Local Government Energy Audit Report

The Lodge, Fire Safety Building, College Park Apartments (CPA)

July 10, 2024

Prepared for:

Ramapo College of New Jersey
523 Route 202
Mahwah, New Jersey 07430

Prepared by:

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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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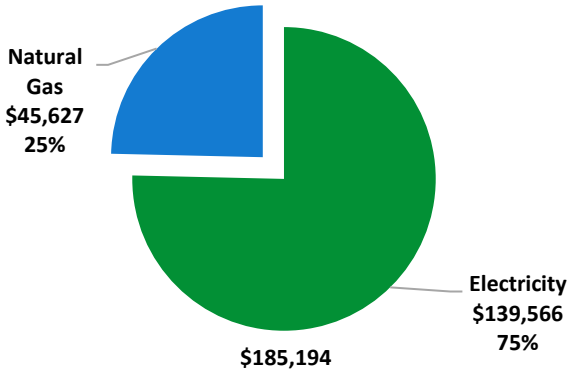
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for CPA. 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: $185,194 Electricity: 1,048,741 kWh Natural Gas: 46,217 Therms	
ENERGY STAR® Benchmarking Score	N/A *(1-100 scale)*	A standard energy use benchmark is not available for this facility type. This report contains suggestions about how to improve building performance and reduce energy costs.

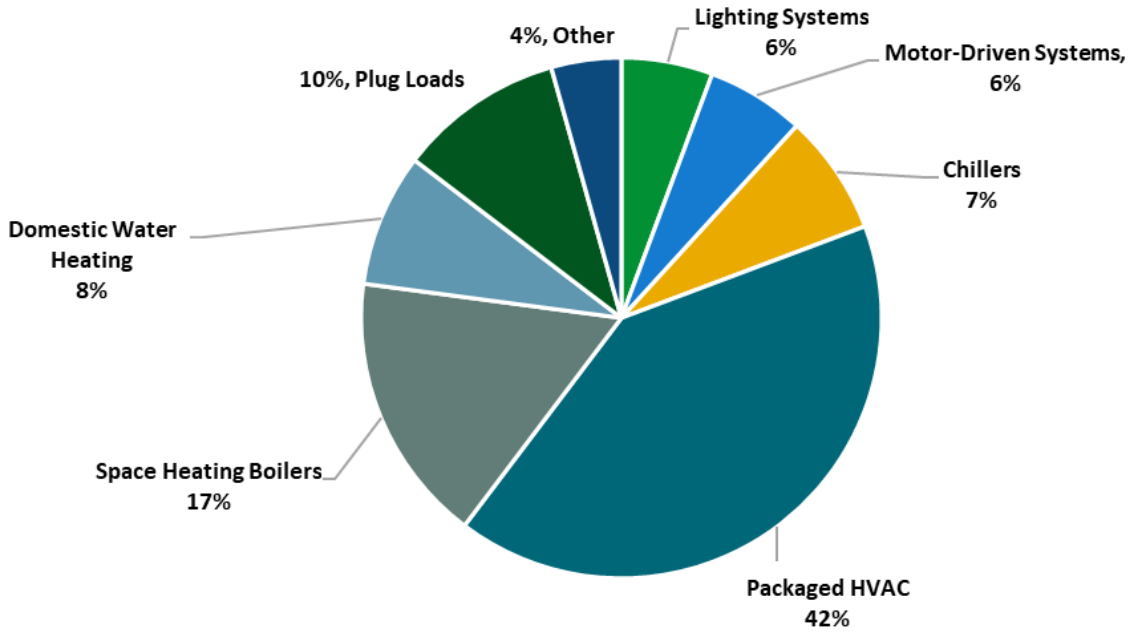


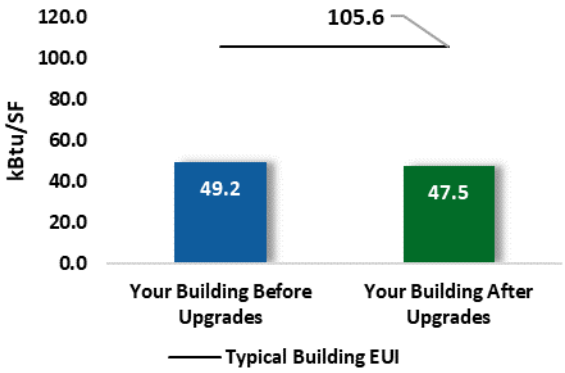
Figure 1 - Energy Use by System

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.

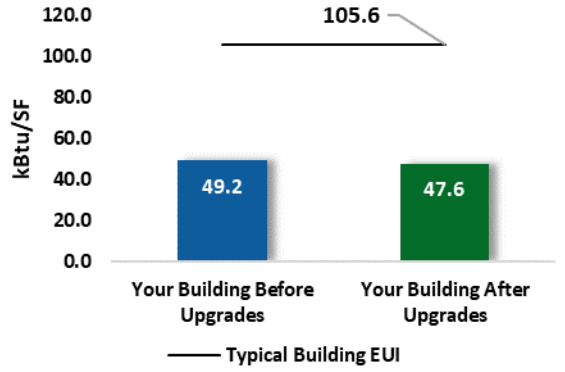
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$74,218
Potential Rebates & Incentives[1]	$12,221
Annual Cost Savings	$9,979
Annual Energy Savings	Electricity: 72,262 kWh Natural Gas: 367 Therms
Greenhouse Gas Emission Savings	39 Tons
Simple Payback	6.2 Years
Site Energy Savings (All Utilities)	3%



Scenario 2: Cost Effective Package[2]

Installation Cost	$61,362
Potential Rebates & Incentives	$11,290
Annual Cost Savings	$9,625
Annual Energy Savings	Electricity: 69,681 kWh Natural Gas: 356 Therms
Greenhouse Gas Emission Savings	37 Tons
Simple Payback	5.2 Years
Site Energy Savings (all utilities)	3%



