Local Government Energy Audit Report

Ancora Psych Hospital - Service Kitchen

March 31, 2025

Prepared for:
State of NJ Department of Human Services
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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities and help prioritize specific measures for implementation. 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 reviewed the energy conservation measures and estimates of energy savings 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 material and labor costs primarily on RS Means cost manuals as well as on our experience at similar facilities. This approach is based on standard cost estimating manuals and is vendor neutral. Cost estimates include material and labor pricing associated with one for one equipment replacements. Cost estimates do not include demolition or removal of hazardous waste. The actual implementation costs for energy savings projects are anticipated to be significantly higher based on the specific conditions at your site(s). We strongly recommend that you work with your design engineer or contractor to develop actual project costs for your specific scope of work for the installation of high efficiency equipment. We encourage you to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on selected products and installers. TRC and NJBPU do not guarantee cost estimates and shall in no event be held liable should actual installed costs vary from these material and labor estimates.

Incentive values provided in this report are estimated based on previously run state efficiency programs. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. Please review all available utility 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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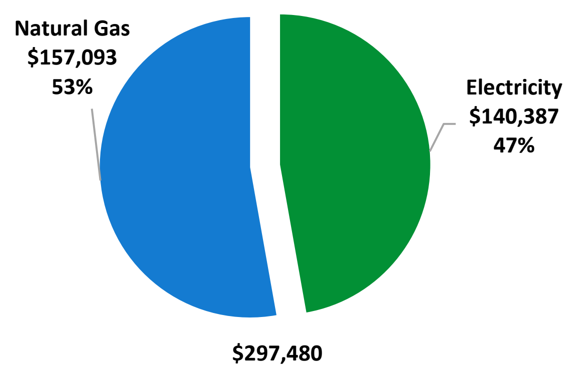
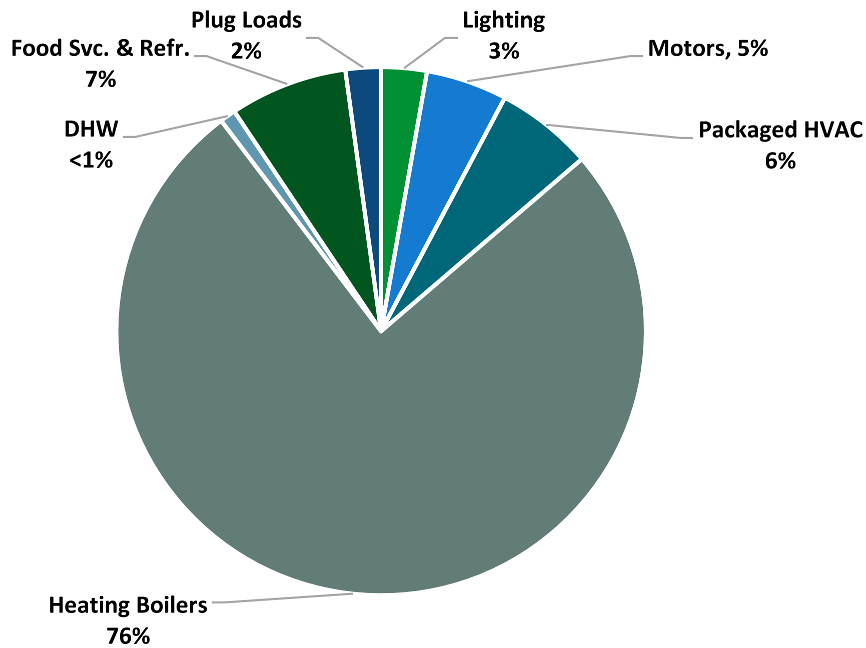
1 Executive Summary

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Ancora Psych Hospital (DMHH) - Service Kitchen. 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 conducted this study as part of a comprehensive effort to assist New Jersey school districts and local governments in controlling their energy costs and to help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Energy Utilities	Costs: $297,480 Electricity: 937,231 kWh Natural Gas: 140,273 Therms	
ENERGY STAR® Benchmarking Score	N/A *(1-100 scale)*	A standard energy use benchmark is not available for this facility type. This report contains suggestions about how to improve building performance and reduce energy costs.





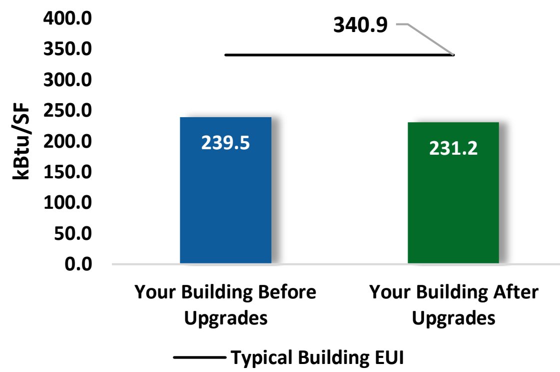
Energy Use by System

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.

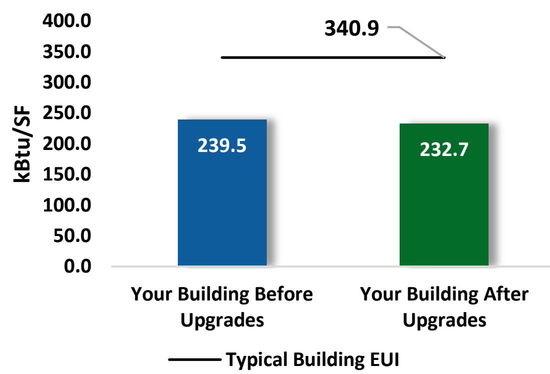
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$215,190
Potential Rebates & Incentives[1]	$13,690
Annual Cost Savings	$25,375
Annual Energy Savings	Electricity: 166,943 kWh Natural Gas: 329 Therms
Greenhouse Gas Emission Savings	86 Tons
Simple Payback	7.9 Years
Site Energy Savings (All Utilities)	3%



Scenario 2: Cost Effective Package[2]

Installation Cost	$87,740
Potential Rebates & Incentives	$8,810
Annual Cost Savings	$21,120
Annual Energy Savings	Electricity: 139,534 kWh Natural Gas: 195 Therms
Greenhouse Gas Emission Savings	71 Tons
Simple Payback	3.7 Years
Site Energy Savings (all utilities)	3%



On-site Generation Potential

Photovoltaic	None
Combined Heat and Power	None

[1] Incentives are based on previously run state rebate programs. Contact your utility provider for current program incentives that 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	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**39,487**	**4.5**	**-8**	**$5,822**	**$7,700**	**$910**	**$6,790**	**1.2**	**38,789**
ECM 1	Install LED Fixtures	Yes	16,739	2.6	-3	$2,468	$4,450	$170	$4,280	1.7	16,447
ECM 2	Retrofit Fixtures with LED Lamps	Yes	22,748	2.0	-5	$3,353	$3,250	$740	$2,510	0.7	22,343
Lighting Control Measures			**30,253**	**3.5**	**-6**	**$4,459**	**$16,660**	**$2,100**	**$14,560**	**3.3**	**29,710**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	29,773	3.4	-6	$4,389	$16,100	$1,960	$14,140	3.2	29,239
ECM 4	Install High/Low Lighting Controls	Yes	480	0.1	0	$71	$560	$140	$420	5.9	471
Variable Frequency Drive (VFD) Measures			**60,762**	**10.2**	**33**	**$9,470**	**$52,600**	**$4,600**	**$48,000**	**5.1**	**65,037**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	40,531	10.2	0	$6,071	$27,300	$4,100	$23,200	3.8	40,814
ECM 6	Install VFDs on Kitchen Hood Fan Motors	Yes	20,231	0.0	33	$3,399	$25,300	$500	$24,800	7.3	24,223
Unitary HVAC Measures			**13,713**	**7.5**	**13**	**$2,204**	**$87,800**	**$3,300**	**$84,500**	**38.3**	**15,376**
ECM 7	Install High Efficiency Air Conditioning Units	No	13,713	7.5	13	$2,204	$87,800	$3,300	$84,500	38.3	15,376
Domestic Water Heating Upgrade			**0**	**0.0**	**1**	**$16**	**$150**	**$70**	**$80**	**5.0**	**167**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	1	$16	$150	$70	$80	5.0	167
Food Service & Refrigeration Measures			**22,728**	**1.4**	**0**	**$3,404**	**$50,280**	**$2,710**	**$47,570**	**14.0**	**22,887**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	7,078	0.9	0	$1,060	$10,090	$1,080	$9,010	8.5	7,127
ECM 10	Refrigeration Controls	No	13,696	0.3	0	$2,052	$39,650	$1,580	$38,070	18.6	13,792
ECM 11	Vending Machine Control	Yes	1,954	0.2	0	$293	$540	$50	$490	1.7	1,968
TOTALS (COST EFFECTIVE MEASURES)			**139,534**	**19.3**	**20**	**$21,120**	**$87,740**	**$8,810**	**$78,930**	**3.7**	**142,799**
TOTALS (ALL MEASURES)			**166,943**	**27.1**	**33**	**$25,375**	**$215,190**	**$13,690**	**$201,500**	**7.9**	**171,967**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

All Evaluated Energy Improvements[3]

For more detail on each evaluated energy improvement and a break out of cost-effective improvements, see **Section 4: Energy Conservation Measures.**

[3] TRC bases estimated material and labor costs primarily on RS Means cost manuals as well as on our experience at similar facilities. This approach is based on standard cost estimating manuals and is vendor neutral. Cost estimates include material and labor pricing associated with one for one equipment replacements. Cost estimates do not include demolition or removal of hazardous waste. The actual implementation costs for energy savings projects are anticipated to be significantly higher based on the specific conditions at your site(s). We strongly recommend that you work with your design engineer or contractor to develop actual project costs for your specific scope of work for the installation of high efficiency equipment. We encourage you to obtain multiple estimates when considering measure installations.

1.1 Planning Your Project

Careful planning makes for a successful energy project. When considering this scope of work, you will have some decision 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

Utility-run energy efficiency programs and 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.

Options from Your Utility Company

Prescriptive and Custom Rebates

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 Prescriptive and Custom Rebates 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 may be required for some incentives. Contact your utility company for more details prior to project installation.

Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized contractor. This program can provide incentives up to 70% or 80% of the cost of selected measures. A Direct Install contractor will assess and verify individual measure eligibility and perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Engineered Solutions

The Engineered Solutions program provides tailored energy-efficiency assistance and turnkey engineering services to municipalities, universities, schools, hospitals, and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. The program provides all professional services from audit, design, construction administration, to commissioning and measurement and verification for custom whole-building energy-efficiency projects. Engineered Solutions 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.

For more details on these programs please contact your utility provider.

Options from New Jersey's Clean Energy Program

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 and Power (CHP)

The CHP program provides incentives for combined heat and power (i.e., 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.

Successor Solar Incentive Program (SuSI)

New Jersey is committed to supporting solar energy. Solar projects help the state reach the renewable goals outlined in the state's Energy Master Plan. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available, but certified solar projects are able to earn one SREC II (Solar Renewable Energy Certificates II) for each megawatt-hour of solar electricity produced from a qualifying solar facility.

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 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.

Large Energy User Program (LEUP)

LEUP is designed to promote self-investment in energy efficiency for the largest energy consumers in the state. Customers in this category spend about $5 million a year on energy bills. This program incentivizes owners/users of buildings to upgrade or install energy conserving measures in existing buildings to help offset the capital costs associated with the project. The efficiency upgrades are customized to meet the requirements of the customers' existing facilities, while advancing the State's energy efficiency, conservation, and greenhouse gas reduction goals.

For more details on these programs please visit New Jersey's Clean Energy Program website.

2 Existing Conditions

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Ancora Psych Hospital (DMHH) - Service Kitchen. 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.

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 January 31, 2024, TRC performed an energy audit at Ancora Psych Hospital (DMHH) - Service Kitchen located in Hammonton, New Jersey. TRC met with Kyle Irizarry to review the facility operations and help focus our investigation on specific energy-using systems. Ancora Psychiatric Hospital is a 600-bed adult inpatient facility that offers a multidisciplinary team approach to development and implementation of care. Opened in 1955, the Ancora campus consists of multiple buildings across 650 acres.

Ancora Psych Hospital (DMHH)-Service Kitchen is a two-story, 71,908 square foot building built in 1953. Spaces include garage, offices, cafeteria, corridors, stairwells, dining room, commercial kitchen, and mechanical space.

Cooling for different areas is provided by packaged units, window AC units, and split air conditioners. Heating primarily comes from steam produced by the boiler house, with additional heating from electric resistance heaters, package units, and heat pumps. The building is also served by a dedicated gas meter which serves some cooking and space heating end uses. There is no backup generator for the building so refrigeration stops working during power outages.

2.2 Building Occupancy

The facility is occupied during regular business hours throughout the week and intermittently, as needed, for maintenance and operations.

Building Name	Weekday/Weekend	Operating Schedule
Ancora Psych Hospital (DMHH) - Service Kitchen	Weekday	4:30 AM - 7:30 PM
	Weekend	4:30 AM - 7:30 PM

Building Occupancy Schedule

2.3 Building Envelope

The walls consist of concrete masonry units (CMUs) over structural steel with a brick veneer and a painted CMU interior finish. The flat roof is supported by steel trusses and formed of a reinforced concrete deck with a gravel pebble finish. Overall, the roof is in good condition and encloses conditioned space.

Most of the windows are single paned with aluminum frames. The glass-to-frame seals are in fair condition, as are the weather seals on the operable windows, which show little evidence of excessive wear.

Exterior doors are made from a mix of metal and fiberglass reinforced polymer (FRP) composite material with aluminum frames. They are in fair condition, with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.

Typical Building Envelope

Typical Building Roof

Building Door

Building Door

Building Windows

Building Envelope

2.4 Lighting Systems

The primary interior lighting system uses linear lamps. Fixture types include 2-lamp, 3-lamp, and 4-lamp fixtures, 4-foot-long surface-mounted fixtures with linear tube lamps. While some of the fixtures contain T8 fluorescent lamps, most have been converted to use LED tube lamps. Typically, T8 fluorescent lamps use electronic ballasts while LED tubes are equipped with drivers.

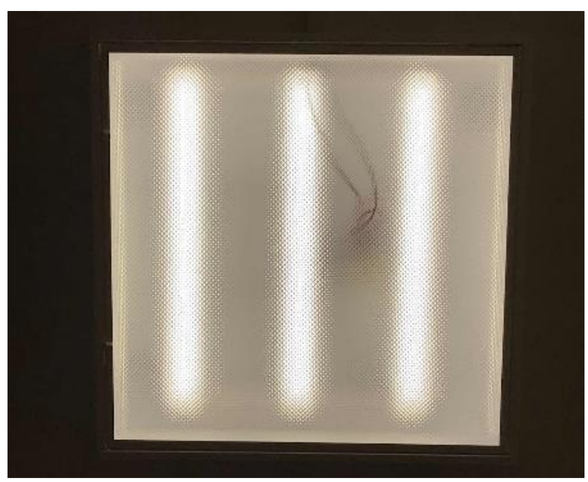
Additionally, there are LED general-purpose lamps in the corridors, cafeteria, restrooms, lobby, storage room, mechanical area, and stairwells. HID lamps illuminate areas such as the corridor-storeroom, garage, main storage, and mechanical rooms. There are also some high bay, ceiling-mounted, and wall pack LED fixtures in the garage, main storeroom, lobby, offices, restrooms, and stairwells.

All exit signs are LED. Most fixtures are in fair condition. Interior lighting levels were generally sufficient. Most light fixtures are controlled manually by wall switches.

HID Fixture

Linear Fluorescent T8 Lamps

LED Linear Tube



LED Linear Tube

LED Lamp

LED High Bay Fixture

Exterior fixtures include a mix of wall packs and floodlights with high-intensity discharge (HID), CFLs, and LED fixtures. Exterior light fixtures are mainly controlled by a photocell.

Exterior CFL Wall Pack Fixture

Exterior LED Fixture

Exterior LED Fixture

Exterior HID Wall Pack Fixture

Unitary Electric HVAC Equipment

Several offices and storage rooms are cooled by window air conditioning (AC) units with capacities ranging from 8,000 Btu to 25,000 Btu. Most units are still operating within their useful lifespan, are in fair condition, and are rated as standard efficiency. The window AC units are operated using remote control units located within the space.

Split air conditioning systems cool various storage rooms, employee cafeteria, and kitchen. These units range from 2 tons to 10 tons in capacity. Most units are still operating within their useful lifespan, are in fair condition, and are rated as standard efficiency. The York unit serving the employee cafeteria is beyond its useful life and has been evaluated for replacement. Housekeeping office 27 and the IT rooms are served by ductless mini-split heat pump units with 0.75-ton and 1.5-ton capacities, respectively. Both units are operating within their useful lifespan and have standard efficiency ratings. The units are controlled locally within their respective spaces and are in fair condition.

