
# Local Government Energy Audit Report

## Atlantic County Justice Facility

April 30, 2024

*Prepared for:*
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Mays Landing, New Jersey 08330

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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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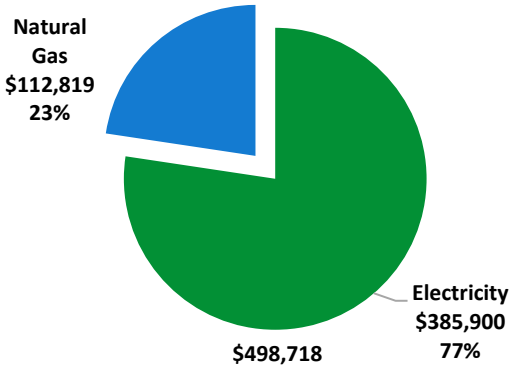
# 1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Atlantic County Justice Facility. 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 Utilities | Costs: $498,718<br>Electricity:<br>2,973,942 kWh<br>Natural Gas:<br>102,559 Therms |  |
| ENERGY STAR® Benchmarking Score | N/A<br>*(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. |

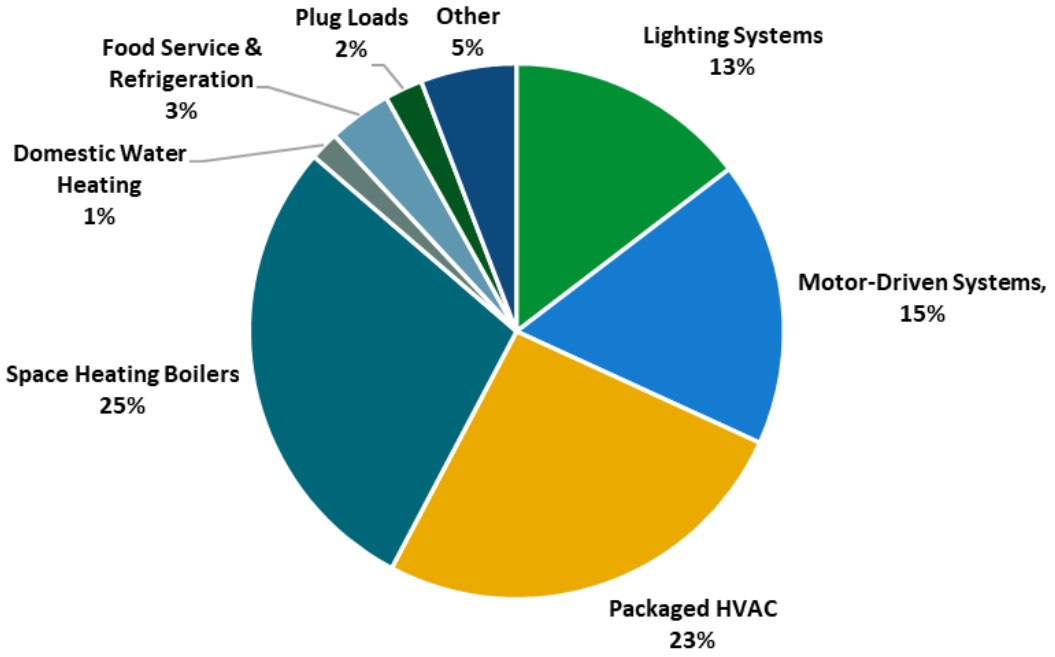


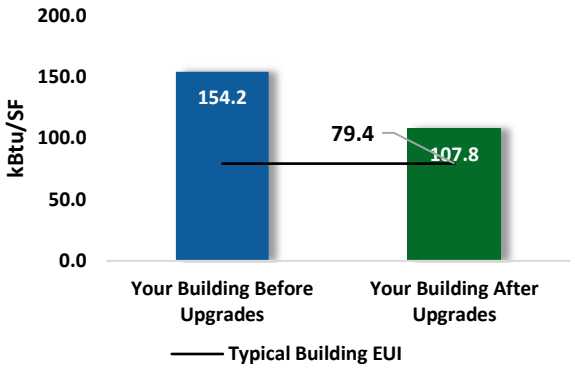

*Figure 1 - Energy Use by System*

## POTENTIAL IMPROVEMENTS

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

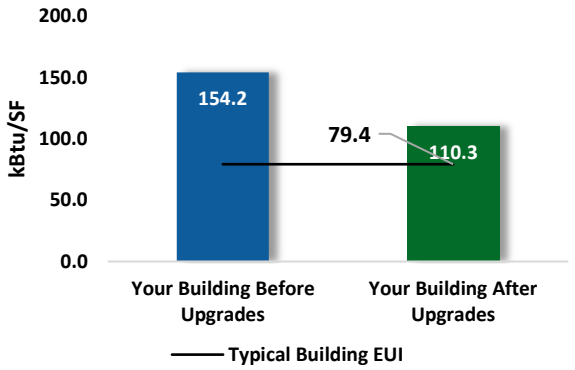
### Scenario 1: Full Package (All Evaluated Measures)

| | |
|---|---|
| Installation Cost | $975,213 |
| Potential Rebates & Incentives[1] | $79,626 |
| Annual Cost Savings | $200,537 |
| Annual Energy Savings | Electricity: 1,441,706 kWh<br>Natural Gas: 12,236 Therms |
| Greenhouse Gas Emission Savings | 798 Tons |
| Simple Payback | 4.5 Years |
| Site Energy Savings (All Utilities) | 30% |




### Scenario 2: Cost Effective Package[2]

| | |
|---|---|
| Installation Cost | $840,482 |
| Potential Rebates & Incentives | $71,571 |
| Annual Cost Savings | $193,229 |
| Annual Energy Savings | Electricity: 1,402,083 kWh<br>Natural Gas: 10,267 Therms |
| Greenhouse Gas Emission Savings | 766 Tons |
| Simple Payback | 4.0 Years |
| Site Energy Savings (all utilities) | 28% |




### On-site Generation Potential

| | |
|---|---|
| Photovoltaic | High |
| 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** | | | **444,854** | **56.1** | **-90** | **$56,739** | **$100,138** | **$16,253** | **$83,885** | **1.5** | **437,474** |
| ECM 1 | Install LED Fixtures | Yes | 200,982 | 23.4 | -38 | $25,665 | $56,277 | $4,700 | $51,577 | 2.0 | 197,978 |
| ECM 2 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes | 371 | 0.2 | 0 | $47 | $275 | $40 | $235 | 5.0 | 364 |
| ECM 3 | Retrofit Fixtures with LED Lamps | Yes | 243,501 | 32.5 | -52 | $31,026 | $43,585 | $11,513 | $32,072 | 1.0 | 239,132 |
| **Lighting Control Measures** | | | **80,118** | **10.4** | **-17** | **$10,208** | **$58,572** | **$14,750** | **$43,822** | **4.3** | **78,681** |
| ECM 4 | Install Occupancy Sensor Lighting Controls | Yes | 62,406 | 8.7 | -13 | $7,952 | $45,522 | $5,860 | $39,662 | 5.0 | 61,286 |
| ECM 5 | Install High/Low Lighting Controls | Yes | 17,713 | 1.7 | -4 | $2,257 | $13,050 | $8,890 | $4,160 | 1.8 | 17,395 |
| **Motor Upgrades** | | | **1,459** | **0.1** | **0** | **$189** | **$2,756** | **$0** | **$2,756** | **14.6** | **1,469** |
| ECM 6 | Premium Efficiency Motors | No | 1,459 | 0.1 | 0 | $189 | $2,756 | $0 | $2,756 | 14.6 | 1,469 |
| **Variable Frequency Drive (VFD) Measures** | | | **373,273** | **52.3** | **45** | **$48,929** | **$218,010** | **$23,400** | **$194,610** | **4.0** | **381,133** |
| ECM 7 | Install VFD on Variable Air Volume (VAV) Fans | Yes | 4,294 | 0.6 | 0 | $557 | $4,182 | $100 | $4,082 | 7.3 | 4,324 |
| ECM 8 | Install VFDs on Constant Volume (CV) Fans | Yes | 224,920 | 32.3 | 0 | $29,186 | $104,630 | $10,050 | $94,580 | 3.2 | 226,493 |
| ECM 9 | Install VFDs on Chilled Water Pumps | Yes | 98,613 | 17.5 | 0 | $12,796 | $59,235 | $7,000 | $52,235 | 4.1 | 99,302 |
| ECM 10 | Install VFDs on Heating Water Pumps | Yes | 23,142 | 2.2 | 0 | $3,003 | $20,111 | $3,600 | $16,511 | 5.5 | 23,303 |
| ECM 11 | Install VFDs on Cooling Tower Fans | No | 9,911 | -0.5 | 0 | $1,286 | $18,354 | $2,400 | $15,954 | 12.4 | 9,980 |
| ECM 12 | Install VFDs on Kitchen Hood Fan Motors | Yes | 12,393 | 0.1 | 45 | $2,101 | $11,499 | $250 | $11,249 | 5.4 | 17,731 |
| **Unitary HVAC Measures** | | | **86,546** | **26.5** | **3** | **$11,260** | **$89,784** | **$3,170** | **$86,614** | **7.7** | **87,465** |
| ECM 13 | Install High Efficiency Air Conditioning Units | No | 28,253 | 8.8 | 3 | $3,696 | $61,797 | $3,170 | $58,627 | 15.9 | 28,765 |
| ECM 14 | Install High Efficiency Heat Pumps | Yes | 58,293 | 17.6 | 0 | $7,564 | $27,987 | $0 | $27,987 | 3.7 | 58,700 |
| **Electric Chiller Replacement** | | | **331,356** | **126.7** | **0** | **$42,997** | **$340,920** | **$12,080** | **$328,840** | **7.6** | **333,672** |
| ECM 15 | Install High Efficiency Chillers | Yes | 331,356 | 126.7 | 0 | $42,997 | $340,920 | $12,080 | $328,840 | 7.6 | 333,672 |
| **Gas Heating (HVAC/Process) Replacement** | | | **0** | **0.0** | **714** | **$7,855** | **$111,160** | **$9,485** | **$101,675** | **12.9** | **83,609** |
| ECM 16 | Install High Efficiency Hot Water Boilers | No | 0 | 0.0 | 194 | $2,137 | $51,823 | $2,485 | $49,338 | 23.1 | 22,742 |
| ECM 17 | Install High Efficiency Furnaces | Yes | 0 | 0.0 | 520 | $5,718 | $59,336 | $7,000 | $52,336 | 9.2 | 60,866 |
| **HVAC System Improvements** | | | **1,933** | **0.0** | **29** | **$575** | **$691** | **$80** | **$611** | **1.1** | **5,400** |
| ECM 18 | Install Pipe Insulation | Yes | 1,933 | 0.0 | 29 | $575 | $691 | $80 | $611 | 1.1 | 5,400 |
| **Domestic Water Heating Upgrade** | | | **1,112** | **0.0** | **30** | **$478** | **$516** | **$258** | **$258** | **0.5** | **4,675** |
| ECM 19 | Install Low-Flow DHW Devices | Yes | 1,112 | 0.0 | 30 | $478 | $516 | $258 | $258 | 0.5 | 4,675 |
| **Food Service & Refrigeration Measures** | | | **5,178** | **0.6** | **0** | **$672** | **$920** | **$150** | **$770** | **1.1** | **5,214** |
| ECM 20 | Vending Machine Control | Yes | 5,178 | 0.6 | 0 | $672 | $920 | $150 | $770 | 1.1 | 5,214 |
| **Custom Measures** | | | **115,878** | **0.0** | **509** | **$20,634** | **$51,746** | **$0** | **$51,746** | **2.5** | **176,266** |
| ECM 21 | Retro-Commissioning Study | Yes | 115,878 | 0.0 | 509 | $20,634 | $51,746 | $0 | $51,746 | 2.5 | 176,266 |
| **TOTALS (COST EFFECTIVE MEASURES)** | | | **1,402,083** | **264.2** | **1,027** | **$193,229** | **$840,482** | **$71,571** | **$768,911** | **4.0** | **1,532,102** |
| **TOTALS (ALL MEASURES)** | | | **1,441,706** | **272.7** | **1,224** | **$200,537** | **$975,213** | **$79,626** | **$895,587** | **4.5** | **1,595,059** |

* - 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).

*Figure 2 – Evaluated Energy Improvements*

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

## 1.1 Planning Your Project

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

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

### Pick Your Installation Approach

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. It 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 the Atlantic County Justice Facility. 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 July 12, 2023, TRC performed an energy audit at the Atlantic County Justice Facility located in Mays Landing, New Jersey. TRC met with Paul Gabriel to review the facility operations and help focus our investigation on specific energy-using systems.

The Atlantic County Justice Facility is comprised of five separate buildings built in 1985, with building areas provided in the table below. The buildings share utility meters for electric, and only the main building, annex, and prosecutors' buildings utilize the gas meter. Spaces include offices, classrooms, conference rooms, lounges, dorm rooms, kitchens, dining areas, gymnasiums, garages, corridors, stairwells, restrooms, locker rooms, storage rooms, electrical and mechanical space.

Lighting for the facility is provided mainly by linear fluorescent T8 fixtures. Two chillers and two boilers provide cooling and heating to the main building. One chiller and four boilers provide cooling and heating to the annex. Three packaged units provide cooling and heating to most spaces in the prosecutors/records storage building. Four through-the-wall AC units equipped with electric resistance heaters provide cooling and heating to the fiscal and social services trailers. One electric resistance heater provides heating to the fire pump building. There are three passenger elevators located in the facility. The facility has three generators to provide emergency backup electricity.

| Building Name | Size of Building (Square Feet) |
|---|---|
| Main Building | 85,700 |
| Annex | 32,800 |
| Prosecutors / Records Storage Building | 10,525 |
| Fiscal & Social Services Trailers | 2,980 |
| Fire Pump Building | 320 |

## 2.2 Building Occupancy

The facility is fully occupied year-round, with a typical occupancy of 1,092 staff.

| Building Name | Weekday/Weekend | Operating Schedule |
|---|---|---|
| Atlantic County Justice Facility | Weekday | 24/7 |
| | Weekend | 24/7 |

*Figure 3 - Building Occupancy Schedule*

## 2.3 Building Envelope

The main building and annex building walls are concrete block over structural steel with a brick facade. The roof is flat, covered with a gray membrane, and in fair condition. The windows are double glazed and have aluminum frames with thermal breaks. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition showing little evidence of excessive wear. Exterior doors are metal and glass with metal frames and are in fair condition. Overall, the building envelope appears in fair condition.

The trailer exteriors are metal sheeting with a pitched metal roof. The windows are single paned and set in metal frames. Exterior doors are metal with metal frames and are in fair condition. The trailers are raised off the ground with a wood deck and ramp attached for access.

*Justice Facility*

*Annex*

*Prosecutors / Records Storage Building*

*Fiscal and Social Services Trailers*

*Fire Pump Building*

## 2.4 Lighting Systems

The primary interior lighting system uses 32-Watt fluorescent T8 lamps. Fixture types include 1-lamp, 2-lamp, 3-lamp, and 4-lamp, 2-foot and 4-foot long recessed, surface mounted, and pendant fixtures with linear and U-bend tube lamps. Typically, T8 fluorescent lamps use electronic ballasts while T12 fluorescent lamps use magnetic ballasts.

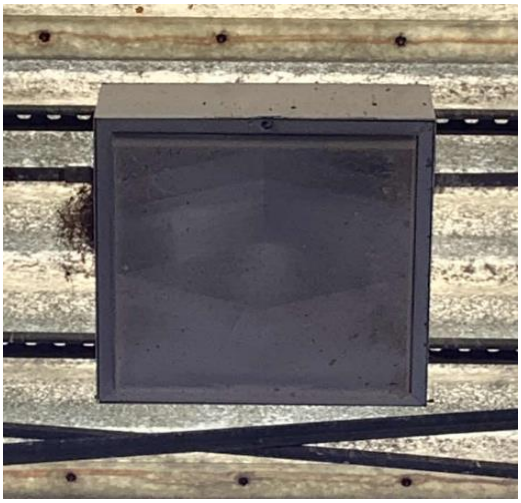
Additionally, lighting in some areas throughout the facility has been replaced over time with LED lamps. Compact fluorescent lamps (CFL), incandescent, fluorescent T12 lamps, metal halide (MH), and high-pressure sodium (HPS) lamps are also used in some spaces. Typically, CFLs at this site use 26-Watts, incandescent lamps draw 25-Watts, fluorescent T12 lamps use 40-Watts, and MH & HPS lamps require 250-Watts to 400-Watts. Exit signs use LED sources.

Interior light fixtures are controlled by manual wall switches. All light fixtures are in good condition. Interior lighting levels were generally sufficient. Exterior fixtures use HPS and LED lamps. Exterior fixtures are photocell and timer controlled.

*Fluorescent T8 Fixtures*

*MH Fixture*

*CFL Fixture*



*Exterior HPS Fixture*

*LED Fixture*

## 2.5 Air Handling Systems

**Unitary Electric HVAC Equipment**

Areas of the facility are conditioned by a total of seven mini-split air conditioning (AC) units, 14 mini-split heat pump (HP) units, seven split systems, and one window AC unit. Cooling capacities range between 0.75 tons to 4.0 tons, with efficiencies between 9.5 EER and 23 EER. Heating capacities for the mini-split HP units' range between 10.9 MBh to 54 MBh, with efficiencies between 7.7 HSPF and 12.5 HSPF.

The trailers are conditioned by four through-the-wall HVAC units. The units are each equipped with a 10-kW electric resistance heater and a fractional hp supply fan. The units have a cooling capacity of 3 tons with an estimated efficiency of 8 EER. The units are in fair condition and have been recommended for replacement with a more efficient heat pump unit.


*Mini-Split HVAC Unit*


*Through-the-Wall HVAC Units*

## Unitary Heating Equipment

The main building's two kitchen units are each equipped with 96 MBh Greenheck forced air furnaces. The garage areas of the prosecutors building are heated by two, 24 MBh Trane suspended gas-fired furnaces. Areas of the facility are heated by six electric resistance heaters with capacities between 1 kW and 3 kW. The units are in fair to good condition and are controlled by thermostats.

*Forced Air Furnaces*

## Packaged Rooftop Units (RTUs)

The facility is served by a total of seven packaged rooftop units (RTUs). Units are equipped with a mix of gas-fired furnaces or hot water coils for heating and DX cooling coils or chilled water coils for cooling as noted below. Fans are driven by constant speed motors. Only AC-2 was found to be equipped with a return fan, driven by a 5 hp constant speed motor. The units are controlled and monitored by the onsite EMS. Refer to Appendix A for detailed information about each unit.