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			**45,111**	**10.0**	**-4**	**$5,959**	**$49,371**	**$9,404**	**$39,967**	**6.7**	**44,901**
ECM 1	Install LED Fixtures	Yes	20,647	0.0	0	$2,748	$10,403	$1,900	$8,503	3.1	20,792
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	3,994	2.5	-1	$523	$6,676	$837	$5,839	11.2	3,925
ECM 3	Retrofit Fixtures with LED Lamps	Yes	20,469	7.5	-4	$2,688	$32,292	$6,667	$25,625	9.5	20,185
Lighting Control Measures			**2,191**	**0.9**	**0**	**$287**	**$5,930**	**$1,145**	**$4,785**	**16.7**	**2,153**
ECM 4	Install Occupancy Sensor Lighting Controls	No	1,978	0.8	0	$259	$5,480	$725	$4,755	18.4	1,943
ECM 5	Install High/Low Lighting Controls	Yes	214	0.1	0	$28	$450	$420	$30	1.1	210
Motor Upgrades			**2,012**	**0.4**	**0**	**$268**	**$2,717**	**$0**	**$2,717**	**10.1**	**2,026**
ECM 6	Premium Efficiency Motors	Yes	2,012	0.4	0	$268	$2,717	$0	$2,717	10.1	2,026
Unitary HVAC Measures			**604**	**0.3**	**2**	**$96**	**$7,376**	**$206**	**$7,170**	**75.0**	**788**
ECM 7	Install High Efficiency Air Conditioning Units	No	604	0.3	2	$96	$7,376	$206	$7,170	75.0	788
HVAC System Improvements			**0**	**0.0**	**40**	**$394**	**$583**	**$76**	**$507**	**1.3**	**4,675**
ECM 8	Install Pipe Insulation	Yes	0	0.0	40	$394	$583	$76	$507	1.3	4,675
Domestic Water Heating Upgrade			**20,390**	**0.0**	**0**	**$2,715**	**$7,781**	**$1,340**	**$6,441**	**2.4**	**20,556**
ECM 9	Install Low-Flow DHW Devices	Yes	20,390	0.0	0	$2,715	$7,781	$1,340	$6,441	2.4	20,556
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$260**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 10	Vending Machine Control	Yes	1,954	0.2	0	$260	$460	$50	$410	1.6	1,968
TOTALS (COST EFFECTIVE MEASURES)			**69,681**	**10.8**	**36**	**$9,625**	**$61,362**	**$11,290**	**$50,072**	**5.2**	**74,336**
TOTALS (ALL MEASURES)			**72,262**	**11.8**	**37**	**$9,979**	**$74,218**	**$12,221**	**$61,997**	**6.2**	**77,067**

* - 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 CPA. 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 28, 2023, TRC performed an energy audit at the College Park Apartment Complex (CPA) located at the Ramapo College in Mahwah, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

College Park Apartments is comprised of 17 buildings. The total area for all buildings is 166,645 square feet. The buildings and their sizes are summarized below.

Building	Building Area (sf)	Building	Building Area (sf)	Building	Building Area (sf)
The Lodge	11,335	CPA-Butternut-P2	11,956	CPA-International-LL	7,281
CPA-Buckeye-UL	8,357	CPA-Mulberry-P2	13,048	CPA-Science-LL	7,801
CPA-Sycamore-P2	11,991	CPA-Cypress-P2	22,090	CPA-Redwood-UL	7,275
CPA-Tamarack-P2	22,566	CPA-Mimosa-LL	11,839	CPA-Holly-UL	8,079,
CPA-Laundry Room	418	CPA-Palm-LL	7,060	CPA-Hickory-UL	7,472
Fire Safety Building	1,016	CPA-Elm-LL	7,061		

The units were built in 1973. Most of the buildings are residential with one or two bedrooms, restrooms, kitchens, lounge areas, storage areas, mechanical rooms, and electrical rooms.

This group of buildings share an electric meter along with several other buildings, and the total usage has been apportioned between the buildings served. The buildings also share a gas meter.

2.2 Building Occupancy

Several of the buildings are occupied year-round, but most of the buildings are occupied during academic semesters only. Office spaces are used during business hours. Janitorial services are performed during business hours.

Building Name	Weekday/Weekend	Operating Schedule
CPA Residence Buildings	Weekday	12:00 AM - 12:00 AM
	Weekend	12:00 AM - 12:00 AM
CPA Lodge	Weekday	8:00 AM - 5:00 PM
	Weekend	Varied
CPA Fire Safety	Weekday	Varied
	Weekend	Varied
CPA Laundry	Weekday	12:00 AM - 12:00 AM
	Weekend	12:00 AM - 12:00 AM

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

The residential structures are wood framed structures with a pitched roofs covered with asphalt shingles. The Fire Safety Building is comprised of a steel frame with a metal cladding exterior. The Lodge has both a wood truss and steel truss structural support system; the pitched roof is covered with asphalt shingles.

CPA Lower-Level Façade

Phase 1 and 2 Building Façade

The Lodge Fitness Room

Fire Safety Garage

Laundry Building Roof

Phase 2 Mechanical Building

Phase 1 Mechanical Building

Laundry Building

Most of the windows are double glazed and have aluminum frames with a thermal break. The glass-to-frame seals are in fair condition. The operable window weather seals are in fair condition, showing little evidence of excessive wear. Exterior doors have aluminum frames and are in fair condition with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.

The Lodge Windows

Lower-Level CPA Window

Phase 2 Window

Phase 2 Door

Fire Safety Door

The Lodge Door

2.4 Lighting Systems

The interior lighting system uses primarily 32-Watt linear fluorescent T8 lamps. There are also several 34-Watt T12 fixtures. Fixture types include 1-lamp, 2-lamp, 3-lamp, or 4-lamp, 2-foot or 4-foot-long troffer, recessed, surface mounted fixtures and 2-foot fixtures with linear tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

Additionally, there are some compact fluorescent lamps (CFL) plug-ins, incandescent, and LED lamps. All exit signs are LED. Most fixtures are in fair condition. Interior lighting levels were generally sufficient.

Surface and Pendent Mount Linear Fluorescent Fixtures

LED Surface Mounted Fixtures

Most lighting fixtures are controlled manually and the remainder by occupancy sensors.

Exterior fixtures include wall packs, floodlights, canopy lights, mainly with high intensity discharge (HID) lamps or CFLs. The Lodge pole mounted fixtures incorporate LED lamps, and several building exteriors are lit with incandescent lamps.

Exterior light fixtures are controlled by a time clock, switch, or photocell, depending on the fixture. Each building has its own controls.

HID Wall Pack

Halogen Incandescent Floodlight

CFL Canopy Fixtures

Unit Ventilators

Phase 1, Phase 2, and rooms of The Lodge have unit ventilators equipped with supply fan motors and electronically controlled outside air dampers and fan coil valves connected to the hot and chilled water distribution system. They provide heating, cooling, and ventilation to mostly residential units. This system is original to the building and appears to be in fair operating condition.



Unit Ventilators

Unitary Electric HVAC Equipment

The Lodge is partially conditioned by ductless mini-split HP or AC units. They range in size between 0.75 tons and 3 tons. The heat pumps have heating capacities ranging from of 10.9 MBh to 31 MBh.