Condensing Unit-Employee Cafeteria

Condensing Unit-Kitchen Office

Typical Window AC- Office-Assistant 34

Typical Window AC- Office-Center Kitchen

Condensing Unit-IT

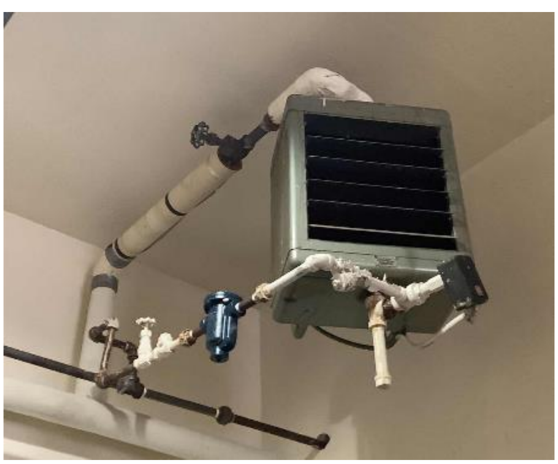
Condensing Unit-Store Room

Unitary Heating Equipment

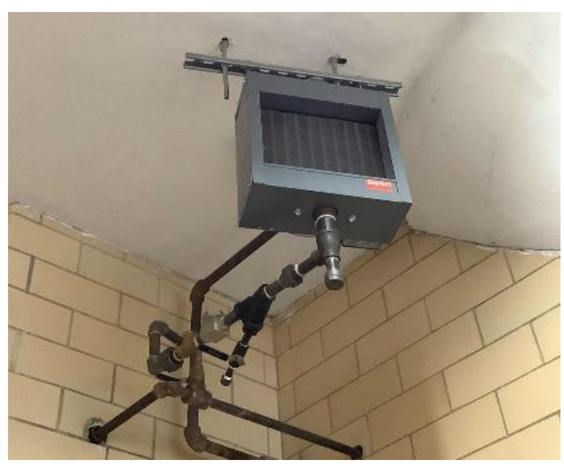
Several areas of the building, including corridors, garage, kitchen, some offices, and storage rooms, are heated by suspended steam unit heaters. The units are in fair condition.

Unit Heater

Unit Heater



Unit Heater



Unit Heater

Packaged Units

Several areas of the building are served by six packaged units with DX cooling coils controlled by local thermostats. The cooling capacity of these units ranges from 5 tons to 15 tons. The equipment is in fair condition. York units serving the chapel and patient cafeteria have gas-fired furnaces with capacities of 100 MBh and 96 MBh, respectively; while the Carrier unit serving the wellness center has an electric resistance heater rated at 50 kW. Most of these units are operating beyond their useful life, have standard efficiency, and have been evaluated for replacement.

The York units serving the chapel area have a supply fan rated at 1 hp, while the units serving the patient cafeteria have a 1.5 hp supply fan. These fans operate at constant volume and are not equipped with VFDs. The Carrier unit has a 10 hp supply fan equipped with a VFD. The motors are rated as standard efficiency. These units are equipped with economizers which are in fair condition.

The building area is served by multiple packaged rooftop units, including:

Area(s)/System(s) Served	System Quantity	Cooling Capacity (Tons)	Heating Capacity (MBh)	Manufacturer	Model
Chapel	2	5.00	100.00	York	DHUC-T060N125A
Patients Cafeteria	3	7.50	96.00	York	ZS-07N12ATAAA5A
Wellness Center/IT	1	15.00	170.60	Carrier	50TC-D17A2A5A6F0G0

Refer to Appendix A for detailed information about each unit.

Rooftop Package Unit-Chapel

Rooftop Package Unit-Patient Cafeteria

Air Handling Units (AHUs)

Several areas of the building are conditioned by two air handling units. Each unit includes a supply fan motor, return fan motor, and steam heating coil. The motors are rated as standard efficiency and operate at a constant speed. Most of the fan motors were not visible during the inspection and were estimated. The supply fans for these AHUs were estimated at 10 hp each, while the return fans were estimated at 5 hp and 7.5 hp, respectively. The kitchen tray line 81 also has a small AHU with an estimated supply fan of 1 hp capacity. The air handlers are in fair operating condition.

The AHUs receive steam from the boiler house (Section 2.6). Variable frequency drives (VFDs) have been evaluated for the supply and return fan motors. Since air change requirements can affect VFD use, we recommend working with your mechanical design team to assess the application of VFDs for these motors.

The HVAC systems are pneumatically controlled. A 1 hp air compressor located in the mechanical basement with a storage tank powers the pneumatic system. No leaks were observed, and the equipment was in fair condition.

Refer to Appendix A for detailed information about each unit.

Air Handling Unit-Kitchen

Air Handling Unit-Mechanical Basement

Air Handling Unit-Mechanical Basement

Air Handling Unit- team Piping

Exhaust Fan

The building has several fractional horsepower exhaust fans on the walls and roof, serving areas including the garage, mechanical rooms, restrooms, and storage rooms. There are six kitchen hood exhaust fans with capacities ranging from 0.5 hp to 1.5 hp. The fan motors are standard efficiency and in fair condition. Most fans run during occupied hours and are locally controlled.

Wall Exhaust Fan

Roof Exhaust Fan

2.5 Steam Heating Systems

This building is supplied with steam produced by the boilers located in the boiler house. Steam is used directly for heating by various unit heaters and air handling units. The mechanical area has three condensate return pumps, each with a 5 hp capacity. The pump motors are rated as standard efficiency and are in fair operating condition.

Most of the supply and return piping are well-insulated.

Condensate Return Pumps

Steam Piping System

Steam Piping-Air Handling Unit

Steam Piping-Air Handling Unit

2.6 Domestic Hot Water

This building receives steam from the boilers at the boiler house. Steam is turned into potable hot water using a dedicated heat exchanger located in the building. Hot water is stored in a tank and then distributed to end uses.

A small circulation pump continuously distributes the hot water. The domestic hot water pipes are insulated, and the insulation is in fair condition.

DHW Storage Water Tank

DHW Recirculation Pump

2.7 Food Service Equipment

The kitchen has a combination of gas and electric appliances for preparing food. Most of the cooking is done using a gas-fired conveyor oven, steamer, and electric ovens. Insulated electric holding cabinets are used for storing bulk prepared foods. The equipment is in fair condition and has standard efficiency.

The dishwasher is an ENERGY STAR high-temperature, rack-type unit.

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

Convection Oven (Full Size)

Steamer

Insulated Food Holding Cabinet (Full Size)

Conveyor Oven

Dishwasher (High Temp)

Convection Oven (Full Size)

2.8 Refrigeration

The kitchen is equipped with several stand-up refrigerators and freezer featuring solid doors, along with a few freezer chests. Most equipment is of standard efficiency and in good condition.

The kitchen building has 14 walk-in coolers equipped with both air-cooled and water-cooled condensers. They range in capacity from 0.46 tons to 1.73 tons. Each cooler has one to four evaporator fans, depending on the unit size. They are locally controlled by thermostats.

There are also four medium-temperature walk-in freezers, with two units at 1.33 tons and one unit at 2.25 tons. These freezers have two, four, or five evaporator fans, depending on the size. They are locally controlled by thermostats.

Our analysis determined that this building's refrigeration equipment accounts for a relatively high proportion of overall energy use. While cost-effective opportunities to replace equipment are limited at this time, we recommend that you work with your refrigeration suppliers to maintain equipment in a way that minimizes energy use. When refrigeration equipment does need to be replaced, consider installing high-efficiency or ENERGY STAR-labeled equipment.

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

Walk-In Cooler (Box 6)

Walk-In Freezer (Box 16)

Water Cooled Condenser-Refrigeration

Air Cooled Condenser-Refrigeration

Stand-Up Solid Door Freezer

Stand-Up Solid Door Refrigerator

2.9 Plug Load and Vending Machines

The location is doing a great job managing the electrical plug loads. This report makes additional suggestions for ECMs in this area as well as energy efficient best practices.

There are 56 computer workstations throughout the facility. Plug loads include general café and office equipment. Typical office and kitchen loads include a coffee machine, microwave, printer/copier, serving table, deli slicers, food mixer, and toaster oven.

There are also a few residential-style refrigerators throughout the building that store food. These vary in condition and efficiency. There is a refrigerated beverage vending machine and a non-refrigerated vending machine. The vending machines are not equipped with occupancy-based controls. In the garage area, there are battery chargers for forklifts, which are part of the larger plug load.

Dehumidifier

Non-Refrigerated Vending Machine

Refrigerated Vending Machine

Typical Plug Loads

Battery Charger

Food Mixer

2.10 Water-Using Systems

Water is provided by New Jersey American Water. There is one active onsite well that serves as a secondary water source for emergencies, firefighting, and other uses. Well water is directed to the water tower located on campus. The primary use of water is for drinking, cleaning, cooking, and sanitary fixtures. No water leaks were observed.

The EPA WaterSense® has set maximum flow rates for sanitary fixtures: 1.28 gallons per flush (gpf) for toilets, 0.5 gpf for urinals, 1.5 gallons per minute (gpm) for lavatory faucets, and 2.0 gpm for showerheads. There are a few restrooms with toilets, urinals, and sinks. Faucet flow rates are 0.5 gpm and 2.2 gpm or higher.

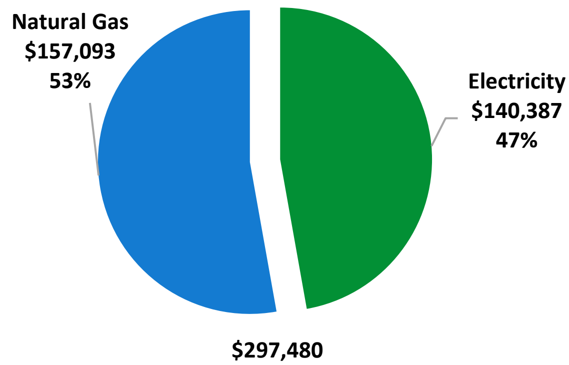
Typical Restroom Faucet

Typical Restroom Faucet

3 ENERGY USE AND COSTS

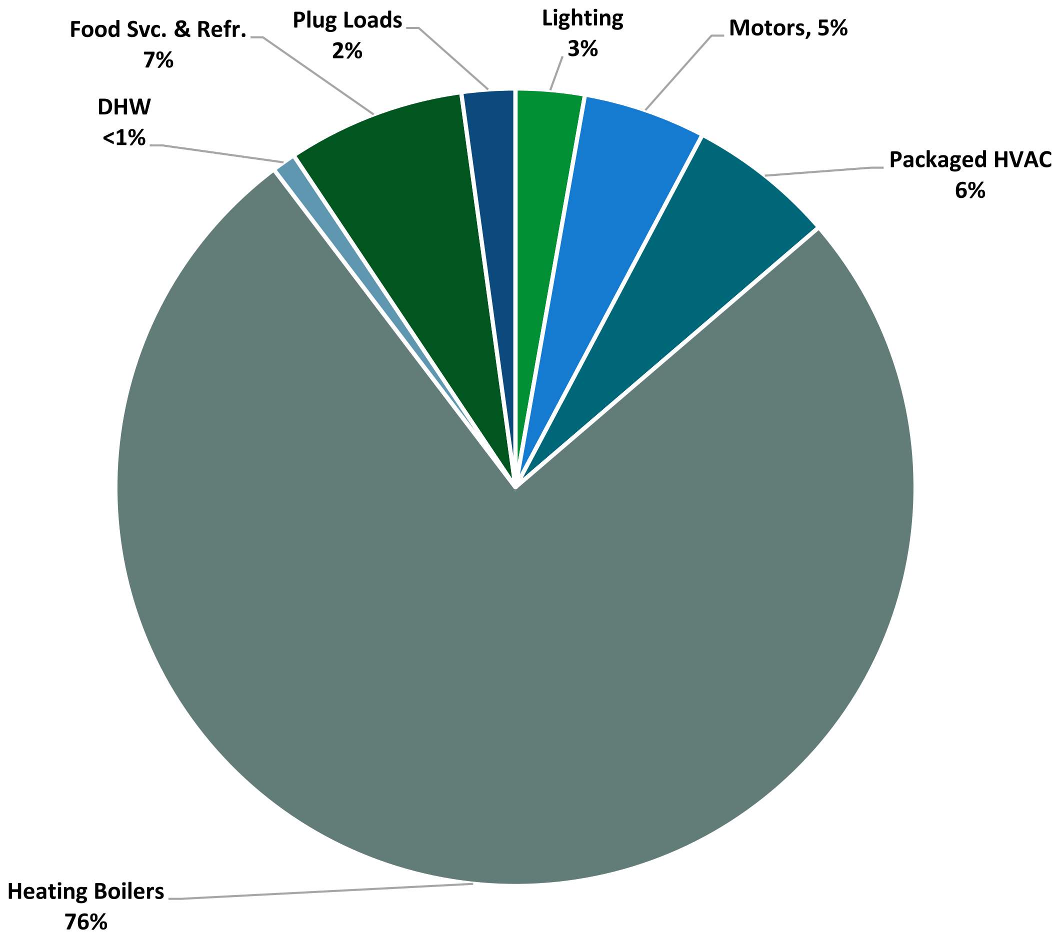
Twelve months of utility billing data are used to develop annual energy consumption and cost data. This information creates a profile of the annual energy consumption and energy costs.

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	937,231 kWh	$140,387
Natural Gas	140,273 Therms	$157,093
Total		**$297,480**



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.

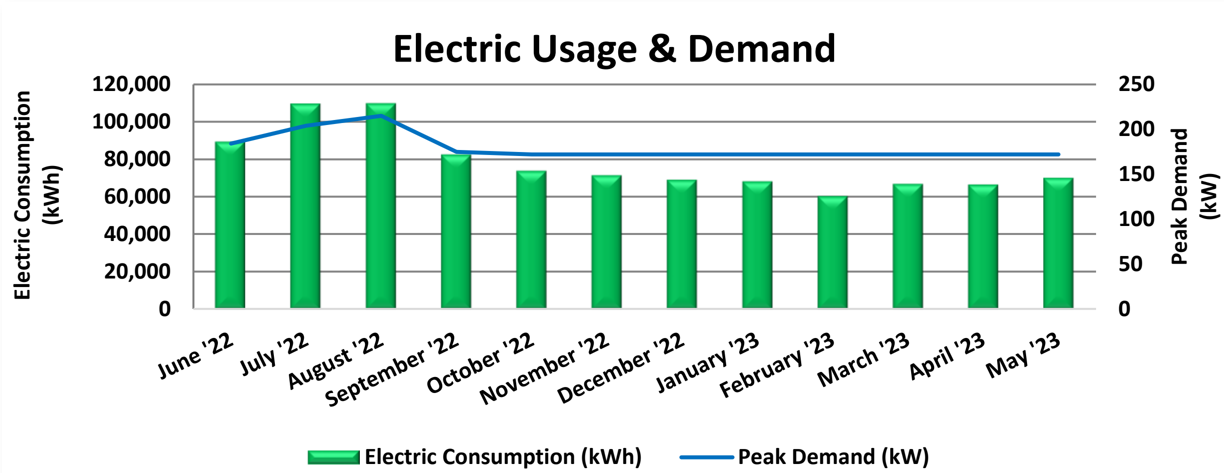
The energy auditor collects information regarding equipment operating hours, capacity, efficiency, and other operational parameters from facility staff, drawings, and on-site observations. This information is used as the inputs to calculate the existing conditions energy use for the site. The calculated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



Energy Balance by System

3.1 Electricity

Atlantic City Electric delivers electricity under rate class Monthly General Service Secondary (GSS), with electric production provided by Constellation, a third-party supplier.