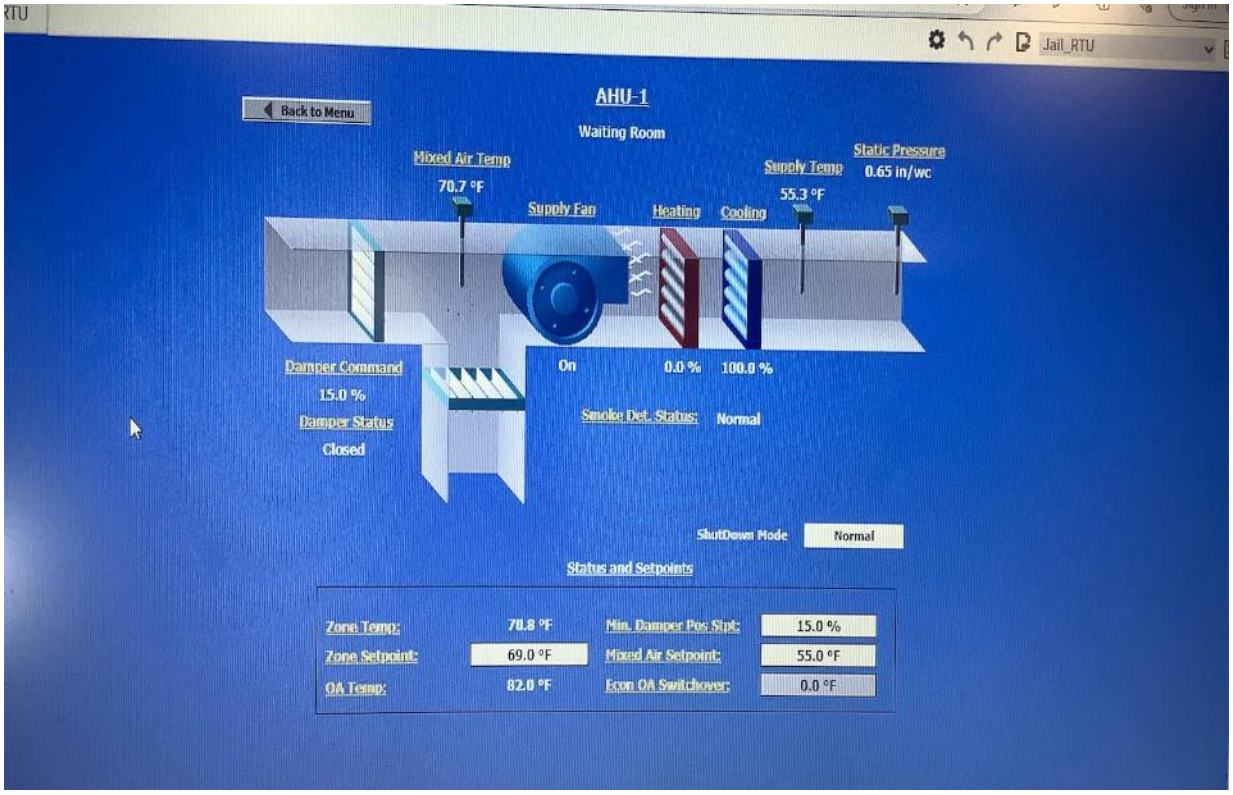
| Units | Building | Area Served | Heating Capacity (MBh) | Cooling Capacity (Tons) | Supply Fan (hp) |
|---|---|---|---|---|---|
| AHU-1 | Main Building | Lobby / Operations | 100 | Chilled Water | 2.0 |
| AHU-2 | Main Building | Admin | 100 | Chilled Water | 2.0 |
| AHU-3 | Main Building | Admissions | 100 | Chilled Water | 3.0 |
| AHU-4 | Main Building | Pod I | 160 | Chilled Water | 5.0 |
| AHU-5 | Main Building | Pods A & E | 320 | Chilled Water | 15.0 |
| AHU-6 | Main Building | Pods B & F | 320 | Chilled Water | 15.0 |
| AHU-7 | Main Building | Pods C & G | 320 | Chilled Water | 15.0 |

| Units | Building | Area Served | Heating Capacity (MBh) | Cooling Capacity (Tons) | Supply Fan (hp) |
|---|---|---|---|---|---|
| AHU-8 | Main Building | Pods D & H | 320 | Chilled Water | 15.0 |
| AHU-11 | Main Building | Medical Clinic | 100 | Chilled Water | 2.0 |
| AC-1 | Annex | Admin | Hot Water | Chilled Water | 3.0 |
| AC-2 | Annex | Dorms | Hot Water | Chilled Water | 1.0 |
| AC-3 | Main Building | Kitchen | Hot Water | Chilled Water | 2.0 |
| N/A | Main Building | Prison Transfer | 107 | 5 | 10.0 |
| RTU-9 | Annex | 1st Floor | Hot Water | Chilled Water | 5.0 |
| AHU-1 | Prosecutors Building | Warehouse | 122 | 12.5 | 3.0 |
| AHU-2 | Prosecutors Building | Warehouse | 122 | 12.5 | 3.0 |
| AH-9 | Prosecutors Building | Office | 52 | 5 | 1.0 |
| N/A | Prosecutors Building | Mail Room | 80 | 3 | 0.5 |


*Packaged Unit – Main Building*


*Packaged Unit - Annex*


*Packaged Unit – Prosecutors Building*




*Packaged Unit EMS Diagram View*

## 2.6 Heating Hot Water Systems

The main building's heating system consists of two AO Smith gas-fired hot water boilers each with an output capacity of 900 MBh. The burners are fully modulating with a nominal efficiency of 90%. The boilers are configured in an automated control scheme and controlled by the facility's BAS. Both boilers are required under high load conditions. Installed in 2000, the boilers are in fair condition. There is a service contract in place.

The annex building's heating system consists of four Weil McLain gas-fired hot water boilers each with an output capacity of 355 MBh. The burners are non-modulating with a nominal efficiency of 78%. The boilers are configured in an automated control scheme and controlled by the facility's BAS. Multiple boilers are required under high load conditions. Installed in 1996, the boilers are in fair condition. There is a service contract in place.

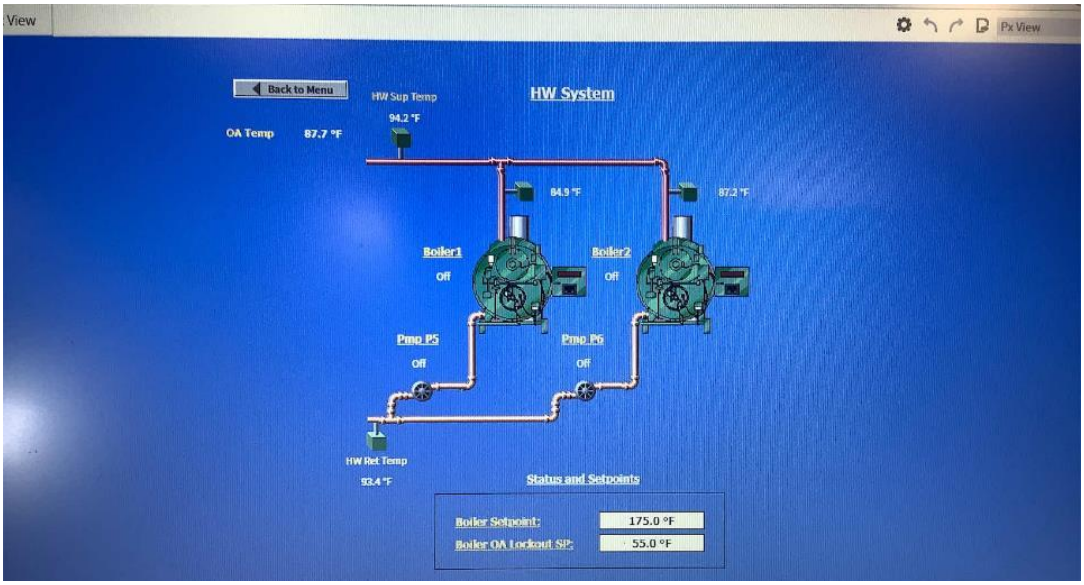
The boilers are configured in a constant flow primary distribution with two, 5 hp constant speed hot water pump (HWP-5 and HWP-6) operating with a lead-lag control scheme for the main building and two, 5 hp constant speed hot water pump (HWP-1 and HWP-2) operating with a lead-lag control scheme for the annex. The boilers provide hot water to air handling units, radiators, and unit heaters throughout the facility.


*Hot Water Boilers – Main Building*

*Hot Water Boilers – Annex*

*Heating Hot Water Pump – Main Building*

*Heating Hot Water Pumps - Annex*




*Heating Hot Water System EMS Diagram View – Main Building*

## 2.7 Chilled Water Systems

The main building's chiller plant consists of two, 170-ton York constant speed, water-cooled screw chillers, while the annex's chiller plant consists of one, 70-ton Carrier variable speed, air-cooled reciprocating chiller. The chillers are configured in a primary distribution loop with two, 20 hp constant speed chilled water pumps (CHWP-1 and CHWP-2) operating with a lead-lag control scheme for the main building, and two, 5 hp constant speed chilled water pumps (CWP-1 and CWP-2) operating with a lead-lag control scheme for the annex.

The condenser water system consists of two, one-cell cooling towers (CT-1 and CT-2), each equipped with a 15 hp constant speed fan. Condenser water is supplied to the chillers by two, 20 hp constant speed pumps (CWP-3 and CWP-4).

The chillers supply chilled water to the air handling units throughout the buildings. The chilled water temperatures and chiller operating schedules are controlled by the facility BAS. Installed between 2001 and 2004, the chillers are in fair condition.

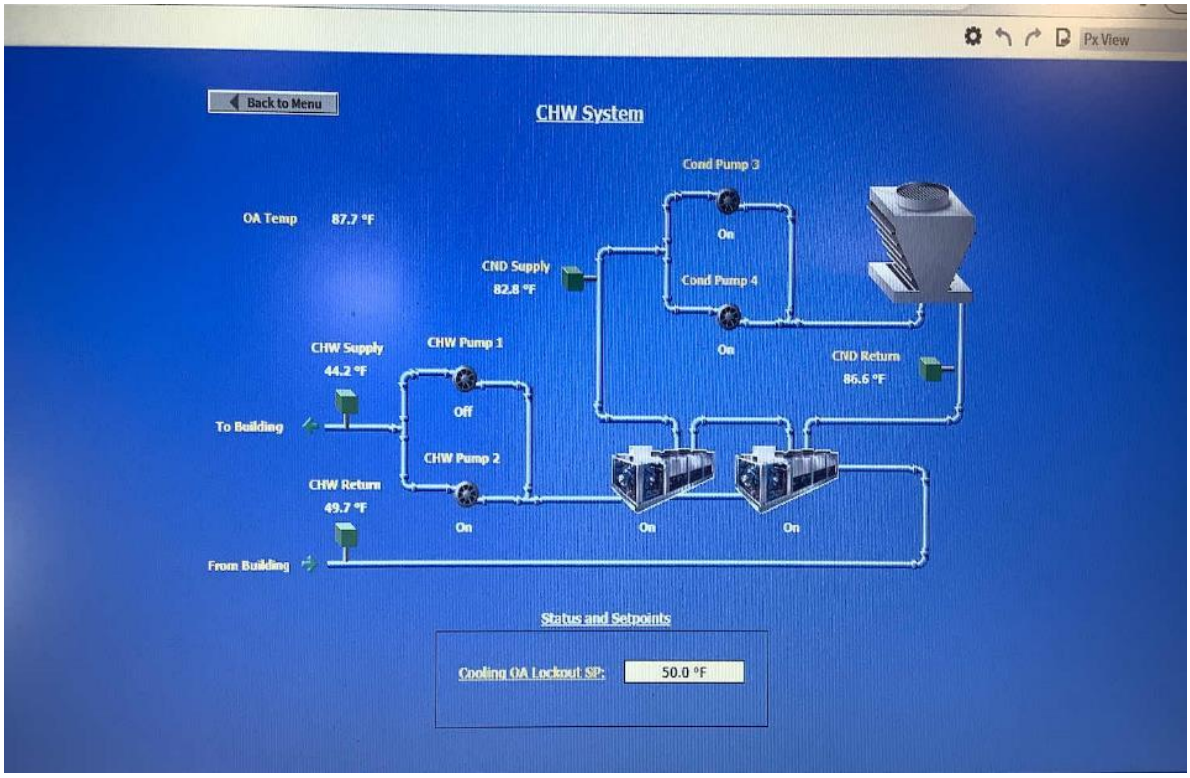
*Water-cooled Chillers – Main Building*

*Air-cooled Chiller - Annex*

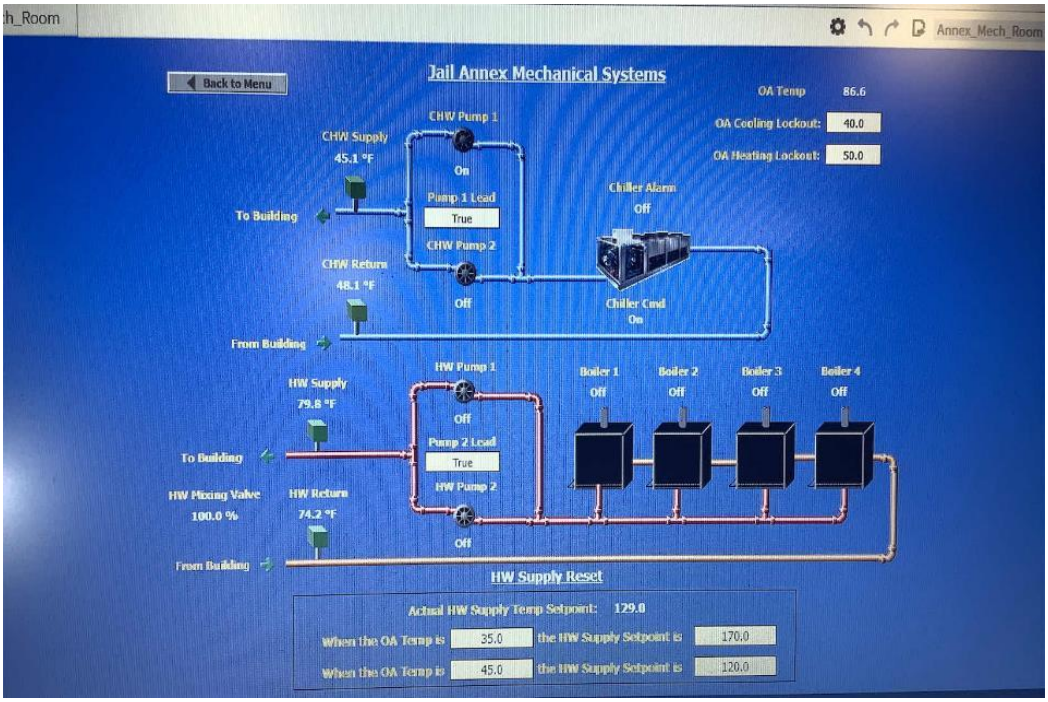
*Chilled Water Pumps – Main Building*


*Chilled Water Pump - Annex*

*Cooling Towers and Condenser Water Pumps – Main Building*




*Chilled Water System EMS Diagram View – Main Building*




*Heating Hot Water and Chilled Water Systems EMS Diagram View - Annex*

## 2.8 Building Automation System (BAS)

A Johnson Controls BAS controls the HVAC equipment, boilers, chillers, air handlers, and package units. The BAS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, heating water loop temperatures, and chilled water loop temperatures.


*Building Energy Management System for Atlantic County Justice Facility*

## 2.9 Domestic Hot Water

Hot water for the facility is produced by five boilers, one gas-fired storage water heater, and three electric storage water heaters. Two, 1,500 MBh boilers provide hot water to the main building, while two, 750 MBh boilers and one, 1,000 MBh boiler provide hot water to the annex.

The gas-fired storage water heater has a 200 MBh capacity and provides hot water to the annex, while the electric storage water heaters range in capacity from 1.4 kW to 5 kW and are used at the main building, the prosecutors building, and the trailers. The units have storage capacities between 4 gallons and 100 gallons.

Six fractional hp circulation pumps distribute water to end uses. The circulation pumps operate continuously. The units are in good condition. The domestic hot water pipes are partially insulated, and the insulation is in good condition.


*Water Heaters*

## 2.10 Food Service Equipment

The kitchens have a mix of gas and electric equipment that is used to prepare meals for inmates and staff. Most cooking is done using convection gas-fired ovens. Bulk prepared foods are held in an electric holding cabinet. Equipment is standard efficiency and is in fair condition.

The dishwasher is a non-ENERGY STAR high temperature, conveyor type unit equipped with an electric booster heater.

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


*Gas-fired Oven*

*Electric Holding Cabinet*

## 2.11 Refrigeration

The facility has two stand-up refrigerators with solid doors and one with glass doors. Equipment is standard efficiency and in fair condition.

There are two walk-in refrigerators each with an estimated 0.78-ton compressor and a two-fan evaporator, and one walk-in refrigerator with an estimated 0.43-ton outside and a one fan evaporator. The refrigerators are equipped with evaporator fan controls.

The walk-in medium temperature freezer has an estimated 0.75-ton compressor and a two-fan evaporator. The freezer is equipped with evaporator fan and electric defrost controls.

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

*Stand-up Refrigerator*

*Walk-in Refrigerator*

## 2.12 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 120 computer workstations throughout the facility. Plug loads throughout the building include general office equipment. There are typical office loads such as copiers, printers, microwaves, and mini fridges. There are 12 residential-style refrigerators in the facility that are used to store food and drinks.

There are three refrigerated beverage vending machines and one non-refrigerated vending machine at the main building. Vending machines are not equipped with occupancy-based controls.

The annex building has a laundry room with four electric clothes washers and three gas-fired clothes dryers that are used to clean an estimated 100 to 200 loads of clothing each day.

*Washing Machine*

*Vending Machine*

## 2.13 Water-Using Systems

There are 25 restrooms and locker rooms with toilets, urinals, sinks, and showers. Some restrooms contained low-flowing fixtures, while others had faucet flow rates of 2.2 gallons per minute (gpm) or higher.

*Typical Restroom Sinks*

## 2.14 On-Site Generation

The Atlantic County Justice Facility has a 120-kW photovoltaic (PV) array located on parking lot canopies surrounding the facility. The install date was not provided by the applicant. This system provides approximately 4% of the electricity used.

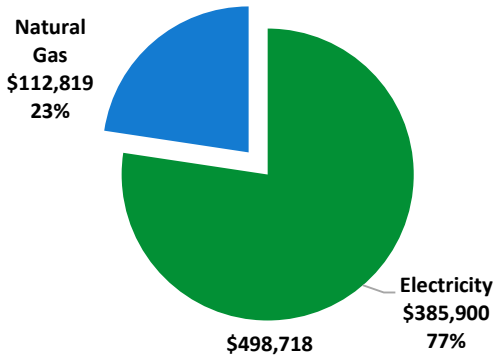
The Atlantic County Justice Facility has emergency generators located at the main building, Annex, and Prosecutors building that, in the event of a power outage, serves the entire building and is only used for emergency needs.

*Parking Lot Canopy Solar Panels*

# 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 | 2,973,942 kWh | $385,900 |
| Natural Gas | 102,559 Therms | $112,819 |
| **Total** | | **$498,718** |




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

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

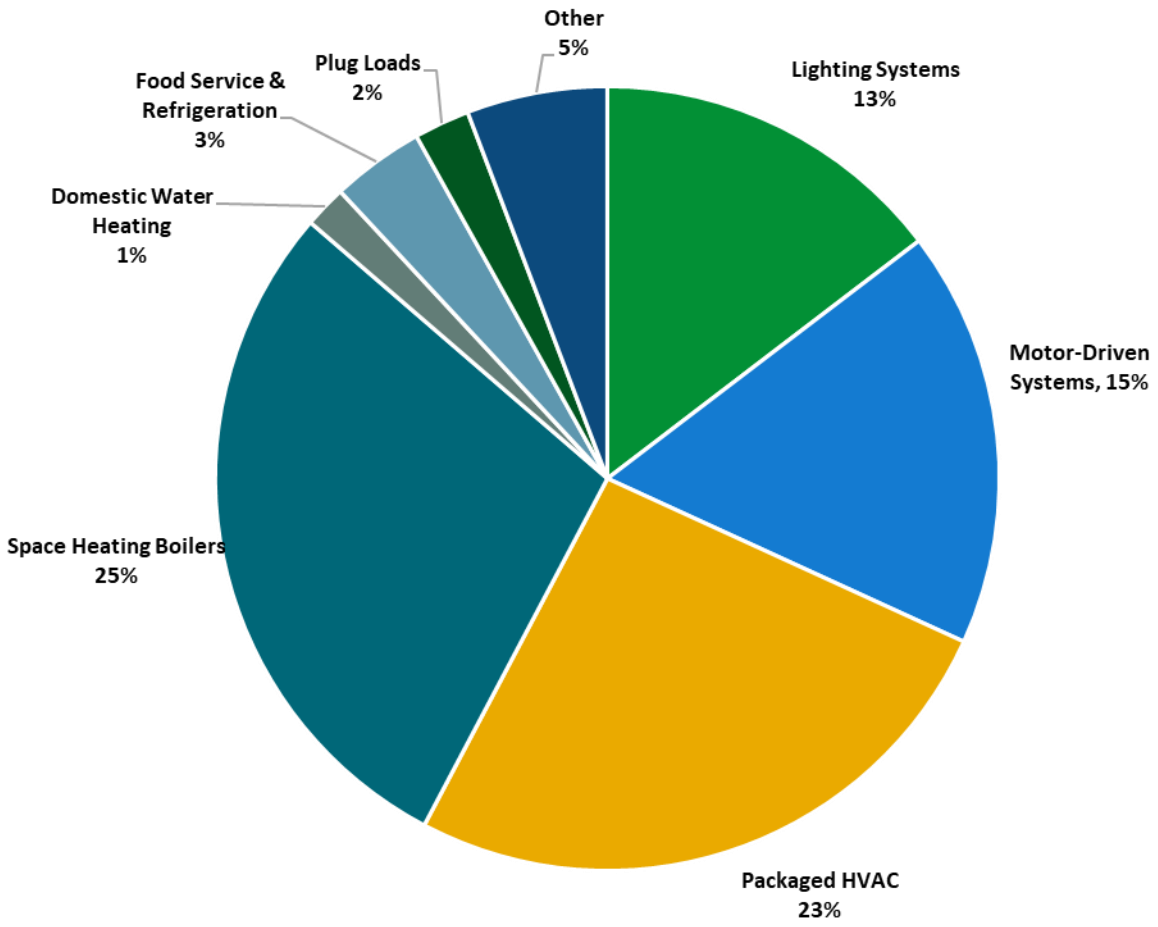
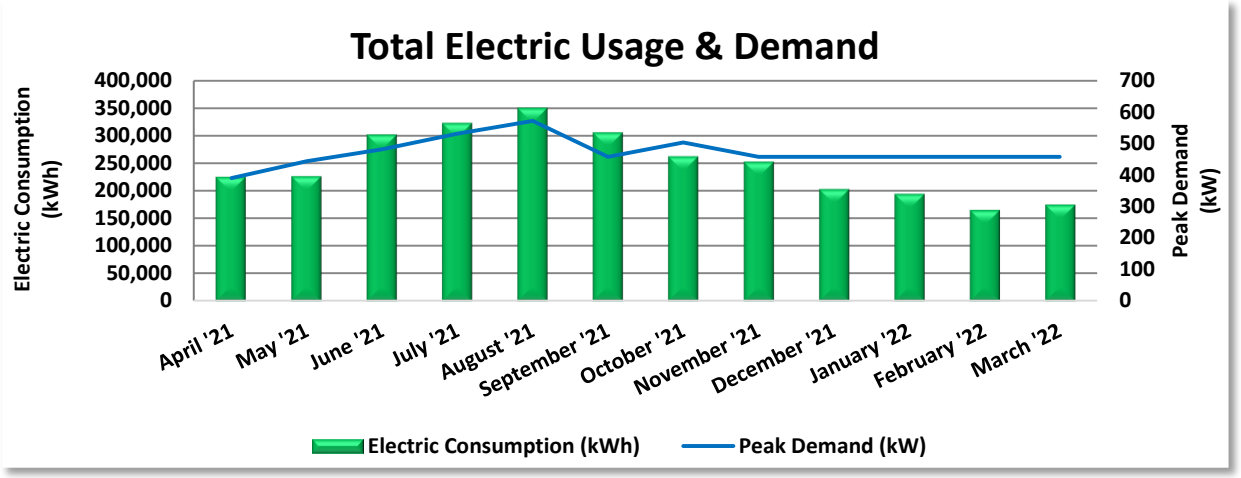
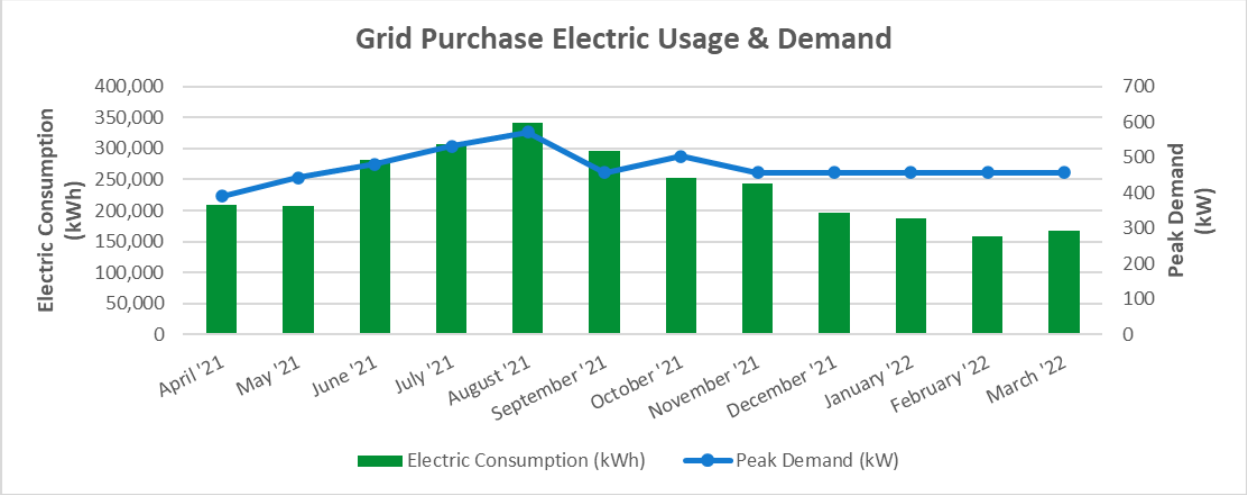