Ductless Mini Outdoor Condensing Units

Unitary Heating Equipment

Fire Safety, CPA Upper Mechanical Building, and CPA Lower Mechanical Building are conditioned by unit heaters. The Fire Safety Garage is conditioned by a 125 MBh input suspended gas-fired furnace. Both CPA Upper and Lower Mechanical Buildings are conditioned by a 20-kW electric resistance heater.

Gas-fired Unit Heater

Electric Resistance Unit Heater

Electric Resistance Unit Heater

Packaged Units

Phase 2 facilities are served mainly by packaged units. Each gas-fired unit has a heating input of 60 MBh and a cooling capacity of 5 tons. Units have an EER of 12. The Laundry facility has a 2-ton packaged unit with a heating input rating of 48 MBh. Fire Safety has two packaged terminal AC units: one 2-ton unit and one unit with a 1.5-ton cooling capacity.

Unit	Area Served	Tons	Quantity	MBh	Efficiency
Packaged	Cypress	5-Tons, 12EER	12	60	80%
Packaged	Tamarack	5-Tons, 12EER	23	60	80%
Packaged	Sycamore	5-Tons, 12EER	13	60	80%
Packaged	Mulberry	5-Tons, 12EER	13	60	80%
Packaged	Butternut	5-Tons, 12EER	13	60	80%
Packaged	Laundry	2-Tons, 12EER	1	48	77%

Refer to Appendix A for detailed information about each unit.

Lower-Level Packaged Unit

Fire Safety PTAC

Laundry Facility Packaged Unit

Air Handling Units (AHUs)

The Lodge has an AHU for the fitness room. It is connected to an outdoor condensing heat pump for heating and cooling. It has a 5-ton cooling capacity with a 60 MBh rating for heating.

AHU at The Overlook

AHU at The Lodge

2.6 Heating Hot Water Systems

Two Navien 150 MBh condensing hot water boilers serve the Lodge's heating load needs. The burners are fully modulating with a nominal efficiency of 92 percent. Two Aerco 750 MBh condensing hot water boilers serve heating needs for CPA Lower buildings and two Triad 750 MBh condensing hot water boilers provide heating to CPA Upper buildings. Boilers are configured in an automatic control scheme.

The hydronic distribution systems for both CPA Upper and CPA Lower are two-pipe heating and cooling (dual temperature) systems with mid spring and mid fall changeovers. The Lodge boilers are configured in a two-pipe, heating-only system.

The boilers are configured in a constant flow primary distribution with circulating pumps that operate in an automated control scheme. The boilers provide hot water to fin tube radiators, unit ventilators, or convectors throughout the buildings.

Hot Water Boilers

Circulation Pumps

2.7 Chilled Water Systems

CPA Lower chiller plant consists of one 90-Ton, Trane, R-410A, scroll chiller while CPA Upper plant consists of one, 56-Ton, York, R-410A, scroll chiller Each unit is connected to a dedicated circulation loop as described in Section 2.6. Cooling is supplied to unit ventilators in CPA Upper and CPA Lower residence buildings.

Chiller

Dual Temp Piping

Unit Label

2.8 Domestic Hot Water

Hot water is produced by a 180 MBh gas-fired storage water heater for the laundry and by 66 electric storage water heater serving the residential buildings. The Lodge is the only location with fractional hp domestic water circulation pumps. The domestic hot water pipes are partially insulated; piping is missing some insulation in the CPA Lower Mech Building and laundry facility.

The Overlook DHW Storage Water Heater

Typical DHW Units in Residential Buildings

2.9 Plug Load and Vending Machines

You may wish to consider paying particular attention to minimizing your plug load usage. This report makes suggestions for ECMs in this area as well as energy efficient best practices.

Plug loads include general cafe and office equipment. The Laundry facility has plug loads for both washers and dryers. The Lodge has refrigerated and non-refrigerated vending machines.

Washer

Vending Machines

Typical Resident Unit Kitchen

2.10 Water-Using Systems

Each residence has a showerhead, restroom sink, and kitchen sink. Aerators are rated at 1.5 gallons per minute (gpm) and up. Most showerheads are rated at 2.5 gpm.

Showerhead

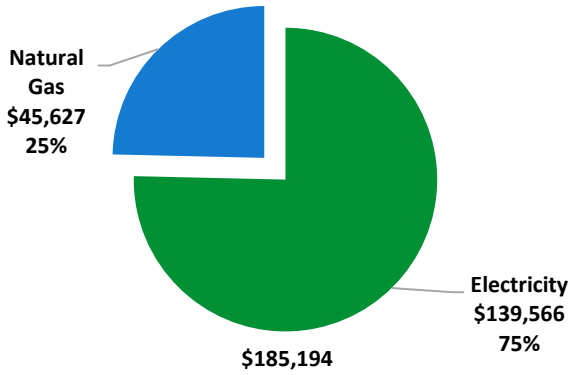
Restroom Sink

Kitchen Sink

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	1,048,741 kWh	$139,566
Natural Gas	46,217 Therms	$45,627
Total		**$185,194**



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.

