the equipment.

4.3 Recommended for Further Study

Wastewater Treatment Aeration Control



TRC's understanding of current operations are that the aerators are equipped with variable frequency drives (VFD), but that they are operated manually. Operators read dissolved oxygen (DO) levels and adjust blower speeds in order to maintain DO levels in accordance with the plant standards.

Regulation of dissolved oxygen levels permits a balance point between insufficient bacterial growth and overgrowth. An optimal system incorporates a VFD to regulate blower speed, a programmable logic controller (PLC), and a DO probe coupled with a transmission device. The system adjusts the airflow based on the DO levels to maintain optimal DO levels. Energy savings result from reducing fan speed to the minimum level that maintains acceptable bacterial growth. Implementing VFD aeration control strategy has benefits in multiple areas of plant operation; it saves energy, improves the process control, enhances the plant power factor, and reduces maintenance costs.

The potential saving for automating this function depends on how tightly DO levels are controlled with current practices. Site personnel should consider further study of the costs and potential savings associated with automated aeration controls.

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

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

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Perform Proper Lighting Maintenance

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

Develop a Lighting Maintenance Schedule

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

Ensure Lighting Controls Are Operating Properly

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

Clean Evaporator/Condenser Coils on AC Systems

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

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.

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.

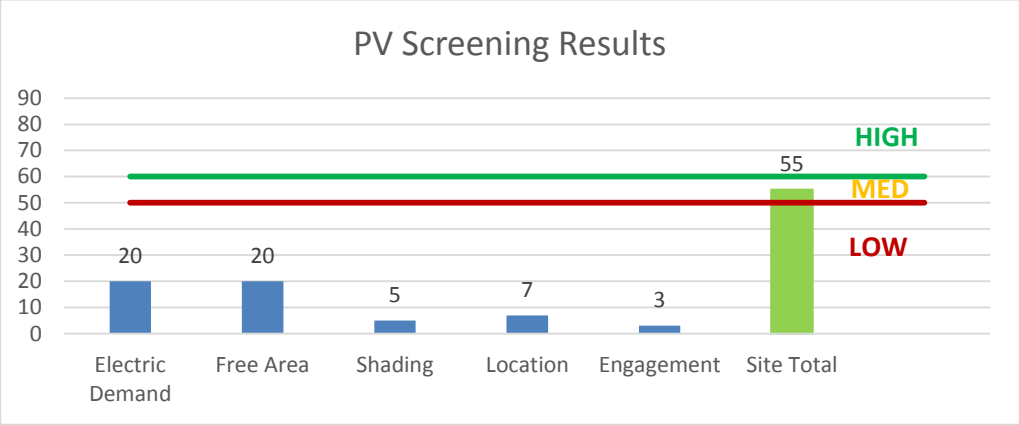
6.1 Photovoltaic

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 Medium potential for installing a PV array.

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

Figure 22 - Photovoltaic Screening



Potential	Medium	
System Potential	172	kW DC STC
Electric Generation	129,421	kWh/yr
Displaced Cost	$11,260	/yr
Installed Cost	$715,500	

Solar projects must register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about developed new solar projects and insight into future SREC pricing. Refer to Section 8.2 for additional information.

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

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

6.2 Combined Heat and Power

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

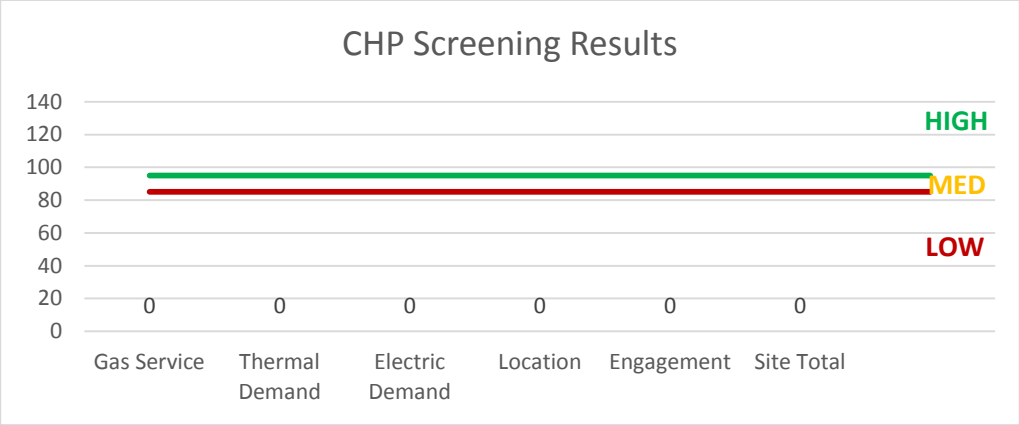
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste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