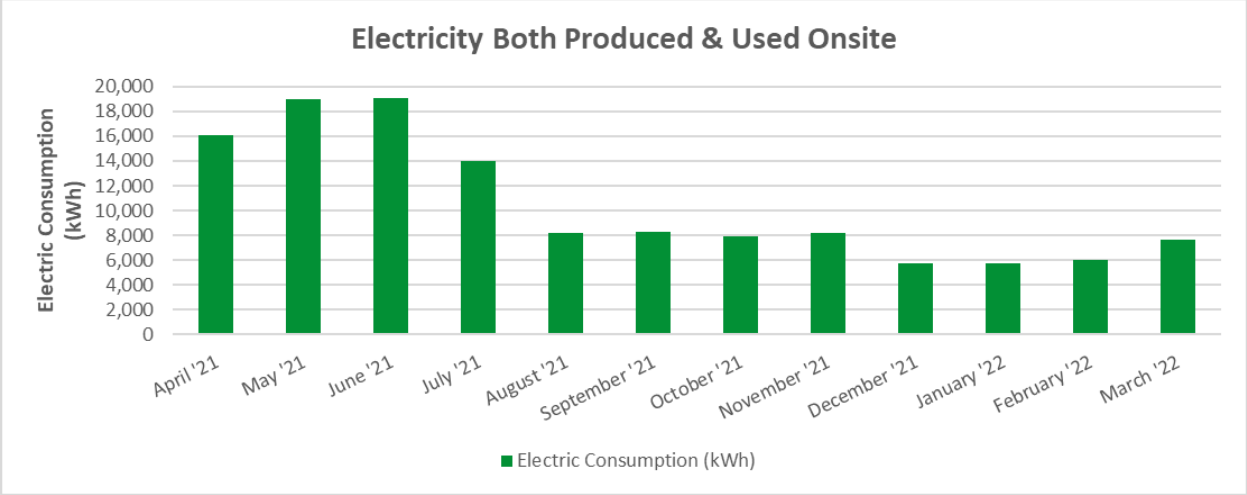

*Figure 4 - Energy Balance*

## 3.1 Electricity

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



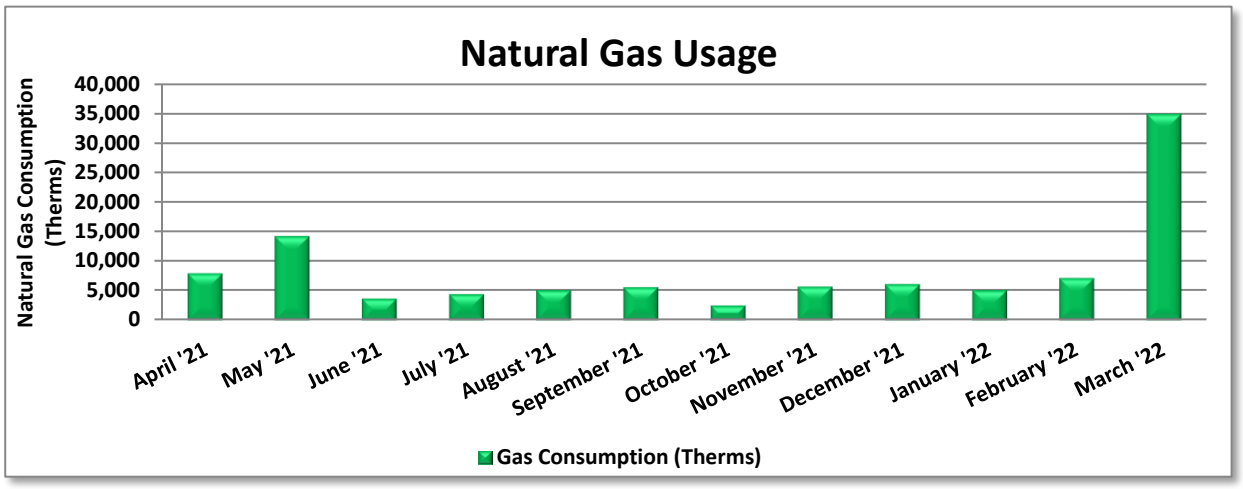
| Electric Billing Data | | | | | |
|---|---|---|---|---|---|
| Period Ending | Days in Period | Electric Usage (kWh) | Demand (kW) | Demand Cost | Total Electric Cost |
| 4/29/21 | 30 | 224,563 | 391 | $4,434 | $27,756 |
| 5/27/21 | 28 | 225,633 | 444 | $4,698 | $28,177 |
| 6/29/21 | 33 | 300,414 | 482 | $6,013 | $37,192 |
| 7/29/21 | 30 | 321,512 | 531 | $6,032 | $40,444 |
| 8/31/21 | 33 | 348,819 | 572 | $6,924 | $45,984 |
| 9/29/21 | 29 | 304,259 | 458 | $6,088 | $38,578 |
| 10/29/21 | 30 | 261,266 | 504 | $5,534 | $32,975 |
| 11/29/21 | 31 | 251,913 | 458 | $5,554 | $32,271 |
| 12/30/21 | 31 | 202,179 | 458 | $5,207 | $26,792 |
| 1/30/22 | 31 | 193,977 | 458 | $6,080 | $27,174 |
| 2/27/22 | 28 | 165,009 | 458 | $5,351 | $23,383 |
| 3/30/22 | 31 | 174,398 | 458 | $5,924 | $25,174 |
| **Totals** | **365** | **2,973,942** | **572** | **$67,838** | **$385,900** |
| **Annual** | **365** | **2,973,942** | **572** | **$67,838** | **$385,900** |

Notes:

- Peak demand of 572 kW occurred in August '21.
- Average demand over the past 12 months was 472 kW.
- The average electric cost over the past 12 months was $0.130/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.
- The first graph shows combined electricity consumption, the second graph shows energy consumed from the grid, and the third graph reflects energy produced by the solar panels and consumed on site.
- The solar meter does not capture kW load and is therefore not displayed on the third graph.

## 3.2 Natural Gas

South Jersey Gas delivers natural gas under rate class General Service Gas FT (GSGFT), with natural gas supply provided by UGI Energy Services LLC, a third-party supplier.




| Gas Billing Data | | | |
|---|---|---|---|
| **Period Ending** | **Days in Period** | **Natural Gas Usage (Therms)** | **Natural Gas Cost** |
| 5/10/21 | 32 | 7,975 | $8,715 |
| 6/9/21 | 30 | 14,256 | $14,609 |
| 7/12/21 | 33 | 3,673 | $4,713 |
| 8/11/21 | 30 | 4,415 | $5,218 |
| 9/10/21 | 30 | 5,156 | $6,072 |
| 10/11/21 | 31 | 5,605 | $6,564 |
| 11/8/21 | 28 | 2,498 | $3,444 |
| 12/9/21 | 31 | 5,704 | $6,674 |
| 1/11/22 | 33 | 6,138 | $7,120 |
| 2/8/22 | 28 | 5,129 | $5,993 |
| 3/7/22 | 27 | 7,149 | $7,928 |
| 4/8/22 | 32 | 34,862 | $35,769 |
| **Totals** | **365** | **102,559** | **$112,819** |
| **Annual** | **365** | **102,559** | **$112,819** |

Notes:

- The average gas cost for the past 12 months is $1.100/therm, which is the blended rate used throughout the analysis.
- Summer gas consumption can be attributed to domestic hot water usage, the gas-fired clothes dryers, and cooking equipment.
- The utility bills over the past 12 months show that actual readings of the gas meter only occurred for April ’21 and March ’22, with estimated usage for the rest of the year. This resulted in an unexpectedly high peak usage for March ’22, which corrected the estimated usage from the prior months.

## 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.

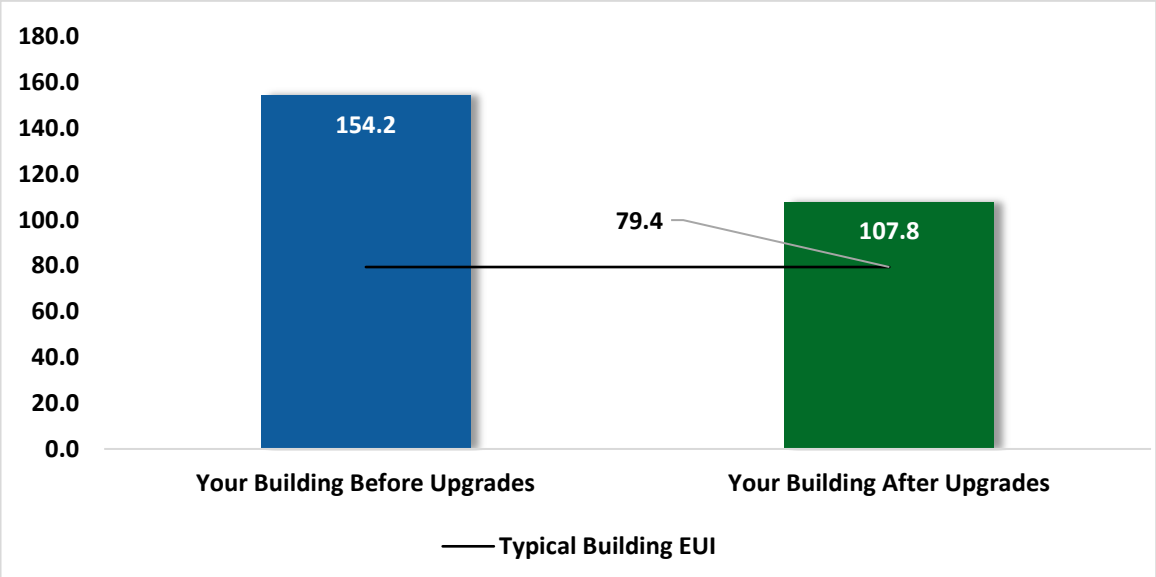



*Figure 5 - Energy Use Intensity Comparison*[3]

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.

[3] Based on all evaluated ECMs

## Tracking Your Energy Performance

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

**We have created a Portfolio Manager account for your facility and 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.

# 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** | | | **444,854** | **56.1** | **-90** | **$56,739** | **$100,138** | **$16,253** | **$83,885** | **1.5** | **437,474** |
| ECM 1 | Install LED Fixtures | Yes | 200,982 | 23.4 | -38 | $25,665 | $56,277 | $4,700 | $51,577 | 2.0 | 197,978 |
| ECM 2 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes | 371 | 0.2 | 0 | $47 | $275 | $40 | $235 | 5.0 | 364 |
| ECM 3 | Retrofit Fixtures with LED Lamps | Yes | 243,501 | 32.5 | -52 | $31,026 | $43,585 | $11,513 | $32,072 | 1.0 | 239,132 |
| **Lighting Control Measures** | | | **80,118** | **10.4** | **-17** | **$10,208** | **$58,572** | **$14,750** | **$43,822** | **4.3** | **78,681** |
| ECM 4 | Install Occupancy Sensor Lighting Controls | Yes | 62,406 | 8.7 | -13 | $7,952 | $45,522 | $5,860 | $39,662 | 5.0 | 61,286 |
| ECM 5 | Install High/Low Lighting Controls | Yes | 17,713 | 1.7 | -4 | $2,257 | $13,050 | $8,890 | $4,160 | 1.8 | 17,395 |
| **Motor Upgrades** | | | **1,459** | **0.1** | **0** | **$189** | **$2,756** | **$0** | **$2,756** | **14.6** | **1,469** |
| ECM 6 | Premium Efficiency Motors | No | 1,459 | 0.1 | 0 | $189 | $2,756 | $0 | $2,756 | 14.6 | 1,469 |
| **Variable Frequency Drive (VFD) Measures** | | | **373,273** | **52.3** | **45** | **$48,929** | **$218,010** | **$23,400** | **$194,610** | **4.0** | **381,133** |
| ECM 7 | Install VFD on Variable Air Volume (VAV) Fans | Yes | 4,294 | 0.6 | 0 | $557 | $4,182 | $100 | $4,082 | 7.3 | 4,324 |
| ECM 8 | Install VFDs on Constant Volume (CV) Fans | Yes | 224,920 | 32.3 | 0 | $29,186 | $104,630 | $10,050 | $94,580 | 3.2 | 226,493 |
| ECM 9 | Install VFDs on Chilled Water Pumps | Yes | 98,613 | 17.5 | 0 | $12,796 | $59,235 | $7,000 | $52,235 | 4.1 | 99,302 |
| ECM 10 | Install VFDs on Heating Water Pumps | Yes | 23,142 | 2.2 | 0 | $3,003 | $20,111 | $3,600 | $16,511 | 5.5 | 23,303 |
| ECM 11 | Install VFDs on Cooling Tower Fans | No | 9,911 | -0.5 | 0 | $1,286 | $18,354 | $2,400 | $15,954 | 12.4 | 9,980 |
| ECM 12 | Install VFDs on Kitchen Hood Fan Motors | Yes | 12,393 | 0.1 | 45 | $2,101 | $11,499 | $250 | $11,249 | 5.4 | 17,731 |
| **Unitary HVAC Measures** | | | **86,546** | **26.5** | **3** | **$11,260** | **$89,784** | **$3,170** | **$86,614** | **7.7** | **87,465** |
| ECM 13 | Install High Efficiency Air Conditioning Units | No | 28,253 | 8.8 | 3 | $3,696 | $61,797 | $3,170 | $58,627 | 15.9 | 28,765 |
| ECM 14 | Install High Efficiency Heat Pumps | Yes | 58,293 | 17.6 | 0 | $7,564 | $27,987 | $0 | $27,987 | 3.7 | 58,700 |
| **Electric Chiller Replacement** | | | **331,356** | **126.7** | **0** | **$42,997** | **$340,920** | **$12,080** | **$328,840** | **7.6** | **333,672** |
| ECM 15 | Install High Efficiency Chillers | Yes | 331,356 | 126.7 | 0 | $42,997 | $340,920 | $12,080 | $328,840 | 7.6 | 333,672 |
| **Gas Heating (HVAC/Process) Replacement** | | | **0** | **0.0** | **714** | **$7,855** | **$111,160** | **$9,485** | **$101,675** | **12.9** | **83,609** |
| ECM 16 | Install High Efficiency Hot Water Boilers | No | 0 | 0.0 | 194 | $2,137 | $51,823 | $2,485 | $49,338 | 23.1 | 22,742 |
| ECM 17 | Install High Efficiency Furnaces | Yes | 0 | 0.0 | 520 | $5,718 | $59,336 | $7,000 | $52,336 | 9.2 | 60,866 |
| **HVAC System Improvements** | | | **1,933** | **0.0** | **29** | **$575** | **$691** | **$80** | **$611** | **1.1** | **5,400** |
| ECM 18 | Install Pipe Insulation | Yes | 1,933 | 0.0 | 29 | $575 | $691 | $80 | $611 | 1.1 | 5,400 |
| **Domestic Water Heating Upgrade** | | | **1,112** | **0.0** | **30** | **$478** | **$516** | **$258** | **$258** | **0.5** | **4,675** |
| ECM 19 | Install Low-Flow DHW Devices | Yes | 1,112 | 0.0 | 30 | $478 | $516 | $258 | $258 | 0.5 | 4,675 |
| **Food Service & Refrigeration Measures** | | | **5,178** | **0.6** | **0** | **$672** | **$920** | **$150** | **$770** | **1.1** | **5,214** |
| ECM 20 | Vending Machine Control | Yes | 5,178 | 0.6 | 0 | $672 | $920 | $150 | $770 | 1.1 | 5,214 |
| **Custom Measures** | | | **115,878** | **0.0** | **509** | **$20,634** | **$51,746** | **$0** | **$51,746** | **2.5** | **176,266** |
| ECM 21 | Retro-Commissioning Study | Yes | 115,878 | 0.0 | 509 | $20,634 | $51,746 | $0 | $51,746 | 2.5 | 176,266 |
| **TOTALS** | | | **1,441,706** | **272.7** | **1,224** | **$200,537** | **$975,213** | **$79,626** | **$895,587** | **4.5** | **1,595,059** |

* - 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).