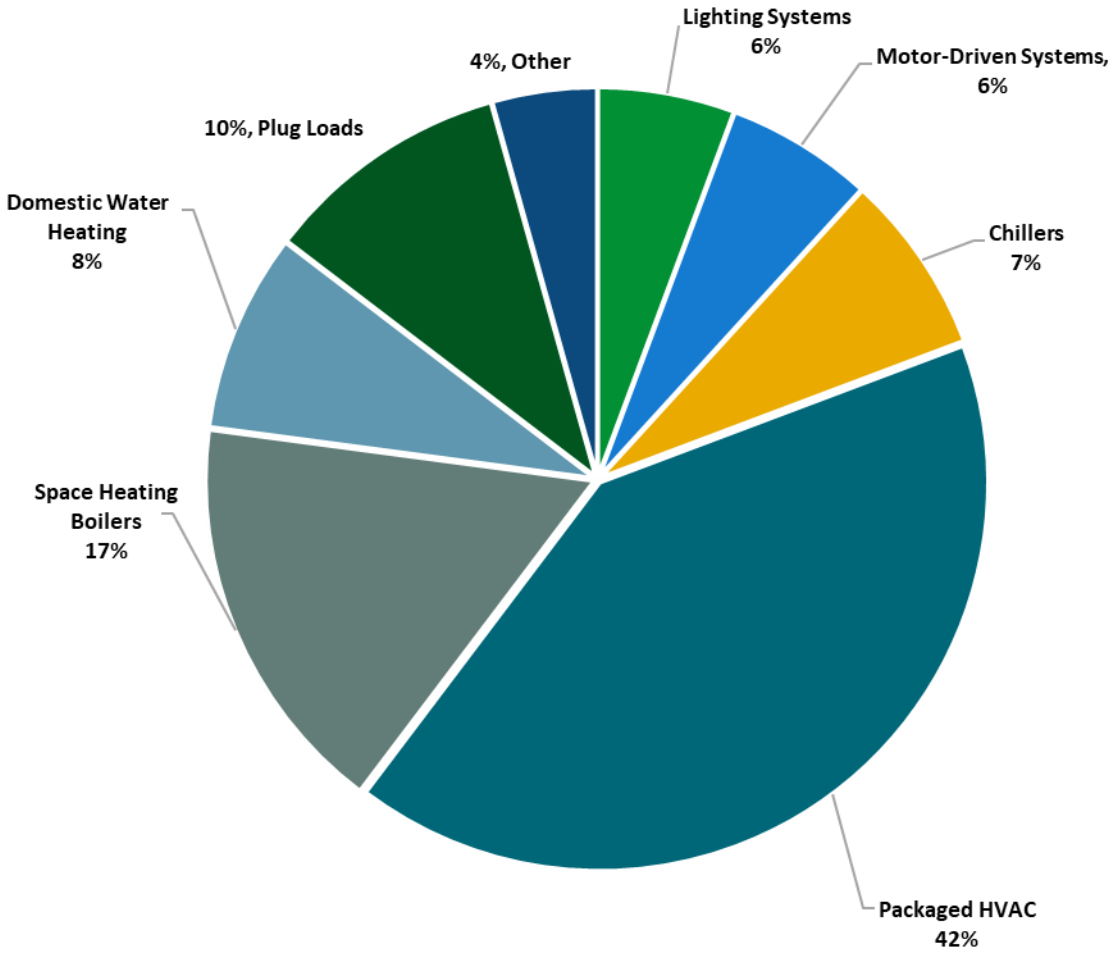
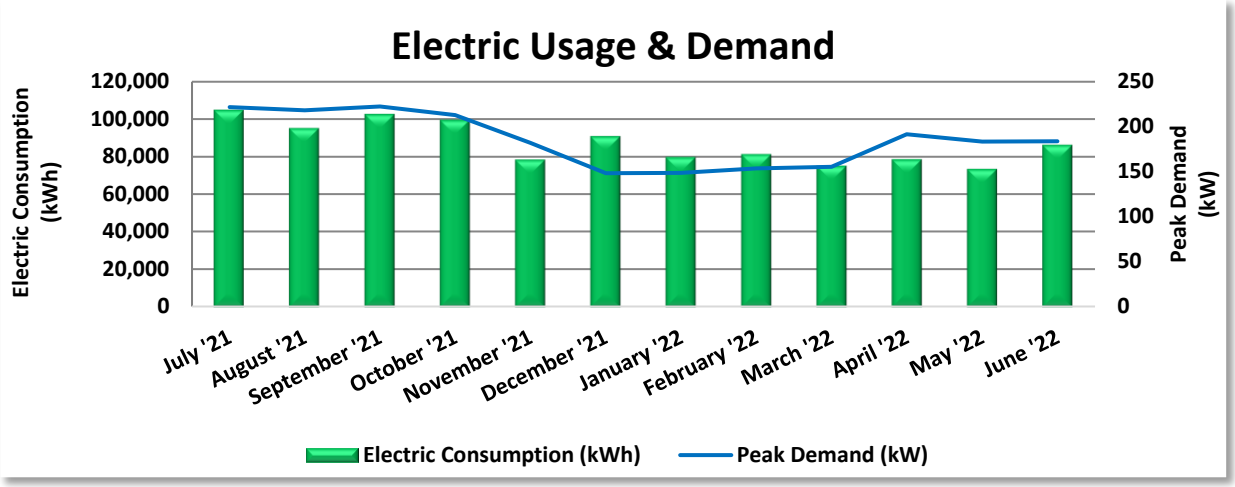


Figure 4 - Energy Balance

3.1 Electricity

Rockland Electric delivers electricity under rate class Electric Comm Prim (TOU-RE-DEL-PJM), with electric production provided by Direct Energy, a third-party supplier.



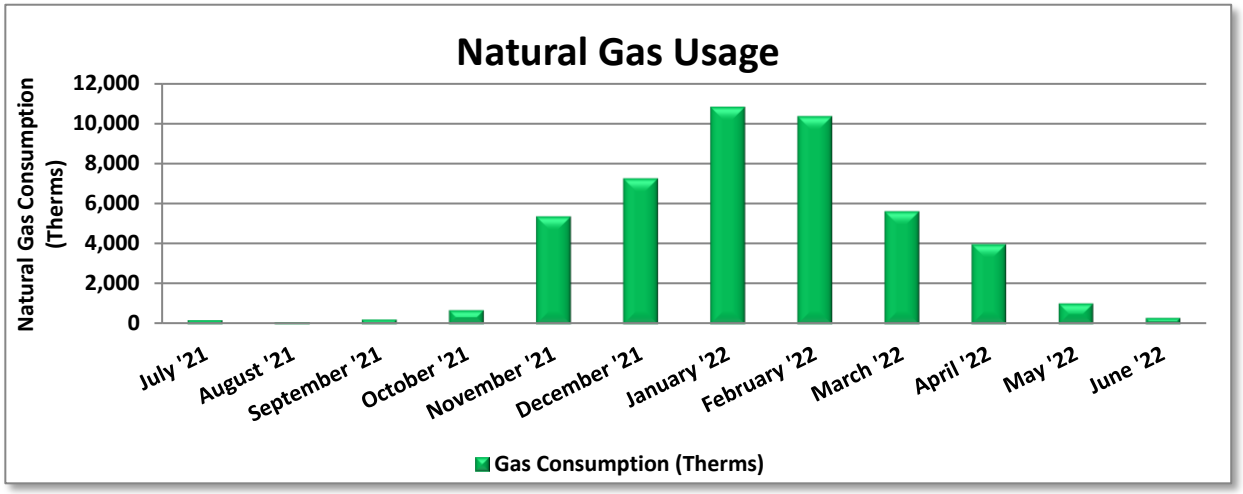
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
7/26/21	32	104,737	222		$12,292
8/24/21	29	95,123	218		$11,316
9/23/21	30	102,662	222		$12,153
10/25/21	32	99,578	213		$11,773
11/23/21	29	78,468	182		$9,363
12/27/21	34	90,873	148		$10,532
1/26/22	30	79,804	149		$11,913
2/24/22	29	81,255	153		$12,189
3/25/22	29	75,221	155		$11,348
4/25/22	31	78,593	192		$12,005
5/23/22	28	73,397	184		$11,187
6/23/22	31	86,157	184		$13,113
Totals	**364**	**1,045,868**	**222**	**$0**	**$139,184**
Annual	**365**	**1,048,741**	**222**	**$0**	**$139,566**

Notes:

- The average electric cost over the past 12 months was $0.133/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.
- These buildings are served from the main campus electric meter along with several others. Energy usage (kWh) and demand (kW) was apportioned among those buildings using a formula that accounts for building area (sf) and presumed energy intensity (EUI) by building type.