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

Lack of gas service, low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

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 23 - Combined Heat and Power Screening



7 DEMAND RESPONSE

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

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

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

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

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

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

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

In our opinion, the facility has a low to moderate potential for demand curtailment. Institution of automated aerator controls could potentially provide a partial basis for meeting the 100 kW minimal curtailment threshold.

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

Figure 24 - 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					
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X					
ECM 3	Retrofit Fixtures with LED Lamps	X					
ECM 4	Install LED Exit Signs						
ECM 5	Install Occupancy Sensor Lighting Controls	X					
ECM 6	Premium Efficiency Motors	X					
ECM 7	Install High Efficiency Hot Water Boilers	X					
ECM 8	Install Low-Flow Domestic Hot Water Devices	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 SmartStart program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

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

8.1 SmartStart

Overview

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 SREC Registration Program

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

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

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

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

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

8.3 Energy Savings Improvement Program

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

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

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

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

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

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize 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
Plant #2 Grit Building	3	Incandescent: Screw-In (75W) 1L	Wall Switch	75	365	Relamp	No	3	LED Screw-In Lamps: LED: Screw-In (13W) 1L	Wall Switch	13	365	0.15	77	0.0	$9.17	$161.26	$15.00	15.94
Plant #2 Grit Building	6	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	6	LED Exit Signs: 2 W Lamp	None	6	8,760	0.07	831	0.0	$99.44	$645.33	$0.00	6.49
Plant #2 Grit Building	6	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.66	335	0.0	$40.07	$1,241.00	$155.00	27.10
Plant #2 Grit Building	30	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.65	838	0.0	$100.18	$4,320.00	$405.00	39.08
Plant #2 Grit Building	7	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	7	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	0.81	4,954	0.0	$592.49	$13,670.95	$700.00	21.89
Plant #2 Primary Clarifier Building	3	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	0.35	2,123	0.0	$253.92	$5,858.98	$300.00	21.89
Plant #2 Primary Clarifier Building	2	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	0.23	1,416	0.0	$169.28	$3,905.99	$200.00	21.89
Plant #2 Primary Clarifier Building	1	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	45	4,380	0.12	708	0.0	$84.64	$390.68	$100.00	3.43
Plant #2 Primary Clarifier Building	5	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.55	279	0.0	$33.39	$1,079.17	$135.00	28.27
Plant #2 Primary Clarifier Building	21	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.16	586	0.0	$70.13	$2,997.00	$280.00	38.75
Plant #2 Aeration Area	11	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	11	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	1.28	7,785	0.0	$931.05	$21,482.92	$1,100.00	21.89
Plant #2 Secondary Clarifier Building	5	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.55	279	0.0	$33.39	$1,079.17	$135.00	28.27
Plant #2 Secondary Clarifier Building	1	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	139	0.0	$16.57	$107.56	$0.00	6.49
Plant #2 Secondary Clarifier Building	21	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.16	586	0.0	$70.13	$2,997.00	$280.00	38.75
Plant #2 Microstrainer Bldg	35	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	35	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.93	977	0.0	$116.88	$4,905.00	$455.00	38.07
Plant #2 Microstrainer Bldg	3	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.33	168	0.0	$20.04	$755.50	$60.00	34.71
Garage	2	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	45	4,380	0.23	1,416	0.0	$169.28	$781.35	$200.00	3.43
Garage	12	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	0.66	335	0.0	$40.07	$1,674.00	$155.00	37.91
Garage	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,380	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,380	0.10	584	0.0	$69.84	$234.00	$20.00	3.06
Garage	2	High-Pressure Sodium: (1) 1000W Lamp	Wall Switch	1,100	4,380	None	No	2	High-Pressure Sodium: (1) 1000W Lamp	Wall Switch	1,100	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #1 Service Water Building	8	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	0.44	223	0.0	$26.71	$1,206.00	$115.00	40.84
Plant #1 Service Water Building	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
Plant #1 Service Water Building	3	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	45	4,380	0.35	2,123	0.0	$253.92	$1,172.03	$300.00	3.43
Plant #1 UV Building	30	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.65	838	0.0	$100.18	$4,320.00	$405.00	39.08
Plant #1 UV Building	1	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	139	0.0	$16.57	$107.56	$0.00	6.49