*Figure 6 – 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** | | **444,854** | **56.1** | **-90** | **$56,739** | **$100,138** | **$16,253** | **$83,885** | **1.5** | **437,474** |
| ECM 1 | Install LED Fixtures | 200,982 | 23.4 | -38 | $25,665 | $56,277 | $4,700 | $51,577 | 2.0 | 197,978 |
| ECM 2 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | 371 | 0.2 | 0 | $47 | $275 | $40 | $235 | 5.0 | 364 |
| ECM 3 | Retrofit Fixtures with LED Lamps | 243,501 | 32.5 | -52 | $31,026 | $43,585 | $11,513 | $32,072 | 1.0 | 239,132 |
| **Lighting Control Measures** | | **80,118** | **10.4** | **-17** | **$10,208** | **$58,572** | **$14,750** | **$43,822** | **4.3** | **78,681** |
| ECM 4 | Install Occupancy Sensor Lighting Controls | 62,406 | 8.7 | -13 | $7,952 | $45,522 | $5,860 | $39,662 | 5.0 | 61,286 |
| ECM 5 | Install High/Low Lighting Controls | 17,713 | 1.7 | -4 | $2,257 | $13,050 | $8,890 | $4,160 | 1.8 | 17,395 |
| **Variable Frequency Drive (VFD) Measures** | | **363,362** | **52.8** | **45** | **$47,643** | **$199,656** | **$21,000** | **$178,656** | **3.7** | **371,153** |
| ECM 7 | Install VFD on Variable Air Volume (VAV) Fans | 4,294 | 0.6 | 0 | $557 | $4,182 | $100 | $4,082 | 7.3 | 4,324 |
| ECM 8 | Install VFDs on Constant Volume (CV) Fans | 224,920 | 32.3 | 0 | $29,186 | $104,630 | $10,050 | $94,580 | 3.2 | 226,493 |
| ECM 9 | Install VFDs on Chilled Water Pumps | 98,613 | 17.5 | 0 | $12,796 | $59,235 | $7,000 | $52,235 | 4.1 | 99,302 |
| ECM 10 | Install VFDs on Heating Water Pumps | 23,142 | 2.2 | 0 | $3,003 | $20,111 | $3,600 | $16,511 | 5.5 | 23,303 |
| ECM 12 | Install VFDs on Kitchen Hood Fan Motors | 12,393 | 0.1 | 45 | $2,101 | $11,499 | $250 | $11,249 | 5.4 | 17,731 |
| **Unitary HVAC Measures** | | **58,293** | **17.6** | **0** | **$7,564** | **$27,987** | **$0** | **$27,987** | **3.7** | **58,700** |
| ECM 14 | Install High Efficiency Heat Pumps | 58,293 | 17.6 | 0 | $7,564 | $27,987 | $0 | $27,987 | 3.7 | 58,700 |
| **Electric Chiller Replacement** | | **331,356** | **126.7** | **0** | **$42,997** | **$340,920** | **$12,080** | **$328,840** | **7.6** | **333,672** |
| ECM 15 | Install High Efficiency Chillers | 331,356 | 126.7 | 0 | $42,997 | $340,920 | $12,080 | $328,840 | 7.6 | 333,672 |
| **Gas Heating (HVAC/Process) Replacement** | | **0** | **0.0** | **520** | **$5,718** | **$59,336** | **$7,000** | **$52,336** | **9.2** | **60,866** |
| ECM 17 | Install High Efficiency Furnaces | 0 | 0.0 | 520 | $5,718 | $59,336 | $7,000 | $52,336 | 9.2 | 60,866 |
| **HVAC System Improvements** | | **1,933** | **0.0** | **29** | **$575** | **$691** | **$80** | **$611** | **1.1** | **5,400** |
| ECM 18 | Install Pipe Insulation | 1,933 | 0.0 | 29 | $575 | $691 | $80 | $611 | 1.1 | 5,400 |
| **Domestic Water Heating Upgrade** | | **1,112** | **0.0** | **30** | **$478** | **$516** | **$258** | **$258** | **0.5** | **4,675** |
| ECM 19 | Install Low-Flow DHW Devices | 1,112 | 0.0 | 30 | $478 | $516 | $258 | $258 | 0.5 | 4,675 |
| **Food Service & Refrigeration Measures** | | **5,178** | **0.6** | **0** | **$672** | **$920** | **$150** | **$770** | **1.1** | **5,214** |
| ECM 20 | Vending Machine Control | 5,178 | 0.6 | 0 | $672 | $920 | $150 | $770 | 1.1 | 5,214 |
| **Custom Measures** | | **115,878** | **0.0** | **509** | **$20,634** | **$51,746** | **$0** | **$51,746** | **2.5** | **176,266** |
| ECM 21 | Retro-Commissioning Study | 115,878 | 0.0 | 509 | $20,634 | $51,746 | $0 | $51,746 | 2.5 | 176,266 |
| **TOTALS** | | **1,402,083** | **264.2** | **1,027** | **$193,229** | **$840,482** | **$71,571** | **$768,911** | **4.0** | **1,532,102** |

* - 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).

*Figure 7 – 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** | | **444,854** | **56.1** | **-90** | **$56,739** | **$100,138** | **$16,253** | **$83,885** | **1.5** | **437,474** |
| ECM 1 | Install LED Fixtures | 200,982 | 23.4 | -38 | $25,665 | $56,277 | $4,700 | $51,577 | 2.0 | 197,978 |
| ECM 2 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | 371 | 0.2 | 0 | $47 | $275 | $40 | $235 | 5.0 | 364 |
| ECM 3 | Retrofit Fixtures with LED Lamps | 243,501 | 32.5 | -52 | $31,026 | $43,585 | $11,513 | $32,072 | 1.0 | 239,132 |

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 high-intensity discharge (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:** gymnasium and exterior HPS and MH fixtures

### ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

**Affected Building Areas**: all areas with fluorescent fixtures with T12 tubes

### ECM 3: Retrofit Fixtures with LED Lamps

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

## 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** | | **80,118** | **10.4** | **-17** | **$10,208** | **$58,572** | **$14,750** | **$43,822** | **4.3** | **78,681** |
| ECM 4 | Install Occupancy Sensor Lighting Controls | 62,406 | 8.7 | -13 | $7,952 | $45,522 | $5,860 | $39,662 | 5.0 | 61,286 |
| ECM 5 | Install High/Low Lighting Controls | 17,713 | 1.7 | -4 | $2,257 | $13,050 | $8,890 | $4,160 | 1.8 | 17,395 |

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

### ECM 4: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend 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:** offices, conference rooms, classrooms, gymnasium, kitchens, cafeterias, garages, restrooms, locker rooms, and storage rooms

## ECM 5: Install High/Low Lighting Controls

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

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety 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, stairwells, and lobbies

# 4.3 Motors

| # | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Motor Upgrades** | | **1,459** | **0.1** | **0** | **$189** | **$2,756** | **$0** | **$2,756** | **14.6** | **1,469** |
| ECM 6 | Premium Efficiency Motors | 1,459 | 0.1 | 0 | $189 | $2,756 | $0 | $2,756 | 14.6 | 1,469 |

## ECM 6: Premium Efficiency Motors

We evaluated replacing standard efficiency motors with IHP 2014 efficiency motors. This evaluation assumes that existing motors will be replaced with motors of equivalent size and type. In some cases, additional savings may be possible by downsizing motors to better meet the motor's current load requirements.

**Affected Motors:**

| Location | Area(s)/System(s) Served | Motor Quantity | Motor Application | HP Per Motor | Additional Motor Description |
|---|---|---|---|---|---|
| Mechanical - DHW Boilers - Main Building | Domestic Hot Water - Main Building | 1 | DHW Circulation Pump | 0.8 | DHW Circulation Pump |
| Main Building | Main Building | 1 | Supply Fan | 0.3 | Split Systems |
| Main Building | Main Building | 1 | Supply Fan | 0.3 | Split Systems |
| Pods C & G - Offices - Main Building | Pods C & G - Offices | 2 | Supply Fan | 0.3 | Split Systems |
| Pods C & G - Offices - Main Building | Pods D & H - Offices | 1 | Supply Fan | 0.3 | Split Systems |

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

## 4.4 Variable Frequency Drives (VFD)

| # | Energy Conservation Measure | Annual Electric Savings (kWh) | Peak Demand Savings (kW) | Annual Fuel Savings (MMBtu) | Annual Energy Cost Savings ($) | Estimated M&L Cost ($) | Estimated Incentive ($)* | Estimated Net M&L Cost ($) | Simple Payback Period (yrs)** | $CO_2e$ Emissions Reduction (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable Frequency Drive (VFD) Measures** | | **373,273** | **52.3** | **45** | **$48,929** | **$218,010** | **$23,400** | **$194,610** | **4.0** | **381,133** |
| ECM 7 | Install VFD on Variable Air Volume (VAV) Fans | 4,294 | 0.6 | 0 | $557 | $4,182 | $100 | $4,082 | 7.3 | 4,324 |
| ECM 8 | Install VFDs on Constant Volume (CV) Fans | 224,920 | 32.3 | 0 | $29,186 | $104,630 | $10,050 | $94,580 | 3.2 | 226,493 |
| ECM 9 | Install VFDs on Chilled Water Pumps | 98,613 | 17.5 | 0 | $12,796 | $59,235 | $7,000 | $52,235 | 4.1 | 99,302 |
| ECM 10 | Install VFDs on Heating Water Pumps | 23,142 | 2.2 | 0 | $3,003 | $20,111 | $3,600 | $16,511 | 5.5 | 23,303 |
| ECM 11 | Install VFDs on Cooling Tower Fans | 9,911 | -0.5 | 0 | $1,286 | $18,354 | $2,400 | $15,954 | 12.4 | 9,980 |
| ECM 12 | Install VFDs on Kitchen Hood Fan Motors | 12,393 | 0.1 | 45 | $2,101 | $11,499 | $250 | $11,249 | 5.4 | 17,731 |

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 7: Install VFD on Variable Air Volume (VAV) Fans

Replace existing air volume control devices on variable volume fans, such as inlet vanes and variable pitch fan blades, with VFDs. Inlet guide vanes and variable pitch fan blades are an inefficient means of controlling the air volume compared to VFDs. The existing volume control device will be removed or permanently disabled, and the control signal will be redirected to the VFD to determine proper fan motor speed.

Energy savings result from using a more efficient control device to regulate the air flow provided by the fan. Additional maintenance savings may result from this measure. VFDs are solid state electronic devices, which generally require less maintenance than mechanical air volume control devices.

**Affected Air Handlers:** AC-1 serving the annex building

### ECM 8: 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.

VAV system controls should not raise the supply air temperature at the expense of the fan power. A common mistake is to reset the supply air temperature to achieve chiller energy savings, which can lead to additional air flow requirements. Supply air temperature should be kept low (e.g., 55°F) until the minimum fan speed (typically about 50%) is met. At this point, it is efficient to raise the supply air temperature as the load decreases, but not such that additional air flow and thus fan energy is required.

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

**Affected Air Handlers:** AHUs 1 to 8, AHU 11, AC-3, prison transfer RTU, and kitchen units serving the main building; AC-2 and RTU-9 serving the annex building. AHU-1, AHU-2, and AH-9 serving the prosecutors building

## ECM 9: Install VFDs on Chilled Water Pumps

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

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

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

**Affected Pumps**: CHWP 1 and 2 and CWP 3 and 4 serving the main building; CWP 1and 2 serving the annex building

## ECM 10: Install VFDs on Heating Water Pumps

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

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

**Affected Pumps:** HWP5&6 serving the main building and the HWP1&2 serving the Annex building

## ECM 11: Install VFDs on Cooling Tower Fans

We evaluated installing VFDs to control cooling tower fan motors. The VFD will allow the cooling tower fan to operate at the minimum speed necessary to maintain the temperature of the condenser water returning to the chiller.

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

**Affected Units:** CT 1 and 2 serving the main building

### ECM 12: Install VFDs on Kitchen Hood Fan Motors

Install VFDs and sensors to control the kitchen hood fan motor(s). 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 Units:** kitchen hood exhaust fans serving the main building and the annex building

## 4.5 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** | | **86,546** | **26.5** | **3** | **$11,260** | **$89,784** | **$3,170** | **$86,614** | **7.7** | **87,465** |
| ECM 13 | Install High Efficiency Air Conditioning Units | 28,253 | 8.8 | 3 | $3,696 | $61,797 | $3,170 | $58,627 | 15.9 | 28,765 |
| ECM 14 | Install High Efficiency Heat Pumps | 58,293 | 17.6 | 0 | $7,564 | $27,987 | $0 | $27,987 | 3.7 | 58,700 |

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 package units, split systems, mini splits, and through the wall AC units are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

### ECM 13: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged air conditioning units with high efficiency packaged 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:** split systems serving the main building and annex building; AHU-1, AHU-2, and split systems serving the prosecutors building

### ECM 14: Install High Efficiency Heat Pumps

Replace standard efficiency heat pumps with high efficiency heat pumps. A higher EER or SEER rating indicates a more efficient cooling system, and a higher HSPF rating indicates more efficient heating mode. 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 heating and cooling loads, and the estimated annual operating hours.

**Affected Units:** mini-split HP units serving the main building and the through-the-wall units serving the trailers

## 4.6 Electric Chillers

| # | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Electric Chiller Replacement** | | **331,356** | **126.7** | **0** | **$42,997** | **$340,920** | **$12,080** | **$328,840** | **7.6** | **333,672** |
| ECM 15 | Install High Efficiency Chillers | 331,356 | 126.7 | 0 | $42,997 | $340,920 | $12,080 | $328,840 | 7.6 | 333,672 |

### ECM 15: Install High Efficiency Chillers

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

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

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

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

Typically, the marginal cost of purchasing a high-efficiency chiller can be justified by the marginal savings from the improved efficiency. When the chillers are eventually replaced, consider purchasing equipment that exceed the minimum efficiency required by building codes.

**Affected Units:** chillers serving the main building and the annex building

## 4.7 Gas-Fired 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Gas Heating (HVAC/Process) Replacement** | | **0** | **0.0** | **714** | **$7,855** | **$111,160** | **$9,485** | **$101,675** | **12.9** | **83,609** |
| ECM 16 | Install High Efficiency Hot Water Boilers | 0 | 0.0 | 194 | $2,137 | $51,823 | $2,485 | $49,338 | 23.1 | 22,742 |
| ECM 17 | Install High Efficiency Furnaces | 0 | 0.0 | 520 | $5,718 | $59,336 | $7,000 | $52,336 | 9.2 | 60,866 |

### ECM 16: Install High Efficiency Hot Water Boilers

We evaluated replacing older inefficient hot water boilers with high efficiency hot water boilers. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

For the purposes of this analysis, we evaluated the replacement of boilers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your mechanical design team to select boilers that are sized appropriately for the heating load. In many cases installing multiple modular boilers, rather than one or two large boilers, will result in higher overall plant efficiency while providing additional system redundancy.

Replacing the boilers has a long payback and may not be justifiable based simply on energy considerations. However, the boilers have reached the end of their normal useful life. Typically, the marginal cost of purchasing high efficiency boilers can be justified by the marginal savings from the improved efficiency. When the boiler is eventually replaced, consider purchasing boilers that exceed the minimum efficiency required by building codes. We also recommend working with your mechanical design team to determine whether the heating system can operate with return water temperatures below 130°F, which would allow the use of condensing boilers.

**Affected Units:** hot water boilers serving the annex building

### ECM 17: Install High Efficiency Furnaces

Replace standard efficiency furnaces with condensing furnaces. Improved combustion technology and heat exchanger design optimize heat recovery from the combustion gases, which can significantly improve furnace efficiency. Savings result from improved system efficiency.

Note: these units produce acidic condensate that require proper drainage.

**Affected Units:** AHU-1 to 8, AHU-11, and the kitchen units with gas-fired furnaces used at the main building; gas-fired unit heaters within the Prosecutors building.

## 4.8 HVAC Improvements

| # | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| **HVAC System Improvements** | | **1,933** | **0.0** | **29** | **$575** | **$691** | **$80** | **$611** | **1.1** | **5,400** |
| ECM 18 | Install Pipe Insulation | 1,933 | 0.0 | 29 | $575 | $691 | $80 | $611 | 1.1 | 5,400 |

### ECM 18: Install Pipe Insulation

Install insulation on domestic hot water system piping. Distribution system losses are dependent on system fluid temperature, the size of the distribution system, and the level of insulation of the piping. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is exposed to water, when the insulation has been removed from some areas of the pipe, or when valves have not been properly insulated system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

**Affected Systems:** domestic hot water piping

## 4.9 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** | | **1,112** | **0.0** | **30** | **$478** | **$516** | **$258** | **$258** | **0.5** | **4,675** |
| ECM 19 | Install Low-Flow DHW Devices | 1,112 | 0.0 | 30 | $478 | $516 | $258 | $258 | 0.5 | 4,675 |

### ECM 19: Install Low-Flow DHW Devices

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

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

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Additional cost savings may result from reduced water usage.

## 4.10 Food Service & 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** | | **5,178** | **0.6** | **0** | **$672** | **$920** | **$150** | **$770** | **1.1** | **5,214** |
| ECM 20 | Vending Machine Control | 5,178 | 0.6 | 0 | $672 | $920 | $150 | $770 | 1.1 | 5,214 |

### ECM 20: Vending Machine Control

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

| # | 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) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Custom Measures** | | **115,878** | **0.0** | **509** | **$20,634** | **$51,746** | **$0** | **$51,746** | **2.5** | **176,266** |
| ECM 21 | Retro-Commissioning Study | 115,878 | 0.0 | 509 | $20,634 | $51,746 | $0 | $51,746 | 2.5 | 176,266 |

## ECM 21: Retro-Commissioning Study

Due to the complexity of today's HVAC systems and controls a thorough analysis and rebalance of heating, ventilation, and cooling systems should periodically be conducted. There are indications at this site that systems may not be operating correctly or as efficiently as they could be. One important tool available to building operators to ensure proper system operation is retro-commissioning.

Retro-commissioning is a common practice recommended by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) to be implemented every few years. We recommend that you contact a reputable engineering firm that specializes in energy control systems and retro-commissioning. Ask them to propose a scope of work and an outline of the procedures and processes to be implemented, including a schedule and the roles of all responsible parties.

Once goals and responsibilities are established, the objective of the investigation process is to understand how the building is currently operating, identify the issues, and determine the most cost-effective way to improve performance. The retro-commissioning agent will review building documentation, interview building occupants, and inspect and test the equipment. Information is then compiled into a report and shared with facility staff, who will select which recommendations to implement after reviewing the findings.

The implementation phase puts the selected processes into place. Typical measures may include sensor calibration, equipment schedule changes, damper linkage repair and similar relatively low-cost adjustments—although more expensive sophisticated programming and building control system upgrades may be warranted. Approved measures may be implemented by the agent, the building staff, or by subcontractors. Typically, a combination of these individuals makes up the retro-commissioning team.

After the approved measures are implemented, the team will verify that the changes are working as expected. Baseline and post-case measurements will allow building staff to monitor equipment and ensure that the benefits are maintained.

A high-level evaluation of potential savings and costs is provided for demonstration purposes only. It is a screening evaluation for the potential in HVAC control improvements. Based on industry standards and previous project experience, the potential energy savings may be up to 15% of existing HVAC energy use. We estimate the cost of retro-commissioning studies and control improvements of $0.40 per square foot. Actual savings and costs will need to be outlined by the specific contractor engaged to perform the study. For the purposes of this report, we have conservatively estimated savings to be 6.0% of the HVAC energy consumption baseline.

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[4]. 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.

[4] 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 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.

## Fans to Reduce Cooling Load

Install ceiling fans to supplement your cooling system. Thermostat settings can typically be increased by 4°F with no change in overall occupant comfort due to the wind chill effect of moving air.

## 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.

## Chiller Maintenance

Service chillers regularly to keep them operating properly. Chillers are responsible for a substantial portion of a commercial building's overall energy usage, and when they do not work well, there is usually a noticeable increase in energy bills and increased occupant complaints. Regular diagnostics and service can save five to ten percent of the cost of operating your chiller. If you already have a maintenance contract in place, your existing service company should be able to provide these services.

## 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.

## Boiler Maintenance

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

## Furnace Maintenance

Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should check for gas / carbon monoxide leaks; change the air and fuel filters; check components for cracks, corrosion, dirt, or debris build-up; ensure the ignition system is working properly; test and adjust operation and safety controls; inspect electrical connections; and lubricate motors and bearings.

## Label HVAC Equipment

For improved coordination in maintenance practices, we recommend labeling or re-labeling the site HVAC equipment. Maintain continuity in labeling by following labeling conventions as indicated in the facility drawings or BAS building equipment list. Use weatherproof or heatproof labeling or stickers for permanence, but do not cover over original equipment nameplates, which should be kept clean and readable whenever possible. Besides equipment, label piping for service and direction of flow when possible. Ideally, maintain a log of HVAC equipment, including nameplate information, asset tag designation, areas served, installation year, service dates, and other pertinent information.

This investment in your equipment will enhance collaboration and communication between your staff and your contracted service providers and may help you with regulatory compliance.

## 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 in order 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.

## Water Heater Maintenance

The lower the supply water temperature that is used for hand washing sinks, the less energy is needed to heat the water. Reducing the temperature results in energy savings and the change is often unnoticeable to users. Be sure to review the domestic water temperature requirements for sterilizers and dishwashers as you investigate reducing the supply water temperature.

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

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

## 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.

## Water Conservation


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

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

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

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

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

## Procurement Strategies

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

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

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

# 6 On-site Generation

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

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

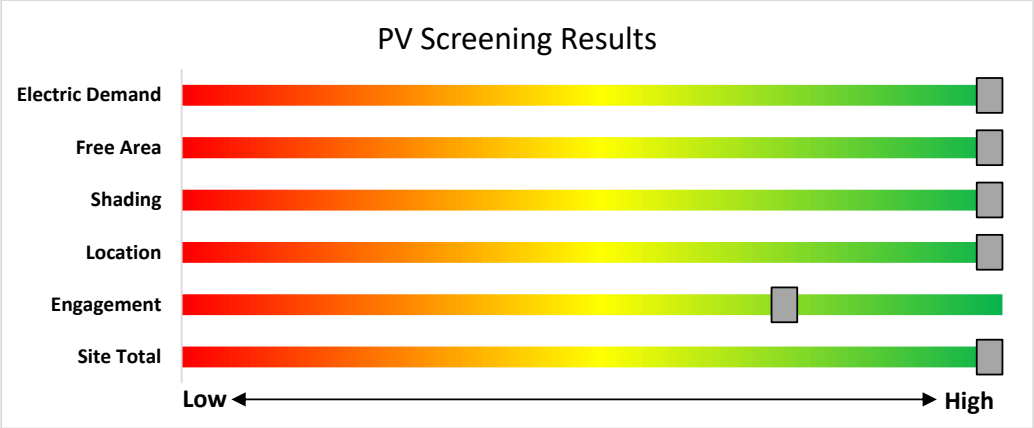
## 6.1 Solar Photovoltaic

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

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

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

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




| | | |
|---|---|---|
| **Potential** | High | |
| **System Potential** | 161 | kW DC STC |
| **Electric Generation** | 191,811 | kWh/yr |
| **Displaced Cost** | $24,890 | /yr |
| **Installed Cost** | $418,600 | |

*Figure 8 - Photovoltaic Screening*

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

## 6.2 Combined Heat and Power

Combined heat and power (CHP) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

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

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has no potential for installing a cost-effective CHP system.