3.2 Natural Gas

PSE&G delivers natural gas under rate class Large Volume Gas, with natural gas supply provided by Direct Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
8/2/21	31	214	$271
8/30/21	28	116	$219
9/28/21	29	248	$289
10/28/21	30	712	$584
11/30/21	33	5,365	$4,930
12/29/21	29	7,241	$6,213
1/28/22	30	10,795	$10,802
3/3/22	34	10,327	$10,558
3/31/22	28	5,611	$6,532
5/2/22	32	3,989	$3,548
5/31/22	29	1,033	$1,024
6/30/22	30	313	$407
Totals	**363**	**45,964**	**$45,377**
Annual	**365**	**46,217**	**$45,627**

Notes:

- The average gas cost for the past 12 months is $0.987/therm, which is the blended rate used throughout the analysis.
- This group of buildings is served by a single dedicated gas service.

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.

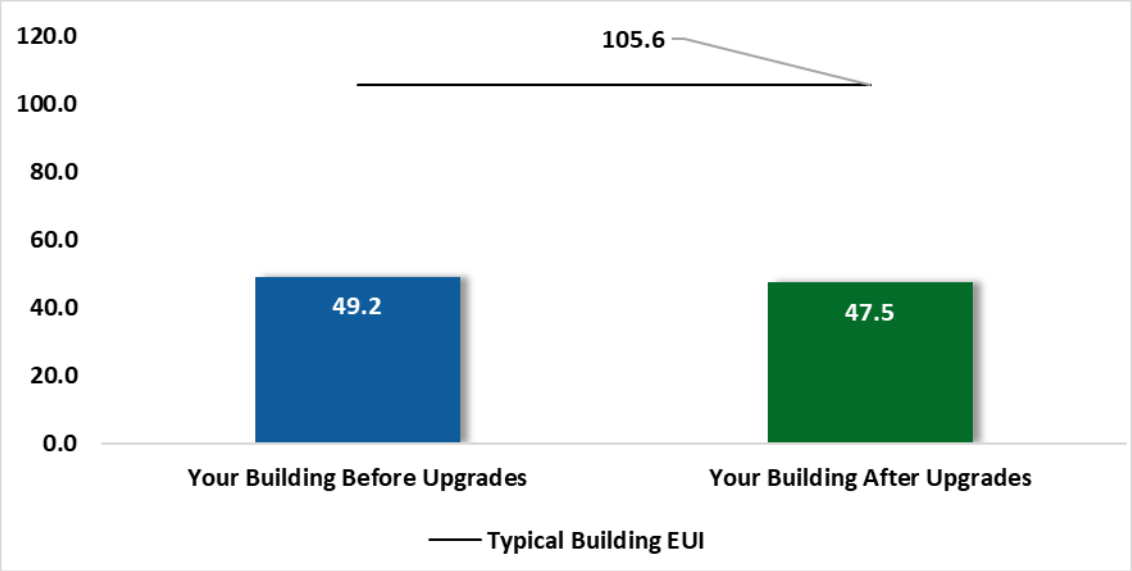


Figure 5 - Energy Use Intensity Comparison[3]

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			**45,111**	**10.0**	**-4**	**$5,959**	**$49,371**	**$9,404**	**$39,967**	**6.7**	**44,901**
ECM 1	Install LED Fixtures	Yes	20,647	0.0	0	$2,748	$10,403	$1,900	$8,503	3.1	20,792
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	3,994	2.5	-1	$523	$6,676	$837	$5,839	11.2	3,925
ECM 3	Retrofit Fixtures with LED Lamps	Yes	20,469	7.5	-4	$2,688	$32,292	$6,667	$25,625	9.5	20,185
Lighting Control Measures			**2,191**	**0.9**	**0**	**$287**	**$5,930**	**$1,145**	**$4,785**	**16.7**	**2,153**
ECM 4	Install Occupancy Sensor Lighting Controls	No	1,978	0.8	0	$259	$5,480	$725	$4,755	18.4	1,943
ECM 5	Install High/Low Lighting Controls	Yes	214	0.1	0	$28	$450	$420	$30	1.1	210
Motor Upgrades			**2,012**	**0.4**	**0**	**$268**	**$2,717**	**$0**	**$2,717**	**10.1**	**2,026**
ECM 6	Premium Efficiency Motors	Yes	2,012	0.4	0	$268	$2,717	$0	$2,717	10.1	2,026
Unitary HVAC Measures			**604**	**0.3**	**2**	**$96**	**$7,376**	**$206**	**$7,170**	**75.0**	**788**
ECM 7	Install High Efficiency Air Conditioning Units	No	604	0.3	2	$96	$7,376	$206	$7,170	75.0	788
HVAC System Improvements			**0**	**0.0**	**40**	**$394**	**$583**	**$76**	**$507**	**1.3**	**4,675**
ECM 8	Install Pipe Insulation	Yes	0	0.0	40	$394	$583	$76	$507	1.3	4,675
Domestic Water Heating Upgrade			**20,390**	**0.0**	**0**	**$2,715**	**$7,781**	**$1,340**	**$6,441**	**2.4**	**20,556**
ECM 9	Install Low-Flow DHW Devices	Yes	20,390	0.0	0	$2,715	$7,781	$1,340	$6,441	2.4	20,556
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$260**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 10	Vending Machine Control	Yes	1,954	0.2	0	$260	$460	$50	$410	1.6	1,968
TOTALS			**72,262**	**11.8**	**37**	**$9,979**	**$74,218**	**$12,221**	**$61,997**	**6.2**	**77,067**

