Local Government Energy Audit Report

New Courthouse

April 30, 2019

Prepared for:

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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information about financial incentives that may be available. Most energy conservation measures have received preliminary analysis of feasibility that identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to establish a basis for further discussion and to help prioritize energy measures.

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

TRC bases estimated installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from RS Means. We encourage the owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual 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. Please review all available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state and federal requirements.

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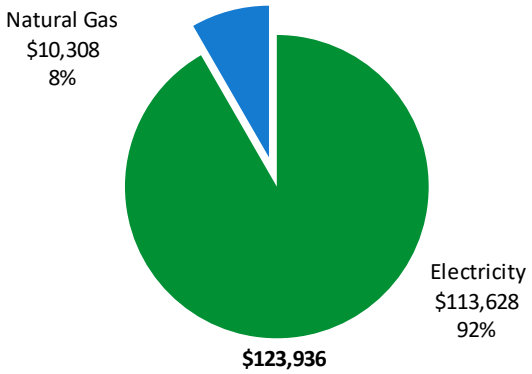
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for the New Courthouse. This report provides you with information about your facility's energy use, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help make changes in your facility. TRC Energy Services (TRC) conducted this study as part of a comprehensive effort to assist New Jersey school districts and local governments in controlling their energy costs and help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $123,936 Electricity: 774,484 kWh Natural Gas: 9,003 Therms	
ENERGY STAR® Benchmarking Score	20 *(1-100 scale)*	*The ENERGY STAR® Portfolio Manager® website was closed due to the ongoing federal government shutdown when this report was produced. Therefore, an SEP report and ENERGY STAR® score could not be generated for this site. Benchmarking for this site will be completed when the Portfolio Manager® website is reopened.*

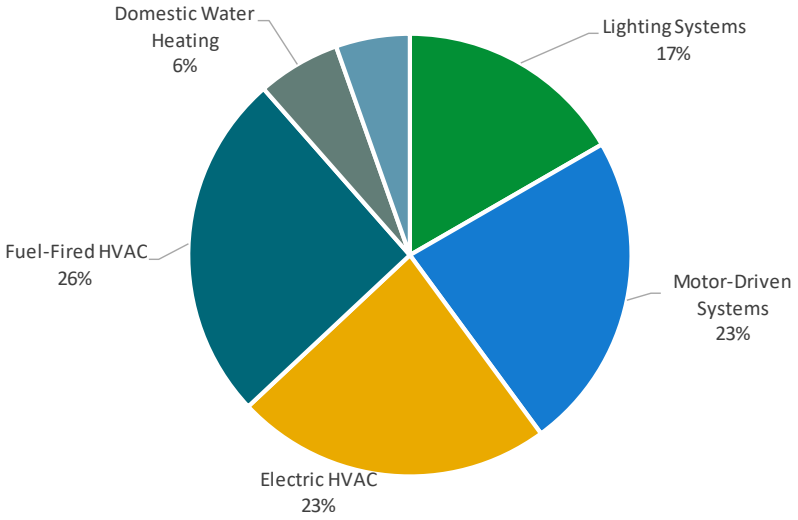


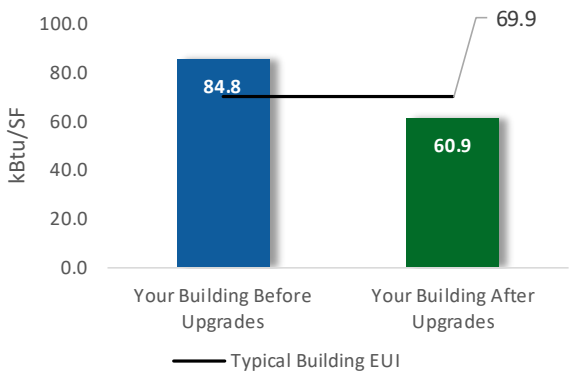
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

This energy audit considered a range of potential energy improvements in your building. Costs and savings will vary between improvements. Presented below are two potential scopes of work for your consideration.

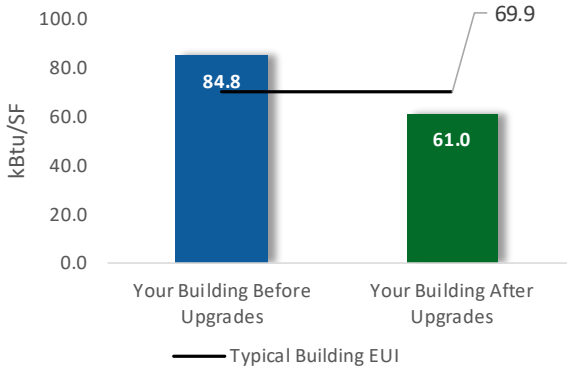
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$265,210
Potential Rebates & Incentives[1]	$23,405
Annual Cost Savings	$43,757
Annual Energy Savings	Electricity: 300,003 kWh
Greenhouse Gas Emission Savings	150 Tons
Simple Payback	5.5 Years
Site Energy Savings (all utilities)	28%



Scenario 2: Cost Effective Package[2]

Installation Cost	$241,160
Potential Rebates & Incentives	$23,405
Annual Cost Savings	$43,451
Annual Energy Savings	Electricity: 297,914 kWh
Greenhouse Gas Emission Savings	149 Tons
Simple Payback	5.0 Years
Site Energy Savings (all utilities)	28%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

[1] Incentives are based on current SmartStart Prescriptive incentives. Other Program incentives may apply.

[2] A cost-effective measure is defined as one where the simple payback does not exceed two-thirds of the expected proposed equipment useful life. Simple payback is based on the net measure cost after potential incentives.

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**93,611**	**32.6**	**-20**	**$13,508**	**$202,617**	**$47,955**	**$12,245**	**$35,710**	**2.6**	**91,952**
ECM 1	Install LED Fixtures	576	0.1	0	$85	$1,269	$966	$100	$866	10.2	580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,249	2.9	-2	$1,046	$15,688	$4,164	$566	$3,598	3.4	7,119
ECM 3	Retrofit Fixtures with LED Lamps	85,785	29.6	-18	$12,377	$185,660	$42,825	$11,579	$31,246	2.5	84,252
Lighting Control Measures		**27,151**	**9.3**	**-6**	**$3,917**	**$31,338**	**$21,240**	**$2,520**	**$18,720**	**4.8**	**26,664**
ECM 4	Install Occupancy Sensor Lighting Controls	25,362	8.7	-5	$3,659	$29,273	$19,440	$2,520	$16,920	4.6	24,907
ECM 5	Install High/Low Lighting Controls	1,789	0.6	0	$258	$2,065	$1,800	$0	$1,800	7.0	1,757
Motor Upgrades		**1,232**	**0.4**	**0**	**$181**	**$2,712**	**$15,832**	**$0**	**$15,832**	**87.6**	**1,241**
	Premium Efficiency Motors	1,232	0.4	0	$181	$2,712	$15,832	$0	$15,832	87.6	1,241
Variable Frequency Drive (VFD) Measures		**46,586**	**6.8**	**0**	**$6,835**	**$102,523**	**$28,984**	**$900**	**$28,084**	**4.1**	**46,912**
ECM 6	Install VFDs on Chilled Water Pumps	33,656	6.2	0	$4,938	$74,068	$17,238	$0	$17,238	3.5	33,892
ECM 7	Install VFDs on Heating Water Pumps	8,580	1.0	0	$1,259	$18,882	$6,552	$0	$6,552	5.2	8,640
ECM 8	Install VFDs on Cooling Tower Fans	4,350	-0.4	0	$638	$9,573	$5,194	$900	$4,294	6.7	4,380
Electric Unitary HVAC Measures		**857**	**0.3**	**0**	**$126**	**$1,886**	**$8,218**	**$0**	**$8,218**	**65.4**	**863**
	Install High Efficiency Air Conditioning Units	857	0.3	0	$126	$1,886	$8,218	$0	$8,218	65.4	863
Electric Chiller Replacement		**111,780**	**49.9**	**0**	**$16,400**	**$327,994**	**$136,767**	**$7,740**	**$129,027**	**7.9**	**112,562**
ECM 9	Install High Efficiency Chillers	111,780	49.9	0	$16,400	$327,994	$136,767	$7,740	$129,027	7.9	112,562
HVAC System Improvements		**3,111**	**0.0**	**3**	**$492**	**$7,374**	**$5,438**	**$0**	**$5,438**	**11.1**	**3,492**
ECM 10	Implement Demand Control Ventilation (DCV)	3,111	0.0	3	$492	$7,374	$5,438	$0	$5,438	11.1	3,492
Domestic Water Heating Upgrade		**12,512**	**0.0**	**0**	**$1,836**	**$18,356**	**$86**	**$0**	**$86**	**0.0**	**12,599**
ECM 11	Install Low-Flow DHW Devices	12,512	0.0	0	$1,836	$18,356	$86	$0	$86	0.0	12,599
Food Service & Refrigeration Measures		**3,163**	**0.4**	**0**	**$464**	**$2,320**	**$690**	**$0**	**$690**	**1.5**	**3,185**
ECM 12	Vending Machine Control	3,163	0.4	0	$464	$2,320	$690	$0	$690	1.5	3,185
TOTALS		**300,003**	**99.6**	**-22**	**$43,757**	**$697,120**	**$265,210**	**$23,405**	**$241,805**	**5.5**	**299,470**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 2 – Evaluated Energy Improvements

1.1 Planning Your Project

Careful planning makes for a successful energy project. When considering this scope of work, you will have some decisions to make, such as:

- How will the project be funded and/or financed?
- Is it best to pursue individual ECMs, groups of ECMs, or use a comprehensive approach where all ECMs are installed together?
- Are there other facility improvements that should happen at the same time?

Pick Your Installation Approach

New Jersey's Clean Energy Programs give you the flexibility to do a little or a lot. Rebates, incentives, and financing are available to help reduce both your installation costs and your energy bills. If you are planning to take advantage of these programs, make sure to review incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives before purchasing materials or starting installation.

The potential ECMs identified for this building likely qualify for multiple incentive and funding programs. Based on current program rules and requirements, your measures are likely to qualify for the following programs:

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures	X		X
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X		X
ECM 3	Retrofit Fixtures with LED Lamps	X		X
ECM 4	Install Occupancy Sensor Lighting Controls	X		X
ECM 5	Install High/Low Lighting Controls			X
ECM 6	Install VFDs on Chilled Water Pumps			X
ECM 7	Install VFDs on Hot Water Pumps			X
ECM 8	Install VFDs on Cooling Tower Fans	X		X
ECM 9	Install High Efficiency Chillers	X		X
ECM 10	Implement Demand Control Ventilation			X
ECM 11	Install Low-Flow Domestic Hot Water Devices			X
ECM 12	Vending Machine Control			X

Figure 3 – Funding Options

New Jersey's Clean Energy Programs At-A-Glance

	SmartStart Flexibility to install at your own pace	**Direct Install** Turnkey installation	**Pay for Performance** Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.

Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.

Individual Measures with SmartStart

For facilities wishing 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, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation.

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% of the cost of selected measures. Direct Install contractors will assess and verify individual measure eligibility and, in most cases, they perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also use this program. Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings.

More Options from Around the State

Financing and Planning Support with the Energy Savings Improvement Program (ESIP)

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the 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. You have already taken the first step as an LGEA customer, because this report is required to participate in ESIP.

Resiliency with Return on Investment through Combined Heat & Power (CHP)

The CHP program provides incentives for combined heat and power (aka cogeneration) and waste heat to power projects. Combined heat and power systems generate power on-site and recover heat from the generation system to meet on-site thermal loads. Waste heat to power systems use waste heat to generate power. You will work with a qualified developer who will design a system that meets your building's heating and cooling needs.

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces 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. By enabling commercial facilities to reduce their electric demand 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 demand response (DR) programs. Program participation is voluntary, and facilities receive payments regardless of whether they are called upon to curtail their load during times of peak demand.

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for the New Courthouse. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

TRC conducted this study as part of a comprehensive effort to assist New Jersey educational and local government facilities in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

2.1 Site Overview

On September 25, 2018, TRC performed an energy audit at the New Courthouse located in Salem, New Jersey. TRC met with Debby Turner to review the facility operations and help focus our investigation on specific energy-using systems.

The New Courthouse is a two-story, 41,760 square foot building built in 1968. Spaces include: offices, courtrooms, break areas, conference and meeting rooms, corridors, restrooms, storage space, stairwells, and electric and mechanical spaces.

2.2 Building Occupancy

The facility is occupied year-round. Typical weekday occupancy is seven staff.

There are no weekend activities or occupancy.

Building Name	Weekday/Weekend	Operating Schedule
New Courthouse	Weekday	8:30 AM - 4:30 PM
	Weekend	Closed

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are brick masonry over wooden frame. There is a section of roof that is flat and covered with a membrane and a low pitch portion with asphalt shingles. The roof is in fair condition.

Most of the windows are single pane with storm windows. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing little evidence of excessive wear. Exterior doors have wood frames and are in fair condition with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.

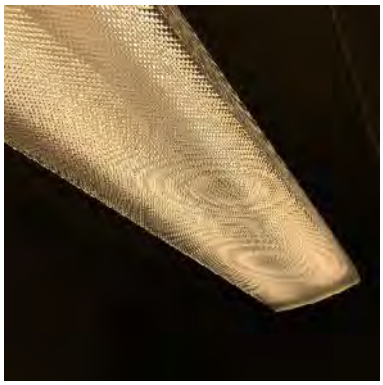
Building Walls

Building Windows

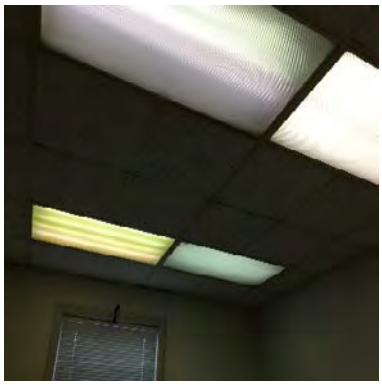
2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps with a few 40-Watt T12 fixtures. Additionally, there are some LED linear tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use less efficient magnetic ballasts.

Fixture types include 2-lamp, 3- lamp and 4-lamp, 2-foot or 4-foot long recessed fixtures and 2-foot fixtures with linear tube lamps. Most fixtures are in good condition. Interior lighting levels were generally sufficient.



Elevator Room Lights



Office Lighting

Exit Signs

Court Room Lights

Lighting fixtures in the building are controlled by wall switches.

Exterior fixtures include wall packs with CFL and high-pressure sodium lamps. The pole mounted fixtures have CFLs, and flood lighting and canopy lighting fixtures have LED lamps. Time clocks control the exterior light fixtures.

Building Exterior Wall Lights

Timeclock

2.5 Air Handling Systems

Air-Handlers and Fan Coil Units

Primary heating, cooling and ventilation is provided by eight air handlers located in the attic and various fan coil units in rooms. All air handling systems are constant volume. Air handlers have supply fans with 1 hp to 3 hp motors. Fan coils have a supply and return fan each with a fractional horsepower motor.

Air Conditioners

The building uses window and split-system air conditioning (AC) units for supplemental cooling. These vary in capacity between 1-ton and 4 tons. The units are in fair condition. They range in efficiency between 12 to 14 EER.

Split-System AC

Air-Handlers

Room Thermostat

Fan Coil Units

2.6 Heating Hot Water Systems

Four Weil McLain 702 MBh hot water boilers serve the building heating load. The burners are non-modulating with a nominal efficiency of 93.6%. The boilers are configured in an automated control scheme. Multiple boilers are required under high load conditions.

The boilers each have a dedicated 0.75 hp pump and are configured in a constant flow primary distribution with two, 5 hp constant speed hot water pumps operating with an automated control scheme. The boilers provide hot water throughout the building to the fan coil units and air handlers on a secondary loop.

Hot Water Boilers

Hot Water Pumps

2.7 Chilled Water Systems

The building has a water-cooled Multistack modular scroll chiller system with a total cooling capacity of 180 tons. The system consists of two 15 ton and six 25 ton modules. Modules can be staged on and off operating in a fashion similar to a variable speed drive chiller. The chillers are configured in a primary-secondary distribution loop with two 10 hp constant flow primary chilled water pumps, two 3 hp and two 5 hp secondary constant flow pumps. The chiller provides chilled water to the nearby Administration Building with one set of secondary pumps. With the other set, chilled water is supplied to air-handlers and fan coils in the building.

The condenser water system consists of a one-cell cooling tower. The tower has a 15 hp fan. Condenser water is supplied to the chillers by two 15 hp constant flow pumps.

Chiller

Chilled Water Pumps

Chilled Water Pumps

Condenser Water Pumps

2.8 Domestic Hot Water

Hot water is produced with a 40 gallon, 4.5 kW electric storage water heater. The domestic hot water pipes are not insulated.

Domestic Hot Water Heater

2.9 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 5.40% of total building energy use. This is higher than a typical building.

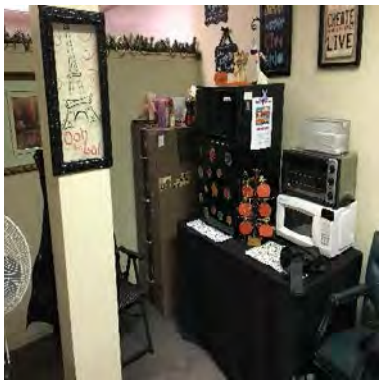
You may wish to consider paying particular attention to minimizing your plug load usage. This report makes suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are approximately 81 computer work stations throughout the facility. Plug loads throughout the building include office equipment, such as printers, copiers, paper shredders, and laptops, as well as water

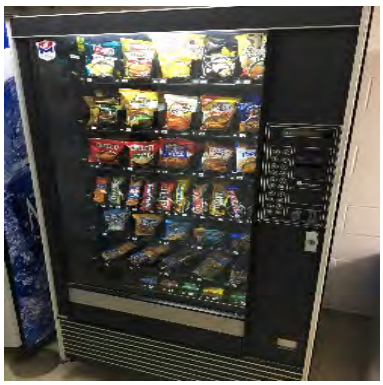
coolers, refrigerators, mini fridges, microwaves, coffee makers, televisions, toaster ovens and a dehumidifier and space heater.

There are two refrigerated vending machines and one non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.

Copiers



Microwaves and Mini Fridge



Vending Machine

Refrigerator

2.10 Water-Using Systems

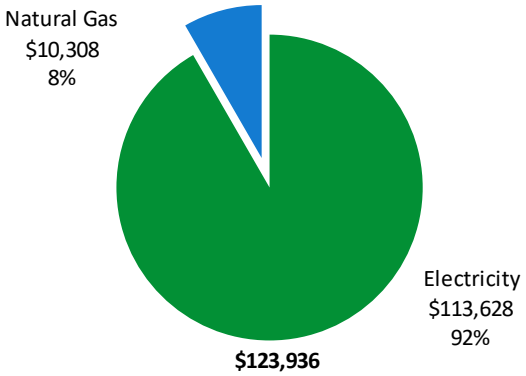
There are about a dozen restrooms with toilets, urinals, and sinks. Faucet flow rates are at between 1.5 and 3.0 gallons per minute (gpm) or higher.

Restroom Water Fixtures

3 Energy Use and Costs

Twelve months of utility billing data are used to develop annual energy consumption and cost data. This information creates a profile of the annual energy consumption and energy costs.

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	774,484 kWh	$113,628
Natural Gas	9,003 Therms	$10,308
Total		**$123,936**



An energy balance identifies and quantifies energy use in your various building systems. This can highlight areas with the most potential for improvement. This energy balance was developed using calculated energy use for each of the end uses noted in the figure.

The energy auditor collects information regarding equipment operating hours, capacity, efficiency and other operational parameters from facility staff, drawings, and on-site observations. This information is used as the inputs to calculate the existing conditions energy use for the site. The calculated energy use is then compared to the historical energy use and the initial inputs are revised, as necessary, to balance the calculated energy use to the historical energy use.