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

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

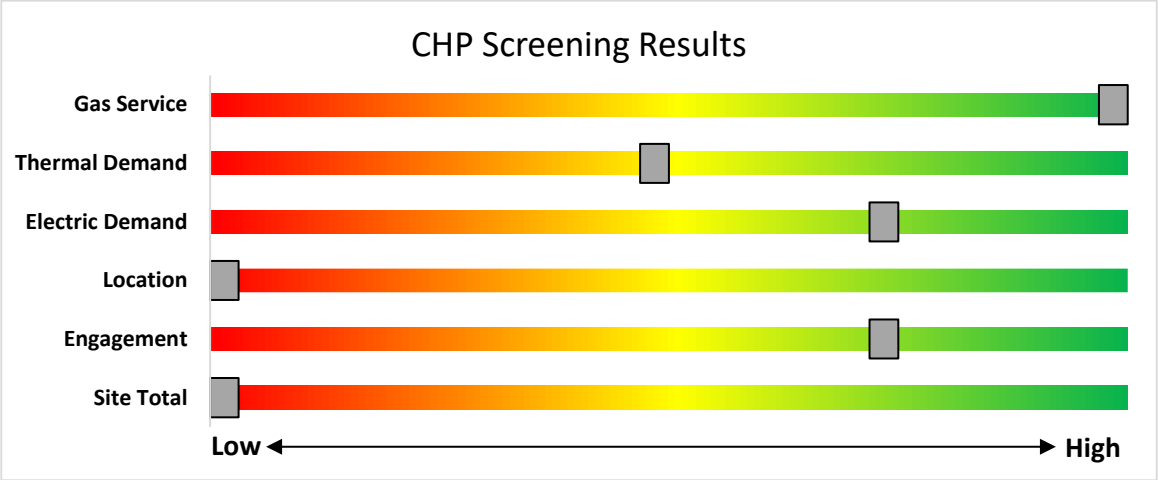



*Figure 9 - Combined Heat and Power Screening*

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/.

# 7 Electric Vehicles (EV)

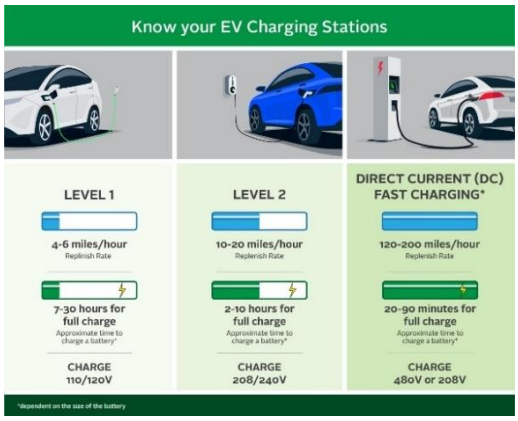
All electric vehicles (EVs) have an electric motor instead of an internal combustion engine. EVs function by plugging into a charge point, taking electricity from the grid, and then storing it in rechargeable batteries. Although electricity production may contribute to air pollution, the U.S. EPA categorizes 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.

## 7.1 Electric Vehicle 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 high 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 208-240V, 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.

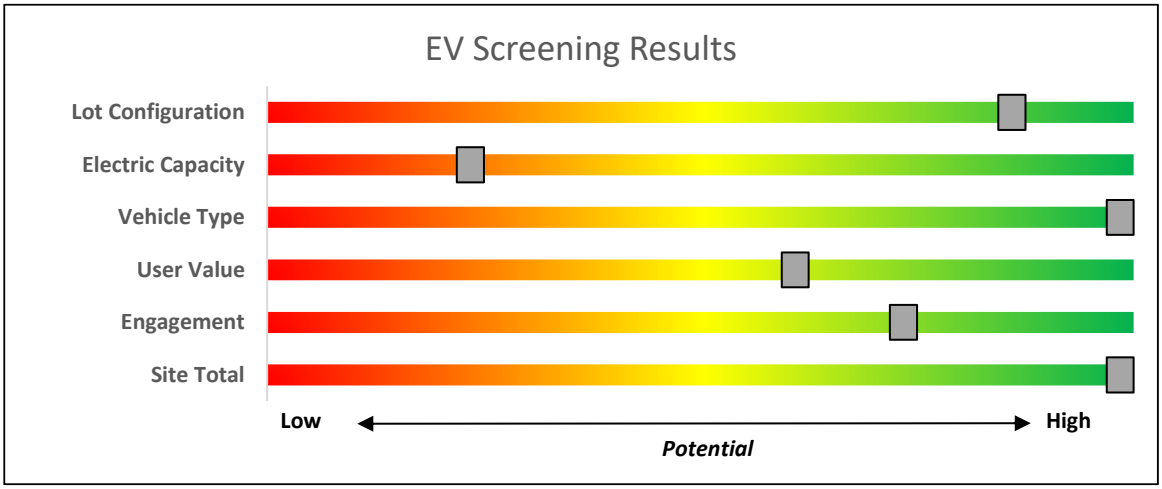



*Figure 10 – EV Charger Screening*

**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) or Public Service Electric & Gas Company (PSE&G), 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 or PSE&G, up to 90% of the combined charger purchase and installation costs. Please check ACE or PSE&G program eligibility requirements before purchasing EV charging equipment, as additional conditions on types of eligible chargers may apply for utility incentives.

Both Jersey Central Power & Light (JCP&L) and Rockland Electric (RECO) have filed proposals for EV charging programs. BPU staff is currently reviewing those proposals.

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.

# 8 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.


## 8.1 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.

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

## 8.2 New Jersey's Clean Energy Programs

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 that annually contribute at least $200,000 to the NJCEP aggregate of all buildings/sites. This equates to roughly $5 million in 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 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**

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

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

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

**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 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 Program**

The Competitive Solar Incentive (CSI) Program will provide competitively set incentives for grid supply projects and net metered non-residential projects greater than 5MW (dc). The program is currently under development. For updates, please continue to check the Solar Proceedings page on the New Jersey's Clean Energy Program website.

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 photovoltaics 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 into 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.*

# 9 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.

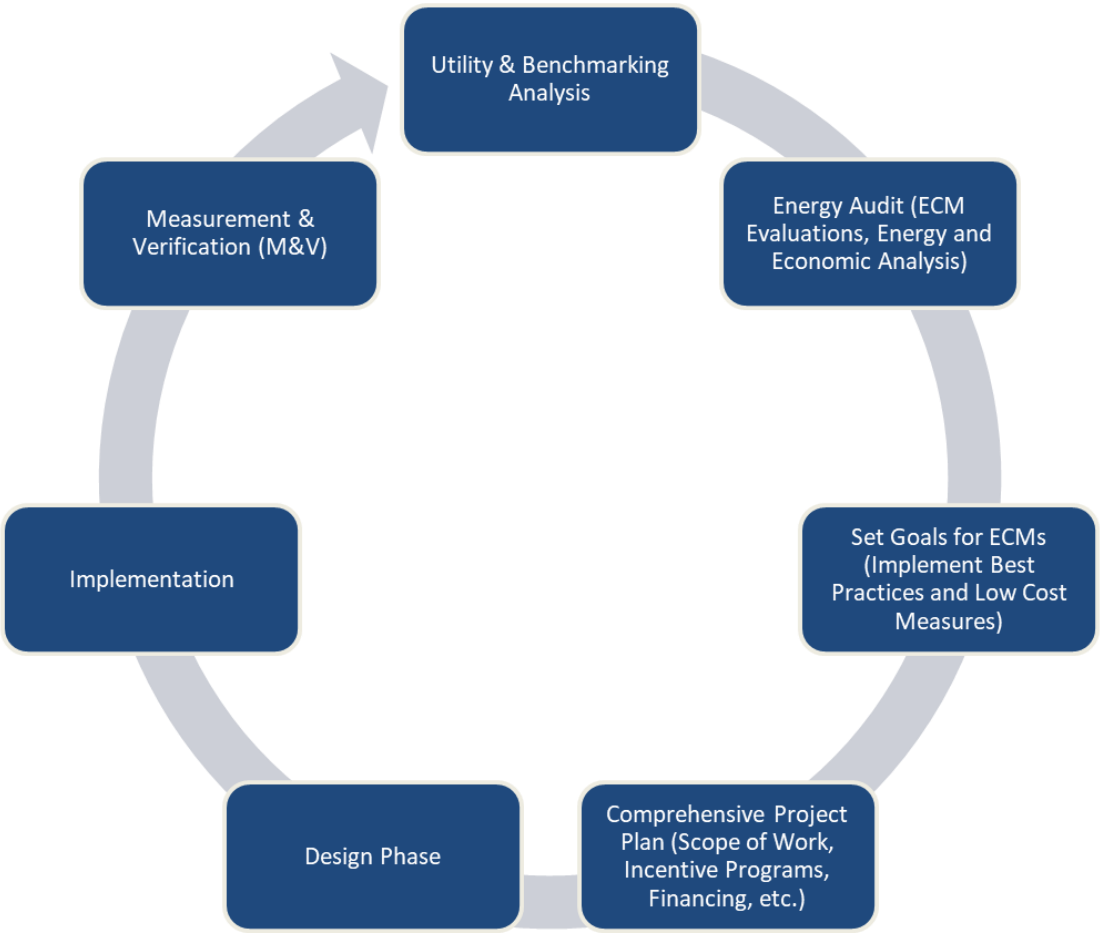


*Figure 11 – Project Development Cycle*

# 10 Energy Purchasing and Procurement Strategies

## 10.1 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[7].

## 10.2 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[8].

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

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

# APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

## Lighting Inventory & Recommendations

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Total Incentives | Simple Payback w/ Incentives in Years |
| Admissions - Cells - Main Building | 9 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 9 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.3 | 2,107 | 0 | $269 | $329 | $90 | 0.9 |
| Classroom A101 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.2 | 1,788 | 0 | $228 | $489 | $95 | 1.7 |
| Classroom D102 - Main Building | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 5 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.3 | 2,235 | 0 | $285 | $544 | $110 | 1.5 |
| Corridor - 1 - Main Building | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - 1 - Main Building | 10 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 10 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 425 | 0 | $54 | $450 | $350 | 1.8 |
| Corridor - 2 - Main Building | 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 - 2 - Main Building | 10 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 10 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 425 | 0 | $54 | $450 | $350 | 1.8 |
| Corridor - 3 - Main Building | 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 - 3 - Main Building | 19 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 19 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 808 | 0 | $103 | $900 | $665 | 2.3 |
| Corridor - 4 - Main Building | 10 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 10 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 425 | 0 | $54 | $450 | $350 | 1.8 |
| Corridor - 5 - Main Building | 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 - 5 - Main Building | 10 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 10 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 425 | 0 | $54 | $450 | $350 | 1.8 |
| Corridor - 6 - Main Building | 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 - 6 - Main Building | 19 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 19 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 808 | 0 | $103 | $900 | $665 | 2.3 |
| Corridor - Center Control Sallyport - Main Building | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Center Control Sallyport - Main Building | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 8,760 | 3, 5 | Relamp | Yes | 3 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 624 | 0 | $80 | $280 | $120 | 2.0 |
| Corridor - Kitchen - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.1 | 1,589 | 0 | $202 | $371 | $180 | 0.9 |
| Corridor - Medical Right - Main Building | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 8,760 | 3, 5 | Relamp | Yes | 5 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 1,040 | 0 | $133 | $316 | $200 | 0.9 |
| Corridor - New Commitments - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Corridor - Visiting - Main Building | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Visiting - Main Building | 12 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 8,760 | 3, 5 | Relamp | Yes | 12 | LED - Linear Tubes: (2) 2' Lamps | High/Low Control | 17 | 6,044 | 0.2 | 2,415 | -1 | $308 | $840 | $492 | 1.1 |
| Corridor - Visiting - Main Building | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 3, 5 | Relamp | Yes | 10 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.4 | 3,973 | -1 | $506 | $815 | $450 | 0.7 |
| Corridor Transfer Station - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 416 | 0 | $53 | $262 | $80 | 3.4 |
| Corridor Transfer Station - Main Building | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 8,760 | 3, 5 | Relamp | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 6,044 | 0.7 | 7,151 | -2 | $911 | $1,107 | $600 | 0.6 |
| Corridor Visiting - Inmates - Main Building | 5 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 8,760 | 5 | None | Yes | 5 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.0 | 213 | 0 | $27 | $225 | $175 | 1.8 |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Total Incentives | Simple Payback w/ Incentives in Years |
| Corridor Visiting - Inmates - Main Building | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 8,760 | 5 | None | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.0 | 340 | 0 | $43 | $225 | $140 | 2.0 |
| Dry Storage - Kitchen - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $10 | 3.6 |
| Dry Storage - Kitchen - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $30 | 1.7 |
| Electrical Room - Main - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 1,005 | 0.2 | 396 | 0 | $50 | $489 | $95 | 7.8 |
| Electrical Room - Operations - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 1,456 | 0.0 | 88 | 0 | $11 | $73 | $20 | 4.7 |
| Electrical Room 0054 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 1,456 | 0.0 | 28 | 0 | $4 | $18 | $5 | 3.8 |
| Garage - Property Storage - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Garage - Property Storage - Main Building | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 5 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.3 | 2,235 | 0 | $285 | $544 | $110 | 1.5 |
| Gymnasium - Main Building | 4 | LED - Fixtures: High-Bay | Wall Switch | S | 150 | 6,570 | 4 | None | Yes | 4 | LED - Fixtures: High-Bay | Occupancy Sensor | 150 | 4,533 | 0.2 | 1,320 | 0 | $168 | $270 | $35 | 1.4 |
| Gymnasium - Main Building | 6 | Metal Halide: (1) 400W Lamp | Wall Switch | S | 458 | 6,570 | 1, 4 | Fixture Replacement | Yes | 6 | LED - Fixtures: High-Bay | Occupancy Sensor | 120 | 4,533 | 2.0 | 15,974 | -3 | $2,035 | $4,275 | $510 | 1.8 |
| Janitorial Hallway #1 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 1,456 | 0.0 | 25 | 0 | $3 | $33 | $6 | 8.3 |
| Janitorial Hallway #2 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 1,456 | 0.0 | 25 | 0 | $3 | $33 | $6 | 8.3 |
| Janitorial Hallway #3 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 1,456 | 0.0 | 25 | 0 | $3 | $33 | $6 | 8.3 |
| Janitorial Hallway #4 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 1,456 | 0.0 | 25 | 0 | $3 | $33 | $6 | 8.3 |
| Kitchen - Main Building | 24 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3, 4 | Relamp | Yes | 24 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 4,533 | 1.6 | 12,598 | -3 | $1,605 | $2,293 | $550 | 1.1 |
| Kitchen - Main Building | 5 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 5 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 4,533 | 0.2 | 1,392 | 0 | $177 | $632 | $85 | 3.1 |
| Lobby - Admissions - Main Building | 10 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 8,760 | 3, 5 | Relamp | Yes | 10 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 6,044 | 0.7 | 6,999 | -1 | $892 | $1,180 | $550 | 0.7 |
| Lobby - Medical Clinic - Main Building | 7 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 3, 5 | Relamp | Yes | 7 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.3 | 2,781 | -1 | $354 | $706 | $315 | 1.1 |
| Locker Room - Female - Main Building | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Locker Room - Female - Main Building | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Locker Room - Female - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Locker Room - Male - Main Building | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Locker Room - Male - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $30 | 3.1 |
| Locker Room - Male - Main Building | 7 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 7 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,086 | 0 | $266 | $526 | $105 | 1.6 |
| Lounge - Break Room Records - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.0 | 351 | 0 | $45 | $55 | $15 | 0.9 |

| | 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 |
| Lounge - Medical Unit Female - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.1 | 624 | 0 | $80 | $343 | $55 | 3.6 |
| Lounge - Medical Unit Male - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.1 | 624 | 0 | $80 | $343 | $55 | 3.6 |
| Lounge - Visiting Inmates Female - Main Building | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 894 | 0 | $114 | $380 | $65 | 2.8 |
| Lounge - Visiting Inmates Male - Main Building | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 894 | 0 | $114 | $380 | $65 | 2.8 |
| Main Lobby - Main Building | 2 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 2 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Main Lobby - Main Building | 10 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 8,760 | 3, 5 | Relamp | Yes | 10 | LED - Linear Tubes: (2) 2' Lamps | High/Low Control | 17 | 6,044 | 0.2 | 2,012 | 0 | $256 | $775 | $410 | 1.4 |
| Main Lobby - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 3, 5 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.3 | 3,178 | -1 | $405 | $742 | $360 | 0.9 |
| Mechanical - Boilers/Chillers - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 6 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.2 | 311 | 0 | $40 | $219 | $60 | 4.0 |
| Mechanical - Elevator #1 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 1,456 | 3 | Relamp | No | 2 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 1,456 | 0.0 | 55 | 0 | $7 | $37 | $10 | 3.8 |
| Medical Unit - Cells - Main Building | 8 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 8 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Office - Admissions - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Admissions Sergeant - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 4,533 | 0.3 | 2,100 | 0 | $268 | $562 | $115 | 1.7 |
| Office - Captain Operations - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Central Control - Main Building | 2 | Incandescent: (1) 25W PAR20 Screw-In Lamp | Wall Switch | S | 25 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED Lamps: PAR20 Lamps | Occupancy Sensor | 4 | 4,533 | 0.0 | 316 | 0 | $40 | $160 | $24 | 3.4 |
| Office - Chief of Staff - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Office - Kitchen #1 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.1 | 624 | 0 | $80 | $343 | $55 | 3.6 |
| Office - Kitchen #2 - Main Building | 4 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.1 | 604 | 0 | $77 | $400 | $59 | 4.4 |
| Office - Lt - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Office - Maintenance Operations - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Medical Clinic #1 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Office - Medical Clinic #2 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Office - Medical Clinic #3 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Office - Medical Clinic #4 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Office - Medical Clinic #5 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Office - Medical Clinic #6 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |

| | 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 - Medical Clinic Open - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.2 | 1,788 | 0 | $228 | $489 | $95 | 1.7 |
| Office - Medical Right - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Office - Medical Right - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $30 | 3.1 |
| Office - Mental Health - Main Building | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.2 | 1,341 | 0 | $171 | $434 | $80 | 2.1 |
| Office - Officers Pod #1 - Main Building | 3 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.1 | 453 | 0 | $58 | $368 | $53 | 5.5 |
| Office - Officers Pod #2 - Main Building | 3 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.1 | 453 | 0 | $58 | $368 | $53 | 5.5 |
| Office - Operations - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Office - Records Captain - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $30 | 3.1 |
| Office - Records Front - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Office - Records Front - Main Building | 9 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 9 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.5 | 4,022 | -1 | $513 | $763 | $170 | 1.2 |
| Office - Sergeant Operations - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Temp Center - Main Building | 2 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | 4 | None | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.0 | 128 | 0 | $16 | $116 | $20 | 5.9 |
| Office - Transfer Station - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 1,192 | 0 | $152 | $416 | $75 | 2.2 |
| Office - Video Court - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Visiting Video Court - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 6,570 | 0.0 | 397 | 0 | $51 | $73 | $20 | 1.0 |
| Office - Warden - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.3 | 2,681 | -1 | $342 | $599 | $125 | 1.4 |
| Office - Warden Secretary - Main Building | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.2 | 1,341 | 0 | $171 | $434 | $80 | 2.1 |
| Pod A - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod A - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod A - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod B - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod B - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod B - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod C - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod C - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Total Incentives | Simple Payback w/ Incentives in Years |
| Pod C - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod D - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod D - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod D - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod I - Cells - Main Building | 24 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 24 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod I - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod I - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Release Area Holding Tank - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $30 | 3.1 |
| Release Area Holding Tank - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.0 | 351 | 0 | $45 | $55 | $15 | 0.9 |
| Restroom - Admissions - Main Building | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Restroom - Central Control - Main Building | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | S | 17 | 6,570 | | None | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Restroom - Classroom #1 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Classroom #2 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Classroom #3 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Classroom #4 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Female 1st 0421 - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.2 | 1,788 | 0 | $228 | $489 | $95 | 1.7 |
| Restroom - Gym - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 124 | 0 | $16 | $18 | $5 | 0.8 |
| Restroom - Male 1st 0420 - Main Building | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 6 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.2 | 1,788 | 0 | $228 | $489 | $95 | 1.7 |
| Restroom - Officers Hallway #1 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Officers Hallway #2 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Officers Hallway #3 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Officers Hallway #4 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Records Female - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Restroom - Records Male - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Restroom - Shower 0401 - Main Building | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 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 - Transfer Station - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Visiting Inmates - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Restroom - Warden - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Restroom Kitchen - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #1 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #2 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #3 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #4 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #5 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #6 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #7 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Sally Port #8 - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Stairs #1 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Stairs #2 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Stairs #3 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Stairs #4 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Stairs #5 - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | | 32 | 8,760 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | High/Low Control | 15 | 6,044 | 0.1 | 832 | 0 | $106 | $298 | $160 | 1.3 |
| Storage - Kitchen Containers - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 1,192 | 0 | $152 | $416 | $40 | 2.5 |
| Storage - Mattress & Blankets - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.1 | 198 | 0 | $25 | $226 | $30 | 7.7 |
| Storage - Records Armory - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 1,456 | 0.0 | 28 | 0 | $4 | $18 | $5 | 3.8 |
| Storage - Transfer Station #1 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 1,456 | 0.0 | 78 | 0 | $10 | $55 | $15 | 4.0 |
| Storage - Transfer Station #2 - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 1,456 | 0.0 | 78 | 0 | $10 | $55 | $15 | 4.0 |
| Storage - Transfer Station #3 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.1 | 198 | 0 | $25 | $226 | $30 | 7.7 |
| Storage - Visiting - Main Building | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 1,456 | 0.0 | 88 | 0 | $11 | $73 | $20 | 4.7 |
| Storage Gym - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.1 | 198 | 0 | $25 | $226 | $30 | 7.7 |