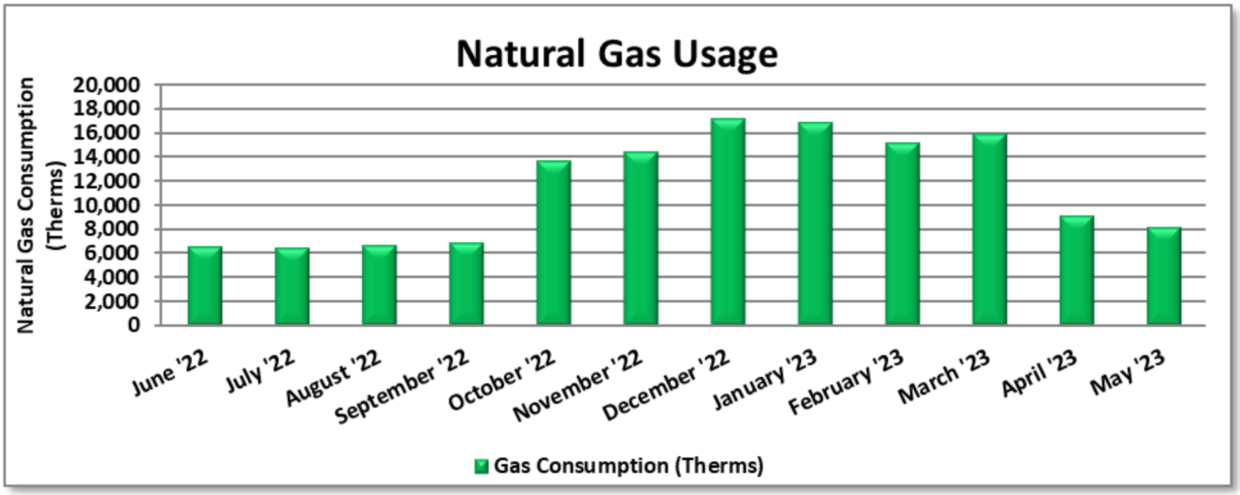
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
6/30/22	30	89,372	184	$1,841	$12,860
7/31/22	31	109,513	204	$2,111	$15,622
8/31/22	31	109,829	215	$2,226	$15,766
9/30/22	30	82,513	175	$1,745	$11,996
10/31/22	31	73,797	172	$1,786	$10,919
11/30/22	30	71,377	172	$1,728	$10,555
12/31/22	31	69,017	172	$1,786	$10,768
1/31/23	31	68,135	172	$1,786	$10,636
2/28/23	28	60,382	172	$1,613	$9,508
3/31/23	31	66,836	172	$1,786	$10,477
4/30/23	30	66,490	172	$1,728	$10,367
5/31/23	31	69,970	172	$1,786	$10,913
Totals	**365**	**937,231**	**215**	**$21,922**	**$140,387**
Annual	**365**	**937,231**	**215**	**$21,922**	**$140,387**

Notes:

- An estimated peak demand of 215 kW occurred in August '22.
- The estimated average demand over the past 12 months was 180 kW.
- This building is served from the main campus electric meter along with several others. Energy usage (kWh) and demand (kW) was apportioned among those buildings using a formula that accounts for building area (sf), usage, and the energy intensity of the equipment.
- The average electric cost over the past 12 months was $0.150/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.

3.2 Natural Gas

South Jersey Gas delivers natural gas under rate class Comprehensive Transportation Services (SJ-CTS), with natural gas supply provided by UGI, a third-party supplier.

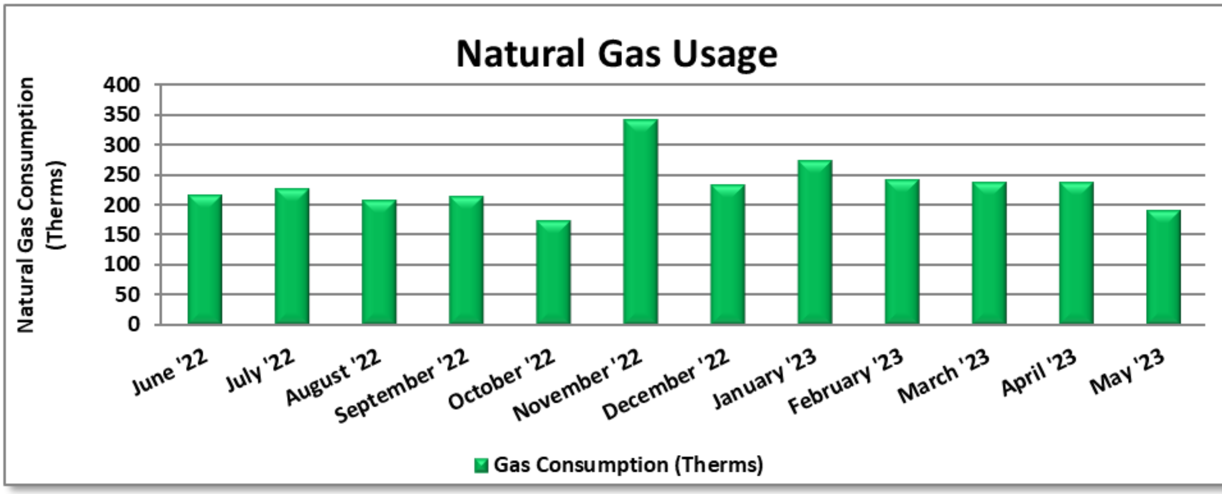


Gas Billing Data			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/30/22	30	6,618	$8,144
7/31/22	31	6,447	$8,107
8/31/22	31	6,723	$8,168
9/30/22	30	6,894	$8,293
10/31/22	31	13,701	$13,432
11/30/22	30	14,425	$14,143
12/31/22	31	17,229	$11,910
1/31/23	31	16,945	$19,937
2/28/23	28	15,227	$18,921
3/31/23	31	15,916	$19,025
4/30/23	30	9,182	$12,415
5/31/23	31	8,159	$11,363
Totals	**365**	**137,466**	**$153,858**
Annual	**365**	**137,466**	**$153,858**

Notes:

- The average gas cost for the past 12 months is $1.2/therm, which is the blended rate used throughout the analysis.
- Heating hot water and domestic hot water for this building are converted from steam provided by the central plant. Central plant natural gas use has been apportioned among the buildings served with steam using a formula that accounts for building area (sf), usage, and the energy intensity of the equipment.
- The building is also served by a dedicated gas meter which provides natural gas for some cooking and heating end uses. See following page for usage corresponding to the dedicated meter.

South Jersey Gas delivers natural gas directly to this building under rate class Comprehensive Transportation Services (SJ-CTS), with natural gas supply provided by UGI, a third-party supplier.



Gas Billing Data			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
6/30/22	30	216	$266
7/31/22	31	227	$285
8/31/22	31	209	$254
9/30/22	30	215	$259
10/31/22	31	175	$171
11/30/22	30	344	$337
12/31/22	31	235	$162
1/31/23	31	275	$323
2/28/23	28	242	$300
3/31/23	31	239	$285
4/30/23	30	239	$323
5/31/23	31	192	$267

Notes:

- Usage depicted in the graph and chart above corresponds to billing data associated with the dedicated meter.

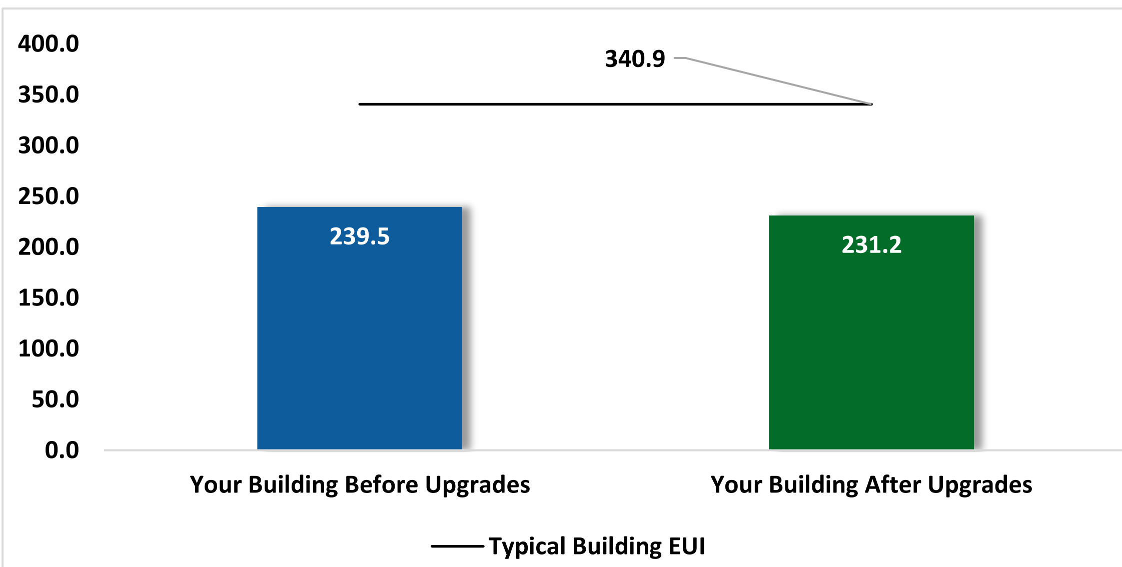
3.3 Benchmarking

Your building was benchmarked using the United States Environmental Protection Agency's (EPA) Portfolio Manager® software. Benchmarking compares your building's energy use to that of similar buildings across the country, 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.

Benchmarking Score	N/A

Due to its unique characteristics, this building type is not able to receive a benchmarking score. This report contains suggestions about how to improve building performance and reduce energy costs.



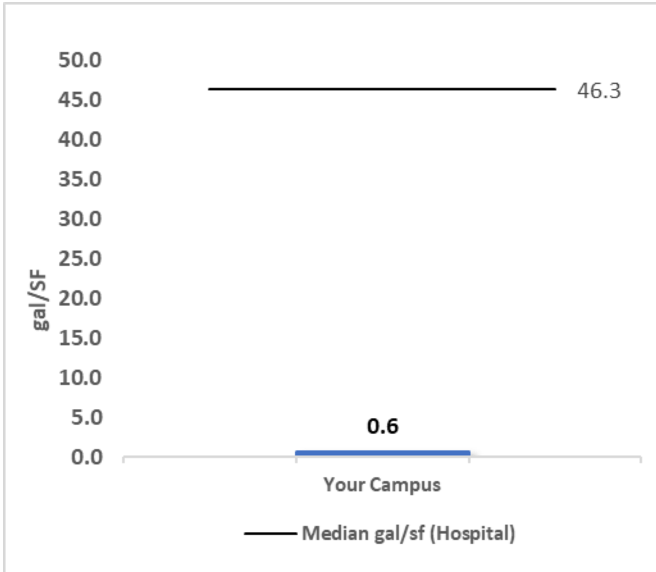
Energy Use Intensity Comparison[4]

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. Several factors can cause a building to vary from 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.

Note that the typical building EUI used in this report refers to the national median energy use intensity for a "specialty hospital" and does not correlate with the energy use intensity of a particular building. Specifically, buildings with lower occupancy periods or less equipment typically use less energy.

[4] Based on all evaluated ECMs

Campus Water Benchmarking



A benchmark is provided for your campus's water use based on the annual water use in gallons per square foot of building area (gal/sf-yr). Your building is compared to other similar buildings based on average water usage as available from the 2012 Commercial Buildings Energy Consumption Survey (CBECS) and from the EPA ENERGY STAR DataTrends Water Use Tracking database.

New Jersey American Water supplies water to the campus. This building, along with several others, shares the main campus water meter. The water bill is not divided among these buildings, so it covers the metered water usage for multiple buildings on campus. This information has been included in the report for the Main Hospital. Additional use of unmetered well water may contribute slightly to overall water consumption. Water use varies considerably depending mainly on the extent of indoor water use and whether process water is used, such as for kitchen equipment. Sanitary fixtures may use varying amounts of water.

Tracking your Energy Performance

Keeping track of your energy and water use on a monthly basis is one of the best ways to keep utility costs in check and keep your facility operating efficiently. 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 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.

3.4 Understanding Your Utility Bills

The State of New Jersey Department of the Public Advocate provides detailed information on how to read natural gas and electric bills. Your bills contain important information including account numbers, meter numbers, rate schedules, meter readings, and the supply and delivery charges. Gas and electric bills both provide comparisons of current energy consumption with prior usage.

Sample bills, with annotation, may be viewed at:
https://www.nj.gov/rpa/docs/Understanding_Electric_Bill.pdf
https://www.nj.gov/rpa/docs/Understanding_Gas_Bill.pdf

Why Utility Bills Vary

Utility bills vary from one month to another for many reasons. For this reason, assessing the effects of your energy savings efforts can be difficult.

Billing periods vary, typically ranging between 28 days and 33 days. Electric bills provide the kilowatt-hours (kWh) used per month while gas bills provide therms (or hundreds of cubic feet - CCF) per month consumption information. Monthly consumption information can be helpful as a tool to assess your efforts to reduce energy, particularly when compared to monthly usage from a similar calendar period in a prior year.

Bills typically vary seasonally, often with more gas consumed in the winter for heating, and more electricity used in the summer when air conditioning is used. Facilities with electric heating may experience higher electricity use in the winter. Seasonal variance will be impacted by the type of heating and cooling systems used. Normal seasonal fluctuations are further impacted by the weather. Extremely cold or hot weathers causes HVAC equipment to run longer, increasing usage. Other monthly fluctuations in usage can be caused by changes in building occupancy. Utility bills provide a comparison of usage between the current period and comparable billing month period of the prior year. Year-to-year monthly use comparisons can point to trends with energy savings for measures/projects that were implemented within the timeframe, but these comparisons do not account for changing weather of occupancy patterns.

The price of fuel and purchased power used to produce and delivery electricity and gas fluctuates. Any increase or decrease in these costs will be reflected in your monthly bill. Additionally, billing rates occasionally change after justification and approval of the NJBPU. For this reason, it is more useful to review energy use rather than cost when assessing energy use trends or the impact of energy conservation measures implemented.

4 Energy Conservation Measures

The goal of this audit report is to identify and evaluate potential energy efficiency improvements and provide information about the cost effectiveness of those improvements. Most energy conservation measures have received preliminary analysis of feasibility, which identifies expected ranges of savings. 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 in this report are based on the previously run state rebate program SmartStart, which has been retired. Now, all investor-owned gas and electric utility companies are offering complementary energy efficiency programs directly to their customers. Some measures and proposed upgrades may be eligible for higher incentives than those shown below. The incentives in the summary tables should be used for high-level planning purposes. To verify incentives, reach out to your utility provider or visit the NJCEP website for more information.

For a detailed list of the locations and recommended energy conservation measures for all inventoried equipment, see Appendix A: Equipment Inventory & Recommendations.

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**39,487**	**4.5**	**-8**	**$5,822**	**$7,700**	**$910**	**$6,790**	**1.2**	**38,789**
ECM 1	Install LED Fixtures	Yes	16,739	2.6	-3	$2,468	$4,450	$170	$4,280	1.7	16,447
ECM 2	Retrofit Fixtures with LED Lamps	Yes	22,748	2.0	-5	$3,353	$3,250	$740	$2,510	0.7	22,343
Lighting Control Measures			**30,253**	**3.5**	**-6**	**$4,459**	**$16,660**	**$2,100**	**$14,560**	**3.3**	**29,710**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	29,773	3.4	-6	$4,389	$16,100	$1,960	$14,140	3.2	29,239
ECM 4	Install High/Low Lighting Controls	Yes	480	0.1	0	$71	$560	$140	$420	5.9	471
Variable Frequency Drive (VFD) Measures			**60,762**	**10.2**	**33**	**$9,470**	**$52,600**	**$4,600**	**$48,000**	**5.1**	**65,037**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	40,531	10.2	0	$6,071	$27,300	$4,100	$23,200	3.8	40,814
ECM 6	Install VFDs on Kitchen Hood Fan Motors	Yes	20,231	0.0	33	$3,399	$25,300	$500	$24,800	7.3	24,223
Unitary HVAC Measures			**13,713**	**7.5**	**13**	**$2,204**	**$87,800**	**$3,300**	**$84,500**	**38.3**	**15,376**
ECM 7	Install High Efficiency Air Conditioning Units	No	13,713	7.5	13	$2,204	$87,800	$3,300	$84,500	38.3	15,376
Domestic Water Heating Upgrade			**0**	**0.0**	**1**	**$16**	**$150**	**$70**	**$80**	**5.0**	**167**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	1	$16	$150	$70	$80	5.0	167
Food Service & Refrigeration Measures			**22,728**	**1.4**	**0**	**$3,404**	**$50,280**	**$2,710**	**$47,570**	**14.0**	**22,887**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	7,078	0.9	0	$1,060	$10,090	$1,080	$9,010	8.5	7,127
ECM 10	Refrigeration Controls	No	13,696	0.3	0	$2,052	$39,650	$1,580	$38,070	18.6	13,792
ECM 11	Vending Machine Control	Yes	1,954	0.2	0	$293	$540	$50	$490	1.7	1,968
TOTALS			**166,943**	**27.1**	**33**	**$25,375**	**$215,190**	**$13,690**	**$201,500**	**7.9**	**171,967**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**39,487**	**4.5**	**-8**	**$5,822**	**$7,700**	**$910**	**$6,790**	**1.2**	**38,789**
ECM 1	Install LED Fixtures	16,739	2.6	-3	$2,468	$4,450	$170	$4,280	1.7	16,447
ECM 2	Retrofit Fixtures with LED Lamps	22,748	2.0	-5	$3,353	$3,250	$740	$2,510	0.7	22,343
Lighting Control Measures		**30,253**	**3.5**	**-6**	**$4,459**	**$16,660**	**$2,100**	**$14,560**	**3.3**	**29,710**
ECM 3	Install Occupancy Sensor Lighting Controls	29,773	3.4	-6	$4,389	$16,100	$1,960	$14,140	3.2	29,239
Variable Frequency Drive (VFD) Measures		**60,762**	**10.2**	**33**	**$9,470**	**$52,600**	**$4,600**	**$48,000**	**5.1**	**65,037**
ECM 5	Install VFDs on Constant Volume (CV) Fans	40,531	10.2	0	$6,071	$27,300	$4,100	$23,200	3.8	40,814
ECM 6	Install VFDs on Kitchen Hood Fan Motors	20,231	0.0	33	$3,399	$25,300	$500	$24,800	7.3	24,223
Domestic Water Heating Upgrade		**0**	**0.0**	**1**	**$16**	**$150**	**$70**	**$80**	**5.0**	**167**
ECM 8	Install Low-Flow DHW Devices	0	0.0	1	$16	$150	$70	$80	5.0	167
Food Service & Refrigeration Measures		**9,032**	**1.1**	**0**	**$1,353**	**$10,630**	**$1,130**	**$9,500**	**7.0**	**9,095**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	7,078	0.9	0	$1,060	$10,090	$1,080	$9,010	8.5	7,127
ECM 11	Vending Machine Control	1,954	0.2	0	$293	$540	$50	$490	1.7	1,968
TOTALS		**139,534**	**19.3**	**20**	**$21,120**	**$87,740**	**$8,810**	**$78,930**	**3.7**	**142,799**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

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 ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**39,487**	**4.5**	**-8**	**$5,822**	**$7,700**	**$910**	**$6,790**	**1.2**	**38,789**
ECM 1	Install LED Fixtures	16,739	2.6	-3	$2,468	$4,450	$170	$4,280	1.7	16,447
ECM 2	Retrofit Fixtures with LED Lamps	22,748	2.0	-5	$3,353	$3,250	$740	$2,510	0.7	22,343

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 is 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 HID 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 fixtures.