* - 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		**45,111**	**10.0**	**-4**	**$5,959**	**$49,371**	**$9,404**	**$39,967**	**6.7**	**44,901**
ECM 1	Install LED Fixtures	20,647	0.0	0	$2,748	$10,403	$1,900	$8,503	3.1	20,792
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,994	2.5	-1	$523	$6,676	$837	$5,839	11.2	3,925
ECM 3	Retrofit Fixtures with LED Lamps	20,469	7.5	-4	$2,688	$32,292	$6,667	$25,625	9.5	20,185
Lighting Control Measures		**214**	**0.1**	**0**	**$28**	**$450**	**$420**	**$30**	**1.1**	**210**
ECM 5	Install High/Low Lighting Controls	214	0.1	0	$28	$450	$420	$30	1.1	210
Motor Upgrades		**2,012**	**0.4**	**0**	**$268**	**$2,717**	**$0**	**$2,717**	**10.1**	**2,026**
ECM 6	Premium Efficiency Motors	2,012	0.4	0	$268	$2,717	$0	$2,717	10.1	2,026
HVAC System Improvements		**0**	**0.0**	**40**	**$394**	**$583**	**$76**	**$507**	**1.3**	**4,675**
ECM 8	Install Pipe Insulation	0	0.0	40	$394	$583	$76	$507	1.3	4,675
Domestic Water Heating Upgrade		**20,390**	**0.0**	**0**	**$2,715**	**$7,781**	**$1,340**	**$6,441**	**2.4**	**20,556**
ECM 9	Install Low-Flow DHW Devices	20,390	0.0	0	$2,715	$7,781	$1,340	$6,441	2.4	20,556
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0**	**$260**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 10	Vending Machine Control	1,954	0.2	0	$260	$460	$50	$410	1.6	1,968
TOTALS		**69,681**	**10.8**	**36**	**$9,625**	**$61,362**	**$11,290**	**$50,072**	**5.2**	**74,336**

* - 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		**45,111**	**10.0**	**-4**	**$5,959**	**$49,371**	**$9,404**	**$39,967**	**6.7**	**44,901**
ECM 1	Install LED Fixtures	20,647	0.0	0	$2,748	$10,403	$1,900	$8,503	3.1	20,792
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,994	2.5	-1	$523	$6,676	$837	$5,839	11.2	3,925
ECM 3	Retrofit Fixtures with LED Lamps	20,469	7.5	-4	$2,688	$32,292	$6,667	$25,625	9.5	20,185

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 a specific lighting type (e.g., linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

Replace existing fixtures containing HID or incandescent lamps with new LED light fixtures. This measure saves energy by installing LEDs, which use less power than other technologies with a comparable light output.

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

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

Affected Building Areas: exterior fixtures

ECM 2: Retrofit 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, CFL, or 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, or 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		**2,191**	**0.9**	**0**	**$287**	**$5,930**	**$1,145**	**$4,785**	**16.7**	**2,153**
ECM 4	Install Occupancy Sensor Lighting Controls	1,978	0.8	0	$259	$5,480	$725	$4,755	18.4	1,943
ECM 5	Install High/Low Lighting Controls	214	0.1	0	$28	$450	$420	$30	1.1	210

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

We evaluated installing 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, lounge, multipurpose room, library, restrooms, 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 and stairwells

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		**2,012**	**0.4**	**0**	**$268**	**$2,717**	**$0**	**$2,717**	**10.1**	**2,026**
ECM 6	Premium Efficiency Motors	2,012	0.4	0	$268	$2,717	$0	$2,717	10.1	2,026

ECM 6: Premium Efficiency Motors

Replace 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.

The potential savings from installing new fan coils with electronically commutated (EC) motors was evaluated. EC motors are generally more efficient than other fractional hp motors and have the capability of operating at variable speeds. In general, replacing the fan coils should be considered a capital improvement measure that has the potential to provide energy savings and improve occupant comfort.

Affected Motors:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Additional Motor Description
CPA Mech Lower	CPA Mech Lower	1	Heating Hot Water Pump	7.5	dual temp circulation pump
CPA Mech Lower	CPA Mech Lower	1	Heating Hot Water Pump	7.5	dual temp circulation pump

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 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		**604**	**0.3**	**2**	**$96**	**$7,376**	**$206**	**$7,170**	**75.0**	**788**
ECM 7	Install High Efficiency Air Conditioning Units	604	0.3	2	$96	$7,376	$206	$7,170	75.0	788

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 packaged RTU is eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 7: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency packaged 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: laundry building

4.5 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		**0**	**0.0**	**40**	**$394**	**$583**	**$76**	**$507**	**1.3**	**4,675**
ECM 8	Install Pipe Insulation	0	0.0	40	$394	$583	$76	$507	1.3	4,675

ECM 8: Install Pipe Insulation

Install insulation on heating water and 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, CPA Laundry (DHW), and CPA Lower (Dual temp loop)

4.6 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		**20,390**	**0.0**	**0**	**$2,715**	**$7,781**	**$1,340**	**$6,441**	**2.4**	**20,556**
ECM 9	Install Low-Flow DHW Devices	20,390	0.0	0	$2,715	$7,781	$1,340	$6,441	2.4	20,556

ECM 9: 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.

4.7 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		**1,954**	**0.2**	**0**	**$260**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 10	Vending Machine Control	1,954	0.2	0	$260	$460	$50	$410	1.6	1,968

ECM 10: 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.

4.8 Measures for Future Consideration

There are additional opportunities for improvement that Ramapo College of New Jersey may wish to consider. These potential upgrades typically require further analysis, involve substantial capital investment, and/or include significant system reconfiguration. These measure(s) are therefore beyond the scope of this energy audit. These measure(s) are described here to support a whole building approach to energy efficiency and sustainability.

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

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

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

Electric Sub Metering

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

5 Energy Efficient Best Practices

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs.

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

You may already be doing some of these things—see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR Portfolio Manager

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

Lighting Maintenance

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

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

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.

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

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.

Destratification Fans

For areas with high ceilings, destratification fans balance the air temperature from floor to ceiling. They help reduce the recovery time needed to warm the space after nightly temperature setbacks, and they will increase occupants' the comfort level.

Areas with high ceilings require the heating system to heat a larger volume of space than that which is occupied. As the warm air rises, the warmest space is at the ceiling level, rather than floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, which requires additional energy consumption by the heating equipment to compensate for this accelerated heat transfer.

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.

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.

Ductwork Maintenance

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

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

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

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

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.

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.

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.

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

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

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.

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.