| | 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 |
| Storage Gym Mezzanine - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.4 | 792 | 0 | $101 | $708 | $120 | 5.8 |
| Storage Gym Mezzanine - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 1,456 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 1,005 | 0.3 | 465 | 0 | $59 | $562 | $80 | 8.1 |
| Storage Kitchen - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.1 | 198 | 0 | $25 | $226 | $30 | 7.7 |
| Transfer Station - Cells - Main Building | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 12 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.5 | 4,215 | -1 | $537 | $657 | $180 | 0.9 |
| Vestibule - Transfer Station - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.1 | 795 | 0 | $101 | $298 | $90 | 2.1 |
| Office - Classifications #1 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Office - Classifications #2 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Office - Classifications #3 - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.0 | 312 | 0 | $40 | $153 | $30 | 3.1 |
| Office - Classifications Front - Main Building | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 1L | Wall Switch | S | 22 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 2' Lamp | Wall Switch | 9 | 6,570 | 0.0 | 96 | 0 | $12 | $16 | $3 | 1.1 |
| Office - Classifications Front - Main Building | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 4,533 | 0.1 | 624 | 0 | $80 | $343 | $55 | 3.6 |
| Office - Classifications Open - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Office - Officers Pod #3 - Main Building | 3 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.1 | 453 | 0 | $58 | $368 | $53 | 5.5 |
| Office - Officers Pod #4 - Main Building | 3 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.1 | 453 | 0 | $58 | $368 | $53 | 5.5 |
| Pod E - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod E - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod E - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod F - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod F - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod F - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod G - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod G - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod G - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |
| Pod H - Cells - Main Building | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | S | 15 | 6,570 | | None | No | 32 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Pod H - Common Area - Main Building | 4 | High-Pressure Sodium: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: Wall Sconces | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $1,176 | $35 | 1.3 |
| Pod H - Common Area - Main Building | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.3 | 2,384 | -1 | $304 | $562 | $115 | 1.5 |

| Location | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 |
| Storage Padlocks - Main Building | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (1) 4' Lamp | Occupancy Sensor | 15 | 1,005 | 0.0 | 69 | 0 | $9 | $153 | $10 | 16.2 |
| Exterior - Yard - Main Building | 16 | High-Pressure Sodium: (1) 400W Lamp | Photocell | | 465 | 4,380 | 1 | Fixture Replacement | No | 16 | LED - Fixtures: Outdoor Wall-Mounted Area Fixture | Photocell | 120 | 4,380 | 0.0 | 24,178 | 0 | $3,137 | $8,872 | $800 | 2.6 |
| Exterior - Yard - Main Building | 10 | LED - Fixtures: Wall Pack | Photocell | | 40 | 4,380 | | None | No | 10 | LED - Fixtures: Wall Pack | Photocell | 40 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Main Building | 2 | LED Lamps: (1) 12W A19 Screw-In Lamp | Photocell | | 12 | 4,380 | | None | No | 2 | LED Lamps: (1) 12W A19 Screw-In Lamp | Photocell | 12 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Main Building | 4 | LED - Fixtures: Ceiling Mount | Photocell | | 20 | 4,380 | | None | No | 4 | LED - Fixtures: Ceiling Mount | Photocell | 20 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Main Building | 4 | LED - Fixtures: Wall Pack | Photocell | | 40 | 4,380 | | None | No | 4 | LED - Fixtures: Wall Pack | Photocell | 40 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Classroom - Training - Annex | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.4 | 3,575 | -1 | $456 | $708 | $155 | 1.2 |
| Conference - Interrogation Room - Annex | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | 17 | 6,570 | 0.0 | 114 | 0 | $14 | $33 | $6 | 1.8 |
| Conference - Investigations - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Conference - Training Unit - Annex | 7 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 7 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.4 | 3,128 | -1 | $399 | $653 | $140 | 1.3 |
| Corridor - Bravo 1 - Annex | 8 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 8,760 | 3, 5 | Relamp | Yes | 8 | LED - Linear Tubes: (2) 2' Lamps | High/Low Control | 17 | 6,044 | 0.2 | 1,610 | 0 | $205 | $710 | $328 | 1.9 |
| Corridor - Bravo 1 - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 8,760 | 3, 5 | Relamp | Yes | 1 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 6,044 | 0.1 | 596 | 0 | $76 | $55 | $15 | 0.5 |
| Corridor - Contact Visiting - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 8,760 | 3, 5 | Relamp | Yes | 1 | LED Lamps: GX23 (Plug-In) Lamps | High/Low Control | 37 | 6,044 | 0.0 | 250 | 0 | $32 | $25 | $2 | 0.7 |
| Corridor - Contact Visiting - Annex | 13 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 8,760 | 3, 5 | Relamp | Yes | 13 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 6,044 | 0.7 | 7,747 | -2 | $987 | $1,387 | $650 | 0.7 |
| Corridor - Medical Clinic - Annex | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Medical Clinic - Annex | 6 | LED - Linear Tubes: (1) 2' Lamp | Wall Switch | S | 9 | 8,760 | 5 | None | Yes | 6 | LED - Linear Tubes: (1) 2' Lamp | High/Low Control | 9 | 6,044 | 0.0 | 150 | 0 | $19 | $225 | $210 | 0.8 |
| Janitor - Bravo 1 - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 1,456 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 1,456 | 0.0 | 24 | 0 | $3 | $25 | $2 | 7.7 |
| Kitchen - Laundry - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.0 | 351 | 0 | $45 | $55 | $15 | 0.9 |
| Kitchen - Staff Dining Room - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Kitchen - Training Unit - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 234 | 0 | $30 | $37 | $10 | 0.9 |
| Laundry Room - Annex | 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 |
| Laundry Room - Annex | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 14 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.8 | 6,257 | -1 | $797 | $1,037 | $245 | 1.0 |
| Lobby - Day Reporting - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 8,760 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 8,760 | 0.0 | 166 | 0 | $21 | $18 | $5 | 0.6 |
| Lobby - Medical Clinic - Annex | 6 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 8,760 | 3, 5 | Relamp | Yes | 6 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 6,044 | 0.3 | 3,575 | -1 | $456 | $554 | $300 | 0.6 |
| Lounge - Common Area - Annex | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.7 | 5,363 | -1 | $683 | $927 | $215 | 1.0 |

| | 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 |
| Main Lobby - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | High/Low Control | 44 | 6,044 | 0.1 | 1,192 | 0 | $152 | $335 | $100 | 1.5 |
| Mechanical - DHW - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.0 | 52 | 0 | $7 | $37 | $10 | 4.0 |
| Mechanical - DHW Boilers - Annex | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 3 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.1 | 156 | 0 | $20 | $110 | $30 | 4.0 |
| Mechanical - Heating Boilers - Annex | 14 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 14 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.4 | 726 | 0 | $93 | $511 | $140 | 4.0 |
| Office - 0756 - Annex | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Office - 0767 John Brooks - Annex | 11 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 11 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.4 | 3,277 | -1 | $418 | $672 | $145 | 1.3 |
| Office - 0770 John Brooks - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Office - Bravo 1 - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.0 | 351 | 0 | $45 | $55 | $15 | 0.9 |
| Office - Counselor - Annex | 2 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | 4 | None | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.0 | 128 | 0 | $16 | $116 | $20 | 5.9 |
| Office - Day Reporting - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 0.0 | 351 | 0 | $45 | $55 | $15 | 0.9 |
| Office - Deputy Warden - Annex | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.2 | 1,341 | 0 | $171 | $434 | $80 | 2.1 |
| Office - Exam Room - Annex | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | 4 | None | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.0 | 255 | 0 | $33 | $270 | $35 | 7.2 |
| Office - Fortis - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Office - HEDS DRP Supervisor 0757 - Annex | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Office - Home Electronic 0755 - Annex | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Office - Investigations #1 - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Office - Investigations #2 - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Office - Medicine Distribution Station - Annex | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | | None | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 6,570 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Office - Training Unit - Annex | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.2 | 1,788 | 0 | $228 | $489 | $95 | 1.7 |
| Restroom - Bravo 1 #1 - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 6,570 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 6,570 | 0.0 | 106 | 0 | $14 | $25 | $2 | 1.7 |
| Restroom - Bravo 1 #2 - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 6,570 | 0.0 | 124 | 0 | $16 | $18 | $5 | 0.8 |
| Restroom - Female 1st Public - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Restroom - Male 1st Public - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.1 | 894 | 0 | $114 | $226 | $50 | 1.5 |
| Restroom - Medicine Clinic - Annex | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | 4 | None | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.0 | 255 | 0 | $33 | $270 | $35 | 7.2 |
| Restroom - Medicine Clinic - Annex | 2 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | S | 17 | 6,570 | 4 | None | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 75 | 0 | $10 | $116 | $20 | 10.1 |

| | 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 - Training Class - Annex | 2 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED Lamps: GX23 (Plug-In) Lamps | Occupancy Sensor | 37 | 4,533 | 0.0 | 376 | 0 | $48 | $166 | $24 | 3.0 |
| Restroom - Training Class - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 596 | 0 | $76 | $189 | $40 | 2.0 |
| Restroom - Training Unit Office - Annex | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Staff Dining Room - Annex | 8 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 8 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 0.4 | 3,575 | -1 | $456 | $708 | $155 | 1.2 |
| Stairs 1 - Annex | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Stairs 1 - Annex | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 8,760 | 3, 5 | Relamp | Yes | 5 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.2 | 1,986 | 0 | $253 | $408 | $225 | 0.7 |
| Stairs 2 - Annex | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Stairs 2 - Annex | 5 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 8,760 | 3, 5 | Relamp | Yes | 5 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.2 | 1,986 | 0 | $253 | $408 | $225 | 0.7 |
| Stairs 3 - Annex | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Stairs 3 - Annex | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.1 | 795 | 0 | $101 | $298 | $90 | 2.1 |
| Storage - Evidence - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 1,456 | 0.0 | 78 | 0 | $10 | $55 | $15 | 4.0 |
| Storage - Training Unit - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.0 | 52 | 0 | $7 | $37 | $10 | 4.0 |
| Storage 0751 Armory - Annex | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.0 | 52 | 0 | $7 | $37 | $10 | 4.0 |
| AXB Dorm - Annex | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| AXB Dorm - Annex | 31 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 31 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 1.4 | 10,888 | -2 | $1,387 | $1,698 | $465 | 0.9 |
| AXC Dorm - Annex | 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 |
| AXC Dorm - Annex | 1 | Linear Fluorescent - T8: 2' T8 (17W) - 1L | Wall Switch | S | 22 | 6,570 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 2' Lamp | Wall Switch | 9 | 6,570 | 0.0 | 96 | 0 | $12 | $16 | $3 | 1.1 |
| AXC Dorm - Annex | 32 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 32 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 1.4 | 11,239 | -2 | $1,432 | $1,753 | $480 | 0.9 |
| Lounge - AXC - Annex | 19 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 19 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 1.1 | 8,491 | -2 | $1,082 | $1,581 | $355 | 1.1 |
| Janitorial Closet - AXB Dorm #1 - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 1,456 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 1,456 | 0.0 | 24 | 0 | $3 | $25 | $2 | 7.7 |
| Janitorial Closet - AXB Dorm #2 - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 1,456 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 1,456 | 0.0 | 24 | 0 | $3 | $25 | $2 | 7.7 |
| Restroom - AXB Dorm - Annex | 9 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | S | 29 | 6,570 | 4 | None | Yes | 9 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.1 | 574 | 0 | $73 | $270 | $35 | 3.2 |
| Restroom - AXB Dorm - Annex | 4 | LED - Linear Tubes: (2) 2' Lamps | Wall Switch | S | 17 | 6,570 | 4 | None | Yes | 4 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 150 | 0 | $19 | $270 | $35 | 12.3 |
| Restroom - AXC Dorm - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 6,570 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 6,570 | 0.0 | 106 | 0 | $14 | $25 | $2 | 1.7 |
| Restroom - AXC Dorm - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 6,570 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 6,570 | 0.0 | 106 | 0 | $14 | $25 | $2 | 1.7 |

| | 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 - AXC Dorm - Annex | 2 | Linear Fluorescent - T8: 2' T8 (17W) - 2L | Wall Switch | S | 33 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 2' Lamps | Occupancy Sensor | 17 | 4,533 | 0.0 | 302 | 0 | $38 | $181 | $32 | 3.9 |
| Restroom - AXC Dorm - Annex | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.4 | 3,575 | -1 | $456 | $708 | $155 | 1.2 |
| Storage - AXB Dorm - Annex | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 1,456 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 1,005 | 0.2 | 297 | 0 | $38 | $434 | $45 | 10.3 |
| AXD Dorm - Annex | 1 | Compact Fluorescent: (2) 26W Double Biaxial Plug-In Lamps | Wall Switch | S | 52 | 6,570 | 3 | Relamp | No | 1 | LED Lamps: GX23 (Plug-In) Lamps | Wall Switch | 37 | 6,570 | 0.0 | 106 | 0 | $14 | $25 | $2 | 1.7 |
| AXD Dorm - Annex | 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 |
| AXD Dorm - Annex | 32 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3 | Relamp | No | 32 | LED - Linear Tubes: (3) 4' Lamps | Wall Switch | 44 | 6,570 | 1.4 | 11,239 | -2 | $1,432 | $1,753 | $480 | 0.9 |
| Lounge - AXD - Annex | 19 | Linear Fluorescent - T8: 4' T8 (32W) - 3L | Wall Switch | S | 93 | 6,570 | 3, 4 | Relamp | Yes | 19 | LED - Linear Tubes: (3) 4' Lamps | Occupancy Sensor | 44 | 4,533 | 1.1 | 8,491 | -2 | $1,082 | $1,581 | $355 | 1.1 |
| Restroom - AXD Dorm - Annex | 4 | LED - Fixtures: Ambient 2x2 Fixture | Wall Switch | S | 40 | 6,570 | 4 | None | Yes | 4 | LED - Fixtures: Ambient 2x2 Fixture | Occupancy Sensor | 40 | 4,533 | 0.0 | 352 | 0 | $45 | $270 | $35 | 5.2 |
| Restroom - AXD Dorm - Annex | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 0.4 | 3,575 | -1 | $456 | $708 | $155 | 1.2 |
| Exterior Lighting - Annex | 3 | LED - Fixtures: Wall Pack | Photocell | | 150 | 4,380 | | None | No | 3 | LED - Fixtures: Wall Pack | Photocell | 150 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Annex | 3 | LED - Fixtures: Wall Pack | Photocell | | 40 | 4,380 | | None | No | 3 | LED - Fixtures: Wall Pack | Photocell | 40 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Prosecutors 1st - Prosecutors | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Prosecutors 1st - Prosecutors | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 6,044 | 0.1 | 1,400 | 0 | $178 | $371 | $110 | 1.5 |
| Electrical Phone Room - Prosecutors | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 1L | Wall Switch | S | 32 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (1) 4' Lamp | Wall Switch | 15 | 1,456 | 0.0 | 28 | 0 | $4 | $18 | $5 | 3.8 |
| Garage - Maintenance Shop - Prosecutors | 9 | Metal Halide: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 9 | LED - Fixtures: High-Bay | Occupancy Sensor | 75 | 4,533 | 1.9 | 15,534 | -3 | $1,979 | $6,526 | $765 | 2.9 |
| Garage - Records Storage - Prosecutors | 53 | Metal Halide: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 53 | LED - Fixtures: High-Bay | Occupancy Sensor | 75 | 4,533 | 11.4 | 91,478 | -19 | $11,656 | $38,431 | $4,505 | 2.9 |
| Mechanical - Elevator - Prosecutors | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.0 | 52 | 0 | $7 | $37 | $10 | 4.0 |
| Office - Mail Room - Prosecutors | 4 | Metal Halide: (1) 250W Lamp | Wall Switch | S | 295 | 6,570 | 1, 4 | Fixture Replacement | Yes | 4 | LED - Fixtures: High-Bay | Occupancy Sensor | 75 | 4,533 | 0.9 | 6,904 | -1 | $880 | $2,900 | $340 | 2.9 |
| Office - Records Center - Prosecutors | 4 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 4,533 | 0.1 | 1,113 | 0 | $142 | $560 | $75 | 3.4 |
| Restroom - Records Center - Prosecutors | 2 | U-Bend Fluorescent - T8: U T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) U-Lamp | Occupancy Sensor | 33 | 4,533 | 0.1 | 557 | 0 | $71 | $261 | $40 | 3.1 |
| Stairs - Prosecutors - Prosecutors | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Stairs - Prosecutors - Prosecutors | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 8,760 | 3, 5 | Relamp | Yes | 3 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.1 | 1,192 | 0 | $152 | $335 | $135 | 1.3 |
| Stairs - Records - Prosecutors | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | | 62 | 8,760 | 3, 5 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 6,044 | 0.1 | 795 | 0 | $101 | $298 | $90 | 2.1 |
| Storage - 2nd Floor Prosecutors - Prosecutors | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 1,456 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 1,005 | 0.8 | 1,396 | 0 | $178 | $1,146 | $240 | 5.1 |
| Storage - Basement - Prosecutors | 48 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 6,570 | 3, 4 | Relamp | Yes | 48 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 4,533 | 1.8 | 14,301 | -3 | $1,822 | $2,833 | $480 | 1.3 |

| | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Fixture Quantity | Fixture Description | Control System | Light Level | Watts per Fixture | Annual Operating Hours | ECM # | Fixture Recommendation | Add Controls? | Fixture Quantity | Fixture Description | Control System | Watts per Fixture | Annual Operating Hours | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Total Incentives | Simple Payback w/ Incentives in Years |
| Storage - New Evidence - Prosecutors | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 6,570 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 4,533 | 0.8 | 6,299 | -1 | $803 | $1,146 | $240 | 1.1 |
| Storage - Old Evidence - Prosecutors | 6 | Metal Halide: (1) 400W Lamp | Wall Switch | S | 458 | 1,456 | 1, 4 | Fixture Replacement | Yes | 6 | LED - Fixtures: High-Bay | Occupancy Sensor | 120 | 1,005 | 2.0 | 3,540 | -1 | $451 | $4,275 | $300 | 8.8 |
| Storage - Vented Room #2 - Prosecutors | 2 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3, 4 | Relamp | Yes | 2 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 1,005 | 0.1 | 132 | 0 | $17 | $189 | $20 | 10.0 |
| Storage - Weapons Room - Prosecutors | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 1,456 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 1,005 | 0.1 | 264 | 0 | $34 | $416 | $40 | 11.2 |
| Corridor - Prosecutors 2nd - Prosecutors | 1 | Exit Signs: LED - 2 W Lamp | None | | 6 | 8,760 | | None | No | 1 | Exit Signs: LED - 2 W Lamp | None | 6 | 8,760 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor - Prosecutors 2nd - Prosecutors | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 8,760 | 3 | Relamp | No | 1 | LED - Linear Tubes: (4) 4' Lamps | Wall Switch | 58 | 8,760 | 0.0 | 530 | 0 | $68 | $73 | $20 | 0.8 |
| Exterior Lighting - Prosecutors | 2 | LED - Fixtures: Wall Pack | Timeclock | | 150 | 4,380 | | None | No | 2 | LED - Fixtures: Wall Pack | Timeclock | 150 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Prosecutors | 2 | LED - Fixtures: Wall Pack | Timeclock | | 20 | 4,380 | | None | No | 2 | LED - Fixtures: Wall Pack | Timeclock | 20 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior Lighting - Prosecutors | 12 | LED - Fixtures: Wall Pack | Timeclock | | 40 | 4,380 | | None | No | 12 | LED - Fixtures: Wall Pack | Timeclock | 40 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Corridor Fiscal - Trailers | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3, 5 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | High/Low Control | 29 | 2,153 | 0.1 | 566 | 0 | $72 | $371 | $180 | 2.6 |
| Corridor Fiscal - Trailers | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 3,120 | 3, 5 | Relamp | Yes | 1 | LED - Linear Tubes: (4) 4' Lamps | High/Low Control | 58 | 2,153 | 0.1 | 249 | 0 | $32 | $73 | $20 | 1.7 |
| Kitchen Fiscal - Trailers | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 3,120 | 0.0 | 111 | 0 | $14 | $37 | $10 | 1.9 |
| Office - Captain Fiscal - Trailers | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 2,153 | 0.1 | 566 | 0 | $72 | $416 | $75 | 4.7 |
| Office - Fiscal - Trailers | 15 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3, 4 | Relamp | Yes | 15 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 2,153 | 0.6 | 2,122 | 0 | $270 | $818 | $185 | 2.3 |
| Office - Fiscal Supervisor - Trailers | 4 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3, 4 | Relamp | Yes | 4 | LED - Linear Tubes: (2) 4' Lamps | Occupancy Sensor | 29 | 2,153 | 0.1 | 566 | 0 | $72 | $416 | $75 | 4.7 |
| Office - Inmate Services - Trailers | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 3,120 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 2,153 | 0.8 | 2,991 | -1 | $381 | $1,146 | $275 | 2.3 |
| Office - JFS - Trailers | 12 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 3,120 | 3, 4 | Relamp | Yes | 12 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 2,153 | 0.8 | 2,991 | -1 | $381 | $1,146 | $275 | 2.3 |
| Office - JFS Supervisor - Trailers | 3 | Linear Fluorescent - T8: 4' T8 (32W) - 4L | Wall Switch | S | 114 | 3,120 | 3, 4 | Relamp | Yes | 3 | LED - Linear Tubes: (4) 4' Lamps | Occupancy Sensor | 58 | 2,153 | 0.2 | 748 | 0 | $95 | $489 | $95 | 4.1 |
| Restroom - Kitchen Fiscal - Trailers | 1 | Linear Fluorescent - T8: 4' T8 (32W) - 2L | Wall Switch | S | 62 | 3,120 | 3 | Relamp | No | 1 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 3,120 | 0.0 | 111 | 0 | $14 | $37 | $10 | 1.9 |
| Exterior Lighting - Trailers | 1 | LED - Fixtures: Wall Pack | Photocell | | 40 | 4,380 | | None | No | 1 | LED - Fixtures: Wall Pack | Photocell | 40 | 4,380 | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Pump House | 4 | Linear Fluorescent - T12: 4' T12 (40W) - 2L | Wall Switch | S | 88 | 1,456 | 2 | Relamp & Reballast | No | 4 | LED - Linear Tubes: (2) 4' Lamps | Wall Switch | 29 | 1,456 | 0.2 | 371 | 0 | $47 | $275 | $40 | 5.0 |
| Exterior Lighting - Pump House | 1 | LED - Fixtures: Wall Pack | Photocell | | 40 | 4,380 | | None | No | 1 | LED - Fixtures: Wall Pack | Photocell | 40 | 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 |
| Mechanical - Boilers/Chillers - Main Building | Cooling System - Main Building | 2 | Chilled Water Pump | 20.0 | 89.5% | No | US Motors | | B | 3,391 | 9 | No | 93.0% | Yes | 2 | 8.0 | 45,269 | 0 | $5,874 | $24,590 | $2,600 | 3.7 |
| Exterior - Main Building | Cooling System - Main Building | 2 | Condenser Water Pump | 20.0 | 93.0% | No | Baldor / Marathon | | B | 3,391 | 9 | No | 93.0% | Yes | 2 | 7.4 | 40,801 | 0 | $5,294 | $24,590 | $2,600 | 4.2 |
| Roof - Main Building | Exhaust System - Main Building | 4 | Exhaust Fan | 0.8 | 78.0% | No | | | B | 6,570 | | No | 78.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Exhaust System - Main Building | 2 | Exhaust Fan | 0.5 | 75.0% | No | | | B | 6,570 | | No | 75.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Exhaust System - Main Building | 9 | Exhaust Fan | 0.3 | 62.5% | No | | | B | 6,570 | | No | 62.5% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Exhaust System - Main Building | 5 | Exhaust Fan | 0.3 | 62.5% | No | | | B | 6,570 | | No | 62.5% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Boilers/Chillers - Main Building | Heating System - Main Building | 2 | Heating Hot Water Pump | 5.0 | 89.5% | No | Marathon | | W | 3,391 | 10 | No | 89.5% | Yes | 2 | 1.0 | 10,599 | 0 | $1,375 | $10,055 | $1,800 | 6.0 |
| Mechanical - DHW Boilers - Main Building | Domestic Hot Water - Main Building | 1 | DHW Circulation Pump | 0.8 | 70.0% | No | Leeson | | B | 8,760 | 6 | Yes | 81.1% | No | | 0.1 | 719 | 0 | $93 | $515 | $0 | 5.5 |
| Mechanical - DHW Boilers - Main Building | Domestic Hot Water - Main Building | 1 | DHW Circulation Pump | 0.3 | 73.4% | No | Bell & Gossett | | N | 8,760 | | No | 73.4% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Elevator #1 - Main Building | Elevator | 1 | Other | 25.0 | 91.7% | No | United Elevator Co. | | W | 400 | | No | 91.7% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior - Main Building | Gate Motors | 2 | Other | 0.5 | 75.0% | No | Haight | | W | 400 | | No | 75.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Main Electrical Room - Main Building | Generator Pumps | 3 | Process Pump | 0.3 | 62.0% | No | | | B | 400 | | No | 62.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Boilers/Chillers - Main Building | Water Treatment Pumps | 2 | Process Pump | 0.1 | 60.0% | No | | | W | 2,745 | | No | 60.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | AHU-1 - Lobby / Operations | 1 | Supply Fan | 2.0 | 84.0% | No | | | B | 6,570 | 8 | No | 86.5% | Yes | 1 | 0.6 | 4,294 | 0 | $557 | $4,182 | $100 | 7.3 |
| Roof - Main Building | AHU-2 - Administration | 1 | Supply Fan | 2.0 | 84.0% | No | | | B | 6,570 | 8 | No | 86.5% | Yes | 1 | 0.6 | 4,294 | 0 | $557 | $4,182 | $100 | 7.3 |
| Roof - Main Building | AHU-3 - Admissions | 1 | Supply Fan | 3.0 | 86.5% | No | | | B | 6,570 | 8 | No | 89.5% | Yes | 1 | 0.9 | 6,484 | 0 | $841 | $4,555 | $200 | 5.2 |
| Roof - Main Building | AHU-4 - Pod I | 1 | Supply Fan | 5.0 | 87.5% | No | | | B | 6,570 | 8 | No | 89.5% | Yes | 1 | 1.5 | 10,587 | 0 | $1,374 | $5,028 | $900 | 3.0 |
| Roof - Main Building | AHU-5 - Pods A & E | 1 | Supply Fan | 15.0 | 91.0% | No | | | B | 6,570 | 8 | No | 93.0% | Yes | 1 | 4.4 | 31,469 | 0 | $4,083 | $9,177 | $1,200 | 2.0 |
| Roof - Main Building | AHU-6 - Pods B & F | 1 | Supply Fan | 15.0 | 91.0% | No | | | B | 6,570 | 8 | No | 93.0% | Yes | 1 | 4.4 | 31,469 | 0 | $4,083 | $9,177 | $1,200 | 2.0 |
| Roof - Main Building | AHU-7 - Pods C & G | 1 | Supply Fan | 15.0 | 91.0% | No | | | B | 6,570 | 8 | No | 93.0% | Yes | 1 | 4.4 | 31,469 | 0 | $4,083 | $9,177 | $1,200 | 2.0 |

| | | 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 |
| Roof - Main Building | AHU-8 - Pods D & H | 1 | Supply Fan | 15.0 | 91.0% | No | | | B | 6,570 | 8 | No | 93.0% | Yes | 1 | 4.4 | 31,469 | 0 | $4,083 | $9,177 | $1,200 | 2.0 |
| Roof - Main Building | AHU-11 - Medical Clinic | 1 | Supply Fan | 2.0 | 84.0% | No | | | B | 6,570 | 8 | No | 86.5% | Yes | 1 | 0.6 | 4,294 | 0 | $557 | $4,182 | $100 | 7.3 |
| Roof - Main Building | AC-3 - Kitchen MAU | 1 | Supply Fan | 3.0 | 86.5% | No | | | B | 6,570 | 8 | No | 89.5% | Yes | 1 | 0.9 | 6,484 | 0 | $841 | $4,555 | $200 | 5.2 |
| Exterior - Main Building | Cooling System - Main Building | 2 | Cooling Tower Fan | 15.0 | 91.0% | No | | | W | 3,391 | 11 | No | 93.0% | Yes | 2 | -0.5 | 9,911 | 0 | $1,286 | $18,354 | $2,400 | 12.4 |
| Roof - Main Building | Kitchen Exhaust Units - Main Building | 2 | Supply Fan | 2.0 | 84.0% | No | | | B | 6,570 | 8 | No | 86.5% | Yes | 2 | 1.2 | 8,678 | 0 | $1,126 | $8,363 | $200 | 7.2 |
| Roof - Main Building | Kitchen Exhaust Units - Main Building | 2 | Kitchen Hood Exhaust Fan | 2.0 | 84.0% | No | | | B | 5,250 | 12 | No | 86.5% | Yes | 2 | 0.1 | 10,646 | 30 | $1,710 | $8,363 | $200 | 4.8 |
| Roof - Main Building | RTU - Prisoner Transfer Station | 1 | Supply Fan | 1.0 | 82.5% | No | | | W | 6,570 | 8 | No | 85.5% | Yes | 1 | 0.3 | 2,174 | 0 | $282 | $3,508 | $75 | 12.2 |
| Main Building | Main Building | 1 | Supply Fan | 0.3 | 62.5% | No | | | B | 6,570 | 6 | Yes | 69.5% | No | | 0.0 | 148 | 0 | $19 | $448 | $0 | 23.3 |
| Main Building | Main Building | 1 | Supply Fan | 0.3 | 62.5% | No | | | B | 6,570 | 6 | Yes | 69.5% | No | | 0.0 | 148 | 0 | $19 | $448 | $0 | 23.3 |
| Pods C & G - Offices - Main Building | Pods C & G - Offices | 2 | Supply Fan | 0.3 | 62.5% | No | | | B | 6,570 | 6 | Yes | 69.5% | No | | 0.0 | 296 | 0 | $38 | $897 | $0 | 23.3 |
| Pods C & G - Offices - Main Building | Pods D & H - Offices | 1 | Supply Fan | 0.3 | 62.5% | No | | | B | 6,570 | 6 | Yes | 69.5% | No | | 0.0 | 148 | 0 | $19 | $448 | $0 | 23.3 |
| Pods C & G - Offices - Main Building | Unit Heaters | 3 | Supply Fan | 0.1 | 60.0% | No | | | B | 6,570 | | No | 60.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Heating Boilers - Annex | Chilled Water System - Annex | 2 | Chilled Water Pump | 5.0 | 84.0% | No | GE | | B | 3,391 | 9 | No | 89.5% | Yes | 2 | 2.1 | 12,542 | 0 | $1,628 | $10,055 | $1,800 | 5.1 |
| Roof - Annex | Exhaust System - Annex | 5 | Exhaust Fan | 0.3 | 62.5% | No | | | W | 6,570 | | No | 62.5% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW - Annex | Domestic Hot Water - Annex | 1 | DHW Circulation Pump | 0.1 | 60.0% | No | | | W | 8,760 | | No | 60.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW Boilers - Annex | Domestic Hot Water - Annex | 3 | DHW Circulation Pump | 0.4 | 65.0% | No | Armstrong | | W | 8,760 | | No | 65.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Heating Boilers - Annex | Heating System - Annex | 2 | Heating Hot Water Pump | 5.0 | 84.0% | No | GE | | B | 3,391 | 10 | No | 89.5% | Yes | 2 | 1.2 | 12,542 | 0 | $1,628 | $10,055 | $1,800 | 5.1 |
| Roof - Annex | Kitchen Exhaust Units - Annex | 1 | Kitchen Hood Exhaust Fan | 0.5 | 75.0% | No | Emerson | | W | 5,250 | 12 | No | 78.2% | Yes | 1 | 0.0 | 1,748 | 15 | $391 | $3,136 | $50 | 7.9 |
| Mechanical - Elevator - Annex | Elevator - Annex | 1 | Other | 25.0 | 91.7% | No | | | W | 400 | | No | 91.7% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW Boilers - Annex | Mechanical - DHW Boilers - Annex | 1 | Exhaust Fan | 0.3 | 62.5% | No | | | W | 6,570 | | No | 62.5% | 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 |
| Various - Annex | Unit Heaters | 5 | Supply Fan | 0.1 | 60.0% | No | | | W | 6,570 | | No | 60.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW Boilers - Annex | AC-1 - Admin | 1 | Supply Fan | 2.0 | 84.0% | No | | | B | 6,570 | 7 | No | 86.5% | Yes | 1 | 0.6 | 4,294 | 0 | $557 | $4,182 | $100 | 7.3 |
| Roof - Annex | AC-2 - Dorms | 1 | Supply Fan | 10.0 | 89.5% | No | | | B | 6,570 | 8 | No | 91.7% | Yes | 1 | 3.0 | 21,217 | 0 | $2,753 | $6,697 | $1,100 | 2.0 |
| Roof - Annex | AC-2 - Dorms | 1 | Return Fan | 5.0 | 87.5% | No | | | B | 6,570 | 8 | No | 89.5% | Yes | 1 | 1.5 | 9,362 | 0 | $1,215 | $5,028 | $900 | 3.4 |
| Roof - Annex | RTU-9 - 1st Floor | 1 | Supply Fan | 5.0 | 87.5% | No | McQuay | RDS708BY | B | 6,570 | 8 | No | 89.5% | Yes | 1 | 1.5 | 10,587 | 0 | $1,374 | $5,028 | $900 | 3.0 |
| Garage - Records Storage - Prosecutors | Garage Door Lift | 1 | Other | 0.5 | 75.0% | No | | | W | 400 | | No | 75.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Elevator Prosecutors | Elevator - Prosecutors | 1 | Other | 40.0 | 93.0% | No | | | W | 400 | | No | 93.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Prosecutors | AHU-1 - Warehouse | 1 | Supply Fan | 3.0 | 86.5% | No | Trane | | B | 4,380 | 8 | No | 89.5% | Yes | 1 | 0.9 | 4,506 | 0 | $585 | $4,555 | $200 | 7.4 |
| Exterior HVAC - Prosecutors | AHU-2 - Warehouse | 1 | Supply Fan | 3.0 | 86.5% | No | Trane | | B | 4,380 | 8 | No | 89.5% | Yes | 1 | 0.9 | 4,506 | 0 | $585 | $4,555 | $200 | 7.4 |
| Exterior HVAC - Prosecutors | AH-9 - Office | 1 | Supply Fan | 1.0 | 82.5% | No | Lennox | | W | 4,380 | 8 | No | 85.5% | Yes | 1 | 0.3 | 1,579 | 0 | $205 | $3,508 | $75 | 16.8 |
| Office - Mail Room - Prosecutors | Office - Mail Room - Prosecutors | 1 | Supply Fan | 0.5 | 75.0% | No | Trane | | B | 4,380 | | No | 75.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Trailers | Trailers | 4 | Supply Fan | 0.3 | 65.0% | No | Bard | | B | 4,380 | | No | 65.0% | No | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Pump House | Exhaust System | 1 | Exhaust Fan | 0.3 | 62.5% | No | | | W | 4,380 | | No | 62.5% | 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 |
| Roof - Main Building | AHU-1 - Lobby / Operations | 1 | Forced Air Furnace | | 100.00 | | 0.8 Et | Reznor | | B | 17 | Yes | 1 | Forced Air Furnace | | 100.00 | | 0.97 AFUE | 0.0 | 0 | 24 | $265 | $3,375 | $500 | 10.8 |
| Roof - Main Building | AHU-2 - Administration | 1 | Forced Air Furnace | | 100.00 | | 0.8 Et | Reznor | | B | 17 | Yes | 1 | Forced Air Furnace | | 100.00 | | 0.97 AFUE | 0.0 | 0 | 24 | $265 | $3,375 | $500 | 10.8 |
| Roof - Main Building | AHU-3 - Admissions | 1 | Forced Air Furnace | | 100.00 | | 0.8 Et | Reznor | HRP125 | B | 17 | Yes | 1 | Forced Air Furnace | | 100.00 | | 0.97 AFUE | 0.0 | 0 | 24 | $265 | $3,375 | $500 | 10.8 |
| Roof - Main Building | AHU-4 - Pod I | 1 | Forced Air Furnace | | 160.00 | | 0.8 Et | Reznor | HRP200 | B | 17 | Yes | 1 | Forced Air Furnace | | 160.00 | | 0.97 AFUE | 0.0 | 0 | 39 | $424 | $4,532 | $500 | 9.5 |
| Roof - Main Building | AHU-5 - Pods A & E | 1 | Forced Air Furnace | | 320.00 | | 0.8 Et | Reznor | HRP400 | B | 17 | Yes | 1 | Forced Air Furnace | | 320.00 | | 0.97 AFUE | 0.0 | 0 | 77 | $848 | $6,913 | $500 | 7.6 |
| Roof - Main Building | AHU-6 - Pods B & F | 1 | Forced Air Furnace | | 320.00 | | 0.8 Et | Reznor | HRP400 | B | 17 | Yes | 1 | Forced Air Furnace | | 320.00 | | 0.97 AFUE | 0.0 | 0 | 77 | $848 | $6,913 | $500 | 7.6 |
| Roof - Main Building | AHU-7 - Pods C & G | 1 | Forced Air Furnace | | 320.00 | | 0.8 Et | Reznor | HRP400 | B | 17 | Yes | 1 | Forced Air Furnace | | 320.00 | | 0.97 AFUE | 0.0 | 0 | 77 | $848 | $6,913 | $500 | 7.6 |
| Roof - Main Building | AHU-8 - Pods D & H | 1 | Forced Air Furnace | | 320.00 | | 0.8 Et | Reznor | HRP400 | B | 17 | Yes | 1 | Forced Air Furnace | | 320.00 | | 0.97 AFUE | 0.0 | 0 | 77 | $848 | $6,913 | $500 | 7.6 |
| Roof - Main Building | AHU-11 - Medical Clinic | 1 | Forced Air Furnace | | 100.00 | | 0.8 Et | Reznor | | B | 17 | Yes | 1 | Forced Air Furnace | | 100.00 | | 0.97 AFUE | 0.0 | 0 | 24 | $265 | $3,375 | $500 | 10.8 |
| Roof - Main Building | Main Building | 1 | Split-System | 1.00 | | 13.00 | | Arcoaire | | B | 13 | Yes | 1 | Split-System | 1.00 | | 16.00 | | 0.1 | 277 | 0 | $36 | $3,428 | $105 | 92.5 |
| Roof - Main Building | Main Building | 1 | Split-System | 1.00 | | 13.00 | | York | AY012MA321A | B | 13 | Yes | 1 | Split-System | 1.00 | | 16.00 | | 0.1 | 277 | 0 | $36 | $3,428 | $105 | 92.5 |
| Roof - Main Building | Pods C & G - Offices | 2 | Split-System | 1.00 | | 13.00 | | York | AY012MA321A | B | 13 | Yes | 2 | Split-System | 1.00 | | 16.00 | | 0.2 | 554 | 0 | $72 | $6,855 | $210 | 92.5 |
| Roof - Main Building | Pods D & H - Offices | 1 | Split-System | 1.50 | | 13.00 | | Thermal Zone | TZAB-318-2N | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Pods D & H - Offices | 1 | Ductless Mini-Split HP | 1.00 | 14.40 | 23.00 | 12.5 HSPF | Daikin | RXS12LVJU | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Vestibule - Transfer Station | Vestibule - Transfer Station | 1 | Electric Resistance Heat | | 5.12 | | 1 COP | | | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Kitchen Exhaust Units | 2 | Forced Air Furnace | | 96.00 | | 0.8 Et | Greenheck | DG12 | B | 17 | Yes | 2 | Forced Air Furnace | | 96.00 | | 0.97 AFUE | 0.0 | 0 | 46 | $509 | $6,602 | $1,000 | 11.0 |
| Exterior - Main Building | New Commitments | 1 | Ductless Mini-Split HP | 2.00 | 27.00 | 16.50 | 10.5 HSPF | Daikin | RZQ24PVJU9 | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split HP | 3.00 | 36.00 | 13.50 | 7.7 HSPF | Mitsubishi | FDC360HA1 | B | 14 | Yes | 1 | Ductless Mini-Split HP | 3.00 | 36.00 | 18.00 | 3.8 COP | 1.3 | 3,725 | 0 | $483 | $6,182 | $0 | 12.8 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split HP | 2.00 | 24.00 | 18.00 | 9 HSPF | Daikin | RX24NMVJU | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split HP | 2.00 | 28.00 | 13.50 | 8.5 HSPF | Mitsubishi | PUZ-A24NHA4 | B | 14 | Yes | 1 | Ductless Mini-Split HP | 2.00 | 28.00 | 18.00 | 3.8 COP | 1.0 | 2,299 | 0 | $298 | $4,410 | $0 | 14.8 |