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 fixtures

ECM 2: Retrofit Fixtures with LED Lamps

Replace fluorescent 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. Be sure to specify replacement lamps that are compatible with existing dimming controls, where applicable. In some circumstances, you may need to upgrade your dimming system for optimum performance.

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: exterior fixtures

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**30,253**	**3.5**	**-6**	**$4,459**	**$16,660**	**$2,100**	**$14,560**	**3.3**	**29,710**
ECM 3	Install Occupancy Sensor Lighting Controls	29,773	3.4	-6	$4,389	$16,100	$1,960	$14,140	3.2	29,239
ECM 4	Install High/Low Lighting Controls	480	0.1	0	$71	$560	$140	$420	5.9	471

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 3: 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 that 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: kitchen, offices, corridor-storeroom, garage, locker room, mechanical area, multipurpose room, and storage rooms

ECM 4: 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 code requirements for egress. 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.

The controller lowers the light level by dimming the fixture output. Therefore, the controlled fixtures need to have a dimmable ballast or driver. This will need to be considered when selecting retrofit lamps and bulbs for the areas proposed for high/low control. 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 occupants approach the area.This measure provides energy savings by reducing the light fixture power draw when reduced light output is appropriate.

Affected Building Areas: hallways and stairwells

4.3 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**60,762**	**10.2**	**33**	**$9,470**	**$52,600**	**$4,600**	**$48,000**	**5.1**	**65,037**
ECM 5	Install VFDs on Constant Volume (CV) Fans	40,531	10.2	0	$6,071	$27,300	$4,100	$23,200	3.8	40,814
ECM 6	Install VFDs on Kitchen Hood Fan Motors	20,231	0.0	33	$3,399	$25,300	$500	$24,800	7.3	24,223

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 inverter duty rated motor to conservatively account for the cost of an inverter duty rated motor.

ECM 5: Install VFDs on Constant Volume (CV) Fans

Install VFDs to control constant volume fan motor speeds. This converts a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor if the air handler has one.

Zone thermostats signal the VFD to adjust fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature.

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing must be determined during the final project design. The control system programming should maintain the minimum air flow whenever the compressor is operating. Prior to implementation, verify minimum fan speed in cooling mode with the manufacturer. Note that savings will vary depending on the operating characteristics of each AHU.

Energy savings result from reducing the fan speed (and power) when conditions allow for reduced air flow.

Affected Air Handlers: mechanical basement: AHU- supply and return fans

ECM 6: Install VFDs on Kitchen Hood Fan Motors

Install VFDs and sensors to control the kitchen hood fan motors. The air flow of the hood is varied based on two key inputs: temperature and smoke/cooking fumes. The VFD controls the amount of exhaust (and kitchen make-up air) based on temperature—the lower the temperature the lower the flow. If the optic sensor is triggered by smoke or cooking fumes, the speed of the fan ramps up to 100%.

Energy savings result from reducing the hood fan speed (and power) when conditions allow for reduced air flow.

Affected Motors: kitchen hood exhaust fans

4.4 Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Unitary HVAC Measures		**13,713**	**7.5**	**13**	**$2,204**	**$87,800**	**$3,300**	**$84,500**	**38.3**	**15,376**
ECM 7	Install High Efficiency Air Conditioning Units	13,713	7.5	13	$2,204	$87,800	$3,300	$84,500	38.3	15,376

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 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 air conditioners are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 7: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged and split air conditioning units with high efficiency packaged and split air conditioning units. Some of the replacement units will incorporate efficient gas furnaces. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling and heating load, and the estimated annual operating hours.

Affected Units:

Area Served	Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (EER)	Heating Mode Efficiency	Manufacturer	Model
Chapel	2	Package Unit	5.00	100.00	9.28	0.8 AFUE	York	DHUC-T060N125A
Patients Cafeteria	3	Package Unit	7.50	96.00	10.49	0.8 AFUE	York	ZS-07N12ATAAA5A
Employee Cafeteria	1	Split-System	5.00		8.86		York	H4DXB060S25A

4.5 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**1**	**$16**	**$150**	**$70**	**$80**	**5.0**	**167**
ECM 8	Install Low-Flow DHW Devices	0	0.0	1	$16	$150	$70	$80	5.0	167

ECM 8: 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.

4.6 Food Service and Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**22,728**	**1.4**	**0**	**$3,404**	**$50,280**	**$2,710**	**$47,570**	**14.0**	**22,887**
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	7,078	0.9	0	$1,060	$10,090	$1,080	$9,010	8.5	7,127
ECM 10	Refrigeration Controls	13,696	0.3	0	$2,052	$39,650	$1,580	$38,070	18.6	13,792
ECM 11	Vending Machine Control	1,954	0.2	0	$293	$540	$50	$490	1.7	1,968

ECM 9: Refrigerator/Freezer Case Electrically Commutated Motors

Replace permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in cooler and freezer. Fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By using variable-speed technology, EC motors can optimize fan usage. Because these motors are brushless and use DC power, losses due to friction and phase shifting are eliminated.

Savings for this measure consider both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

Affected Systems: walk-in coolers and freezers

ECM 10: Refrigeration Controls

We evaluated installing additional controls to optimize the operation of walk-in coolers and freezers.

Defrost controllers can be used to override defrost of evaporator fans when the defrost operation is not necessary, which reduces annual energy consumption. This measure is applicable to existing evaporator fans with a traditional electric de-frost mechanism.

Many walk-in coolers and freezers have evaporator fans that run continuously. The measure adds a control system feature to automatically shut off evaporator fans when not needed.

Energy savings for each of the control measures account for reduction in compressor and fan operating hours as well as reduction in the refrigeration heat load as appropriate.

Affected Systems: walk-in coolers and freezers

ECM 11: 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 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.

Affected Systems: refrigerated and non-refrigerated vending machines

4.7 Measures for Future Consideration

There are additional opportunities for improvement that State of NJ Department of Human Services may wish to consider. These potential upgrades typically require further analysis, involve substantial capital investment, and/or include significant system reconfiguration. These measures are therefore beyond the scope of this energy audit. These measures are described here to support a whole building approach to energy efficiency and sustainability.

State of NJ Department of Human Services may wish to consider the Energy Savings Improvement Program (ESIP) or other whole building approach. With interest in implementing comprehensive, largescale and/or complex system wide projects, these measures may be pursued during development of a future energy savings plan. We recommend that you work with your energy service company (ESCO) and/or design team to:

- Evaluate these measures further.
- Develop firm costs.
- Determine measure savings.
- Prepare detailed implementation plans.

Other modernization or capital improvement funds may be leveraged for these types of refurbishments. As you plan for capital upgrades, be sure to consider the energy impact of the building systems and controls being specified.

Electric Sub Metering

Electricity use varies in different facilities, and plant operators need to perform their own investigations and analyses to understand how their facilities consume energy. Utility bills indicate how much energy a facility uses across the entire facility, but submetering provides more detailed data on the energy consumption of specific systems and even on individual pieces of equipment, depending on how extensively meters are installed. Electric submeters alone do not save energy, but they are a useful tool under the right circumstances. Electric sub-meters can provide facility staff with real-time energy use data for specific buildings and equipment, information that enhances the potential for greater energy management activities. Revenue grade submeters are a tool that allow operators to better understand how and where electricity is used at the facility. Better resolution of system energy use can lead to operational changes or even equipment modifications or replacement, which often result in reduced energy use, which often result in reduced energy use.

Upgrade to a Heat Pump System

Electric resistance heating units work by passing an electric current through wires to heat them. The system is 100% efficient since for every unit of electricity consumed, one unit of heat is produced.

But there is a way to convert electricity to create heat at better than a 1:1 ratio. Heat pumps operate on a more efficient principle, the refrigeration cycle. Instead of directly converting electricity to heat, electricity does the work, via a compressor, of moving refrigerant through a system that transfers heat from a cooler place to a warmer place. That system can move three to five as much energy as is available using electric resistance heating methods. Heat pumps work in a similar manner to an air conditioner, except they reverse the cooling process to circulate warm air instead of cold air. Also, heat pumps are generally capable of dispensing refrigerated air as they can typically be operated in air conditioning mode.

Electric resistance heat, including electric furnaces and baseboard heaters, can be inexpensive to install but often expensive to run. Facilities with these systems can save substantial energy at a moderate cost by installing a heat pump when they replace a central air conditioner.

Even in buildings without central air-conditioning, there are opportunities to save energy when an existing electric furnace needs to be replaced, as well as opportunities to install ductless electric heat pumps in buildings with baseboard electric heaters and electric fan coils. Unit ventilators with built-in electric resistance heaters can be replaced with unit ventilators with integrated heat pumps.

Electric heat pumps have high coefficient of performance (COP) ratings and are substantially more efficient than traditional electric heating systems. Further investigation is required to determine whether installing a heat pump system is a cost-effective solution when replacing existing electrical heating systems.

VRF Systems

Consider variable refrigerant flow (VRF) systems as part of a comprehensive package unit upgrade project. (VRF systems use direct expansion (DX) heat pumps to transport heat between an outdoor condensing unit and a network of indoor evaporators, located near or within the conditioned space, through refrigerant piping installed in the building. Attributes that distinguish VRF from other DX system types are:

- Multiple indoor units connected to a common outdoor unit
- Scalability
- Variable capacity
- Distributed control
- Simultaneous heating and cooling capability

VRF provides flexibility by allowing for many different indoor units (with different capacities and configurations), individual zone control, the unique ability to offer simultaneous heating and cooling in separate zones on a common refrigerant circuit, and heat recovery from one zone to another. VRF systems are equipped with at least one variable-speed and/or variable-capacity compressor.

To match the building's load profiles, energy is transferred from one indoor space to another through the refrigerant line, and only one energy source is necessary to provide both heating and cooling. VRF systems also operate efficiently at part load because of the compressor's variable capacity control. VRF systems are ideal for applications with varying loads or where zoning is required. Some other advantages of VRF systems include consistent comfort, quiet operation, energy efficiency, installation flexibility, zoned heating and cooling, state-of-the-art controls, and reliability.

VRF systems are more expensive than conventional heat pump systems; however, the higher initial cost can be offset by improved cooling efficiency during part load operation—a SEER (cooling) rating of 18.0 is not uncommon for small packaged VRF-equipped heat pumps.

When you are replacing packaged HVAC equipment, we recommend a comprehensive approach. Work with your contractor or design engineer to make sure your systems are sized and zoned according to current space configurations and occupancy. Select high efficiency equipment and controls that match your heating and cooling needs. Commission the system and controls to ensure proper operation, comfort, ventilation, and energy use.

Replace Water Cooled Condenser

A water-cooled condenser is a heat exchanger that removes heat from refrigerant vapor and transfers it to water running through it. Refrigerant vapor condenses on the outside of a tube, permitting the vapor to give up heat to the water inside the tube. The water-cooled design allows it to function as a specialized heat exchanger, converting hot, high-pressure gas from the compressor into a liquid.

In air-cooled condensers, air removes heat from the refrigerant by passing over copper pipes and aluminum fins. Forced air-cooled condensers in commercial refrigeration systems increase airflow to improve heat transfer. The temperature in the condenser is usually 7ºC to 12ºC higher than the ambient temperature, referred to as the heat exchange temperature difference. To maintain efficiency, it is important to minimize this temperature difference when designing the condenser.

The primary drawback of water-cooled systems is their reliance on a continuous and adequate water supply. These systems often dump used water to the drain, highlighting water conservation as an important consideration. Additionally, water-cooled condensers need regular maintenance to prevent scale buildup and algae growth, which can reduce efficiency and lead to equipment failure.

Air cooled condensers require no water usage and generally require less infrastructure compared to water-cooled systems. They require less maintenance because there is no water system. However, air-cooled condensers are generally less efficient than water-cooled ones, especially in high-temperature environments. High efficiency air cooled condensers are available incorporating variable frequency drive fans and associated controls.

This type of system upgrade has significant up-front capital costs. We recommend you work with your mechanical design team to select appropriately sized condensers for refrigerators and freezers. Since air-cooled condensers are affected by ambient temperature, design for the highest expected ambient temperature to ensure reliable operation. Condensers are typically installed outdoors, so ensure there is sufficient space and clearance around the unit for proper airflow. Consider using variable speed fans, which can adjust their speed based on cooling demand and lead to energy savings. Additionally, ensure the new air-cooled condenser is compatible with the refrigerant used in the existing system.

Water-cooled condenser replacement typically has a long payback and may not be justifiable based simply on energy considerations. However, the condensers are nearing the end of their normal useful life. It is recommended that reconfiguring the condensers be further evaluated. Savings may result from improved efficiency, water savings, and reduced maintenance costs. Further analysis should be conducted to determine the feasibility of this measure. This measure is a capital improvement measure for future consideration.

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.

Operation and maintenance (O&M) plans enhance the operational efficiency of HVAC and other energy intensive systems and could save 5% –20% of the energy usage in your building without substantial capital investment. A successful plan includes your records of energy usage trends and costs, building equipment lists, current maintenance practices, and planned capital upgrades, and it incorporates your ideas for improved building operation. Your plan will address goals for energy-efficient operation, provide detail on how to reach the goals, and outline procedures for measuring and reporting whether goals have been achieved.

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 cannot manage what you do not 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[5]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Weatherization

Caulk or weather strip leaky doors and windows to reduce drafts and loss of heated or cooled air. Sealing cracks and openings can reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. Materials used may include caulk, polyurethane foam, and other weather-stripping materials. There is an energy savings opportunity by reducing the uncontrolled air exchange between the outside and inside of the building. Blower door assisted comprehensive building air sealing will reduce the amount of air exchange, which will in turn reduce the load on the buildings heating and cooling equipment, providing energy savings and increased occupant comfort.

Doors and Windows

Close exterior doors and windows in heated and cooled areas. Leaving doors and windows open leads to a loss of heat during the winter and chilled air during the summer. Reducing air changes per hour can lead to increased occupant comfort as well as heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Window Treatments/Coverings

Use high-reflectivity films or cover windows with shades or shutters to reduce solar heat gain and reduce the load on cooling and heating systems. Older, single-pane windows and east- or west-facing windows are especially prone to solar heat gain. In addition, use shades or shutters at night during cold weather to reduce heat loss.

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

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.

Lighting Controls

As part of a lighting maintenance schedule, test lighting controls to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight and photocell sensors, maintenance involves cleaning sensor lenses and confirming that setpoints and sensitivity are configured properly. Adjust exterior lighting time clock controls seasonally as needed to match your lighting requirements.

Motor Controls

Electric motors often run unnecessarily, and this is an overlooked opportunity to save energy. These motors should be identified and turned off when appropriate. For example, exhaust fans often run unnecessarily when ventilation requirements are already met. Whenever possible, use automatic devices such as twist timers or occupancy sensors to turn off motors when they are not needed.

Motor Maintenance

Motors have many moving parts. As these parts degrade over time, the efficiency of the motor is reduced. Routine maintenance prevents damage to motor components. Routine maintenance should include cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Thermostat Schedules and Temperature Resets

Use thermostat setback temperatures and schedules to reduce heating and cooling energy use during periods of low or no occupancy. Thermostats should be programmed for a setback of 5°F-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Economizer Maintenance

Economizers can significantly reduce cooling system load. A malfunctioning economizer can increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air. Common economizer malfunctions include broken outdoor thermostat or enthalpy control or dampers that are stuck or improperly adjusted.