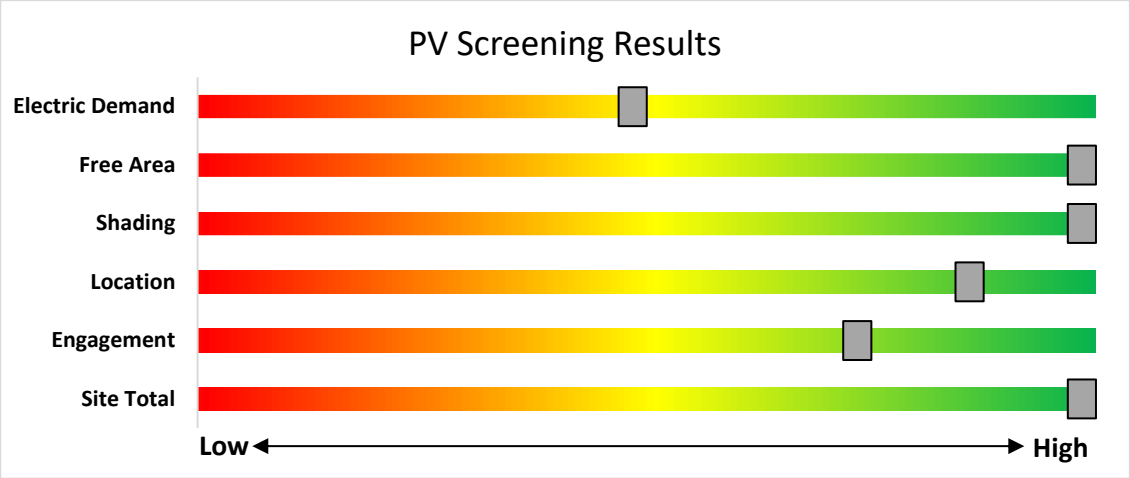
6.1 Solar Photovoltaic

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 a PV array.

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

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



Potential	High	
System Potential	185	kW DC STC
Electric Generation	220,404	kWh/yr
Displaced Cost	$29,330	/yr
Installed Cost	$529,100	

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) generate 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.

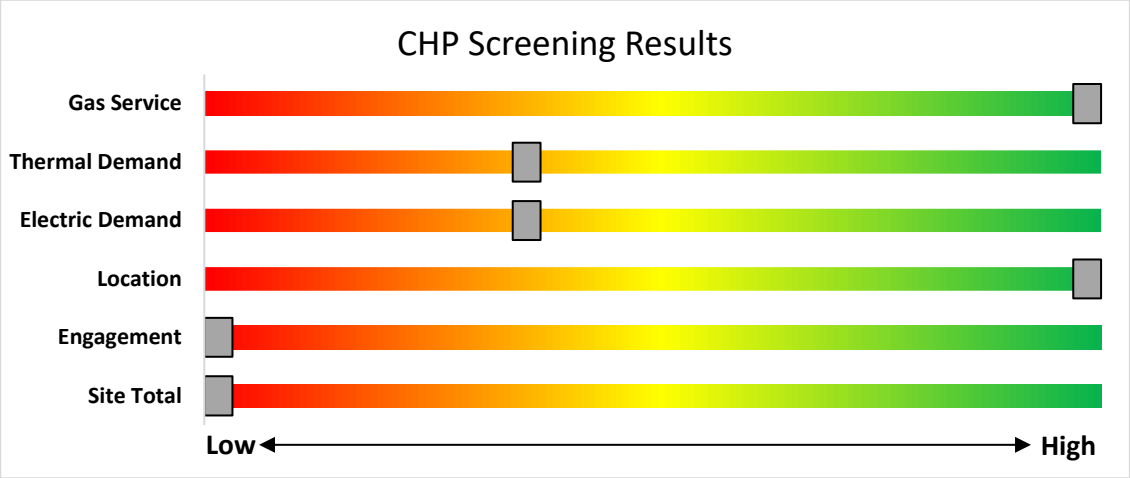


Figure 9 - Combined Heat and Power Screening

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 medium potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

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

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

The location and capacity of facility electric panels also impact charger installation costs. A Level 2 charger generally requires a dedicated 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.

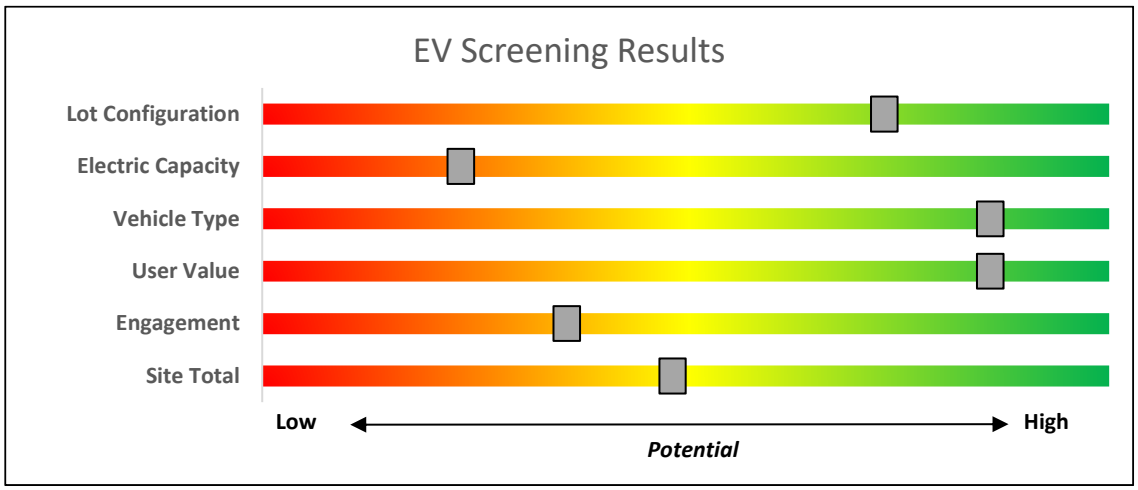


Figure 10 – EV Charger Screening

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.

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 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.