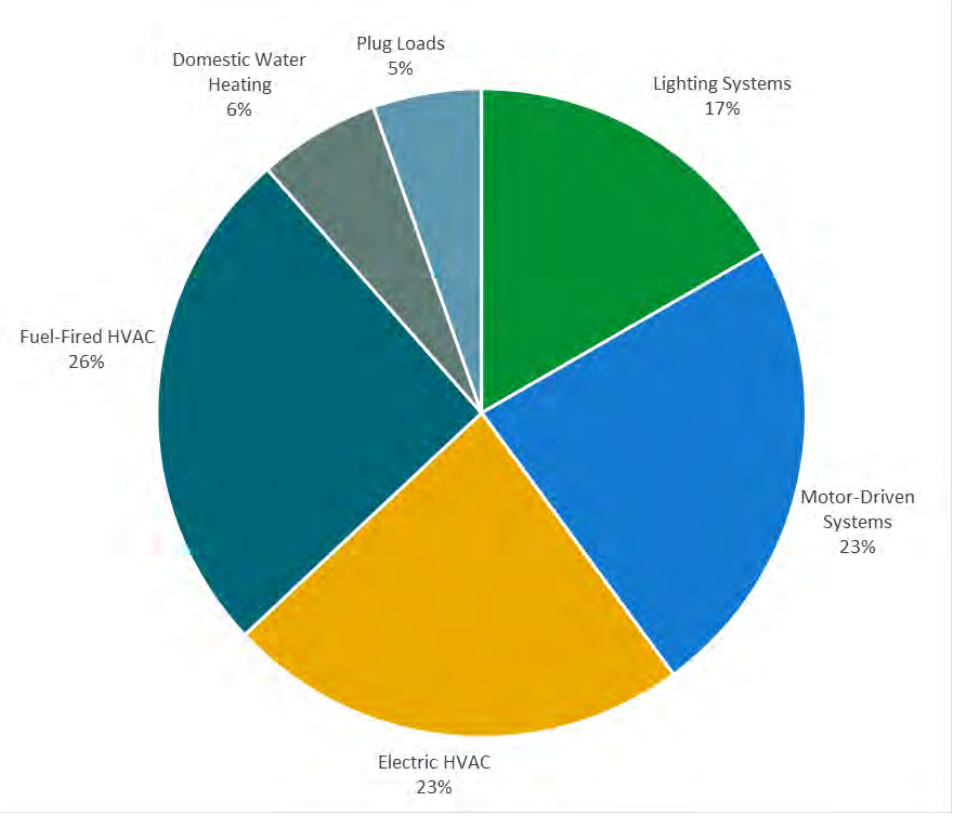
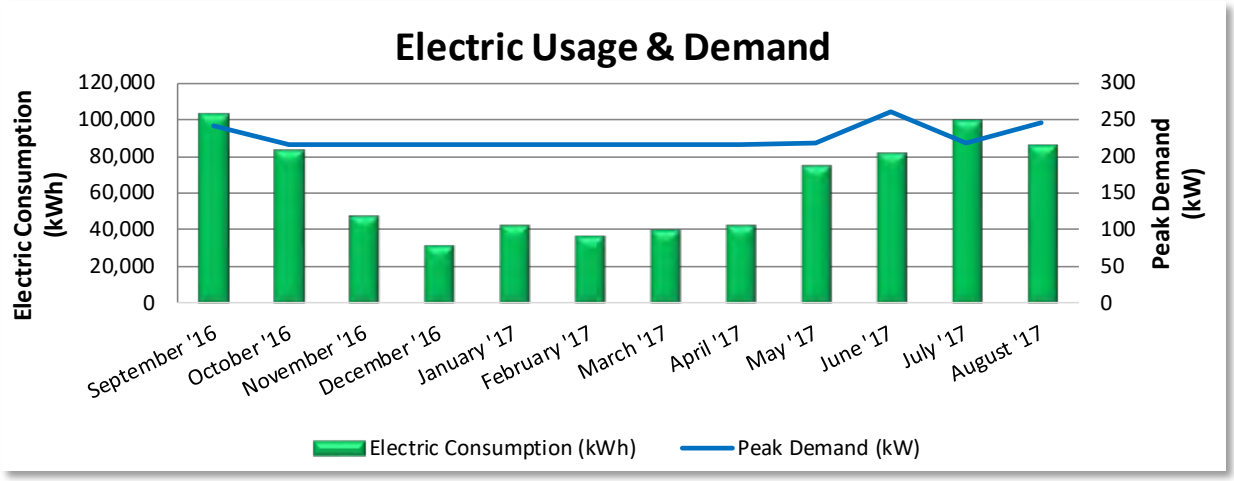


Figure 5 - Energy Balance

3.1 Electricity

Atlantic City Electric delivers electricity under rate class Secondary Annual General Service, with electric production provided by Constellation New Energy, a third-party supplier.



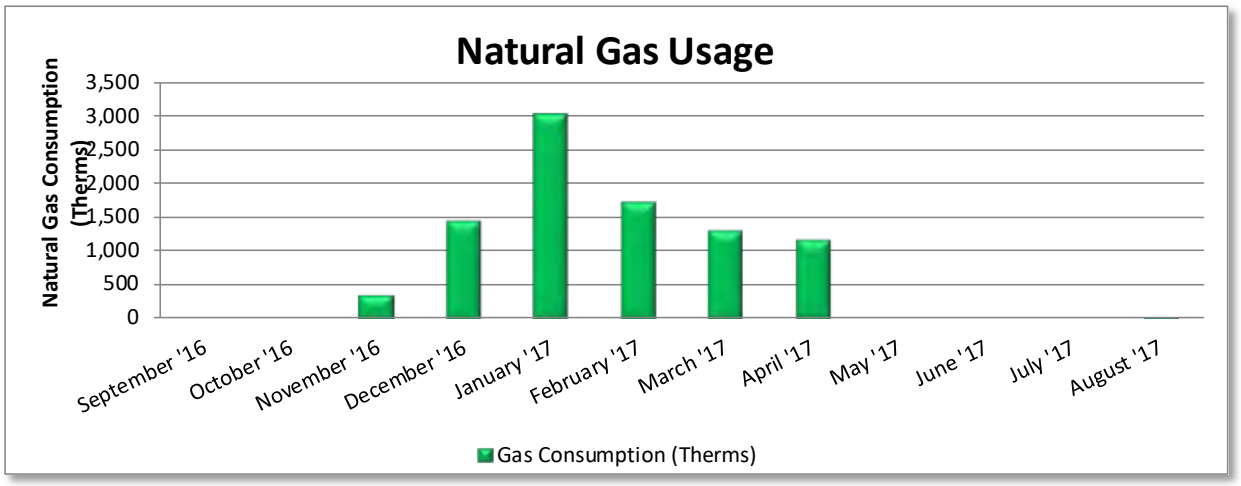
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
9/15/16	30	103,360	242	$2,067	$13,909
10/17/16	32	83,840	216	$2,037	$11,671
11/14/16	28	47,520	216	$1,783	$7,374
12/5/16	21	31,040	216	$1,910	$7,371
1/17/17	43	42,880	216	$2,164	$7,372
2/13/17	27	36,960	216	$1,717	$6,161
3/15/17	30	40,000	216	$1,908	$6,732
4/13/17	29	42,400	216	$1,844	$6,899
5/15/17	32	74,880	218	$2,047	$10,599
6/14/17	30	81,440	261	$2,300	$11,341
7/17/17	33	100,000	219	$2,127	$12,555
8/14/17	28	85,920	245	$2,015	$11,023
Totals	**363**	**770,240**	**261**	**$23,920**	**$113,005**
Annual	**365**	**774,484**	**261**	**$24,052**	**$113,628**

Notes:

- Peak demand of 261 kW occurred in September 2016.
- The average electric cost over the past 12 months was $0.147/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.
- Electricity consumption and demand noticeably increase in the summer months due to greater need for cooling provided by the electric chiller and HVAC equipment
- Electrical use may be higher than expected for a building this size because the chiller in the New Courthouse serves the Administration Buildings as well.

3.2 Natural Gas

South Jersey Gas delivers natural gas under rate class General Service FT, with natural gas supply provided by Constellation New Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
9/15/16	30	0	$0
10/17/16	32	0	$0
11/12/16	26	343	$392
12/12/16	30	1,443	$1,652
1/17/17	36	3,014	$3,451
2/13/17	27	1,706	$1,953
3/14/17	29	1,292	$1,479
4/13/17	30	1,146	$1,312
5/15/17	32	0	$0
6/14/17	30	0	$0
7/15/17	31	0	$0
8/14/17	30	10	$12
Totals	**363**	**8,954**	**$10,252**
Annual	**365**	**9,003**	**$10,308**

Notes:

- The average gas cost for the past 12 months is $1.145/therm, which is the blended rate used throughout the analysis.
- Gas consumption primarily occurs in the winter months due to the heating provided by the hot water boilers.

3.3 Benchmarking

Your building was benchmarked using the United States Environmental Protection Agency's *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the county, while neutralizing variations due to location, occupancy and operating hours. Some building types can be scored with a 1-100 ranking of a building's energy performance relative to the national building market. A score of 50 represents the national average and a score of 100 is best.

This ENERGY STAR® benchmarking score provides a comprehensive snapshot of your building's energy performance. It assesses the building's physical assets, operations, and occupant behavior, which is compiled into a quick and easy-to-understand score.

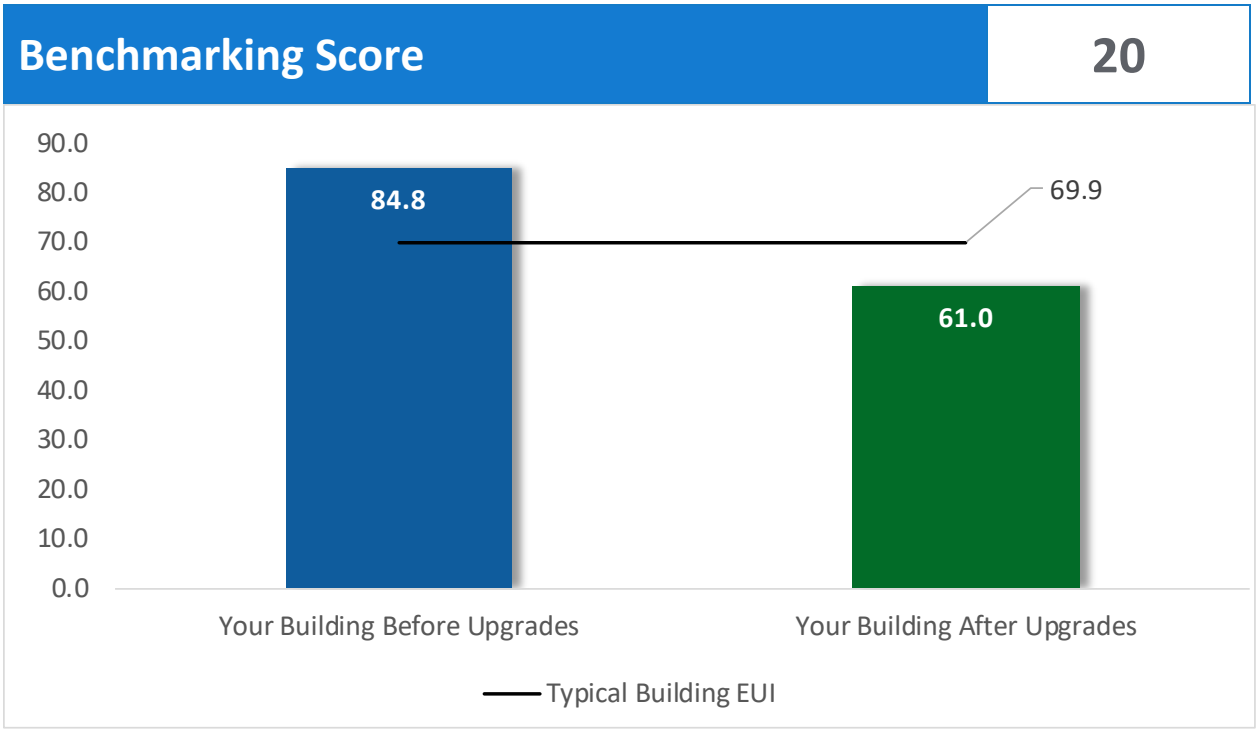


Figure 6 - Energy Use Intensity Comparison

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. A number of factors can cause a building to vary from the "typical" energy usage. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use and the benchmarking score.