Periodic inspection and maintenance will keep economizers working in sync with the heating and cooling system. This maintenance should be part of annual system maintenance, and it should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position.

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.

HVAC Filter Cleaning and Replacement

Air filters should be checked regularly (often monthly) and cleaned or replaced when appropriate. Air filters reduce indoor air pollution, increase occupant comfort, and help keep equipment operating efficiently. If the building has a building management system, consider installing a differential pressure switch across filters to send an alarm about premature fouling or overdue filter replacement. Over time, filters become less and less effective as particulate buildup increases. Dirty filters also restrict air flow through the air conditioning or heat pump system, which increases the load on the distribution fans.

Ductwork Maintenance

Duct maintenance has two primary goals: keep the ducts clean to avoid air quality problems and seal leaks to save energy. Check for cleanliness, obstructions that block airflow, water damage, and leaks. Ducts should be inspected at least every two years.

The biggest symptoms of clogged air ducts are differing temperatures throughout the building and areas with limited airflow from supply registers. If a particular air duct is clogged, then air flow will only be cut off to some rooms in the building—not all of them. The reduced airflow will make it more difficult for those areas to reach the temperature setpoint, which will cause the HVAC system to run longer to cool or heat that area properly. If you suspect clogged air ducts, ensure that all areas in front of supply registers are clear of items that may block or restrict air flow, and you should check for fire dampers or balancing dampers that have failed closed.

Duct leakage in commercial buildings can account for 5%–25% of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building wasting conditioned air. Check ductwork for leakage. Eliminating duct leaks can improve ventilation system performance and reduce heating and cooling system operation.

Distribution system losses are dependent on air system temperature, the size of the distribution system, and the level of insulation of the ductwork. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is missing or worn, the system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

Steam Trap Repair and Replacement

Steam traps are a crucial part of delivering heat from the boiler to the space heating units. Steam traps are automatic valves that remove condensate from the system. If the traps fail closed, condensate can build up in the steam supply side of the trap, which reduces the flow in the steam lines and thermal capacity of the radiators. Or they may fail open, allowing steam into the condensate return lines resulting in wasted energy, water, and hammering. Losses can be significantly reduced by testing and replacing equipment as they start to fail. Repair or replace traps that are blocked or allowing steam to pass. Inspect steam traps as part of a regular steam system maintenance plan.

Optimize HVAC Equipment Schedules

Energy management systems (BAS) typically provide advanced controls for building HVAC systems, including chillers, boilers, air handling units, rooftop units and exhaust fans. The BAS monitors and reports operational status, schedules equipment start and stop times, locks out equipment operation based on outside air or space temperature, and often optimizes damper and valve operation based on complex algorithms. These BAS features, when in proper adjustment, can improve comfort for building occupants and save substantial energy.

Know your BAS scheduling capabilities. Regularly monitor HVAC equipment operating schedules and match them to building operating hours to eliminate unnecessary equipment operation and save energy. Monitoring should be performed often at sites with frequently changing usage patterns – daily in some cases. We recommend using the optimal start feature of the BAS (if available) to optimize the building warmup sequence. Most BAS scheduling programs provide for holiday schedules, which can be used during reduced use or shutdown periods. Finally, many systems are equipped with a one-time override function, which can be used to provide additional space conditioning due to a one-time, special event. When available this override feature should be used rather than changing the base operating schedule.

Compressed Air System Maintenance

Compressed air systems require periodic maintenance to operate at peak efficiency. A maintenance plan for compressed air systems should include:

- Inspection, cleaning, and replacement of inlet filter cartridges.
- Cleaning of drain traps.
- Daily inspection of lubricant levels to reduce unwanted friction.
- Inspection of belt condition and tension.
- Check for leaks and adjust loose connections.
- Overall system cleaning.
- Reduce pressure setting to minimum needed for air operated equipment.
- Turn off compressor if not routinely needed.
- Use low pressure blower air rather than high pressure compressed air.

Contact a qualified technician for help with setting up periodic maintenance schedule.

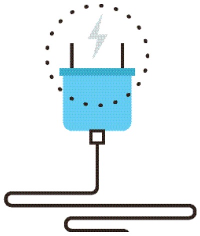
Refrigeration Equipment Maintenance

Preventative maintenance keeps commercial refrigeration equipment running reliably and efficiently. Commercial refrigerators and freezers are mission-critical equipment that can cost a fortune when they go down. Even when they appear to be working properly, refrigeration units can be consuming too much energy. Have walk-in refrigeration and freezer and other commercial systems serviced at least annually. This practice will allow systems to perform to their highest capabilities and will help identify system issues if they exist.

Maintaining your commercial refrigeration equipment can save between five and ten percent on energy costs. When condenser coils are dirty, your commercial refrigerators and freezers work harder to maintain the temperature inside. Worn gaskets, hinges, door handles or faulty seals cause cold air to leak from the unit, forcing the unit to run longer and use more electricity.

Regular cleaning and maintenance also help your commercial refrigeration equipment to last longer.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips[6]. Your local utility may offer incentives or rebates for this equipment.

Procurement Strategies

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

[6] For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

6 Water Best Practices

Getting Started

The commercial and institutional sector is the second largest consumer of publicly supplied water in the United States, accounting for 17% of the withdrawals from public water supplies[7]. In New Jersey, excluding water used for power generation, approximately 80% of total water use was attributed to potable supply during the period of 2009 to 2018. Water withdrawals for potable supply have not changed noticeably during the period from 1990 to 2018[8].

Water management planning serves as the foundation for any successful water reduction effort. It is the first step a commercial or institutional facility owner or manager should take to achieve and sustain long-term water savings. Understanding how water is used within a facility is critical for the water management planning process. A water assessment provides a comprehensive account of all known water uses at the facility. It allows the water management team to establish a baseline from which progress and program success can be measured. It also enables the water management team to set achievable goals and identify and prioritize specific projects based on the relative savings opportunities and project cost-effectiveness.

Water conservation devices may significantly reduce your water and sewer usage costs. Any reduction in water use reduces grid-level electricity use since a significant amount of electricity is used to treat and deliver water from reservoirs to end users.

For more information regarding water conservation or additional details regarding the practices shown below go to the EPA's WaterSense website[9] or download a copy of EPA's "WaterSense at Work: Best Management Practices for Commercial and Institutional Facilities"[10] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

Water Metering and Submetering

Tracking a facility's total water use, as well as specific end uses, is a key component of a facility's water-efficiency efforts. Accurately measuring water use can help facility managers identify areas for targeted reductions and track progress from water-efficiency upgrades. If possible, install meters to measure all water conveyed to the facility, regardless of the source. Each source should be metered separately. Consider developing a metering plan and installing separate submeters to measure specific end uses. There are many types and sizes of meters intended for different uses. Installing the correct type and size of meter are critical to accurate water measurement. Sub-metering applications may include:

- Individual tenant spaces
- Cooling tower make-up and blowdown water supply
- Water lines serving other HVAC systems including water circulating loops
- Make up water supply for steam boiler plants with a capacity of 500,000 Btu/hr. or greater
- Systems or equipment that use single pass cooling water
- Irrigation systems

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[7] Estimated from analyzing data in: Solley, Wayne B,. et al, "Estimated Use of Water in the United States in 1995", U.S Geological Survey Circular 1200, (1998)

[8] https://dep.nj.gov/wp-content/uploads/dsr/trends-water-supply.pdf

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

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

- Roof spray systems (for irrigating vegetated roofs or thermal conditioning)
- Ornamental water features
- Indoor and outdoor pools and spas
- Industrial water using processes

Leak Detection and Repair

Identifying and repairing leaks and other water use anomalies within a facility's water distribution system or from processes or equipment can keep a facility from wasting significant quantities of water. Examples of common leaks include leaking toilets and faucets, drip irrigation malfunctions, stuck float valves, and broken distribution lines. Reading meters, installing failure abatement technologies, and conducting visual and auditory inspections are important best practices to detect leaks. Train building occupants, employees, and visitors to report any leaks that they detect. To reduce unnecessary water loss, detected leaks should be repaired quickly. Repairing leaks in water distribution that is pressurized by on-site pumps or in heated or chilled water piping will also reduce energy use.

Toilets and Urinals

Toilets and urinals are considered sanitary fixtures and are found in most facilities. High efficiency fixtures are at least 20% more efficient than available standard products. Leaking or damaged equipment is a substantial source of water waste. Train users to report continuously flushing, leaking, or otherwise improperly operating equipment to the appropriate personnel. Depending on the age of the equipment and the frequency of use, it may be cost effective to replace older inefficient fixtures with current generation WaterSense labeled equipment.

Commercial facilities typically use tank toilets or wall-mount flushometers. Educate and inform users with restroom signage and other means to avoid flushing inappropriate objects. For tank toilets, periodically check to ensure fill valves are working properly and that water level is set correctly. Annually test toilets to ensure the flappers are not worn or allowing water to seep from the tank into the bowl and down the sewer. Control stops and piston valves on flushometer toilets should be checked at least annually.

Most urinals use water to flush liquid. These standard single-user fixtures are present in most facilities. Non-water urinals use a specially designed trap that allows liquid waste to drain out of the fixture through a trap seal, and into the drainage system. Flushing urinals should be inspected at least annually for proper valve and sensor operation. For non-water urinals, follow maintenance practices as directed by the manufacturer to ensure products perform as expected. Non-water urinals can be considered during urinal replacement, however, review the condition and design of the existing plumbing system and the expected usage patterns to ensure that these products will provide the anticipated performance.

Faucets and Showerheads

Faucets and showerheads are sanitary fixtures that generally dispense heated water. Reducing water use by these fixtures translates into a reduction of site fuel or electric use depending on how water is heated. High efficiency fixtures are at least 20% more efficient than available standard products. Leaking or damaged equipment is a substantial source of water waste. Train users to report continuously dripping, leaking, or otherwise improperly operating equipment to the appropriate personnel. Depending on the age of the equipment and the frequency of use, it may be cost effective to replace older fixtures with current generation WaterSense labeled equipment.

Faucets are used for a variety of purposes, and standard flow rates are dictated by the intended use. Public use lavatory faucets and kitchen faucets are subject to maximum flow rates while service sinks are not. Periodically inspect faucet aerators for scale buildup to ensure flow is not being restricted. Clean or replace the aerator or other spout end device as needed. Check and adjust automatic sensors (where installed) to ensure they are operating properly to avoid faucets running longer than necessary. Post materials in restrooms and kitchens to ensure user awareness of the facility's water-efficiency goals. Remind users to turn off the tap when they are done and to consider turning the tap off during sanitation activities when it is not being used. Consider installing lavatory and kitchen faucet fixtures with reduced flow. Federal standards limit kitchen and restroom faucet flows to 2.2 gpm. To qualify for a WaterSense label a faucet cannot exceed 1.5 gpm.

Effective in 1992, the maximum allowable flow rate for all showerheads sold in the United States is 2.5 gpm. Since this standard was enacted, many showerheads have been designed to use even less water. WaterSense labeled equipment is designed to use 2.0 gpm, or less. For optimum showerhead efficiency, the system pressure should be tested to make sure that it is between 20 and 80 pounds per square inch (psi). Verify that plumbing lines are routed through a shower valve to prevent water pressure fluctuations. Periodically inspect showerheads for scale buildup to ensure flow is not being restricted. In general, replace showerheads with 2.5 gpm flow rates or higher with WaterSense labeled models. Note: Use of poor performing replacement reduced flow showerheads may result in increased use if the duration of use is increased to compensate for reduced performance. WaterSense labeled showerheads are independently certified to meet or exceed minimum performance requirements for spray coverage and force.

Commercial Kitchen Equipment

Commercial and institutional sectors, including hospitals, offices, and schools, have substantial kitchen water use. Water in food service is used for steam cooking, spray/flow cleaning, dish washing, and ice making. In most commercial kitchens, the commercial dishwasher and pre-rinse spray valve account for over two-thirds of the water use. Newer technologies and better practices are available that can significantly reduce commercial kitchen equipment water and energy use. For example, ENERGY STAR qualified dishwashers and steam cookers are at least 10% more water-efficient and 15% more energy-efficient than standard models. With some models saving significantly more.

Cooking equipment includes combination ovens, steam cookers, and steam kettles. For efficient steam cooking operation, fill vessels to capacity when possible, set temperatures optimally for the process, and keep doors and lids closed while cooking. Replace gaskets to ensure proper sealing and repair leaks. When replacing combination ovens, select connectionless equipment; replace steam cookers with ENERGY STAR rated steam cookers.

Spray/flow cleaning equipment includes dipper wells, pre-rinse spray valves, food disposals, and wash down sprayers. Turn off water when service periods are slow and keep flow rates to minimum level. Train users to scrape food rather than rely on water pressure. Inspect for leaks and scaling. Test system pressure to ensure it is between 20 and 80 pounds per square inch (psi) for optimum flow and performance of spray equipment. For dipper wells, consider installing in-line flow restrictors to reduce flow. Pre-rinse spray valves can be replaced with new assemblies which use 1.3 gpm or less. Washdown sprayers can be equipped with self-closing nozzles or consider mopping/sweeping as an alternative.

Dishwashers range in type and include undercounter, stationary/hood, conveyor, and flight-type models. Only run dishwashers when they are full, and fill racks to maximum capacity. Be sure to replace damaged dishwasher racks. Educate staff to scrape dishes prior to loading. Ensure that final rinse pressure and water temperature are within the manufacturer's recommendations. Operate the dishwasher close to or at the minimum flow rate and set rinse cycle time to the manufacturer's minimum recommended settings. Make sure that manual fill valves close completely after the wash tank is filled. Find and repair any leaks. Inspect valves and rinse nozzles for proper operation and repair worn nozzles. Look for ENERGY STAR qualified models when purchasing or leasing a new commercial dishwasher or replacing an existing unit.

Consider your kitchen throughput to select an appropriately sized commercial dishwasher since an oversized dishwasher will waste water if the machine is not loaded to capacity.

Ice Machines

Commercial ice machines use refrigeration units to freeze water into ice. Ice machines typically use water for two purposes: cooling the refrigeration unit and making ice. Because the ice-making process generates a significant amount of heat, either water or air is used to remove this waste heat from the ice machine's refrigeration unit.

Water-cooled ice machines generally pass water through the machine once to cool it and then dispose of the single-pass water down the drain. Water-cooled systems can use less water by recirculating the cooling water through a chiller or a cooling tower to lower the temperature, returning the water to the machine for reuse. To eliminate using water to cool the refrigeration unit altogether, air can be used to cool the unit. Air-cooled ice machines use motor-driven fans or centrifugal blowers to move air through the refrigeration unit to remove heat. In general, water-cooled units are more energy efficient than air-cooled units but use more water. Commercial ice machines that are ENERGY STAR qualified are, on average, 15% more energy-efficient and 10% more water-efficient than standard air-cooled models.

For optimal ice machine efficiency, consider the following:

- Clean the ice machine to remove lime and scale buildup; sanitize it to kill bacteria and fungi. Run the self-cleaning sequence if available. For machines without a self-cleaning mode, shut down the machine, empty the bin of ice, add cleaning or sanitizing solution to the machine, switch it to cleaning mode, and then switch it to ice production mode. For health and safety purposes, create and discard several batches of ice to remove residual cleaning solution.
- Keep the ice machine's coils clean to ensure the heat exchange process is running efficiently.
- Keep the lid closed to preserve cool air and maintain the appropriate temperature.
- Install a timer to shift ice production to off-peak hours to decrease peak energy demand.
- Work with the manufacturer to ensure that the ice machine's rinse cycle is set to the lowest possible frequency that still provides sufficient ice quality and meets local water quality and site requirements.
- Follow the manufacturer's use and care instructions for the specific ice machine model.
- Train users to report leaking or otherwise improperly operating ice machines to the appropriate personnel.

If the machine is cooled using single-pass water, modify the machine to operate on a closed loop that recirculates the cooling water through a cooling tower or heat exchanger, if possible.

When replacing an ice machine or installing a new one, ensure that the new model is sized appropriately to fit the facility's need. Choose an ice machine that is appropriate for the quality of ice needed. Producing ice of higher quality than required will use water unnecessarily. Look for ENERGY STAR qualified models, all of which are air-cooled. Also consider air- or water-cooled ice machines that meet the efficiency specifications outlined by the Consortium for Energy Efficiency. If feasible, consider selecting air-cooled flake or nugget ice machines, which use less water and energy than cubed ice machines.

7 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, 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.

7.1 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 campus wide screening based on the facility's demand, combined available roof spaces, and shading elements has been included in the report for Boiler House.

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available for solar projects. Solar projects may qualify to earn SREC- IIs (Solar Renewable Energy Certificates-II), however, the project owners must register their solar projects prior to the start of construction to establish the project's eligibility.

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:

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

7.2 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 has been included in the report for the Boiler House.