| | | 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 (kBtu/hr) | Cooling Mode Efficiency (SEER/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 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split AC | 1.50 | | 16.00 | | Sanyo | CL1872 | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split HP | 2.00 | 28.00 | 13.50 | 8.5 HSPF | Mitsubishi | PUZ-A24NHA4 | B | 14 | Yes | 1 | Ductless Mini-Split HP | 2.00 | 28.00 | 18.00 | 3.8 COP | 1.0 | 2,299 | 0 | $298 | $4,410 | $0 | 14.8 |
| Roof - Main Building | Main Building | 1 | Ductless Mini-Split HP | 2.00 | 19.00 | 14.10 | 9.5 HSPF | Mitsubishi | PUZ-A18NHA4 | B | 14 | Yes | 1 | Ductless Mini-Split HP | 2.00 | 19.00 | 18.00 | 3.8 COP | 0.3 | 1,338 | 0 | $174 | $4,410 | $0 | 25.4 |
| Roof - Main Building | E & A Pods Offices | 2 | Ductless Mini-Split HP | 1.00 | 14.40 | 23.00 | 12.5 HSPF | Daikin | RXS12LVJU | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | F & B Pods Offices | 1 | Ductless Mini-Split HP | 1.00 | 14.40 | 23.00 | 12.5 HSPF | Daikin | RXS12LVJU | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | F & B Pods Offices | 1 | Ductless Mini-Split HP | 1.50 | 20.00 | 14.50 | 9.8 HSPF | Daikin | RX18RMVJU9A | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Yard - Main Building | Medical | 1 | Ductless Mini-Split HP | 4.00 | 54.00 | 18.80 | 11.3 HSPF | Daikin | RMXS48LVJU | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Main Building | RTU - Prisoner Transfer Station | 1 | Package Unit | 5.00 | 106.60 | 14.00 | 0.82 Et | Trane | YSC | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Annex | B Dorm | 1 | Split-System | 2.00 | | 10.00 | | Sanyo | CL2422 | B | 13 | Yes | 1 | Split-System | 2.00 | | 16.00 | | 0.5 | 1,440 | 0 | $187 | $4,040 | $210 | 20.5 |
| Office - Deputy Warden - Annex | Office - Deputy Warden - Annex | 2 | Electric Resistance Heat | | 5.12 | | 1 COP | Ouellet | | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Annex | AXB / AXC / AXD Offices | 3 | Ductless Mini-Split AC | 0.75 | 10.90 | 17.80 | 10.3 HSPF | Daikin | RX09RMVJU9 | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Annex | Exam Room | 1 | Ductless Mini-Split AC | 3.00 | 40.00 | 18.20 | 9 HSPF | Daikin | RXTQ36TAVJ9 | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Annex | Staff Dining Room | 1 | Ductless Mini-Split HP | 1.50 | 20.00 | 14.50 | 9.8 HSPF | Daikin | | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Roof - Annex | Bravo 1 | 1 | Ductless Mini-Split AC | 0.75 | | 10.00 | | Sanyo | C0951 | B | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Prosecutors | AHU-1 - Warehouse | 1 | Package Unit | 12.50 | 122.00 | 8.30 | 0.81333333 3333333 Et | Trane | YCH150D4L0BA | B | 13 | Yes | 1 | Package Unit | 12.50 | 122.00 | 14.00 | 0.82 Et | 3.7 | 11,773 | 1 | $1,542 | $19,265 | $1,113 | 11.8 |
| Exterior HVAC - Prosecutors | AHU-2 - Warehouse | 1 | Package Unit | 12.50 | 122.00 | 8.30 | 0.81333333 3333333 Et | Trane | YCH150D4L0BA | B | 13 | Yes | 1 | Package Unit | 12.50 | 122.00 | 14.00 | 0.82 Et | 3.7 | 11,773 | 1 | $1,542 | $19,265 | $1,113 | 11.8 |
| Exterior HVAC - Prosecutors | AH-9 - Office | 1 | Package Unit | 5.00 | 52.00 | 15.50 | 0.8 Et | Lennox | LGH060S4TS2Y | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Office - Mail Room - Prosecutors | Office - Mail Room - Prosecutors | 1 | Forced Air Furnace | | 80.00 | | 0.8 Et | Trane | GDND010ANF1000F | B | 17 | Yes | 1 | Forced Air Furnace | | 80.00 | | 0.97 AFUE | 0.0 | 0 | 19 | $212 | $3,007 | $500 | 11.8 |
| Exterior HVAC - Prosecutors | Office - Mail Room - Prosecutors | 1 | Split-System | 3.00 | | 10.00 | | Trane | 2TTA0036A3000AA | B | 13 | Yes | 1 | Split-System | 3.00 | | 16.00 | | 0.7 | 2,160 | 0 | $280 | $5,517 | $315 | 18.6 |
| Stairs - Records - Prosecutors | Stairs - Records - Prosecutors | 1 | Electric Resistance Heat | | 3.41 | | 1 COP | | | B | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |

| | | 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 (kBtu/hr) | Cooling Mode Efficiency (SEER/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 |
| Garage - Maintenance Shop - Prosecutors | Garage - Maintenance Shop - Prosecutors | 1 | Window AC | 1.17 | | 9.50 | | Frigidaire | FFTA142W | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Garage - Maintenance Shop - Prosecutors | Garage - Maintenance Shop - Prosecutors | 1 | Forced Air Furnace | | 24.30 | | 0.81 Et | Trane | GPN0003ADF1000E | B | 17 | Yes | 1 | Forced Air Furnace | | 24.30 | | 0.97 AFUE | 0.0 | 0 | 5 | $60 | $2,022 | $500 | 25.4 |
| Garage - Records Storage - Prosecutors | Garage - Records Storage - Prosecutors | 1 | Forced Air Furnace | | 24.30 | | 0.81 Et | Trane | GPN0003ADF1000E | B | 17 | Yes | 1 | Forced Air Furnace | | 24.30 | | 0.97 AFUE | 0.0 | 0 | 5 | $60 | $2,022 | $500 | 25.4 |
| Exterior HVAC - Prosecutors | Prosecutors Building | 1 | Ductless Mini-Split AC | 2.00 | | 18.00 | | Fujitsu | AOU24CL1 | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Prosecutors | Prosecutors Building | 1 | Ductless Mini-Split HP | 1.50 | 20.00 | 15.50 | 9.1 HSPF | Daikin | RZQ18TAVJUA | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Restroom - Kitchen Fiscal - Trailers | Restroom - Kitchen Fiscal - Trailers | 1 | Electric Resistance Heat | | 3.41 | | 1 COP | TPI | | B | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior HVAC - Trailers | Trailers | 4 | Through-The-Wall AC | 3.00 | 34.12 | 8.00 | 1 COP | Bard | 36WA4 | B | 14 | Yes | 4 | Through-The-Wall HP | 3.00 | 34.12 | 12.00 | 3.3 COP | 14.0 | 48,630 | 0 | $6,310 | $8,575 | $0 | 1.4 |
| Mechanical - Pump House | Mechanical - Pump House | 1 | Electric Resistance Heat | | 10.24 | | 1 COP | Dayton | | W | | No | | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |

## Electric Chiller Inventory & Recommendations

| | | Existing Conditions | | | | | | Proposed Conditions | | | | | | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Area(s)/System(s) Served | Chiller Quantity | System Type | Cooling Capacity per Unit (Tons) | Manufacturer | Model | Remaining Useful Life | ECM # | Install High Efficiency Chillers? | Chiller Quantity | System Type | Constant/ Variable Speed | Cooling Capacity (Tons) | Full Load Efficiency (kW/Ton) | IPLV Efficiency (kW/Ton) | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Total Incentives | Simple Payback w/ Incentives in Years |
| Mechanical - Boilers/Chillers - Main Building | Cooling System - Main Building | 2 | Water-Cooled Screw Chiller | 170.00 | York | YS CB CB S1 CG | B | 15 | Yes | 2 | Water-Cooled Screw Chiller | Constant | 170.00 | 0.65 | 0.54 | 126.0 | 300,832 | 0 | $39,036 | $259,484 | $5,780 | 6.5 |
| Exterior HVAC - Annex | Cooling System - Annex | 1 | Air-Cooled Reciprocating Chiller | 70.00 | Carrier | 30GTN070--C631HL | B | 15 | Yes | 1 | Air-Cooled Scroll Chiller | Variable | 70.00 | 1.24 | 0.74 | 0.7 | 30,524 | 0 | $3,961 | $81,436 | $6,300 | 19.0 |

## 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 |
| Mechanical - Boilers/Chillers - Main Building | Heating System - Main Building | 2 | Non-Condensing Hot Water Boiler | 900 | AO Smith | LB 1000 980 | B | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - Heating Boilers - Annex | Heating System - Annex | 4 | Non-Condensing Hot Water Boiler | 355 | Weil McLain | PFG-8 | B | 16 | Yes | 4 | Non-Condensing Hot Water Boiler | 355 | 85.00% | Et | 0.0 | 0 | 194 | $2,137 | $51,823 | $2,485 | 23.1 |

## Pipe Insulation Recommendations

| | | Recommendation Inputs | | | Energy Impact & Financial Analysis | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Area(s)/System(s) Affected | ECM # | Length of Uninsulated Pipe (ft) | Pipe Diameter (in) | 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 - DHW Boilers - Main Building | Domestic Hot Water - Main Building | 18 | 20 | 3.00 | 0.0 | 0 | 25 | $271 | $266 | $40 | 0.8 |
| Locker Room - Male - Main Building | Domestic Hot Water - Main Building Medical Clinic | 18 | 5 | 0.50 | 0.0 | 343 | 0 | $44 | $60 | $5 | 1.2 |
| Mechanical - DHW Boilers - Annex | Domestic Hot Water - Annex | 18 | 5 | 2.50 | 0.0 | 0 | 5 | $54 | $67 | $10 | 1.1 |
| Garage - Records Storage - Prosecutors | Domestic Hot Water - Prosecutors | 18 | 20 | 0.50 | 0.0 | 1,247 | 0 | $162 | $239 | $20 | 1.4 |
| Restroom - Kitchen Fiscal - Trailers | Domestic Hot Water - Trailers | 18 | 5 | 0.50 | 0.0 | 343 | 0 | $44 | $60 | $5 | 1.2 |

## 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 |
| Mechanical - DHW Boilers - Main Building | Domestic Hot Water - Main Building | 2 | Boiler | Ace Heating | B15G | W | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Locker Room - Male - Main Building | Domestic Hot Water - Main Building Medical Clinic | 1 | Storage Tank Water Heater (≤ 50 Gal) | Bradford White | RE120L6-1NCWW | N | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW - Annex | Domestic Hot Water - Annex | 1 | Storage Tank Water Heater (> 50 Gal) | Bradford White | D100T1993N | W | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW Boilers - Annex | Domestic Hot Water - Annex | 2 | Boiler | Lochinvar | PFN0752PM | N | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Mechanical - DHW Boilers - Annex | Domestic Hot Water - Annex | 1 | Boiler | Lochinvar | PFN1002PM | W | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Garage - Records Storage - Prosecutors | Domestic Hot Water - Prosecutors | 1 | Storage Tank Water Heater (≤ 50 Gal) | AO Smith | DEL 30 104 | W | | No | | | | | | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Restroom - Kitchen Fiscal - Trailers | Domestic Hot Water - Trailers | 1 | Storage Tank Water Heater (≤ 50 Gal) | Bosch | ES 4-1M WIR | W | | 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 |
| Main Building | 19 | 22 | Faucet Aerator (Lavatory) | 2.20 | 0.50 | 0.0 | 0 | 10 | $115 | $158 | $79 | 0.7 |
| Main Building | 19 | 5 | Faucet Aerator (Lavatory) | 2.20 | 0.50 | 0.0 | 695 | 0 | $90 | $36 | $18 | 0.2 |
| Annex | 19 | 42 | Faucet Aerator (Lavatory) | 2.20 | 0.50 | 0.0 | 0 | 20 | $219 | $301 | $151 | 0.7 |
| Prosecutors Building | 19 | 1 | Faucet Aerator (Lavatory) | 2.20 | 0.50 | 0.0 | 139 | 0 | $18 | $7 | $4 | 0.2 |
| Trailers | 19 | 2 | Faucet Aerator (Lavatory) | 2.20 | 0.50 | 0.0 | 278 | 0 | $36 | $14 | $7 | 0.2 |

## 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 |
| Kitchen - Main Building | 1 | Cooler (35F to 55F) | Kolpak | AM26-094-ADAE / PC98MZOP-3E | | No | No | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Kitchen - Main Building | 2 | Cooler (35F to 55F) | Kolpak | AM16-052-ADAE / PC48MOP-2E | | No | No | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Exterior - Main Building | 1 | Medium Temp Freezer (0F to 30F) | Kolpak | EL26-090-DDAE / PC348LZOP-3E | | No | No | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |

## 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 |
| Corridor - Center Control Sallyport - Main Building | 1 | Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.) | True | T-19 | No | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Staff Dining Room - Annex | 1 | Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.) | Everest | EBR1 | No | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Staff Dining Room - Annex | 1 | Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.) | Continental | 1RNGD | 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 |
| Kitchen - Main Building | 1 | Insulated Food Holding Cabinet (3/4 Size) | | | No | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Kitchen - Main Building | 2 | Gas Convection Oven (Full Size) | Vulcan | | Yes | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Kitchen - Main Building | 3 | Gas Steamer | Vulcan | | No | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Staff Dining Room - Annex | 1 | Electric Fryer | | | No | | No | 0.0 | 0 | 0 | $0 | $0 | $0 | 0.0 |
| Staff Dining Room - Annex | 1 | Electric Griddle (3 Feet Width) | | | 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 - Main Building | 1 | Single Tank Conveyor (High Temp) | Hatco | | Electric | Electric | No | | 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 |
| Main Building | 5 | Coffee Machine | 500 | No | | |
| Main Building | 71 | Desktop | 120 | No | | |
| Main Building | 1 | Fan (Large) | 200 | No | | |
| Main Building | 8 | Microwave | 1,000 | No | | |
| Main Building | 4 | Paper Shredder | 146 | No | | |
| Main Building | 26 | Printer (Medium/Small) | 450 | No | | |
| Main Building | 5 | Printer/Copier (Large) | 600 | No | | |
| Main Building | 11 | Refrigerator (Mini) | 175 | No | | |
| Main Building | 5 | Refrigerator (Residential) | 340 | No | | |
| Main Building | 22 | Television | 224 | No | | |
| Main Building | 1 | Toaster Oven | 600 | No | | |
| Main Building | 1 | Water Cooler | 192 | No | | |
| Main Building | 1 | Water Fountain | 370 | No | | |
| Main Building | 1 | Server | 4,000 | No | | |
| Annex | 1 | Clothes Washer | 3,326 | No | | |
| Annex | 1 | Clothes Washer | 4,157 | No | | |
| Annex | 2 | Clothes Washer | 4,988 | No | | |
| Annex | 2 | Coffee Machine | 500 | No | | |
| Annex | 23 | Desktop | 120 | No | | |
| Annex | 1 | Fan (Large) | 200 | No | | |
| Annex | 6 | Microwave | 1,000 | No | | |
| Annex | 1 | Paper Shredder | 146 | No | | |
| Annex | 9 | Printer (Medium/Small) | 450 | No | | |
| Annex | 2 | Printer/Copier (Large) | 600 | No | | |
| Annex | 3 | Projector | 240 | No | | |
| Annex | 6 | Refrigerator (Mini) | 175 | No | | |
| Annex | 4 | Refrigerator (Residential) | 340 | No | | |
| Annex | 7 | Television | 224 | No | | |
| Annex | 4 | Toaster | 600 | No | | |
| Annex | 2 | Toaster Oven | 600 | No | | |
| Annex | 1 | Water Fountain | 370 | No | | |
| Annex | 1 | Server | 4,000 | No | | |
| Prosecutors Building | 7 | Desktop | 120 | No | | |
| Prosecutors Building | 3 | Microwave | 1,000 | No | | |
| Prosecutors Building | 5 | Printer (Medium/Small) | 450 | No | | |

| | Existing Conditions | | | | | |
|---|---|---|---|---|---|---|
| Location | Quantity | Equipment Description | Energy Rate (W) | ENERGY STAR Qualified? | Manufacturer | Model |
| Prosecutors Building | 1 | Printer/Copier (Large) | 600 | No | | |
| Prosecutors Building | 1 | Refrigerator (Mini) | 175 | No | | |
| Prosecutors Building | 2 | Refrigerator (Residential) | 340 | No | | |
| Prosecutors Building | 1 | Toaster | 600 | No | | |
| Prosecutors Building | 1 | Toaster Oven | 600 | No | | |
| Trailers | 6 | Coffee Machine | 500 | No | | |
| Trailers | 19 | Desktop | 120 | No | | |
| Trailers | 4 | Microwave | 1,000 | No | | |
| Trailers | 2 | Paper Shredder | 146 | No | | |
| Trailers | 11 | Printer (Medium/Small) | 450 | No | | |
| Trailers | 1 | Printer/Copier (Large) | 600 | No | | |
| Trailers | 3 | Refrigerator (Mini) | 175 | No | | |
| Trailers | 1 | Refrigerator (Residential) | 340 | No | | |
| Trailers | 1 | Toaster Oven | 600 | No | | |
| Trailers | 1 | Water Cooler | 192 | No | | |

**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 |
| Main Lobby - Main Building | 2 | Refrigerated | 20 | Yes | 0.4 | 3,224 | 0 | $418 | $460 | $100 | 0.9 |
| Main Lobby - Main Building | 1 | Non-Refrigerated | 20 | Yes | 0.0 | 343 | 0 | $44 | $230 | $0 | 5.2 |
| Exterior - Main Building | 1 | Refrigerated | 20 | Yes | 0.2 | 1,612 | 0 | $209 | $230 | $50 | 0.9 |

**Miscellaneous Fuel Inventory**

| | Existing Conditions | | | | | |
|---|---|---|---|---|---|---|
| Location | Quantity | Equipment Description | Input Capacity per Unit (MBh) | ENERGY STAR Qualified? | Manufacturer | Model |
| Laundry Room - Annex | 2 | Clothes Dryer | 270.0 | No | Speed Queen | 0.0 |
| Laundry Room - Annex | 1 | Clothes Dryer | 300.0 | No | Whirlpool | 0 |

**Custom (High Level) Measure Analysis**

Retro-Commissioning Study

| | | | |
|---|---|---|---|
| Building Square Footage | 132,005 | Fuel Utility Rate | $11.000 MMBtu |
| Percent of Conditioned Area Impacted | 98% | Blended Electric Utility Rate | $0.130 kWh |

| Existing Conditions | | | | | | Proposed Conditions | | | | | Energy Impact & Financial Analysis | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Description | Area(s)/System(s) Served | Remaining Useful Life | Total HVAC Motor Usage kWh | Total HVAC Electric Usage kWh | Total HVAC Fuel Usage MMBtu | Description | % Savings HVAC Motor Usage kWh | % Savings HVAC Electric Usage kWh | % Savings HVAC Fuel Usage MMBtu | Estimated Cost per Sqft | Total Peak kW Savings | Total Annual kWh Savings | Total Annual MMBtu Savings | Total Annual Energy Cost Savings | Estimated M&L Cost ($) | Base Incentives | Enhanced Incentives | Total Incentives | Total Net Cost | Payback w/o Incentives in Years | Simple Payback w/ Incentives in Years |
| HVAC Controls Not Currently Optimized | HVAC Equipment & Systems | 3 | 875,674 | 1,055,623 | 8,481 | Retro-Commissioning Study | 6% | 6% | 6% | $0.40 | 0.00 | 115,878 | 509 | $20,634 | $51,746 | $0 | $0 | $0 | $51,746 | 2.51 | 2.51 |

# 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.

## ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

**N/A**

ENERGY STAR® Score[1]

### Atlantic County Justice Facility Complex (campus)

**Primary Property Type:** Prison/Incarceration
**Gross Floor Area (ft²):** 132,325
**Built:** 1985

**For Year Ending:** February 28, 2022
**Date Generated:** August 29, 2023

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 |
|---|---|---|
| Atlantic County Justice Facility Complex (campus)<br>5060 Atlantic Avenue<br>Mays Landing, New Jersey 08330 | Atlantic County<br>1227 Drexel Avenue<br>Atlantic City, NJ 08401<br>(609) 343-2284 | Jerry Griffin<br>1227 Drexel Avenue<br>Atlantic City, NJ 08401<br>(609) 343-2284<br>griffin_jerry@aclink.org |

**Property ID**: 28500034

### Energy Consumption and Energy Use Intensity (EUI)

**Site EUI**
140 kBtu/ft²

**Source EUI**
275.5 kBtu/ft²

| Annual Energy by Fuel | |
|---|---|
| Electric - Solar (kBtu) | 457,010 (2%) |
| Natural Gas (kBtu) | 8,332,050 (45%) |
| Electric - Grid (kBtu) | 9,730,094 (52%) |

| National Median Comparison | |
|---|---|
| National Median Site EUI (kBtu/ft²) | 79.4 |
| National Median Source EUI (kBtu/ft²) | 156.4 |
| % Diff from National Median Source EUI | 76% |
| **Annual Emissions** | |
| Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) | 1,317 |

### 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, which 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. |