Tracking Your Energy Performance

Keeping track of your energy use on a monthly basis is one of the best ways to keep energy costs in check. Update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance.

We have created a Portfolio Manager® account for your facility and we have already entered the monthly utility data shown above for you. Account login information for your account will be sent via email.

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.

For more information on ENERGY STAR® and Portfolio Manager®, visit their website[3].

[3] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1

4 ENERGY CONSERVATION MEASURES

The goal of this audit report is to identify and evaluate potential energy efficiency improvements, provide information about the cost effectiveness of those improvements, and recognize potential financial incentives from NJBPU. Most energy conservation measures have received preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is typically sufficient to demonstrate project cost-effectiveness and help prioritize energy measures.

Calculations of energy use and savings are based on the current version of the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the NJBPU. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances.

Operation and maintenance costs for the proposed new equipment will generally be lower than the current costs for the existing equipment—especially if the existing equipment is at or past its normal useful life. We have conservatively assumed there to be no impact on overall maintenance costs over the life of the equipment.

Financial incentives are based on the current NJCEP prescriptive SmartStart program. A higher level of investigation may be necessary to support any SmartStart Custom, Pay for Performance, or Direct Install incentive applications. Some measures and proposed upgrades may be eligible for higher incentives than those shown below through other NJCEP programs described in a following section of this report.

Appendix A: Equipment Inventory & Recommendations

The appendix provides a detailed list of the locations and recommended upgrades for each energy conservation measure.

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Lifetime Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**93,611**	**32.6**	**-20**	**$13,508**	**$202,617**	**$47,955**	**$12,245**	**$35,710**	**2.6**	**91,952**
ECM 1	Install LED Fixtures	576	0.1	0	$85	$1,269	$966	$100	$866	10.2	580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,249	2.9	-2	$1,046	$15,688	$4,164	$566	$3,598	3.4	7,119
ECM 3	Retrofit Fixtures with LED Lamps	85,785	29.6	-18	$12,377	$185,660	$42,825	$11,579	$31,246	2.5	84,252
Lighting Control Measures		**27,151**	**9.3**	**-6**	**$3,917**	**$31,338**	**$21,240**	**$2,520**	**$18,720**	**4.8**	**26,664**
ECM 4	Install Occupancy Sensor Lighting Controls	25,362	8.7	-5	$3,659	$29,273	$19,440	$2,520	$16,920	4.6	24,907
ECM 5	Install High/Low Lighting Controls	1,789	0.6	0	$258	$2,065	$1,800	$0	$1,800	7.0	1,757
Motor Upgrades		**1,232**	**0.4**	**0**	**$181**	**$2,712**	**$15,832**	**$0**	**$15,832**	**87.6**	**1,241**
	Premium Efficiency Motors	1,232	0.4	0	$181	$2,712	$15,832	$0	$15,832	87.6	1,241
Variable Frequency Drive (VFD) Measures		**46,586**	**6.8**	**0**	**$6,835**	**$102,523**	**$28,984**	**$900**	**$28,084**	**4.1**	**46,912**
ECM 6	Install VFDs on Chilled Water Pumps	33,656	6.2	0	$4,938	$74,068	$17,238	$0	$17,238	3.5	33,892
ECM 7	Install VFDs on Heating Water Pumps	8,580	1.0	0	$1,259	$18,882	$6,552	$0	$6,552	5.2	8,640
ECM 8	Install VFDs on Cooling Tower Fans	4,350	-0.4	0	$638	$9,573	$5,194	$900	$4,294	6.7	4,380
Electric Unitary HVAC Measures		**857**	**0.3**	**0**	**$126**	**$1,886**	**$8,218**	**$0**	**$8,218**	**65.4**	**863**
	Install High Efficiency Air Conditioning Units	857	0.3	0	$126	$1,886	$8,218	$0	$8,218	65.4	863
Electric Chiller Replacement		**111,780**	**49.9**	**0**	**$16,400**	**$327,994**	**$136,767**	**$7,740**	**$129,027**	**7.9**	**112,562**
ECM 9	Install High Efficiency Chillers	111,780	49.9	0	$16,400	$327,994	$136,767	$7,740	$129,027	7.9	112,562
HVAC System Improvements		**3,111**	**0.0**	**3**	**$492**	**$7,374**	**$5,438**	**$0**	**$5,438**	**11.1**	**3,492**
ECM 10	Implement Demand Control Ventilation (DCV)	3,111	0.0	3	$492	$7,374	$5,438	$0	$5,438	11.1	3,492
Domestic Water Heating Upgrade		**12,512**	**0.0**	**0**	**$1,836**	**$18,356**	**$86**	**$0**	**$86**	**0.0**	**12,599**
ECM 11	Install Low-Flow DHW Devices	12,512	0.0	0	$1,836	$18,356	$86	$0	$86	0.0	12,599
Food Service & Refrigeration Measures		**3,163**	**0.4**	**0**	**$464**	**$2,320**	**$690**	**$0**	**$690**	**1.5**	**3,185**
ECM 12	Vending Machine Control	3,163	0.4	0	$464	$2,320	$690	$0	$690	1.5	3,185
TOTALS		**300,003**	**99.6**	**-22**	**$43,757**	**$697,120**	**$265,210**	**$23,405**	**$241,805**	**5.5**	**299,470**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 7 – All Evaluated 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		**93,611**	**32.6**	**-20**	**$13,508**	**$47,955**	**$12,245**	**$35,710**	**2.6**	**91,952**
ECM 1	Install LED Fixtures	576	0.1	0	$85	$966	$100	$866	10.2	580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,249	2.9	-2	$1,046	$4,164	$566	$3,598	3.4	7,119
ECM 3	Retrofit Fixtures with LED Lamps	85,785	29.6	-18	$12,377	$42,825	$11,579	$31,246	2.5	84,252
Lighting Control Measures		**27,151**	**9.3**	**-6**	**$3,917**	**$21,240**	**$2,520**	**$18,720**	**4.8**	**26,664**
ECM 4	Install Occupancy Sensor Lighting Controls	25,362	8.7	-5	$3,659	$19,440	$2,520	$16,920	4.6	24,907
ECM 5	Install High/Low Lighting Controls	1,789	0.6	0	$258	$1,800	$0	$1,800	7.0	1,757
Variable Frequency Drive (VFD) Measures		**46,586**	**6.8**	**0**	**$6,835**	**$28,984**	**$900**	**$28,084**	**4.1**	**46,912**
ECM 6	Install VFDs on Chilled Water Pumps	33,656	6.2	0	$4,938	$17,238	$0	$17,238	3.5	33,892
ECM 7	Install VFDs on Heating Water Pumps	8,580	1.0	0	$1,259	$6,552	$0	$6,552	5.2	8,640
ECM 8	Install VFDs on Cooling Tower Fans	4,350	-0.4	0	$638	$5,194	$900	$4,294	6.7	4,380
Electric Chiller Replacement		**111,780**	**49.9**	**0**	**$16,400**	**$136,767**	**$7,740**	**$129,027**	**7.9**	**112,562**
ECM 9	Install High Efficiency Chillers	111,780	49.9	0	$16,400	$136,767	$7,740	$129,027	7.9	112,562
HVAC System Improvements		**3,111**	**0.0**	**3**	**$492**	**$5,438**	**$0**	**$5,438**	**11.1**	**3,492**
ECM 10	Implement Demand Control Ventilation (DCV)	3,111	0.0	3	$492	$5,438	$0	$5,438	11.1	3,492
Domestic Water Heating Upgrade		**12,512**	**0.0**	**0**	**$1,836**	**$86**	**$0**	**$86**	**0.0**	**12,599**
ECM 11	Install Low-Flow DHW Devices	12,512	0.0	0	$1,836	$86	$0	$86	0.0	12,599
Food Service & Refrigeration Measures		**3,163**	**0.4**	**0**	**$464**	**$690**	**$0**	**$690**	**1.5**	**3,185**
ECM 12	Vending Machine Control	3,163	0.4	0	$464	$690	$0	$690	1.5	3,185
TOTALS		**297,914**	**98.9**	**-22**	**$43,451**	**$241,160**	**$23,405**	**$217,755**	**5.0**	**297,366**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 8 – Cost Effective ECMs

4.1 Lighting

#	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		**93,611**	**32.6**	**-20**	**$13,508**	**$47,955**	**$12,245**	**$35,710**	**2.6**	**91,952**
ECM 1	Install LED Fixtures	576	0.1	0	$85	$966	$100	$866	10.2	580
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,249	2.9	-2	$1,046	$4,164	$566	$3,598	3.4	7,119
ECM 3	Retrofit Fixtures with LED Lamps	85,785	29.6	-18	$12,377	$42,825	$11,579	$31,246	2.5	84,252

When considering lighting upgrades, we suggest using a comprehensive design approach that simultaneously upgrades lighting fixtures and controls to maximize energy savings and improve occupant lighting. Comprehensive design will also consider appropriate lighting levels for different space types to make sure that the right amount of light is delivered where needed. If conversion to LED light sources are proposed, we suggest converting all of a specific lighting type (e.g., linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

Replace existing fixtures containing high-pressure sodium lamps with new LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

In some cases, HID fixtures can be retrofit with screw-based LED lamps. Replacing an existing HID fixture with a new LED fixture will generally provide better overall lighting optics, however, replacing the HID lamp with a LED screw-in lamp is typically a less expensive retrofit. We recommend you work with your lighting contractor to determine which retrofit solution is best suited to your needs and will be compatible with the existing fixture(s).

Maintenance savings may also be achieved since LED lamps last longer than other light sources and therefore do not need to be replaced as often.

Affected building areas: exterior wall pack fixture

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent fixtures by removing the fluorescent tubes and ballasts and replacing them with LED tubes and LED drivers (if necessary), which are designed to be used in retrofitted fluorescent fixtures.