Find a qualified firm that specializes in commercial CHP cost assessment and installation: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

8 Electric Vehicles

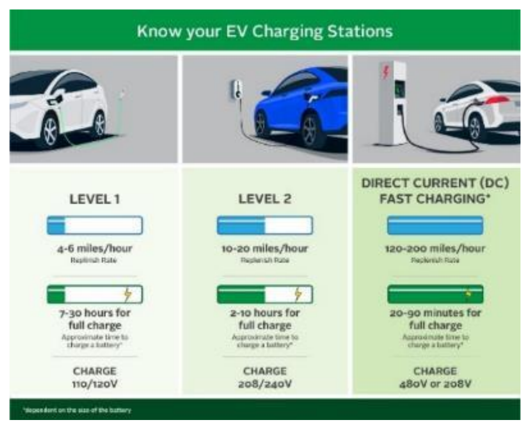
All electric vehicles (EVs) have an electric motor instead of an internal combustion engine. EVs function by plugging into a charge point, taking electricity from the grid, and then storing it in rechargeable batteries. Although electricity production may contribute to air pollution, the U.S. EPA categorizes all-electric vehicles as zero-emission vehicles because they produce no direct exhaust or tailpipe emissions.

EVs are typically more expensive than similar conventional and hybrid vehicles, although some cost can be recovered through fuel savings, federal tax credit, or state incentives

8.1 EV Charging

EV charging stations provide a means for electric vehicle operators to recharge their batteries at a facility. While many EV drivers charge at home, others do not have access to regular home charging, and the ability to charge at work or in public locations is critical to making EVs practical for more drivers. Charging can also be used for electric fleet vehicles, which can reduce fuel and maintenance costs for fleets that replace gas or diesel vehicles with EVs.

EV charging comes in three main types. For this assessment, the screening considers addition of Level 2 charging, which is most common at workplaces and other public locations. Depending on the site type and usage, other levels of charging power may be more appropriate.



The preliminary assessment of EV charging at the facility shows that there is medium potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

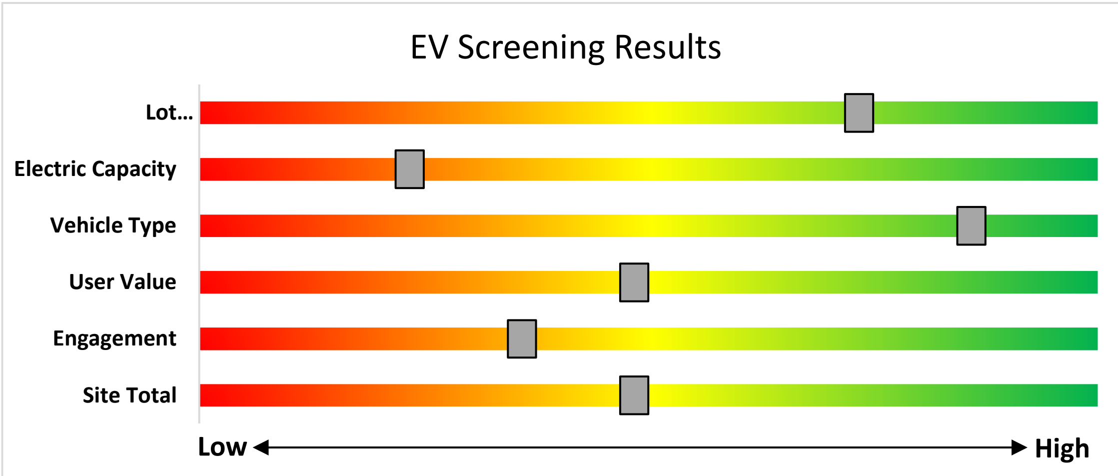
The primary costs associated with installing EV charging are the charger hardware and the cost to extend power from the facility to parking spaces. This may include upgrades to electric panels to serve increased loads.

The type and size of the parking area impact the costs and feasibility of adding EV charging. Parking structure installations can be less costly than surface lot installations as power may be readily available, and equipment and wiring can be surface mounted. Parking lot installations often require trenching through concrete or asphalt surface. Large parking areas provide greater flexibility in charger siting than smaller lots.

The location and capacity of facility electric panels also impact charger installation costs. A Level 2 charger generally requires a dedicated 208V-240V, 40 Amp circuit. The electric panel nearest the planned installation may not have available capacity and may need to be upgraded to serve new EV charging loads. Alternatively, chargers could be powered from a more distant panel. The distance from the panel to the location of charging stations ties directly to costs, as conduits, cables, and potential trenching costs all increase on a per-foot basis. The more charging stations planned, the more likely it is that additional electrical capacity will be needed.

Other factors to consider when planning for EV charging at a facility include who the intended users are, how long they park vehicles at the site, and whether they will need to pay for the electricity they use.

The graphic below displays the results of the EV charging assessment conducted as part of this audit. The position of each slider indicates the impact each factor has on the feasibility of installing EV charging at the site.



EV Charger Screening

Electric Vehicle Programs Available

New Jersey is leading the way on electric vehicle (EV) adoption on the East Coast. There are several programs designed to encourage EV adoption in New Jersey, which is crucial to reaching a 100% clean energy future.

NJCEP offers a variety of EV programs for vehicles, charging stations, and fleets. Certain EV charging stations that receive electric utility service from Atlantic City Electric Company (ACE), Public Service Electric and Gas Company (PSE&G) or Jersey Central Power and Light (JCP&L), may be eligible for additional electric vehicle charging incentives directly from the utility. Projects may be eligible for both the incentives offered by this BPU program and incentives offered by ACE, PSE&G or JCP&L, up to 90% of the combined charger purchase and installation costs. Please check ACE, PSE&G or JCP&L program eligibility requirements before purchasing EV charging equipment, as additional conditions on types of eligible chargers may apply for utility incentives.

EV Charging incentive information is available from Atlantic City Electric, PSE&G and JCP&L.For more information and to keep up to date on all EV programs please visit https://www.njcleanenergy.com/commercial-industrial/programs/electric-vehicle-programs

9 Project Funding and Incentives

Ready to improve your building's performance? New Jersey's Clean Energy Programs and Utility Energy Efficiency Programs can help. Pick the program that works best for you. This section provides an overview of currently available incentive programs in New Jersey.

NJBPU and NJCEP Administered Programs

New Jersey's cleanenergy program™

- New Construction (residential, commercial, industrial, government)
- Large Energy Users
- Energy Savings Improvement Program (financing)
- State Facilities Initiative*
- Local Government Energy Audits
- Combined Heat & Power & Fuel Cells

*State facilities are also eligible for utility programs

Utility Administered Programs

atlantic city electric – AN EXELON COMPANY; Jersey Central Power & Light – A FirstEnergy Company; PSEG; Rockland Electric Company; ELIZABETHTOWN GAS; SOUTH JERSEY GAS; New Jersey Natural Gas

- Existing buildings (residential, commercial, industrial, government)
- Efficient Products
    - Lighting & Marketplace
    - HVAC
    - Appliance Rebates
    - Appliance Recycling

9.1 New Jersey's Clean Energy Program

Save money while saving the planet! New Jersey's Clean Energy Program is a statewide program that offers incentives, programs, and services that benefit New Jersey residents, businesses, educational, non-profit, and government entities to help them save energy, money, and the environment.

Large Energy Users

The Large Energy Users Program (LEUP) is designed to foster self-directed investment in energy projects. This program is offered to New Jersey's largest energy customers. To qualify entities must have incurred at least $5 million in total energy costs in the prior fiscal year.

Incentives

Incentives are based on the specifications below. The maximum incentive per entity is the lesser of:

- $4 million
- 75% of the total project(s) cost
- 90% of total NJCEP fund contribution in previous year
- $0.33 per projected kWh saved; $3.75 per projected Therm saved annually

How to Participate

To participate in LEUP, you will first need submit an enrollment application. This program requires all qualified and approved applicants to submit an energy plan that outlines the proposed energy efficiency work for review and approval. Applicants may submit a Draft Energy Efficiency Plan (DEEP), or a Final Energy Efficiency Plan (FEEP). Once the FEEP is approved, the proposed work can begin.

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

Combined Heat and Power

The Combined Heat & Power (CHP) program provides incentives for eligible CHP or waste heat to power (WHP) projects. Eligible CHP or WHP projects must achieve an annual system efficiency of at least 65% (lower heating value, or LHV), based on total energy input and total utilized energy output. Mechanical energy may be included in the efficiency evaluation. ≤

Incentives[11]

Eligible Technology	Size (Installed Rated Capacity)	Incentive ($/Watt)[5]	% of Total Cost Cap per Project	$ Cap per Project
CHPs powered by non-renewable or renewable fuel source, or a combination:[4] - Gas Internal Combustion Engine - Gas Combustion Turbine - Microturbine Fuel Cells ≥60%	≤500 kW[1]	$2.00	30-40%[2]	$2 million
	>500 kW - 1 MW[1]	$1.00		
	> 1 MW - 3 MW[1]	$0.55	30%	$3 million
	>3 MW[1]	$0.35		
Fuel Cells ≥40%	Same as above[1]	Applicable amount above	30%	$1 million
Waste Heat to Power (WHP)[3] Powered by non-renewable fuel source. Heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine)	≤1MW[1]	$1.00	30%	$2 million
	> 1MW[1]	$.50	30%	$3 million

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[1] Incentives are tiered, which means the incentive levels vary based upon the installed rated capacity, as listed in the chart above. For example, a 4 MW CHP system would receive $2.00/watt for the first 500 kW, $1.00/watt for the second 500 kW, $0.55/watt for the next 2 MW and $0.35/watt for the last 1 MW (up to the caps listed).

[2] The maximum incentive will be limited to 30% of total project. For CHP projects up to 1 MW, this cap will be increased to 40% where a cooling application is used or included with the CHP system (e.g. absorption chiller).

[3] Projects will be eligible for incentives shown above, not to exceed the lesser of % of total project cost per project cap or maximum $ per project cap. Projects installing CHP or FC with WHP will be eligible for incentive shown above, not to exceed the lesser caps of the CHP or FC incentive. Minimum efficiency will be calculated based on annual total electricity generated, utilized waste heat at the host site (i.e. not lost/rejected), and energy input.

[4] Systems fueled by a Class 1 Renewable Fuel Source, as defined by N.J.A.C. 14:8-2.5, are eligible for a 30% incentive bonus. If the fuel is mixed, the bonus will be prorated accordingly. For example, if the mix is 60/40 (60% being a Class 1 renewable), the bonus will be 18%. This bonus will be included in the final performance incentive payment, based on system performance and fuel mix consumption data. Total incentive, inclusive of bonus, shall not exceed above stipulated caps.

[5] CHP-FC systems located at Critical Facility and incorporating blackstart and islanding technology are eligible for a 25% incentive bonus. This bonus incentive will be paid with the second/Installation incentive payment. Total incentive, inclusive of bonus, shall not exceed above stipulated caps.

How to Participate

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

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The program is used to register and certify 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 SREC-IIs (Solar Renewable Energy Certificates-II). SuSI consists of two sub-programs. The Administratively Determined Incentive (ADI) Program and the Competitive Solar Incentive (CSI) Program.

Administratively Determined Incentive (ADI) Program

The ADI Program provides administratively set incentives for net metered residential projects, net metered non-residential projects 5 MW or less, and all community solar projects.

After the registration is accepted, construction is complete, and a complete final as-built packet has been submitted, the project is issued a New Jersey certification number, which enables it to generate New Jersey SREC- IIs.

Market Segments	Size MW dc	Incentive Value ($/SREC II)	Public Entities Incentive Value - $20 Adder ($/SRECII)
Net Metered Residential	All types and sizes	$90	N/A
Small Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects smaller than 1 MW	$100	$120
Large Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects 1 MW to 5 MW	$90	$110
Small Net Metered Non-Residential Ground Mount	Projects smaller than 1 MW	$85	$105
Large Net Metered Non-Residential Ground Mount	Projects 1 MW to 5 MW	$80	$100
LMI Community Solar	Up to 5 MW	$90	N/A
Non-LMI Community Solar	Up to 5 MW	$70	N/A
Interim Subsection (t)	All types and sizes	$100	N/A

Eligible projects may generate SREC-IIs for 15 years following the commencement of commercial operations which is defined as permission to operate (PTO) from the Electric Distribution Company. After 15 years, projects may be eligible for a NJ Class I REC.

SREC-IIs will be purchased monthly by the SREC-II Program Administrator who will allocate the SREC-IIs to the Load Serving Entities (BGS Providers and Third-Party Suppliers) annually based on their market share of retail electricity sold during the relevant Energy Year.

The ADI Program online portal is now open to new registrations.

Competitive Solar Incentive (CSI) Program

The CSI Program opened on April 15, 2023, and will serve as the permanent program within the SuSI Program providing incentives to larger solar facilities. The CSI Program is open to qualifying grid supply solar facilities, non-residential net metered solar installations with a capacity greater than five (5) megawatts ("MW"), and to eligible grid supply solar facilities installed in combination with energy storage.

CSI eligible facilities will only be allowed to register in the CSI program upon award of a bid pursuant to N.J.A.C. 14:8-11.10.

The CSI program structure has separate categories, or tranches, to ensure that a range of solar project types, including those on preferred sites, are able to participate despite potentially different project cost profiles. The Board has approved four tranches for grid supply and large net metered solar and an additional fifth tranche for storage in combination with grid supply solar. The following table lists procurement targets for the first solicitation:

Tranche	Project Type	MW (dc) Targets
Tranche 1.	Basic Grid Supply	140
Tranche 2.	Grid Supply on the Built Environment	80
Tranche 3.	Grid Supply on Contaminated Sites and Landfills	40
Tranche 4.	Net Metered Non- Residential	40
Tranche 5.	*Storage Paired with Grid	160 MWh

*The storage tranche of 160 MWh corresponds to a 4-hour storage pairing of 40 MW of solar

Solar projects help the State of New Jersey reach renewable energy goals outlined in the state's Energy Master Plan.

If you are considering installing solar on your building, visit the following link for more information: https://njcleanenergy.com/renewable-energy/programs/susi-program

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 contracts to help finance building energy upgrades. Annual payments are lower than the savings projected from the energy conservation measures (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 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 descriptions 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.

Demand Response (DR) Energy Aggregator

Demand Response Energy Aggregator is a program designed to reduce the electric load when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Grid operators call upon curtailment service providers and commercial facilities to reduce electric usage during times of peak demand, making the grid more reliable and reducing transmission costs for all ratepayers. Curtailment service providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary and participants receive payments whether or not their facility is called upon to curtail its electric usage.

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

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

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

The first step toward participation in a DR program is to contact a curtailment service provider. A list of these providers is available on the website of the independent system operator, PJM, and it includes contact information for each company, as well as the states where they have active business[12]. PJM also posts training materials for program members interested in specific rules and requirements regarding DR activity along with a variety of other DR program information[13].

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

[12] http://www.pjm.com/markets-and-operations/demand-response.aspx.

[13] http://www.pjm.com/training/training-events.aspx.

9.2 Utility Energy Efficiency Programs

The Clean Energy Act, signed into law by Governor Murphy in 2018, requires New Jersey's investor-owned gas and electric utilities to reduce their customers' use by set percentages over time. To help reach these targets the New Jersey Board of Public Utilities approved a comprehensive suite of energy efficiency programs to be run by the utility companies.

Prescriptive and Custom

The Prescriptive and Custom rebate program through your utility provider 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.

Equipment Examples

Lighting
Lighting Controls
HVAC Equipment
Refrigeration
Gas Heating
Gas Cooling
Commercial Kitchen Equipment
Food Service Equipment
Variable Frequency Drives
Electronically Commutate Motors
Variable Frequency Drives
Plug Loads Controls
Washers and Dryers
Agricultural
Water Heating

The Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type. The Custom program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives.

Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures.

How to Participate

To participate in Direct Install, you will work with a participating contractor. The contractor will be paid the measure incentives directly by the program, which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the Direct Install program, subject to program rules and eligibility, while the remaining percent of the cost is paid to the contractor by the customer.