	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
Plant #1 Microstrainer Building	23	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.27	642	0.0	$76.80	$3,231.00	$300.00	38.16
Plant #1 Secondary Clarifier / Aeration Area	12	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	12	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	1.40	8,493	0.0	$1,015.70	$23,435.92	$1,200.00	21.89
Plant #1 Secondary Clarifier Building	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
Plant #1 Secondary Clarifier Building	20	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.10	558	0.0	$66.79	$2,880.00	$270.00	39.08
Plant #1 Secondary Clarifier Building	3	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	45	4,380	0.35	2,123	0.0	$253.92	$1,172.03	$300.00	3.43
Plant #1 Primary Clarifier Building	2	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	277	0.0	$33.15	$215.11	$0.00	6.49
Plant #1 Primary Clarifier Building	22	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.21	614	0.0	$73.46	$3,114.00	$290.00	38.44
Plant #1 Grit Building	23	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.27	642	0.0	$76.80	$3,231.00	$300.00	38.16
Plant #1 Grit Building	1	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	139	0.0	$16.57	$107.56	$0.00	6.49
Plant #1 Grit Building	2	Incandescent: Screw-In (75W) 1L	None	75	365	Relamp	No	2	LED Screw-In Lamps: LED: Screw-In (13W) 1L	None	13	365	0.10	51	0.0	$6.12	$107.51	$10.00	15.94
Plant #1 Grit Building	9	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	9	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	1.05	6,370	0.0	$761.77	$17,576.94	$900.00	21.89
Plant #1 Primary Clarifier Building	2	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	0.23	1,416	0.0	$169.28	$3,905.99	$200.00	21.89
Plant #1 Sludge Thickener Building	4	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	4	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	45	4,380	0.47	2,831	0.0	$338.57	$1,562.71	$400.00	3.43
Plant #1 Sludge Thickener Building	2	High-Pressure Sodium: (1) 150W Lamp	Wall Switch	188	4,380	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	45	4,380	0.23	1,416	0.0	$169.28	$3,905.99	$200.00	21.89
Plant #1 Sludge Thickener Building	20	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.10	558	0.0	$66.79	$2,880.00	$270.00	39.08
Plant #1 Sludge Thickener Building	2	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	277	0.0	$33.15	$215.11	$0.00	6.49
Plant #1 Sludge Thickener Building	23	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	23	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.27	642	0.0	$76.80	$3,231.00	$300.00	38.16
Plant #2 Sludge Thickener Building & Holding Tank	30	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	365	Relamp & Reballast	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	256	1.65	838	0.0	$100.18	$4,320.00	$405.00	39.08
Plant #2 Sludge Thickener Building & Holding Tank	3	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.03	416	0.0	$49.72	$322.67	$0.00	6.49
Storage Building (Old Compost Bldg)	117	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	730	Relamp & Reballast	No	117	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	730	5.62	5,694	0.0	$680.98	$13,689.00	$1,170.00	18.38
Plant #1, #2, #3 Generator Buildings	12	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	91	Relamp & Reballast	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	64	0.66	84	0.0	$9.99	$2,214.00	$225.00	199.09
UV Treatment Building	60	Incandescent: Trojan UV 3000 Plus	None	250	8,736	None	No	60	Incandescent: Trojan UV 3000 Plus	None	250	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Street Lamps	6	High-Pressure Sodium: (1) 250W Lamp	Wall Switch	295	4,320	Fixture Replacement	No	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Wall Switch	75	4,320	1.07	6,444	0.0	$770.60	$11,717.96	$600.00	14.43
Street Lamps	14	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	None	46	4,320	None	No	14	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	None	46	4,320	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin/Service Building Maintenance Area	30	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	3,285	Relamp & Reballast	Yes	30	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,300	3.30	15,078	0.0	$1,803.22	$5,665.00	$705.00	2.75