The measure uses the existing fixture housing but replaces the electric components with more efficient lighting technology which use less power than other lighting technologies but provides equivalent lighting output. Maintenance savings may also be achieved since LED tubes last longer than fluorescent tubes and therefore do not need to be replaced as often.

Affected building areas: all areas with fluorescent fixtures with T12 tubes

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies.

This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space. Maintenance savings may also be available, as longer-lasting LEDs lamps will not need to be replaced as often as the existing lamps.

Affected building areas: all areas with fluorescent fixtures with T8 tubes and CFLs

4.2 Lighting Controls

#	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		**27,151**	**9.3**	**-6**	**$3,917**	**$21,240**	**$2,520**	**$18,720**	**4.8**	**26,664**
ECM 4	Install Occupancy Sensor Lighting Controls	25,362	8.7	-5	$3,659	$19,440	$2,520	$16,920	4.6	24,907
ECM 5	Install High/Low Lighting Controls	1,789	0.6	0	$258	$1,800	$0	$1,800	7.0	1,757

Lighting controls reduce energy use by turning off or lowering, lighting fixture power levels when not in use. A comprehensive approach to lighting design should upgrade the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 4: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

Occupancy sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Most occupancy sensor lighting controls allow users to manually turn fixtures on/off, as needed. Some controls can also provide dimming options.

Occupancy sensors can be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are best suited to single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in large spaces, locations without local switching, and where wall switches are not in the line-of-sight of the main work area.

This measure provides energy savings by reducing the lighting operating hours.

Affected building areas: restrooms, offices, court rooms, and meeting rooms

ECM 5: Install High/Low Lighting Controls

Install occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons.

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Fixtures automatically switch back to low level after a predefined period of vacancy. In parking lots and parking garages with significant ambient lighting, this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylight.

This measure provides energy savings by reducing the light fixture power draw when reduced light output is appropriate.

Affected building areas: hallways

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

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,232**	**0.4**	**0**	**$181**	**$15,832**	**$0**	**$15,832**	**87.6**	**1,241**
	Premium Efficiency Motors	1,232	0.4	0	$181	$15,832	$0	$15,832	87.6	1,241

Premium Efficiency Motors

This evaluation assumes that existing motors will be replaced with motors of equivalent size and type. In some cases, additional savings may be possible by downsizing motors to better meet the motor's current load requirements.

Affected motors:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
Attic	AHU 1: 1st Flr Waiting	1	Supply Fan	1.0	
Attic	AHU 3	1	Supply Fan	3.0	
Attic	AHU 4: Treasurer Room	1	Supply Fan	3.0	
Attic	AHU 5: 2nd Flr Lunch Room	1	Supply Fan	3.0	
Attic	AHU 6: 2nd Flr Case Mgmt	1	Supply Fan	3.0	
basement	Chilled Water System	2	Chilled Water Pump	10.0	
Basement	Hot Water Distribution	2	Heating Hot Water Pump	5.0	
Basement	Chilled Water System	2	Chilled Water Pump	3.0	
Basement	Chilled Water System	1	Chilled Water Pump	7.5	
Elevator Room	Elevators	1	Other	15.0	
Roof	Condenser Water	1	Cooling Tower Fan	15.0	

Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours. The base case motor energy consumption is estimated using the efficiencies found on nameplates or estimated based on the age of the motor and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the current *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*.

This measure is not cost effective based on energy savings alone, because the simple payback period of the measure exceeds the expected useful life of the replacement equipment. For motors where VFDs are indicated (see VFD Measures below), inverter duty motors are typically a requirement. It may be necessary to replace those motors if existing motors are not properly rated.

4.4 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**46,586**	**6.8**	**0**	**$6,835**	**$28,984**	**$900**	**$28,084**	**4.1**	**46,912**
ECM 6	Install VFDs on Chilled Water Pumps	33,656	6.2	0	$4,938	$17,238	$0	$17,238	3.5	33,892
ECM 7	Install VFDs on Heating Water Pumps	8,580	1.0	0	$1,259	$6,552	$0	$6,552	5.2	8,640
ECM 8	Install VFDs on Cooling Tower Fans	4,350	-0.4	0	$638	$5,194	$900	$4,294	6.7	4,380

Variable frequency drives control motors for fans, pumps, and process equipment based on the actual output required of the driven equipment. Energy savings result from more efficient control of motor energy usage when equipment operates at partial load. The magnitude of energy savings depends on the estimated amount of time that the motor would operate at partial load. For equipment with proposed

VFDs, we have included replacing the controlled motor with a new motor —unless the existing motor meets or exceeds IHP 2014 standards—to conservatively account for the cost of an inverter duty rated motor. The savings and cost associated with the new motor are presented with the Premium Efficiency Motor measures. If the proposed VFD measure is not selected for implementation the motor replacement should be reevaluated.

ECM 6: Install VFDs on Chilled Water Pumps

Install VFDs to control chilled water pumps. Two-way valves must serve the chilled water coils being served and the chilled water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the chilled water distribution they will need to be modified when this measure is implemented. As the chilled water valves close, the differential pressure increases, and the VFD modulates the pump speed to maintain a differential pressure setpoint.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will need to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

Energy savings result from reducing the pump motor speed (and power) as chilled water valves close. The magnitude of energy savings is based on the estimated amount of time that the system operates at reduced loads.

ECM 7: Install VFDs on Heating Water Pumps

Install variable frequency drives (VFD) to control heating water pumps. Two-way valves must serve the hot water coils and the hot water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the hot water distribution they will need to be modified when this measure is implemented. As the hot water valves close, the differential pressure increases and the VFD modulates the pump speed to maintain a differential pressure setpoint.

Energy savings result from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

ECM 8: Install VFDs on Cooling Tower Fans

Install a VFD to control the cooling tower fan motor. The VFD will allow the cooling tower fan to operate at the minimum speed necessary to maintain the temperature of the condenser water returning to the chiller.

Energy savings result from reducing fan speed (and power) when there is a reduced load on the chiller and outside air wet bulb temperatures are depressed. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.5 Electric Unitary HVAC

#	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		**857**	**0.3**	**0**	**$126**	**$8,218**	**$0**	**$8,218**	**65.4**	**863**
	Install High Efficiency Air Conditioning Units	857	0.3	0	$126	$8,218	$0	$8,218	65.4	863

Install High Efficiency Air Conditioning Units

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, most of the units at this facility are nearing or have reached the end of their normal useful life. Typically, the marginal cost of purchasing a high efficiency unit can be justified by the marginal savings from the improved efficiency. When the ductless mini-split AC is eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

4.6 Electric Chillers

#	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 Chiller Replacement		**111,780**	**49.9**	**0**	**$16,400**	**$136,767**	**$7,740**	**$129,027**	**7.9**	**112,562**
ECM 9	Install High Efficiency Chillers	111,780	49.9	0	$16,400	$136,767	$7,740	$129,027	7.9	112,562

ECM 9: Install High Efficiency Chillers

Replace older inefficient electric chillers with new high efficiency chillers. The type of chiller to be installed depends on the magnitude of the cooling load and variability of the cooling load profile, for example:

- Positive displacement chillers are usually under 600 tons of cooling capacity and centrifugal chillers generally start at 150 tons of cooling capacity.
- Constant speed chillers should be used to meet cooling loads with little or no variation while variable speed chillers are more efficient for variable cooling load profiles.
- Water cooled chillers are more efficient than air cooled chillers but require cooling towers and additional pumps to circulate the cooling water.
- In any given size range, variable speed chillers tend to have better partial load efficiency, but worse full load efficiency, than constant speed chillers.

Energy savings result from the improvement in chiller efficiency and matching the right type of chiller to the cooling load. The energy savings are calculated based on the cooling capacity of the new chiller, the improvement in efficiency compared with the base case equipment, the cooling load profile, and the estimated annual operating hours of the chiller before and after the upgrade.

For the purposes of this analysis, we evaluated the replacement of chillers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your design team to select chillers that are sized appropriately for the cooling load at this facility. In some cases, the plant energy use can be reduced by selecting multiple chillers that match the facility load profile rather than one or two large chillers. This can also improve the chiller plant reliability through increased redundancy. Energy savings are maximized by proper selection of new equipment based on the cooling load profile.

4.7 HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**3,111**	**0.0**	**3**	**$492**	**$5,438**	**$0**	**$5,438**	**11.1**	**3,492**
ECM 10	Implement Demand Control Ventilation (DCV)	3,111	0.0	3	$492	$5,438	$0	$5,438	11.1	3,492

ECM 10: Implement Demand Control Ventilation (DCV)

Demand control ventilation (DCV) monitors the indoor air's carbon dioxide (CO_2) content to measure room occupancy. This data is used to regulate the amount of outdoor air provided to the space for ventilation.

Standard ventilation systems often provide outside air based on a space's estimated maximum occupancy but not actual occupancy. During low occupancy periods, the space may then be over ventilated. This wastes energy through excessive fan motor usage as well as heating and cooling the excess outside air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels. DCV is most suited for facilities where occupancy levels vary significantly from hour to hour and day to day.

Energy savings associated with DCV are based on hours of operation, space occupancy, system air flow, outside air reduction, and other factors. Energy savings results from eliminating unnecessary ventilation and space conditioning.

Affected building areas: courtrooms and 2nd floor lunch room

4.8 Domestic Water Heating

#	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		**12,512**	**0.0**	**0**	**$1,836**	**$86**	**$0**	**$86**	**0.0**	**12,599**
ECM 11	Install Low-Flow DHW Devices	12,512	0.0	0	$1,836	$86	$0	$86	0.0	12,599

ECM 11: Install Low-Flow DHW Devices

Install low-flow devices to reduce overall hot water demand. The following low-flow devices are recommended to reduce hot water usage:

Device	Flow Rate
Faucet aerators (lavatory)	0.5 gpm
Faucet aerator (kitchen)	1.5 gpm
Showerhead	2.0 gpm
Pre-rinse spray valve (kitchen)	1.28 gpm

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing.

Additional cost savings may result from reduced water usage.

4.9 Food Service & Refrigeration Measures

#	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)
Food Service & Refrigeration Measures		**3,163**	**0.4**	**0**	**$464**	**$690**	**$0**	**$690**	**1.5**	**3,185**
ECM 12	Vending Machine Control	3,163	0.4	0	$464	$690	$0	$690	1.5	3,185

ECM 12: Vending Machine Control

Vending machines operate continuously, even during unoccupied hours. Install occupancy sensor controls to reduce energy use. These controls power down vending machines when the vending machine area has been vacant for some time, and they power up the machines at necessary regular intervals or when the surrounding area is occupied. Energy savings are dependent on the vending machine and activity level in the area surrounding the machines.