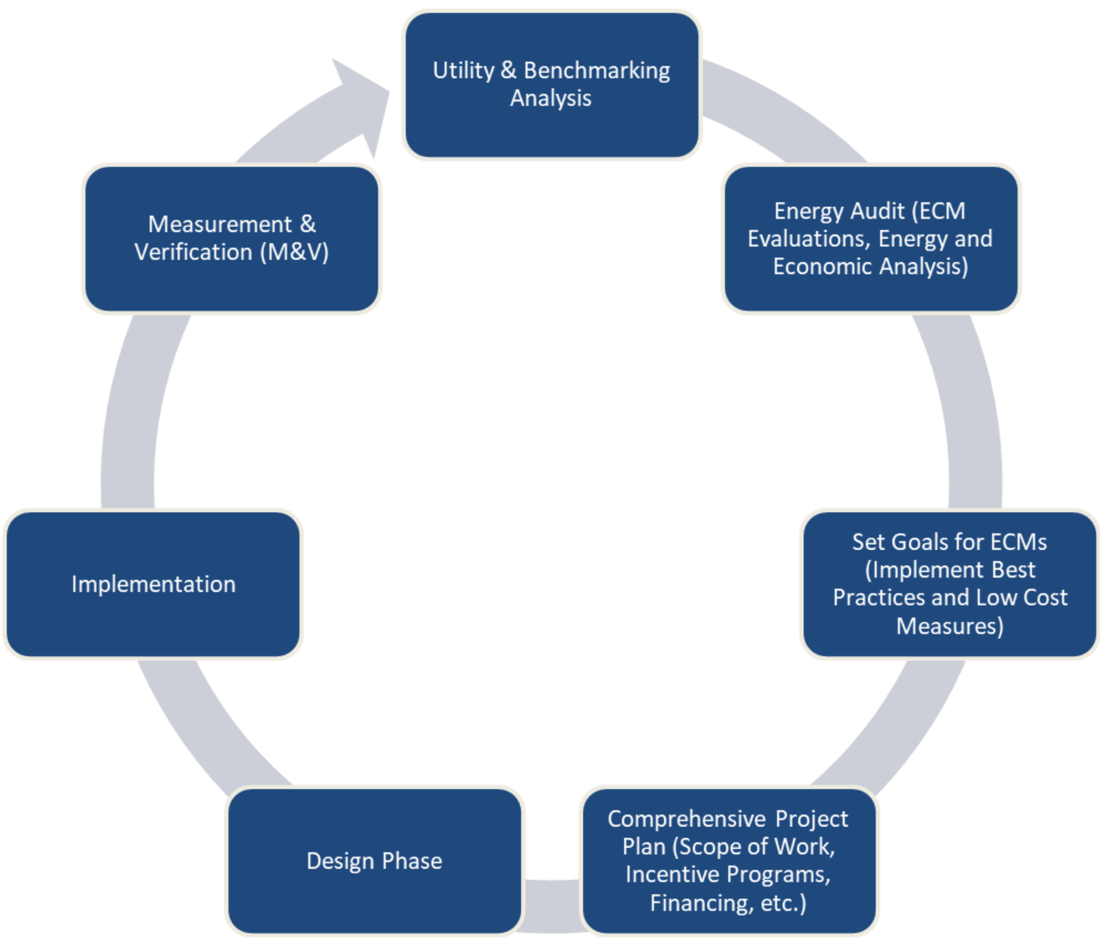
Engineered Solutions

The Engineered Solutions Program provides tailored energy-efficiency assistance and services to municipalities, universities, schools, hospitals, and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. Customers receive expert guided services, including investment-grade energy auditing, engineering design, installation assistance, construction administration, commissioning, and measurement and verification (M&V) services to support the implementation of cost-effective and comprehensive efficiency projects. Engineered Solutions is generally a good option for medium to large sized facilities with a peak demand over 200 kW looking to implement as many measures as possible under a single project to achieve deep energy savings. Engineered Solutions 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 for this program are based on project scope and energy savings achieved.

For more information on any of these programs, contact your local utility provider or visit https://www.njcleanenergy.com/transition.

10 Project Development

Energy conservation measures (ECMs) have been identified for your site, and their energy and economic analyses are provided within this LGEA report. Note that some of the identified projects may be mutually exclusive, such as replacing equipment versus upgrading motors or controls. The next steps with project development are to set goals and create a comprehensive project plan. The graphic below provides an overview of the process flow for a typical energy efficiency or renewable energy project. We recommend implementing as many ECMs as possible prior to undertaking a feasibility study for a renewable project. The cyclical nature of this process flow demonstrates the ongoing work required to continually improve building energy efficiency over time. If your building(s) scope of work is relatively simple to implement or small in scope, the measurement and verification (M&V) step may not be required. It should be noted through a typical project cycle, there will be changes in costs based on specific scopes of work, contractor selections, design considerations, construction, etc. The estimated costs provided throughout this LGEA report demonstrate the unburdened turn-key material and labor cost only. There will be contingencies and additional costs at the time of implementation. We recommend comprehensive project planning that includes the review of multiple bids for project work, incorporates potential operations and maintenance (O&M) cost savings, and maximizes your incentive potential.



Project Development Cycle

11 Energy Purchasing and Procurement Strategies

11.1 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. 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[14].

11.2 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 fluctuate monthly. The utility provides basic gas supply service 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[15].

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

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

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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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Corridor - 52	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 52	7	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	7	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Corridor - Storeroom	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - Storeroom	11	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	11	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Corridor - Storeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,380	2, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	3,022	0.1	700	0	$103	$180	$40	1.4
Corridor - Storeroom	5	Metal Halide: (1) 100W Lamp	Wall Switch	S	128	4,380	1, 3	Fixture Replacement	Yes	5	LED - Fixtures: Downlight Pendant	Occupancy Sensor	30	3,022	0.5	2,538	-1	$374	$2,300	$210	5.6
Employee Cafeteria	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Employee Cafeteria	8	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Wall Switch	S	25	5,460	3	None	Yes	8	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Occupancy Sensor	25	3,767	0.1	366	0	$54	$0	$0	0.0
Employee Cafeteria	15	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	5,460	3	None	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,767	0.1	795	0	$117	$330	$40	2.5
Employee Cafeteria	15	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	5,460	3	None	Yes	15	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,767	0.2	1,193	0	$176	$330	$40	1.6
Garage - Main Storeroom	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Garage - Main Storeroom	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	4,000	3	None	Yes	3	LED - Fixtures: Ceiling Mount	Occupancy Sensor	20	2,760	0.0	80	0	$12	$0	$0	0.0
Garage - Main Storeroom	10	LED - Fixtures: High-Bay	Wall Switch	S	100	4,000	3	None	Yes	10	LED - Fixtures: High-Bay	Occupancy Sensor	100	2,760	0.3	1,339	0	$197	$330	$40	1.5
Garage - Main Storeroom	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,000	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,760	0.3	1,270	0	$187	$680	$110	3.0
Garage - Main Storeroom	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,000	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,760	0.1	639	0	$94	$180	$40	1.5
Garage - Main Storeroom	10	Metal Halide: (1) 100W Lamp	Wall Switch	S	128	4,000	1, 3	Fixture Replacement	Yes	10	LED - Fixtures: Downlight Pendant	Occupancy Sensor	30	2,760	0.9	4,635	-1	$683	$4,590	$400	6.1
Garage - Main Storeroom	6	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	4,000	1, 3	Fixture Replacement	Yes	6	LED - Fixtures: Downlight Pendant	Occupancy Sensor	75	2,760	1.3	6,305	-1	$929	$1,410	$70	1.4
Janitorial - Center	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Janitorial - IT	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Janitorial - Slop Room	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Janitorial - Tray Line	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Janitorial - Wellness Center	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Kitchen - Center Area	16	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	5,460	3	None	Yes	16	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,767	0.2	1,272	0	$188	$660	$70	3.1
Kitchen - Employee Cafeteria Dishwasher	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	5,460	3	None	Yes	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	3,767	0.0	44	0	$6	$0	$0	0.0
Kitchen - Employee Cafeteria Dishwasher	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	5,460		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	5,460	0.0	0	0	$0	$0	$0	0.0

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New Jersey's cleanenergy program

	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen - Patients Cafeteria	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	5,460	3	None	Yes	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	3,767	0.0	88	0	$13	$0	$0	0.0
Kitchen - Patients Cafeteria	10	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	S	15	5,460	3	None	Yes	10	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,767	0.0	265	0	$39	$330	$40	7.4
Kitchen - Patients Cafeteria	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	5,460	3	None	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,767	0.0	159	0	$23	$0	$0	0.0
Kitchen - Sandwich Prep 98	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,460	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,767	0.2	1,486	0	$219	$580	$100	2.2
Kitchen - Tray Line 81	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	5,460	3	None	Yes	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	3,767	0.0	66	0	$10	$0	$0	0.0
Kitchen - Tray Line 81	6	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Wall Switch	S	25	5,460	3	None	Yes	6	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Occupancy Sensor	25	3,767	0.0	274	0	$40	$330	$40	7.2
Kitchen - Tray Line 81	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	5,460	2, 3	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,767	0.3	1,857	0	$274	$650	$120	1.9
Library - Chapel 58A	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,368	0.0	234	0	$34	$60	$20	1.2
Lobby - Chapel	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	4,380		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	20	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Employee Cafeteria #1	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Employee Cafeteria #2	1	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Wall Switch	S	25	4,380		None	No	1	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Wall Switch	25	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - IT	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Patients Cafeteria #1	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Patients Cafeteria #2	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,380		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Locker Room - Female 42	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	85	0	$13	$330	$40	23.2
Locker Room - Male 39	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	85	0	$13	$330	$40	23.2
Locker Room - Mens 26	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	5,460	3	None	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,767	0.0	212	0	$31	$0	$0	0.0
Main Kitchen	23	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	S	58	5,460	3	None	Yes	23	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,767	0.4	2,439	-1	$359	$660	$70	1.6
Mechanical - Compressor Room	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	39,312	3	None	Yes	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	27,125	0.0	474	0	$70	$330	$40	4.2
Mechanical - Compressor Room	1	Metal Halide: (1) 100W Lamp	Wall Switch	S	128	39,312	1	Fixture Replacement	No	1	LED - Fixtures: Downlight Pendant	Wall Switch	30	39,312	0.1	4,161	-1	$613	$190	$10	0.3
Multipurpose - Chapel	6	LED Lamps: (5) 12W A19 Screw-In Lamps	Wall Switch	S	60	39,312	3	None	Yes	6	LED Lamps: (5) 12W A19 Screw-In Lamps	Occupancy Sensor	60	27,125	0.1	4,738	-1	$698	$330	$40	0.4
Multipurpose - Wellness Center	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	39,312		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	20	39,312	0.0	0	0	$0	$0	$0	0.0
Multipurpose - Wellness Center	5	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	39,312	2, 3	Relamp	Yes	5	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	27,125	0.3	15,705	-3	$2,315	$770	$140	0.3
Office - Assistant 34	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	4,368		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	20	4,368	0.0	0	0	$0	$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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Assistant 34	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	85	0	$13	$330	$40	23.2
Office - Center Kitchen	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	0	0	$0	$0	$0	0.0
Office - Chaplain 58	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,368	0.0	234	0	$34	$60	$20	1.2
Office - Chaplain 58B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.1	594	0	$88	$460	$70	4.5
Office - Food Service 29A	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.1	594	0	$88	$460	$70	4.5
Office - Food Service 29B	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.1	594	0	$88	$460	$70	4.5
Office - Housekeeping 27	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,368		None	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,368	0.0	0	0	$0	$0	$0	0.0
Office - IT	55	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	55	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,333	0	$344	$1,320	$140	3.4
Office - IT	9	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,368	3	None	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.1	573	0	$84	$0	$0	0.0
Office - Main Storeroom #1	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,368	2	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.1	528	0	$78	$180	$40	1.8
Office - Main Storeroom #2	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,368	2	Relamp	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.1	528	0	$78	$180	$40	1.8
Office - Scullery 101	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	85	0	$13	$0	$0	0.0
Office - Scullery 101	11	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,368	3	None	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.1	700	0	$103	$330	$40	2.8
Office - Scullery 101	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	S	26	4,368	3	None	Yes	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.0	37	0	$5	$0	$0	0.0
Office - Tray Line 82	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,014	0.2	891	0	$131	$520	$90	3.3
Patients Cafeteria	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Patients Cafeteria	24	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	5,824	3	None	Yes	24	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	4,019	0.3	2,036	0	$300	$660	$70	2.0
Patients Cafeteria	9	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	S	26	5,824	3	None	Yes	9	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	4,019	0.1	447	0	$66	$0	$0	0.0
Restroom - Female 17	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,659		None	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Female 61	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Female 71	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Female Wellness Center	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - IT 17	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,659		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - IT 21	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,659		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Male 60	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Restroom - Male 70	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Male Wellness Center	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Men 12	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	4,659		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	20	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Men 12	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,659	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,215	0.1	423	0	$62	$430	$60	5.9
Restroom - Unisex 11	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	4,659	3	None	Yes	2	LED - Fixtures: Ceiling Mount	Occupancy Sensor	20	3,215	0.0	62	0	$9	$150	$20	14.1
Restroom - Unisex 45	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,659	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,659	0.0	166	0	$24	$50	$10	1.6
Restroom - Unisex 73	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	4,659		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,659	0.0	0	0	$0	$0	$0	0.0
Restroom - Unisex 73	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	S	44	4,659	3	None	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	3,215	0.0	136	0	$20	$330	$40	14.5
Storage - 23	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912	3	None	Yes	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	2,009	0.0	35	0	$5	$150	$20	25.1
Storage - 28	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - 52	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	20	2,912	3	None	Yes	2	LED - Fixtures: Ceiling Mount	Occupancy Sensor	20	2,009	0.0	39	0	$6	$150	$20	22.6
Storage - 54	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - Box 14	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,912	3	None	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,009	0.0	85	0	$13	$150	$20	10.4
Storage - Box 15	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - Box 16	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	2,912	3	None	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,009	0.0	113	0	$17	$330	$40	17.4
Storage - Box 17	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912	3	None	Yes	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	2,009	0.0	35	0	$5	$150	$20	25.1
Storage - Box 19	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912	3	None	Yes	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	2,009	0.0	47	0	$7	$150	$20	18.8
Storage - Broom Closet 56	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	S	26	2,912		None	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - Chemicals 44	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - Dry Ingredients	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	2,912	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	2,912	0.0	176	0	$26	$90	$20	2.7
Storage - Refrigerant Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	2,912	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	2,912	0.0	104	0	$15	$50	$10	2.6
Storage - Store Room #3	6	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	6	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Storage - Trash Room	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	2,912		None	No	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	2,912	0.0	0	0	$0	$0	$0	0.0
Corridor - Basement	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,380	2, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	3,022	0.1	397	0	$59	$380	$90	5.0
Mechanical - Basement AHUs	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	39,312	3	None	Yes	2	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	27,125	0.0	316	0	$47	$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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical - Basement AHUs	4	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Wall Switch	S	25	39,312	3	None	Yes	4	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Occupancy Sensor	25	27,125	0.0	1,316	0	$194	$330	$40	1.5
Mechanical - Basement AHUs	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	39,312	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	39,312	0.0	1,401	0	$207	$50	$10	0.2
Mechanical - Basement Compressors	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	39,312	3	None	Yes	3	LED Lamps: (1) 12W A19 Screw-In Lamp	Occupancy Sensor	12	27,125	0.0	474	0	$70	$0	$0	0.0
Mechanical - Elevator	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	S	12	39,312		None	No	1	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	39,312	0.0	0	0	$0	$0	$0	0.0
Stairs to Basement	1	LED Lamps: (2) 12W A19 Screw-In Lamps	Wall Switch		24	5,460		None	No	1	LED Lamps: (2) 12W A19 Screw-In Lamps	Wall Switch	24	5,460	0.0	0	0	$0	$0	$0	0.0
Stairs to Basement	2	LED - Fixtures: Wall Pack	Wall Switch		12	5,460		None	No	2	LED - Fixtures: Wall Pack	Wall Switch	12	5,460	0.0	0	0	$0	$0	$0	0.0
Stairs to Basement #2	1	LED Lamps: (2) 12W A19 Screw-In Lamps	Wall Switch		24	5,460		None	No	1	LED Lamps: (2) 12W A19 Screw-In Lamps	Wall Switch	24	5,460	0.0	0	0	$0	$0	$0	0.0
Stairs to Basement #2	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch		12	5,460		None	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch	12	5,460	0.0	0	0	$0	$0	$0	0.0
Stairs to Basement #3	2	LED - Linear Tubes: (3) 4' Lamps	Wall Switch		44	5,460	4	None	Yes	2	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,767	0.0	159	0	$23	$280	$70	9.0
Stairs to Basement #3	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Wall Switch		12	5,460	4	None	Yes	3	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	High/Low Control	12	3,767	0.0	66	0	$10	$0	$0	0.0
Exterior	2	Compact Fluorescent: (1) 42W Triple Biaxial Plug-In Lamp	Photocell		42	4,380	2	Relamp	No	2	LED Lamps: PL-L (Biax) Lamps	Photocell	30	4,380	0.0	105	0	$16	$30	$0	1.9
Exterior	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch		12	4,380		None	No	4	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior	2	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Photocell		25	4,380		None	No	2	LED Lamps: (1) 25W Corn Bulb Screw-In Lamp	Photocell	25	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell		100	4,380		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	100	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell		12	4,380		None	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	12	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior	1	Metal Halide: (1) 70W Lamp	Photocell		95	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	21	4,380	0.0	324	0	$49	$270	$50	4.5
Exterior - Loading Dock	10	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch		12	4,380		None	No	10	LED Lamps: (1) 12W A19 Screw-In Lamp	Wall Switch	12	4,380	0.0	0	0	$0	$0	$0	0.0