	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
Admin/Service Building Maintenance Area	16	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,285	Relamp & Reballast	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,300	1.26	5,734	0.0	$685.77	$2,644.00	$310.00	3.40
Admin/Service Building Maintenance Area	2	Exit Signs: Incandescent	Wall Switch	20	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	Wall Switch	6	8,760	0.02	277	0.0	$33.15	$215.11	$0.00	6.49
Admin/Service Building Hallway	13	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	13	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	1.43	3,258	0.0	$389.63	$2,643.83	$330.00	5.94
Admin/Service Building Hallway	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
Admin/Service Building Hallway	2	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	277	0.0	$33.15	$215.11	$0.00	6.49
Admin/Service Building Hallway Closet	1	LED Screw-In Lamps: Screw-In (7W) 1L	Wall Switch	7	365	None	No	1	LED Screw-In Lamps: Screw-In (7W) 1L	Wall Switch	7	365	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin/Service Building Lab	15	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	15	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	1.65	3,759	0.0	$449.57	$2,967.50	$370.00	5.78
Admin/Service Building Boiler Room	8	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	3,285	Relamp & Reballast	No	8	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,285	0.54	2,480	0.0	$296.54	$1,052.00	$120.00	3.14
Admin/Service Building Ferric Chloride Room	12	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,285	Relamp & Reballast	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,300	0.66	3,016	0.0	$360.64	$1,674.00	$155.00	4.21
Admin/Service Building Electrical Room	12	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	365	Relamp & Reballast	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	256	0.94	478	0.0	$57.15	$2,118.00	$250.00	32.69
Admin/Service Building Electrical Room	1	Exit Signs: Incandescent	Wall Switch	20	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	Wall Switch	6	8,760	0.01	139	0.0	$16.57	$107.56	$0.00	6.49
Admin/Service Building Boiler Room	8	Linear Fluorescent - T12: 4' T12 (40W) - 3L	Wall Switch	127	1,095	Relamp & Reballast	No	8	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,095	0.54	827	0.0	$98.85	$1,052.00	$120.00	9.43
Admin/Service Building Boiler Room	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin/Service Building Men's Room	7	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	730	Relamp & Reballast	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	511	0.39	391	0.0	$46.75	$1,089.00	$105.00	21.05
Admin/Service Building Lunch Room	4	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	0.44	1,002	0.0	$119.89	$917.33	$115.00	6.69
Admin/Service Building Pump Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.11	56	0.0	$6.68	$431.83	$20.00	61.66
Admin/Service Building Women's Room	3	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	365	Relamp & Reballast	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	256	0.33	168	0.0	$20.04	$755.50	$60.00	34.71
Admin/Service Building Women's Room	2	Incandescent: Screw-In (60W) 1L	Wall Switch	60	730	Relamp	Yes	2	LED Screw-In Lamps: LED: Screw-In (9W) 1L	Occupancy Sensor	10	511	0.09	88	0.0	$10.53	$377.51	$10.00	34.91
Admin/Service Building Conference Room	11	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	1.21	2,757	0.0	$329.68	$2,050.17	$255.00	5.45
Admin/Service Building Conference Room	1	Exit Signs: Incandescent	None	20	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	139	0.0	$16.57	$107.56	$0.00	6.49
Admin/Service Building Entry	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	3,285	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,285	0.10	438	0.0	$52.38	$234.00	$20.00	4.09
Admin/Service Building Admin Office	8	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	3,285	Relamp & Reballast	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,300	0.88	4,021	0.0	$480.86	$1,564.67	$195.00	2.85
Admin/Service Building Main Office	10	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	1.10	2,506	0.0	$299.71	$1,888.33	$235.00	5.52
Admin/Service Building Main Office	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
Admin/Service Building Back Office Area	8	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	1,638	Relamp & Reballast	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,147	0.88	2,005	0.0	$239.77	$1,564.67	$195.00	5.71

	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
Admin/Service Building Back Office Area	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