5 ENERGY EFFICIENT BEST PRACTICES

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®

You've heard it before - you can't manage what you don't measure. ENERGY STAR® Portfolio Manager® is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[4]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Lighting Maintenance

Clean lamps, reflectors and lenses of dirt, dust, oil, and smoke buildup every six to twelve months. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust. Together, this can reduce total light output by up to 60% while still drawing full power.

In addition to routine cleaning, developing a maintenance schedule can ensure that maintenance is performed regularly, and it can reduce the overall cost of fixture re-lamping and re-ballasting. Group re-lamping and re-ballasting maintains lighting levels and minimizes the number of site visits by a lighting technician or contractor, decreasing the overall cost of maintenance.

AC System Evaporator/Condenser Coil Cleaning

Dirty evaporator and condenser coils restrict air flow and restrict heat transfer. This increases the loads on the evaporator and condenser fan and decreases overall cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Boilers should be cleaned according to the manufacturer's instructions to remove soot and scale from the water side or fire side of the boiler.

Water Heater Maintenance

Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. At least once a year, follow manufacturer instructions to drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Annual checks should include checks for:

[4] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager

- Leaks or heavy corrosion on the pipes and valves.
- Corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot, or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional.
- For electric water heaters, look for signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank.
- For water heaters more than three years old, have a technician inspect the sacrificial anode annually.

Water Conservation

Installing dual flush or low-flow toilets and low-flow/waterless urinals are ways to reduce water use. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and for flush valve toilets is 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

For more information regarding water conservation go to the EPA's WaterSense™ website[5] or download a copy of EPA's "WaterSense™ at Work: Best Management Practices for Commercial and Institutional Facilities"[6] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

Water conservation devices that do not reduce hot water consumption will not provide energy savings at the site level, but they may significantly affect your water and sewer usage costs. Any reduction in water use does however ultimately reduce grid-level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users.

If the facility has detached buildings with a master water meter for the entire campus, check for unnatural wet areas in the lawn or water seeping in the foundation at water pipe penetrations through the foundation. Periodically check overnight meter readings when the facility is unoccupied, and there is no other scheduled water usage.

Manage irrigation systems to use water more effectively outside the building. Adjust spray patterns so that water lands on intended lawns and plantings and not on pavement and walls. Consider installing an evapotranspiration irrigation controller that will prevent over-watering.

Procurement Strategies

Purchasing efficient products reduces energy costs without compromising quality. Consider modifying your procurement policies and language to require ENERGY STAR® or WaterSense™ products where available.

[5] https://www.epa.gov/watersense

[6] https://www.epa.gov/watersense/watersense-work-0

6 On-site Generation

You don't have to look far in New Jersey to see one of the thousands of solar electric systems providing clean power to homes, businesses, schools, and government buildings. On-site generation includes both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) technologies that generate power to meet all or a portion of the facility's electric energy needs. Also referred to as distributed generation, these systems contribute to greenhouse gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases reduction, which results in improved electric grid reliability through better use of transmission and distribution systems.

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze 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 Solar Photovoltaic

Photovoltaic (PV) panels convert sunlight into electricity. Individual panels are combined into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution system.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **high potential** for installing a PV array.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential. A PV array located on the roof may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

The graphic below displays the results of the PV potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

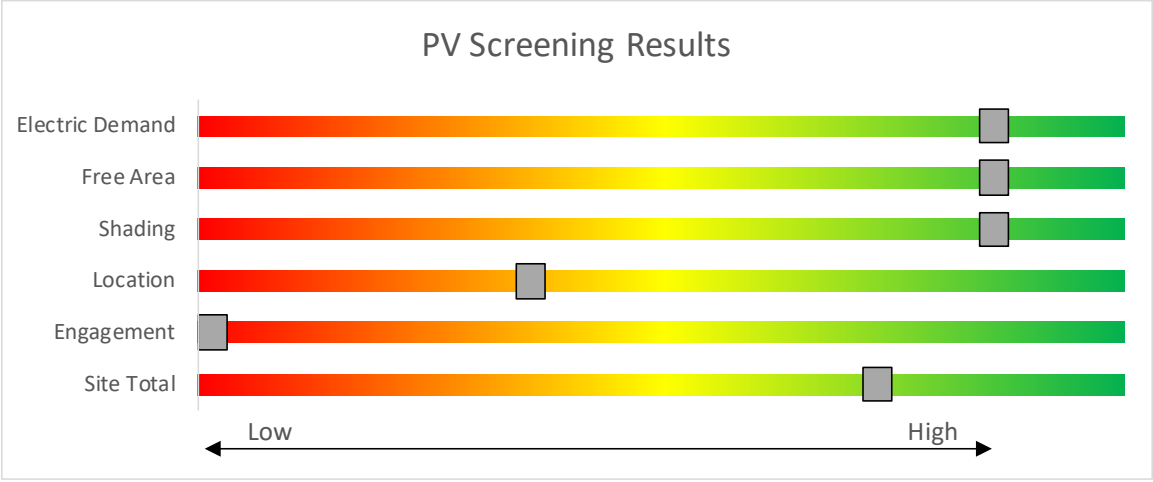


Figure 9 - Photovoltaic Screening

Solar Renewable Energy Certificate (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your PV system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

If you are considering installing solar photovoltaics on your building, visit www.njcleanenergy.com/srec for more information about the SREC Registration Program.

Get more information about solar power in New Jersey or find a qualified solar installer who can help you decide if solar is right for your building:

- **Basic Info on Solar PV in NJ**: www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: 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) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for space cooling.

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need 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 **no potential** for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The low and infrequent thermal load and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

The graphic below displays the results of the CHP potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

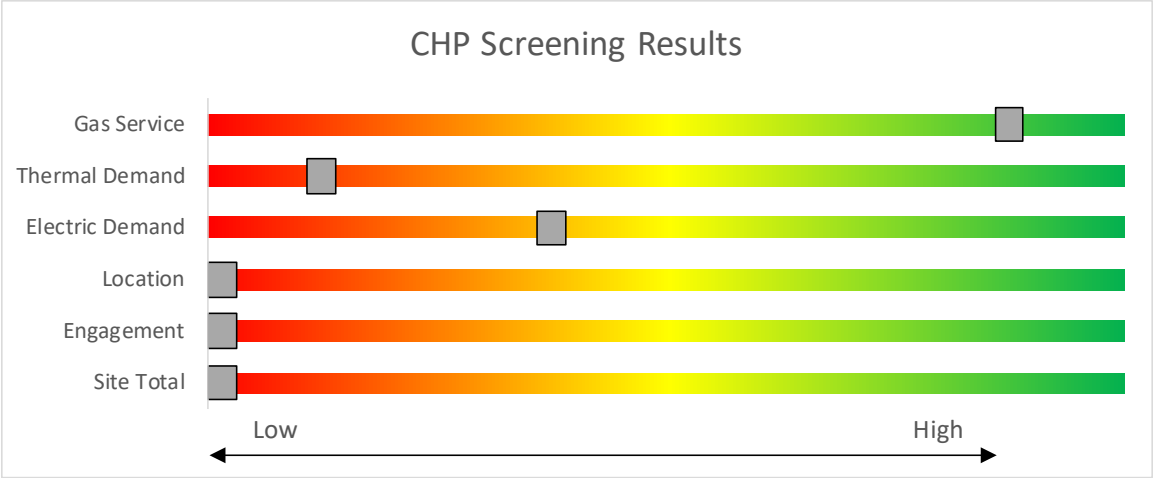


Figure 10 - Combined Heat and Power Screening

7 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? New Jersey's Clean Energy Programs can help. Pick the program that works best for you. Incentive programs that may apply to this facility are identified in the Executive Summary. This section provides an overview of currently available in New Jersey's Clean Energy Programs.

	SmartStart *Flexibility to install at your own pace*	**Direct Install** *Turnkey installation*	**Pay for Performance** *Whole building upgrades*
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

7.1 SmartStart

SmartStart offers incentives for installing prescriptive and custom energy efficiency measures at your facility. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades. This program serves most common equipment types and sizes.

SmartStart routinely adds, removes, or modifies incentives from year-to-year for various energy-efficient 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

Incentives

The SmartStart Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type.

SmartStart Custom provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives. Custom incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings. Incentives are 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

Submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. You can work with your preferred contractor or use internal staff to install measures.

Visit www.njcleanenergy.com/SSB for a detailed program description, instructions for applying, and applications.

7.2 Pay for Performance - Existing Buildings

Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings. P4P is a generally a good option for medium-to-large sized facilities looking to implement as many measures as possible under a single project to achieve deep energy savings. This program has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program.

Incentives

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

How to Participate

Contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, they will help further evaluate the measures identified in this report through development of the energy reduction plan), assist you in implementing selected measures, and verify actual savings one year after the installation. Your Partner will also help you apply for incentives.

Approval of the final scope of work is required by the program prior to installation. Installation can be done by the contractor of your choice (some P4P Partners are also contractors) or by internal staff, but the Partner remains involved throughout construction to ensure compliance with the program requirements.

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

7.3 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) serves New Jersey's government agencies by financing energy projects. 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. Annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive for the life of the contract.

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 described above can also be used to help further reduce the total project cost of eligible measures.

How to Participate

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 used 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. Carefully consider all alternatives to develop an approach that best meets your needs. A detailed program description and application can be found at: www.njcleanenergy.com/ESIP.

ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you can use NJCEP incentive programs to help further reduce costs when developing the energy savings plan. Refer to the ESIP guidelines at the link above for further information and guidance on next steps.

7.4 SREC Registration Program

The SREC (Solar Energy Renewable 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 prior to the start of construction 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. SRECs 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 SRECs 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 Renewable Portfolio Standard. Purchasing SRECs can help them meet those requirements. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period fluctuates depending on supply and demand.

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

8 Energy Purchasing and Procurement Strategies

8.1 Retail Electric Supply Options

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 already buys electricity from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party electric suppliers is available at the NJBPU website[7].

8.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey is also deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate monthly. 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 typically depends on whether a customer prefers 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 does not already purchase natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility already purchases natural gas from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party natural gas suppliers is available at the NJBPU website[8].

[7] www.state.nj.us/bpu/commercial/shopping.html.