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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Storage - Trash Room	Compressed air system	1	Air Compressor	5.00	87.5%	No	Marathon	5KCR48TN2691Y	W	1,200		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Compressed air system	2	Air Compressor	1.00	85.5%	No	Baldor	EM3116T	W	1,200		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Condensate Return	2	Condensate Pump	5.00	87.5%	No	Marathon	184TTDB4026BR	W	3,294		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Condensate Return	1	Condensate Pump	5.00	87.5%	No	WEG	005180T3E184T-S	W	3,294		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Garage - Main Storeroom	Exhaust System	1	Exhaust Fan	0.13	65.0%	No			W	3,843		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Main Kitchen	Exhaust System	5	Exhaust Fan	0.50	70.0%	No			W	3,843		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage - Trash Room	Exhaust System	1	Exhaust Fan	0.13	65.0%	No			W	3,843		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Exhaust System	1	Exhaust Fan	0.50	70.0%	No			W	3,843		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust System	4	Exhaust Fan	0.75	73.0%	No	PennBarry	DX36B	W	3,843		No	73.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust System	9	Exhaust Fan	0.25	65.0%	No			W	3,843		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust System	4	Exhaust Fan	0.50	70.0%	No			W	3,843		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	DHW Circulation system	1	DHW Circulation Pump	0.08	65.0%	No			W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Kitchen Exhaust	5	Kitchen Hood Exhaust Fan	1.50	86.5%	No			W	5,250	6	No	86.5%	Yes	5	0.0	18,228	16	$2,914	$21,800	$400	7.3
Roof	Kitchen Exhaust	1	Kitchen Hood Exhaust Fan	0.50	67.9%	No		CUE-141 HP-A -6	W	5,250	6	No	78.2%	Yes	1	0.0	2,003	16	$484	$3,500	$100	7.0
Garage - Main Storeroom	Garage Door	1	Other	0.25	65.0%	No			W	250		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Elevator	Elevator Motor	1	Other	15.00	80.0%	No	Elevator Control Corp	H-800	W	250		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Compactors	2	Other	5.00	87.5%	No			W	500		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Sump Pump	2	Other	0.75	75.5%	No	Baldor		W	1,800		No	75.5%	No		0.0	0	0	$0	$0	$0	0.0
Corridor - Storeroom	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Corridor - Storeroom	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0

		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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Garage - Main Storeroom	Unit Heater	1	Supply Fan	0.25	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Garage - Main Storeroom	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Garage - Main Storeroom	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Main Kitchen	Unit Heater	1	Supply Fan	0.20	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Office - Main Storeroom #1	Unit Heater	1	Supply Fan	0.20	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Office - Main Storeroom #2	Unit Heater	1	Supply Fan	0.20	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Office - Scullery 101	Unit Heater	1	Supply Fan	0.50	70.0%	No			W	3,500		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage - 23	Unit Heater	1	Supply Fan	0.20	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage - Store Room #3	Unit Heater	1	Supply Fan	0.20	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Patients Cafeteria	3	Supply Fan	1.50	80.0%	No			W	3,500		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Chapel	2	Supply Fan	1.00	78.0%	No			W	3,500		No	78.0%	No		0.0	0	0	$0	$0	$0	0.0
Office - Housekeeping 27	Wall Mounted Indoor	1	Supply Fan	0.25	65.0%	No	Samsung		W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Storage - Store Room #3	Wall Mounted Indoor	1	Supply Fan	0.25	65.0%	No	Fujitsu		W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Air Curtain Electric Heater	1	Supply Fan	1.00	78.0%	No	Mars	HV296-2UG-TS	W	3,500		No	78.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Air Curtain Electric Heater	1	Supply Fan	0.17	65.0%	No	Mars	LPV260-1UA-OB	W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	Kitchen - Tray Line 81	1	Supply Fan	1.00	78.0%	No			W	3,500		No	78.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Basement AHUs	Mechanical - Basement AHUs	1	Supply Fan	10.00	87.0%	No			W	3,500	5	No	91.7%	Yes	1	3.1	12,293	0	$1,841	$7,500	$1,100	3.5
Mechanical - Basement AHUs	Mechanical - Basement AHUs	1	Return Fan	5.00	85.0%	No			W	3,500	5	No	89.5%	Yes	1	1.6	6,281	0	$941	$5,600	$900	5.0
Mechanical - Basement AHUs	Mechanical - Basement AHUs	1	Supply Fan	10.00	87.0%	No			W	3,500	5	No	91.7%	Yes	1	3.1	12,293	0	$1,841	$7,500	$1,100	3.5

		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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical - Basement AHUs	Mechanical - Basement AHUs	1	Return Fan	7.50	85.0%	No			W	3,500	5	No	91.0%	Yes	1	2.4	9,665	0	$1,448	$6,700	$1,000	3.9
Roof	Wellness Center/IT	1	Supply Fan	10.00	91.0%	Yes			W	3,500		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Employee cafeteria	1	Supply Fan	0.25	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Main Kitchen Office	1	Supply Fan	0.10	65.0%	No			W	3,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Exterior	Store Rooms	2	Supply Fan	1.50	84.0%	No			W	3,500		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Condensing Unit	1	Supply Fan	1.50	103.0%	No			W	3,500		No	103.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged 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)	Cooling Mode Efficiency (SEER/IEER/EER)	Heating Mode Efficiency	Manufacturer	Model	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/IEER/EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Assistant 34	Office - Assistant 34	1	Window AC	1.00		10.60		Frigidaire		W		No							0.0	0	0	$0	$0	$0	0.0
Office - Center Kitchen	Office - Center Kitchen	1	Window AC	0.67		12.10		Frigidaire	FFRE083ZA1	W		No							0.0	0	0	$0	$0	$0	0.0
Office - IT	Office - IT	1	Window AC	1.00		10.00				W		No							0.0	0	0	$0	$0	$0	0.0
Office - Main Storeroom #2	Office - Main Storeroom #2	1	Window AC	1.47		11.90		Frigidaire	FFRE1833U20	W		No							0.0	0	0	$0	$0	$0	0.0
Office - Scullery 101	Office - Scullery 101	2	Window AC	2.08		10.37		Frigidaire	FHWC253WB2	W		No							0.0	0	0	$0	$0	$0	0.0
Storage - Broom Closet 56	Storage - Broom Closet 56	1	Window AC	0.67		12.10		Frigidaire		W		No							0.0	0	0	$0	$0	$0	0.0
Storage - Store Room #3	Storage - Store Room #3	1	Window AC	1.00		10.60		Frigidaire		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Chapel	2	Package Unit	5.00	100.00	9.28	0.8 AFUE	York	DHUC-T060N125A	B	7	Yes	2	Package Unit	5.00	100.00	16.00	0.82 AFUE	2.7	5,002	5	$811	$25,900	$1,000	30.7
Roof	Patients Cafeteria	3	Package Unit	7.50	96.00	10.49	0.8 AFUE	York	ZS-07N12ATAAA5A	B	7	Yes	3	Package Unit	7.50	96.00	14.00	0.82 Et	3.2	5,929	8	$977	$51,100	$1,800	50.5
Roof	Wellness Center/IT	1	Package Unit	15.00	170.60	11.00	1 COP	Carrier	50TC-D17A2A5A6F0G0	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior	Storage - Store Room #3	1	Ductless Mini-Split AC	3.00		13.56		Fujitsu	AOU36CLX1	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Office - Housekeeping 27	1	Ductless Mini-Split HP	0.75	9.50	10.00	10.7954545454545 HSPF	Samsung	UQ09A6MA	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior	Air Curtain Electric Heater	3	Unit Heater		10.24		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Exterior	Employee cafeteria	1	Split-System	5.00		8.86		York	H4DXB060S25A	B	7	Yes	1	Split-System	5.00		16.00		1.5	2,781	0	$417	$10,800	$500	24.7
Exterior	Main Kitchen Office	1	Split-System	2.00		11.00		Thermal Zone	TZAL-324- 2C	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior	Store Rooms	1	Split-System	10.00		11.20		Arcoaire	CAS120HDA0A00A	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Cooling Unit	1	Split-System	5.00		12.25		Carrier	50VL-C60-30TP	W		No							0.0	0	0	$0	$0	$0	0.0
Exterior Wall	IT Room	1	Ductless Mini-Split HP	1.50	19.80	12.50	10 HSPF	Frigidaire	FFHP183CS20	W		No							0.0	0	0	$0	$0	$0	0.0

Space Heating Boiler 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)	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Central Power Plant	Heating System	1	Forced Draft Steam Boiler	11,222			W		No						0.0	0	0	$0	$0	$0	0.0

DHW Inventory & Recommendations

		Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Central Power Plant	Hot Water System	1	Boiler					No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommendation 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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Various Restrooms	8	14	Faucet Aerator (Lavatory)	0.50	0.50	0.0	0	0	$0	$120	$60	0.0
Various Restrooms	8	3	Faucet Aerator (Lavatory)	2.20	0.50	0.0	0	1	$16	$30	$10	1.3

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions				Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	Manufacturer	Model	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Janitorial - Slop Room	1	Cooler (35F to 55F)	Heatcraft	ADT090AEWMC6K	10, 11	Yes	No	Yes	0.1	1,251	0	$187	$2,810	$160	14.1
Kitchen Area	6	Cooler (35F to 55F)	Trenton Refrigeration Products	TPLP211MAS1BR6	10, 11	Yes	No	Yes	0.1	1,309	0	$196	$13,120	$530	64.2
Kitchen Area	2	Cooler (35F to 55F)	Trenton Refrigeration Products	TPLP320MAS1BR6	10, 11	Yes	No	Yes	0.1	2,066	0	$309	$5,240	$270	16.1
Kitchen - Center Area	1	Cooler (35F to 55F)	Heatcraft	LSC208AK	10, 11	Yes	No	Yes	0.2	2,583	0	$387	$3,550	$240	8.6
Main Kitchen	2	Cooler (35F to 55F)	Trenton Refrigeration Products	TPLP209MAS1DR8-ESP	10, 11	Yes	No	Yes	0.1	1,251	0	$187	$4,870	$230	24.8
Office - Tray Line 82	1	Cooler (35F to 55F)	Trenton Refrigeration Products	TPLP106MAS1BR6	10, 11	Yes	No	Yes	0.0	655	0	$98	$2,430	$120	23.6
Storage - Box 14	1	Cooler (35F to 55F)	Trenton Refrigeration Products	TPLP214MAS1BR6	10, 11	Yes	No	Yes	0.1	1,397	0	$209	$2,810	$160	12.7
Kitchen - Center Area	1	Medium Temp Freezer (0F to 30F)	Heatcraft	LSP160AK	10, 11	Yes	Yes	Yes	0.2	2,912	0	$436	$4,190	$290	8.9
Storage - Box 16	2	Medium Temp Freezer (0F to 30F)	Heatcraft	BEM0250BS4HMAD6127	10, 11	Yes	Yes	Yes	0.1	1,924	0	$288	$6,150	$330	20.2
Storage - Box 17	1	Medium Temp Freezer (0F to 30F)	Trenton Refrigeration Products	TPLP527LES2BR6E	10, 11	Yes	Yes	Yes	0.2	5,428	0	$813	$4,570	$330	5.2

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Main Kitchen	2	Freezer Chest	Excellence		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Patients Cafeteria	1	Stand-Up Freezer, Solid Door (16 - 30 cu. ft.)	Traulsen	G12010	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	1	Stand-Up Freezer, Solid Door (31 - 50 cu. ft.)	Continental		Yes		No	0.0	0	0	$0	$0	$0	0.0
Employee Cafeteria	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Continental	1R	No		No	0.0	0	0	$0	$0	$0	0.0
Employee Cafeteria	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2RE	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Center Area	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2RNHD	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Patients Cafeteria	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2R	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	2RNHD	Yes		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	1	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	Continental	1R	No		No	0.0	0	0	$0	$0	$0	0.0

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Employee Cafeteria	1	Ice Making Head (<450 lbs/day), Batch	Manitowoc		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Center Area	1	Ice Making Head (≥450 lbs/day), Batch	Manitowoc	IYT1500W-261A	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	1	Ice Making Head (≥450 lbs/day), Batch	Manitowoc	RFF1300A-261	No		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	1	Ice Making Head (≥450 lbs/day), Batch	Manitowoc	RFF1300A-261	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Patients Cafeteria	1	Self-Contained Unit (≥175 lbs/day), Batch	Manitowoc		No		No	0.0	0	0	$0	$0	$0	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	Manufacturer	Model	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Main Kitchen	1	Electric Convection Oven (Full Size)	Blodgett		No		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	1	Electric Convection Oven (Full Size)	Blodgett	Zephaire	No		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	1	Gas Conveyor Oven (≥25")	Baxter		No		No	0.0	0	0	$0	$0	$0	0.0
Employee Cafeteria	1	Insulated Food Holding Cabinet (Full Size)	Halo heat		No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Patients Cafeteria	1	Insulated Food Holding Cabinet (Full Size)			No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen - Tray Line 81	2	Insulated Food Holding Cabinet (Full Size)			No		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	1	Insulated Food Holding Cabinet (Full Size)	Unox		Yes		No	0.0	0	0	$0	$0	$0	0.0
Main Kitchen	4	Gas Steamer			No		No	0.0	0	0	$0	$0	$0	0.0

Dishwasher Inventory & Recommendations

	Existing Conditions							Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Manufacturer	Model	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Payback w/ Incentives in Years
Kitchen - Employee Cafeteria Dishwasher	1	Single Tank Conveyor (High Temp)	Hobart	CLPS66E	Electric	None	Yes		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Various Location Kitchen	7	Coffee Machine	900	No		
Mechanical - Elevator	1	Dehumidifier	520	Yes	General Electric	
Various Offices	56	Desktop	150	No		
Various Location Kitchen	31	Fan (Ceiling)	150	No		
Various Location Kitchen	9	Microwave	1,000	No		
Various Offices	31	Printer (Medium/Small)	200	No		
Various Offices	5	Printer/Copier (Large)	600	No		
Library - Chapel 58A	1	Refrigerator (Mini)	153	No		
Office - Assistant 34	1	Refrigerator (Mini)	153	No		
Office - Housekeeping 27	1	Refrigerator (Mini)	153	No		
Garage - Main Storeroom	1	Refrigerator (Residential)	218	No		
Multipurpose - Wellness Center	1	Refrigerator (Residential)	218	No		
Office - IT	2	Refrigerator (Residential)	218	No		
Office - Scullery 101	1	Refrigerator (Residential)	218	No		
Kitchen	7	Serving Table (Chilled/Heated)	1,920	No		
Multipurpose - Wellness Center	1	Television	190	No		
Office - IT	2	Television	190	No		
Various Location Kitchen	4	Toaster Oven	1,200	No		
Garage - Main Storeroom	1	Battery Charger	31,140	No	Hobart	TD-18-865
Main Kitchen	1	Deli Slicer	240	No		
Main Kitchen	2	Large Mixer	2,014	No	Hobart	HL600
Garage - Main Storeroom	2	Battery Charger	10,824	No	Hobart	600B1-12R
Garage - Main Storeroom	2	Battery Charger	3,120	No	MAC	PAC 1240

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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Employee Cafeteria	1	Refrigerated	12	Yes	0.2	1,612	0	$241	$270	$50	0.9
Employee Cafeteria	1	Non-Refrigerated	12	Yes	0.0	343	0	$51	$270	$0	5.3

Appendix B: ENERGY STAR Statement of Energy Performance

Energy use intensity (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

N/A

ENERGY STAR® Score[1]

DHS - Ancora Psychiatric Hospital (APH Campus)

Primary Property Type: Other - Specialty Hospital
Gross Floor Area (ft²): 833,680
Built: 1953

For Year Ending: April 30, 2023
Date Generated: August 05, 2024

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
DHS - Ancora Psychiatric Hospital (APH Campus) 301 Spring Garden Road Hammonton, New Jersey 08037	State of New Jersey 428 East State Street Trenton, NJ 08625 (609) 940-4129	New Jersey Board of Public Utilities State Energy Services 44 South Clinton Ave Trenton, NJ 08625 (609) 633-9666 BPU.EnergyServices@bpu.nj.gov

Property ID: 29865004
Unique Building Identifier (UBID): 87F7M4MQ+39R-448-488-439-512

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
212.3 kBtu/ft²

Source EUI
270.2 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	154,445,594 (87%)
Electric - Grid (kBtu)	22,538,831 (13%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	340.9
National Median Source EUI (kBtu/ft²)	433.9
% Diff from National Median Source EUI	-38%

Annual Emissions

Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	10,229

Signature & Stamp of Verifying Professional

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

LP Signature: ______________________Date: ___________

Licensed Professional

____ ________
,
(____)____-______
____

Professional Engineer or Registered Architect 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 gas* 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 (II)	*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 $1/8^{th}$ 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.