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
Treatment Plant #1	Grit Screw and Conveyance	2	Process Pump	7.5	89.5%	No	1,825	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Grit Screw and Conveyance	2	Process Blower	5.0	85.5%	No	8,760	Yes	89.5%	No		0.22	2,562	0.0	$306.39	$1,842.12	$0.00	6.01
Treatment Plant #1	Grit Screw and Conveyance	1	Other	0.8	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Equalization Basin	2	Process Pump	15.0	91.7%	No	52	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Equalization Basin	4	Other	10.0	80.0%	No	8,760	Yes	91.7%	No		2.64	31,267	0.0	$3,739.25	$6,268.20	$0.00	1.68
Treatment Plant #1	Primary Treatment	2	Other	3.0	84.0%	No	730	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Primary Treatment	2	Other	5.0	89.5%	No	183	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Primary Treatment	1	Other	3.0	84.0%	No	730	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Primary Treatment	2	Process Pump	10.0	91.0%	No	730	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Primary Treatment	2	Other	0.8	80.0%	No	8,760	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Primary Treatment	1	Other	2.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Aeration Treatment	2	Process Pump	7.5	80.0%	No	52	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Aeration Treatment	8	Other	20.0	91.0%	Yes	8,760	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Secondary Treatment	2	Process Pump	5.0	80.0%	No	1,460	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Secondary Treatment	3	Process Pump	7.5	88.5%	No	5,840	No	88.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Secondary Treatment	2	Process Pump	10.0	91.0%	No	183	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Secondary Treatment	2	Other	0.8	80.0%	No	8,760	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Secondary Treatment	2	Other	1.0	80.0%	No	2,555	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Microstrainer Treatment	2	Other	5.0	80.0%	No	8,760	Yes	89.5%	No		0.55	6,503	0.0	$777.69	$1,842.12	$0.00	2.37
Treatment Plant #1	Microstrainer Treatment	2	Process Pump	1.0	80.0%	No	8,760	No	80.0%	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
Treatment Plant #1	Microstrainer Treatment	2	Process Pump	5.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Soda Ash Chemical Feed	2	Process Pump	2.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Soda Ash Chemical Feed	1	Other	0.5	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Soda Ash Chemical Feed	1	Other	0.2	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Ferric Chloride Chemical Feed	1	Other	1.0	85.5%	No	2,190	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1	Ferric Chloride Chemical Feed	1	Other	1.5	85.5%	No	2,190	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
REUSE SYS	Service Water	2	Process Pump	7.5	91.0%	No	2,190	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
REUSE SYS	Service Water	3	Process Pump	20.0	93.0%	No	2,190	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Grit Screw and Conveyance	2	Process Pump	7.5	89.5%	No	1,825	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Grit Screw and Conveyance	2	Process Blower	5.0	85.5%	No	8,760	Yes	89.5%	No		0.22	2,562	0.0	$306.39	$1,842.12	$0.00	6.01
Treatment Plant #2	Grit Screw and Conveyance	1	Other	1.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Grit Screw and Conveyance	1	Other	0.8	80.0%	No	8,760	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Equalization Basin	2	Process Pump	10.0	85.5%	No	52	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Equalization Basin	4	Process Pump	10.0	80.0%	No	8,760	Yes	91.7%	No		2.64	31,267	0.0	$3,739.25	$6,268.20	$0.00	1.68
Treatment Plant #2	Primary Treatment	2	Process Pump	3.0	87.5%	No	2,190	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Primary Treatment	1	Other	3.0	82.0%	No	2,190	No	82.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Primary Treatment	3	Process Pump	5.0	89.5%	No	2,190	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Primary Treatment	2	Other	3.0	84.0%	No	730	No	84.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Primary Treatment	2	Other	0.8	80.0%	No	8,760	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Aeration Treatment	2	Process Pump	7.5	89.5%	No	52	No	89.5%	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
Treatment Plant #2	Aeration Treatment	8	Other	15.0	92.4%	Yes	8,760	No	92.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Secondary Treatment	2	Process Pump	3.0	87.5%	No	1,460	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Secondary Treatment	3	Process Pump	7.5	91.0%	No	5,840	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Secondary Treatment	2	Process Pump	7.5	89.5%	No	183	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Secondary Treatment	2	Other	0.8	80.0%	No	8,760	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Secondary Treatment	1	Other	1.0	86.5%	No	2,190	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Microstrainer Treatment	2	Other	5.0	80.0%	No	8,760	Yes	89.5%	No		0.55	6,503	0.0	$777.69	$1,842.12	$0.00	2.37