[8] 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	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Facilities Management	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	4	None	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	93	0	$13	$0	$0	0.0
Facilities Management	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.5	1,534	0	$221	$584	$160	1.9
Facilities Management	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.3	871	0	$126	$562	$115	3.6
Facilities Storage Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	1,000	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	64	0	$9	$69	$10	6.4
Mens Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.0	109	0	$16	$37	$10	1.7
Mens Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
Mens Restroom	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	99	0	$14	$65	$6	4.1
Custodial Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	5.2
M/W Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
M/W Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 1L	Wall Switch	S	22	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	1,656	0.0	42	0	$6	$16	$3	2.2
Womens Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
Womens Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	55	0	$8	$33	$6	3.3
Telephone Room	8	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.5	1,410	0	$203	$820	$115	3.5
Telephone Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	176	0	$25	$69	$10	2.3
Electrical Room	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	1,000	2	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.2	191	0	$28	$206	$30	6.4
Boiler Room	11	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	1,000	2	Relamp & Reballast	No	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.6	701	0	$101	$756	$110	6.4
Elevator Room	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	1,000		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	0	0	$0	$0	$0	0.0
Switchboard	34	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	34	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	2.2	6,520	-1	$941	$3,293	$785	2.7
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	0.0	0	0	$0	$0	$0	0.0
Jury Management Office	38	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	38	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	2.5	7,287	-2	$1,051	$3,585	$865	2.6
Jury Assembly	40	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	40	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	2.6	7,670	-2	$1,107	$3,731	$905	2.6
Mail Room	48	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	48	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	3.1	9,204	-2	$1,328	$4,585	$1,100	2.6
Basement	10	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	1,000	3	Relamp	No	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,000	0.1	173	0	$25	$325	$60	10.6
Hallway	5	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	5	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Hallway	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	S	17	2,400	5	None	Yes	1	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	1,656	0.0	14	0	$2	$0	$0	0.0

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Hallway	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,400	5	None	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,656	0.0	23	0	$3	$0	$0	0.0
Hallway	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	0.2	490	0	$71	$364	$45	4.5
Womens Restroom	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	55	0	$8	$33	$6	3.3
Womens Restroom	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	435	0	$63	$416	$75	5.4
Womens Restroom	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	352	0	$51	$138	$20	2.3
Mens Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	327	0	$47	$380	$65	6.7
Mens Restroom	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	99	0	$14	$65	$6	4.1
Mens Restroom 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
Mens Restroom 2	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	99	0	$14	$65	$6	4.1
M/W Restroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
Civil Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	1,656	0.0	55	0	$8	$33	$6	3.3
Civil Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.8	2,301	0	$332	$1,146	$275	2.6
Storage Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	5.2
Mail Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	153	0	$22	$69	$10	2.7
Office 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Kitchen Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	384	0	$55	$416	$75	6.2
Server Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,000	3	Relamp	No	3	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	1,000	0.1	160	0	$23	$164	$45	5.2
Server Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,000	0.0	17	0	$2	$33	$6	10.6
Electric Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	5.2
Electric Room 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.0	36	0	$5	$37	$10	5.2
Break Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	86	0	$12	$37	$10	2.1
Victim/Witness Office	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.6	1,726	0	$249	$927	$215	2.9
IT Office	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.7	1,918	0	$277	$1,000	$235	2.8
Family Court	36	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	36	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	2.4	6,903	-1	$996	$3,439	$825	2.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Intake	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.7	2,109	0	$304	$1,073	$255	2.7
Intake	2	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	1,656	0.1	205	0	$30	$130	$24	3.6
Conference Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	7	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.5	1,342	0	$194	$781	$175	3.1
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 3	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 4	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.4	1,151	0	$166	$708	$155	3.3
Court Room	20	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	20	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	1.3	3,835	-1	$553	$2,001	$470	2.8
Break Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Copy Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Court Room 5	16	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.9	2,612	-1	$377	$1,146	$275	2.3
Family Intake	10	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	10	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.7	1,918	0	$277	$1,000	$235	2.8
Client Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.4	1,151	0	$166	$708	$155	3.3
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$292	$80	1.9
Office	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.8	2,301	0	$332	$1,146	$275	2.6
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	0.0	0	0	$0	$0	$0	0.0
Pretrial Serving	14	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	14	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.9	2,685	-1	$387	$1,292	$315	2.5
Pretrial Serving	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Stroage Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	71	0	$10	$73	$20	5.2
1st Floor Hall	30	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	30	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	1.7	4,898	-1	$707	$2,643	$450	3.1
1st Floor Hall	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
2nd flr Womens Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	327	0	$47	$380	$65	6.7
2nd flr Womens Restroom	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	352	0	$51	$138	$20	2.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
2nd flr Mens Restroom	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	327	0	$47	$380	$65	6.7
2nd flr Mens Restroom	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	352	0	$51	$138	$20	2.3
2nd flr Mens Restroom 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
2nd flr Mens Restroom 2	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	1,656	0.0	50	0	$7	$49	$3	6.4
2nd flr Womens Restroom 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	218	0	$31	$343	$55	9.2
2nd flr Womens Restroom 2	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	2,400	2, 4	Relamp & Reballast	Yes	1	LED - Linear Tubes: (1) 2' Lamp	Occupancy Sensor	9	1,656	0.0	50	0	$7	$49	$3	6.4
Criminal Case Management	27	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	27	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	1.8	5,177	-1	$747	$2,512	$610	2.5
Office 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Office 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.1	435	0	$63	$416	$75	5.4
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	384	0	$55	$146	$40	1.9
Office 3	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.4	1,151	0	$166	$708	$155	3.3
Office 4	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.4	1,151	0	$166	$708	$155	3.3
Waiting Room	16	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	1.0	3,068	-1	$443	$1,708	$390	3.0
Waiting Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	1,656	0.0	102	0	$15	$65	$12	3.6
Waiting Room Mens Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	153	0	$22	$69	$10	2.7
Waiting Room Womens Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	153	0	$22	$69	$10	2.7
Attorney/Client rooms	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	384	0	$55	$146	$40	1.9
Attorney/Client rooms	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.1	384	0	$55	$416	$75	6.2
Judge Chaimber	6	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.4	1,151	0	$166	$708	$155	3.3
Judge Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Electric Room 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	71	0	$10	$73	$20	5.2
Electric Room 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,000	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,000	0.1	71	0	$10	$73	$20	5.2
Attorney's Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Judge Hall	4	Linear Fluorescent - T8: 2' T8 (17W) - 4L	Wall Switch	S	63	2,400	3, 5	Relamp	Yes	4	LED - Linear Tubes: (4) 2' Lamps	High/Low Control	34	1,656	0.1	410	0	$59	$460	$48	7.0
Judge Restroom	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.0	86	0	$12	$65	$6	4.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Jury Room 2	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	0.3	980	0	$141	$599	$125	3.4
Jury Womens Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	S	176	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,400	0.1	306	0	$44	$118	$20	2.2
Jury Mens Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.1	153	0	$22	$69	$10	2.7
Hallway	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	0.7	2,122	0	$306	$1,112	$195	3.0
Hallway	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 5	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	1,656	0.1	163	0	$24	$55	$15	1.7
Hallway	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Family Court 2	32	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	2,400	3, 4	Relamp	Yes	32	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,656	1.8	5,224	-1	$754	$2,563	$585	2.6
Family Court 2	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Stairwell 1	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	2,400	3	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.1	249	0	$36	$195	$36	4.4
Stairwell 2	6	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	2,400	2	Relamp & Reballast	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	2,400	0.2	513	0	$74	$389	$36	4.8
Penthouse	14	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	2,400	2, 4	Relamp & Reballast	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,656	0.8	2,467	-1	$356	$1,233	$175	3.0
Penthouse	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Penthouse	1	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	S	110	2,400	3, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	1,656	0.1	156	0	$23	$89	$20	3.0
Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	86	0	$12	$37	$10	2.1
Room 2	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.5	1,534	0	$221	$854	$195	3.0
Room 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	86	0	$12	$37	$10	2.1
Room 4	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,400	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,400	0.0	86	0	$12	$37	$10	2.1
Room 5	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.3	767	0	$111	$562	$115	4.0
Room 6	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,400	3, 4	Relamp	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	1,656	0.5	1,534	0	$221	$854	$195	3.0
Hanging Fixture	3	LED Screw-In Lamps: One Lamp Screw-in	Timeclock		9	4,380		None	No	3	LED Screw-In Lamps: One Lamp Screw-in	Timeclock	9	4,380	0.0	0	0	$0	$0	$0	0.0
Pole Lights	8	Compact Fluorescent: One Lamp Screw-in	Timeclock		18	4,380	3	Relamp	No	8	LED Screw-In Lamps: One Lamp Screw-in	Timeclock	13	4,380	0.0	175	0	$26	$138	$8	5.0
Flag Light	1	LED Screw-In Lamps: One Lamp Screw-in	Timeclock		20	4,380		None	No	1	LED Screw-In Lamps: One Lamp Screw-in	Timeclock	20	4,380	0.0	0	0	$0	$0	$0	0.0
Wall Light	4	Compact Fluorescent: One Lamp Screw-in	Timeclock		18	4,380	3	Relamp	No	4	LED Screw-In Lamps: One Lamp Screw-in	Timeclock	13	4,380	0.0	88	0	$13	$69	$4	5.0
Wall Light	1	High-Pressure Sodium: (1) 150W Lamp	Timeclock		188	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	56	4,380	0.1	576	0	$85	$966	$100	10.2

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?	Remaining Useful Life	Annual Operating Hours	ECM #	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
Attic	AHU 1: 1st Flr Waiting	1	Supply Fan	1.0	83.5%	No	W	2,745	NR	Yes	85.5%	No		0.0	43	0	$6	$474	$0	75.1
Attic	AHU 2: 1st Flr Free Hold	1	Supply Fan	3.0	89.5%	No	W	2,745		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Attic	AHU 3	1	Supply Fan	3.0	86.5%	No	W	2,745	NR	Yes	89.5%	No		0.0	179	0	$26	$876	$0	33.5
Attic	AHU 4: Treasurer Room	1	Supply Fan	3.0	86.5%	No	B	2,745	NR	Yes	89.5%	No		0.0	179	0	$26	$876	$0	33.5
Attic	AHU 5: 2nd Flr Lunch Room	1	Supply Fan	3.0	86.5%	No	W	2,745	NR	Yes	89.5%	No		0.0	179	0	$26	$876	$0	33.5
Attic	AHU 6: 2nd Flr Case Mgmt	1	Supply Fan	3.0	82.0%	No	B	2,745	NR	Yes	89.5%	No		0.1	471	0	$69	$876	$0	12.7
Attic	AHU 7	1	Supply Fan	3.0	89.5%	No	W	2,745		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Attic	AHU 8: Courtroom	1	Supply Fan	3.0	89.5%	No	W	2,745		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Basement	Boiler Circulating Pumps	1	Heating Hot Water Pump	0.8	81.8%	No	W	2,745		No	81.8%	No		0.0	0	0	$0	$0	$0	0.0
Basement	Boiler Circulating Pumps	3	Heating Hot Water Pump	0.8	81.8%	No	W	2,745		No	81.8%	No		0.0	0	0	$0	$0	$0	0.0
basement	Chilled Water System	2	Chilled Water Pump	10.0	91.7%	No	W	3,391	NR, 6	Yes	91.7%	Yes	2	3.7	20,690	0	$3,035	$10,303	$0	3.4
Basement	Condenser water	2	Condenser Water Pump	15.0	93.0%	No	W	3,391		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Basement	Hot Water Distribution	2	Heating Hot Water Pump	5.0	89.5%	No	W	2,745	NR, 7	Yes	89.5%	Yes	2	1.0	8,580	0	$1,259	$8,152	$0	6.5
Basement	Chilled Water System	2	Chilled Water Pump	3.0	89.5%	No	W	2,745	NR, 6	Yes	89.5%	Yes	2	1.1	5,148	0	$755	$7,768	$0	10.3
Basement	Chilled Water System	1	Chilled Water Pump	7.5	91.0%	No	W	3,391	NR, 6	Yes	91.0%	Yes	1	1.4	7,818	0	$1,147	$4,738	$0	4.1
Basement	Air Compressor	1	Air Compressor	2.0	86.5%	No	W	2,000		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Elevator Room	Elevators	1	Other	15.0	90.2%	No	B	1,000	NR	Yes	91.7%	No		0.1	183	0	$27	$2,833	$0	105.7
Multiple Locations	Room Heating	20	Supply Fan	0.1	68.5%	No	W	2,745		No	68.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Condenser Water	1	Cooling Tower Fan	15.0	93.0%	No	W	3,391	NR, 8	Yes	93.0%	Yes	1	-0.4	4,350	0	$638	$7,041	$900	9.6

Electric HVAC Inventory & Recommendations

		Existing Conditions					Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	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
Outside	Supplementary Cooling	1	Split-System AC	4.00		W		No							0.0	0	0	$0	$0	$0	0.0
Outside	Supplementary Cooling	1	Ductless Mini-Split AC	3.00		W	NR	Yes	1	Ductless Mini-Split AC	3.00		18.00		0.3	857	0	$126	$8,218	$0	65.4
Office	Office Supplementary Cooling	1	Window AC	1.00		W		No							0.0	0	0	$0	$0	$0	0.0

Electric Chiller Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement	Entire Facility	1	Water-Cooled Scroll Chiller	180.00	W	9	Yes	1	Water-Cooled Scroll Chiller	Variable	180.00	0.68	0.43	49.9	111,780	0	$16,400	$136,767	$7,740	7.9

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)	Remaining Useful Life	ECM #	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
Basement	Entire Facility	4	Condensing Hot Water Boiler	702.00	W		No						0.0	0	0	$0	$0	$0	0.0

Demand Control Ventilation Recommendations

		Recommendation Inputs					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Number of Zones	Cooling Capacity of Controlled System (Tons)	Electric Heating Capacity of Controlled System (kBtu/hr)	Output Heating Capacity of Controlled System (MBh)	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
Attic	AHU 8: Courtroom	10	2.00	24.55		95.73	0.0	1,556	2	$246	$2,719	$0	11.1
Attic	AHU 5: 2nd Flr Lunch Room	10	2.00	24.55		95.73	0.0	1,556	2	$246	$2,719	$0	11.1

DHW Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Remaining Useful Life	ECM #	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
Basement	Entire Facility	1	Storage Tank Water Heater (≤ 50 Gal)	B		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	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
Multiple Locations	11	3	Faucet Aerator (Lavatory)	2.50	0.50	0.0	2,944	0	$432	$22	$0	0.0
Multiple Locations	11	7	Faucet Aerator (Lavatory)	3.00	0.50	0.0	8,586	0	$1,260	$50	$0	0.0
Multiple Locations	11	2	Faucet Aerator (Lavatory)	1.50	0.50	0.0	981	0	$144	$14	$0	0.1

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Multiple Locations	4	Laptop	40.0	
Multiple Locations	81	Desktop	75.0	
Multiple Locations	16	Printer	20.0	
Multiple Locations	11	Copier	515.0	
Multiple Locations	6	Water Cooler	500.0	
Multiple Locations	3	Refrigerator	600.0	
Office	1	Space Heater	1,500.0	
Multiple Locations	11	Mini fridge	30.0	
Multiple Locations	13	microwave	1,000.0	
Multiple Locations	3	toaster oven	1,200.0	
Multiple Locations	13	Coffee Maker	400.0	
Multiple Locations	6	Paper Shredder	360.0	
Multiple Locations	10	LCD TV	120.0	
Multiple Locations	4	CRT TV	120.0	
Mail Room	1	dehumidifier	1,500.0	

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	ECM #	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Break	1	Non-Refrigerated	12	Yes	0.0	343	0	$50	$230	$0	4.6
Break	1	Refrigerated	12	Yes	0.2	1,612	0	$236	$230	$0	1.0
Break	1	Glass Fronted Refrigerated	12	Yes	0.1	1,209	0	$177	$230	$0	1.3

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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.

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

New Courthouse

Primary Property Type: Office
Gross Floor Area (ft²): 41,760
Built: 1968

For Year Ending: July 31, 2017
Date Generated: February 04, 2019

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
New Courthouse 92 Market Street Salem, New Jersey 08079	County of Salem 110 Fifth Street, Suite 400 Salem, NJ 08079 856-935-7510	Debby Turner 110 Fifth Street, Suite 400 Salem, NJ 08079 856-935-7510 Ext. 8601 Debby.Turner-Fox@salemcountynj.gov

Property ID: 6667569

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
85 kBtu/ft²

Source EUI
200.3 kBtu/ft²

Annual Energy by Fuel		
Electric - Grid (kBtu)	2,652,229 (75%)	
Natural Gas (kBtu)	895,439 (25%)	

National Median Comparison	
National Median Site EUI (kBtu/ft²)	57.1
National Median Source EUI (kBtu/ft²)	134.8
% Diff from National Median Source EUI	49%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	316

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

___ _____
.
(___)___-_____
_____

Professional Engineer Stamp (if applicable)

APPENDIX C: GLOSSARY

TERM	DEFINITION
Blended Rate	Used to calculate fiscal savings associated with measures. The blended rate is calculated by dividing the amount of your bill by the total energy use. For example, if your bill is $22,217.22, and you used 266,400 kilowatt-hours, your blended rate is 8.3 cents per kilowatt-hour.
Btu	*British thermal unit*: a unit of energy equal to the amount of heat required to increase the temperature of one pound of water by one-degree Fahrenheit.
CHP	*Combined heat and power*. Also referred to as cogeneration.
COP	*Coefficient of performance*: a measure of efficiency in terms of useful energy delivered divided by total energy input.
Demand Response	Demand response reduces or shifts electricity usage at or among participating buildings/sites during peak energy use periods in response to time-based rates or other forms of financial incentives.
DCV	*Demand control ventilation*: a control strategy to limit the amount of outside air introduced to the conditioned space based on actual occupancy need.
US DOE	*United States Department of Energy*
EC Motor	*Electronically commutated motor*
ECM	*Energy conservation measure*
EER	*Energy efficiency ratio*: a measure of efficiency in terms of cooling energy provided divided by electric input.
EUI	*Energy Use Intensity:* measures energy consumption per square foot and is a standard metric for comparing buildings' energy performance.
Energy Efficiency	Reducing the amount of energy necessary to provide comfort and service to a building/area. Achieved through the installation of new equipment and/or optimizing the operation of energy use systems. Unlike conservation, which involves some reduction of service, energy efficiency provides energy reductions without sacrifice of service.
ENERGY STAR®	ENERGY STAR® is the government-backed symbol for energy efficiency. The ENERGY STAR® program is managed by the EPA.
EPA	*United States Environmental Protection Agency*
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
GHG	*Greenhouse gases:* gases that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.
gpf	*Gallons per flush*

gpm	*Gallon per minute*
HID	*High intensity discharge:* high-output lighting lamps such as high-pressure sodium, metal halide, and mercury vapor.
hp	*Horsepower*
HPS	*High-pressure sodium*: a type of HID lamp
HSPF	*Heating seasonal performance factor:* a measure of efficiency typically applied to heat pumps. Heating energy provided divided by seasonal energy input.
HVAC	*Heating, ventilating, and air conditioning*
IHP 2014	US DOE Integral Horsepower rule. The current ruling regarding required electric motor efficiency.
IPLV	*Integrated part load value:* a measure of the part load efficiency usually applied to chillers.
kBtu	One thousand British thermal units
kW	*Kilowatt*: equal to 1,000 Watts.
kWh	*Kilowatt-hour*: 1,000 Watts of power expended over one hour.
LED	*Light emitting diode*: a high-efficiency source of light with a long lamp life.
LGEA	*Local Government Energy Audit*
Load	The total power a building or system is using at any given time.
Measure	A single activity, or installation of a single type of equipment, that is implemented in a building system to reduce total energy consumption.
MH	*Metal halide*: a type of HID lamp
MBh	*Thousand Btu per hour*
MBtu	*One thousand British thermal units*
MMBtu	*One million British thermal units*
MV	*Mercury Vapor:* a type of HID lamp
NJBPU	*New Jersey Board of Public Utilities*
NJCEP	*New Jersey's Clean Energy Program:* NJCEP is a statewide program that offers financial incentives, programs and services for New Jersey residents, business owners and local governments to help them save energy, money and the environment.
psig	Pounds per square inch gauge
Plug Load	Refers to the amount of power used in a space by products that are powered by means of an ordinary AC plug.
PV	*Photovoltaic:* refers to an electronic device capable of converting incident light directly into electricity (direct current).

SEER	*Seasonal energy efficiency ratio:* a measure of efficiency in terms of annual cooling energy provided divided by total electric input.
SEP	*Statement of energy performance:* a summary document from the ENERGY STAR® Portfolio Manager®.
Simple Payback	The amount of time needed to recoup the funds expended in an investment or to reach the break-even point between investment and savings.
SREC	*Solar renewable energy credit*: a credit you can earn from the state for energy produced from a photovoltaic array.
T5, T8, T12	A reference to a linear lamp diameter. The number represents increments of 1/8th of an inch.
Temperature Setpoint	The temperature at which a temperature regulating device (thermostat, for example) has been set.
therm	100,000 Btu. Typically used as a measure of natural gas consumption.
tons	A unit of cooling capacity equal to 12,000 Btu/hr.
Turnkey	Provision of a complete product or service that is ready for immediate use
VAV	*Variable air volume*
VFD	*Variable frequency drive*: a controller used to vary the speed of an electric motor.
WaterSense™	The symbol for water efficiency. The WaterSense™ program is managed by the EPA.
Watt (W)	Unit of power commonly used to measure electricity use.