Treatment Plant #2	Microstrainer Treatment	2	Process Pump	6.0	80.0%	No	2,190	Yes	89.5%	No		0.66	1,951	0.0	$233.31	$1,842.12	$0.00	7.90
Treatment Plant #2	Soda Ash Chemical Feed	2	Process Pump	2.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Soda Ash Chemical Feed	1	Other	0.3	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Soda Ash Chemical Feed	1	Other	1.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2	Ferric Chloride Chemical Feed	2	Other	1.0	85.5%	No	2,190	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Sludge Management 1	Sludge Holding	1	Other	10.0	90.2%	No	2,190	No	90.2%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Sludge Management 1	Sludge Processing	4	Process Pump	5.0	88.5%	No	4,380	No	88.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Sludge Management 1	Sludge Processing	4	Other	3.0	80.0%	No	2,190	Yes	89.5%	No		0.66	1,951	0.0	$233.31	$3,219.36	$0.00	13.80
Sludge Management 1	Sludge Processing	6	Process Pump	10.0	91.0%	No	4,380	No	91.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Sludge Management 1	Sludge Processing	2	Process Pump	3.0	80.0%	No	104	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Sludge Management 1	Sludge Processing	1	Other	10.0	80.0%	No	2,190	Yes	91.0%	No		0.63	1,851	0.0	$221.41	$1,977.64	$0.00	8.93
Treatment Plant #2 Grit Bldg	Treatment Plant #2 Grit Building	2	Process Pump	2.0	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Garage	Garage	1	Other	2.0	85.5%	No	2,190	No	85.5%	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
Garage	Garage	1	Process Pump	10.0	89.5%	No	1,460	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1 Primary Clarifier Bldg	Treatment Plant #1 Primary Clarifier Bldg	2	Process Pump	2.0	85.5%	No	2,190	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1 Secondary Clarifier Bldg	Treatment Plant #1 Secondary Clarifier Bldg	2	Process Pump	0.8	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Unit Heater fans	Whole Facility	63	Supply Fan	0.3	85.5%	No	500	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2 Primary Clarifier Bldg	Treatment Plant #2 Primary Clarifier Bldg	2	Process Pump	2.0	85.5%	No	2,190	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #2 Secondary Clarifier Bldg	Treatment Plant #2 Secondary Clarifier Bldg	2	Process Pump	0.8	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Treatment Plant #1 Grit Bldg	Treatment Plant #1 Grit Building	2	Process Pump	0.8	80.0%	No	2,190	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin Building	Whole Building	10	Supply Fan	0.3	85.0%	No	1,600	No	85.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin Building Roof	Exhaust fans	9	Exhaust Fan	0.3	85.0%	No	1,600	No	85.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Grit Screw and Conveyance	Grit Removal	2	Process Pump	7.5	89.5%	Yes	0	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Grit Screw and Conveyance	Blower Motor	2	Process Blower	5.0	89.5%	No	0	No	89.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Primary Treatment	Scum Pump Motor / Grinder Motor	2	Process Pump	3.0	87.5%	No	0	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Primary Treatment	Sludge Pump Motor	2	Process Pump	15.0	92.4%	Yes	0	No	92.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Aeration Treatment	Surface Aerator Motor	3	Other	15.0	92.4%	Yes	0	No	92.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Secondary Treatment	Scum Pump Motor	1	Process Pump	3.0	87.5%	No	0	No	87.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Secondary Treatment	RAS Pump Motor / WAS Pump Motor	3	Process Pump	5.0	89.7%	No	0	No	89.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Secondary Treatment	Clarifier Scum Mixer Motor	1	Process Pump	2.0	85.5%	No	0	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Microstrainer Treatment	Microstrainer Treatment	1	Process Pump	5.0	89.7%	No	0	No	89.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Sludge Processing	Overflow Pump	2	Process Pump	5.0	89.7%	No	0	No	89.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Sludge Processing	Sludge Grinder Motor	1	Other	3.0	87.5%	No	0	No	87.5%	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
Plant #3 Sludge Processing	Sludge Pump Motor	2	Process Pump	20.0	93.0%	Yes	0	No	93.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #3 Chemical Feed	Pump Motors	6	Other	1.0	80.0%	No	0	No	80.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Admin/Service Building	Admin/Service Building	1	Non-Condensing Hot Water Boiler	552.00	Yes	1	Non-Condensing Hot Water Boiler	552.00	85.00%	Et	0.00	0	89.1	$857.83	$12,384.25	$966.00	13.31

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
Plant #2 Grit Building	Plant #2 Grit Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #2 Primary Clarifier Building	Plant #2 Primary Clarifier Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #2 Secondary Clarifier Building	Plant #2 Secondary Clarifier Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #1 Secondary Clarifier Building	Plant #1 Secondary Clarifier Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #1 Primary Clarifier Building	Plant #1 Primary Clarifier Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #1 Sludge Thickener Building	Plant #1 Sludge Thickener Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Plant #2 Sludge Thickener and Holding Tank	Plant #2 Sludge Thickener and Holding Tank	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Admin Building Boiler Room	Whole Building	1	Storage Tank Water Heater (> 50 Gal)	Yes	1	Storage Tank Water Heater (> 50 Gal)	Propane	80.00%	Et	9.00	4,003	-13.7	$347.15	$5,894.58	$204.00	16.39

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
Treatment Plant	7	Faucet Aerator (Kitchen)	2.50	2.20	0.00	884	0.0	$105.68	$50.19	$0.00	0.47
Admin Building Kitchen	1	Faucet Aerator (Kitchen)	2.20	2.20	0.00	0	0.0	$0.00	$7.17	$0.00	0.00
Admin Building Men's RR	2	Faucet Aerator (Lavatory)	1.50	1.00	0.00	421	0.0	$50.33	$14.34	$0.00	0.28
Admin Building Women's RR	2	Faucet Aerator (Lavatory)	1.50	1.00	0.00	421	0.0	$50.33	$14.34	$0.00	0.28
Admin Building Lab	1	Faucet Aerator (Kitchen)	2.20	2.20	0.00	0	0.0	$0.00	$7.17	$0.00	0.00
Admin Building Men's RR	1	Showerhead	2.00	2.00	0.00	0	0.0	$0.00	$89.30	$0.00	0.00
Admin Building Women's RR	1	Showerhead	2.00	2.00	0.00	0	0.0	$0.00	$89.30	$0.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Admin/Service Building Maintenance Area	1	Microwave	1,000.0	No
Admin/Service Building Maintenance Area	1	Desktop Computer	150.0	Yes
Admin/Service Building Maintenance Area	1	Laptop	45.0	Yes
Admin/Service Building Maintenance Area	1	Printer	60.0	Yes
Admin/Service Building Maintenance Area	1	Toaster Oven	1,200.0	No
Admin/Service Building Maintenance Area	1	Mini Fridge	153.0	Yes
Admin/Service Building Lab	1	Desktop Computer	150.0	Yes
Admin/Service Building Lab	1	Printer	60.0	Yes
Admin/Service Building Lab	1	Mini Fridge	153.0	No
Admin/Service Building Lab	1	Refrigerator	153.0	No
Admin/Service Building Lab	1	Incubator	1,000.0	No
Admin Offices	4	Desktop Computer	150.0	Yes
Admin Offices	1	Large Printer	600.0	Yes
Admin Offices	1	Space Heater	1,500.0	No

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

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N/A

ENERGY STAR® Score[1]

Musconetcong Sewerage Authority

Primary Property Type: Wastewater Treatment Plant
Gross Floor Area (ft²): 28,882
Built: 1992

For Year Ending: October 31, 2016
Date Generated: January 30, 2018

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

Property & Contact Information

Property Address	Property Owner	Primary Contact
Musconetcong Sewerage Authority 110 Continental Dr. North Musconetcong, New Jersey 07828	_____ , (___)___-_____	___ _____ , (___)___-_____ _____

Property ID: 6212837

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
386.7 kBtu/ft²

Source EUI
1,169.6 kBtu/ ft²

Annual Energy by Fuel

Propane (kBtu)	605,562 (5%)
Electric - Grid (kBtu)	10,563,682 (95%)

National Median Comparison

National Median Site EUI ()	N/A
National Median Source EUI ()	N/A
% Diff from National Median Source EUI	N/A%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,211