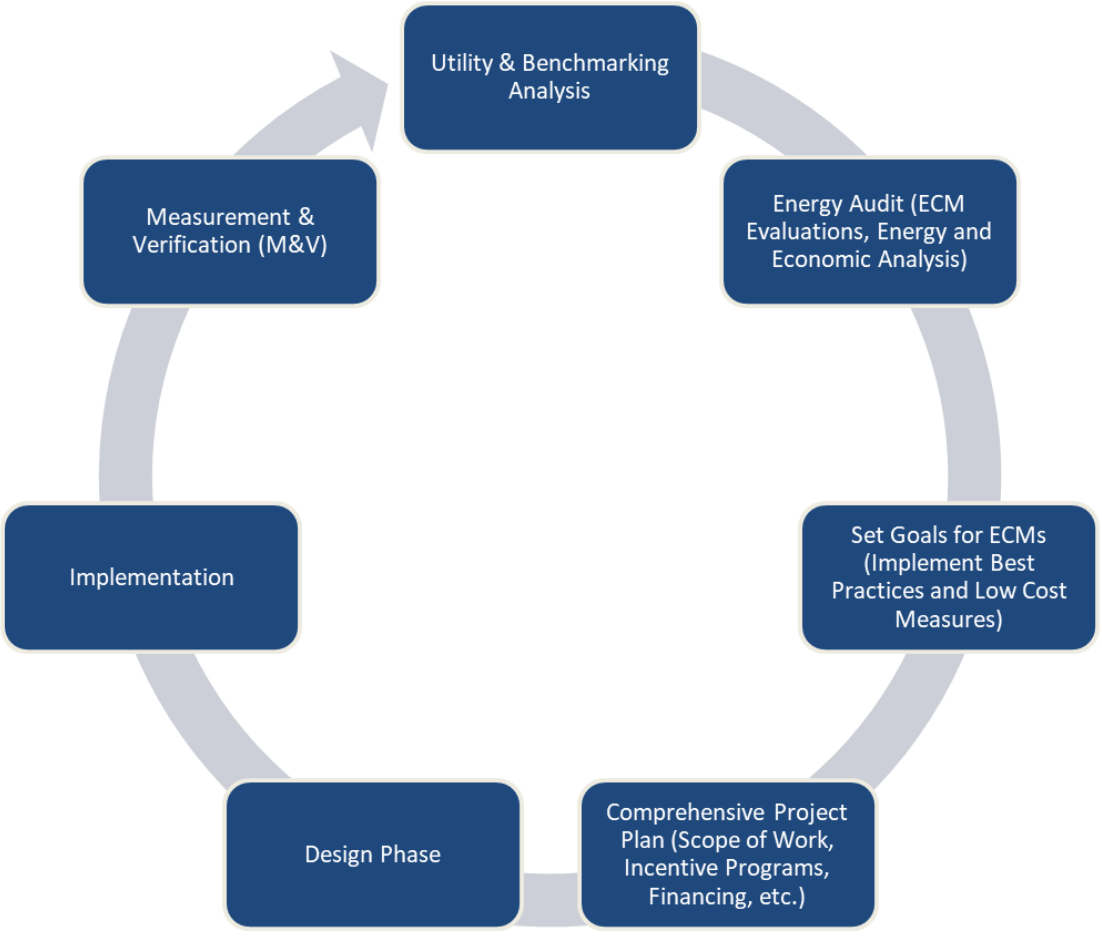


Figure 11 – Project Development Cycle

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
CPA Lodge - Conference 1	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.2	665	0	$87	$562	$115	5.1
CPA Lodge - Corridor 2	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Corridor 2	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 5	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	1,242	0.4	998	0	$131	$888	$540	2.7
CPA Lodge - Corridor Fitness	2	LED Lamps: (1) 12W PAR30 Screw-In Lamp	Wall Switch	S	12	1,800		None	No	2	LED Lamps: (1) 12W PAR30 Screw-In Lamp	Wall Switch	12	1,800	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Electrical Room Outside	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,800	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	85	0	$11	$69	$10	5.3
CPA Lodge - Exterior 1	11	High-Pressure Sodium: (1) 70W Lamp	Photocell		95	4,380	1	Fixture Replacement	No	11	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	21	4,380	0.0	3,565	0	$474	$2,267	$550	3.6
CPA Lodge - Exterior 1	1	High-Pressure Sodium: (1) 400W Lamp	Photocell		465	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Architectural Flood/Spot Luminaire	Photocell	120	4,380	0.0	1,511	0	$201	$517	$50	2.3
CPA Lodge - Exterior 1	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch		9	8,736		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Exterior 1	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Photocell		75	4,380		None	No	6	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Photocell	75	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Exterior 1	2	Metal Halide: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Photocell	75	4,380	0.0	1,927	0	$256	$891	$200	2.7
CPA Lodge - Gymnasium Cardio Rm	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	249	0	$33	$380	$65	9.6
CPA Lodge - Gymnasium Fitness Rm	10	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,800	3, 4	Relamp	Yes	10	LED Lamps: Plug-In Lamp	Occupancy Sensor	18	1,242	0.1	269	0	$35	$770	$135	18.0
CPA Lodge - Gymnasium Fitness Rm	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
CPA Lodge - Gymnasium Fitness Rm	1	Incandescent: (1) 100W BR40 Screw-In Lamp	Wall Switch	S	100	1,800	3	Relamp	No	1	LED Lamps: BR40 Lamps	Wall Switch	15	1,800	0.1	168	0	$22	$26	$3	1.0
CPA Lodge - Gymnasium Fitness Rm	13	LED Lamps: (1) 12W PAR30 Screw-In Lamp	Wall Switch	S	12	1,800	4	None	Yes	13	LED Lamps: (1) 12W PAR30 Screw-In Lamp	Occupancy Sensor	12	1,242	0.0	96	0	$13	$270	$35	18.7
CPA Lodge - Gymnasium Fitness Rm	5	Metal Halide: (1) 250W Lamp	Wall Switch	S	295	1,000	3, 4	Relamp	Yes	5	LED Lamps - E39: ≤125 W Lamp	Occupancy Sensor	75	690	0.9	1,338	0	$175	$1,460	$285	6.7
CPA Lodge - Mechanical 2	2	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	500	2	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.1	47	0	$6	$138	$20	19.0
CPA Lodge - Mechanical Outside	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	500	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	24	0	$3	$69	$10	19.0
CPA Lodge - Multipurpose 1	4	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Wall Switch	S	42	1,800	3, 4	Relamp	Yes	4	LED Lamps: Plug-In Lamp	Occupancy Sensor	30	1,242	0.1	169	0	$22	$324	$39	12.9
CPA Lodge - Multipurpose 1	9	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Wall Switch	S	42	1,800	3, 4	Relamp	Yes	9	LED Lamps: Plug-In Lamp	Occupancy Sensor	30	1,242	0.1	380	0	$50	$392	$44	7.0
CPA Lodge - Multipurpose 1	2	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Wall Switch	S	42	1,800	3, 4	Relamp	Yes	2	LED Lamps: Plug-In Lamp	Occupancy Sensor	30	1,242	0.0	84	0	$11	$143	$22	10.9
CPA Lodge - Multipurpose 1	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Multipurpose 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 10	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	333	0	$44	$416	$75	7.8

	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
CPA Lodge - Office - Enclosed 11	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 12	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 2	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	333	0	$44	$416	$75	7.8
CPA Lodge - Office - Enclosed 3	1	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,800	3	Relamp	No	1	LED Lamps: Plug-In Lamp	Wall Switch	18	1,800	0.0	16	0	$2	$50	$10	19.3
CPA Lodge - Office - Enclosed 3	1	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,800	3	Relamp	No	1	LED Lamps: Plug-In Lamp	Wall Switch	18	1,800	0.0	16	0	$2	$50	$10	19.3
CPA Lodge - Office - Enclosed 3	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Office - Enclosed 4	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Office - Enclosed 7	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Office - Enclosed 8	1	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	30	1,800		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	30	1,800	0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Office - Enclosed 8	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,800	0.0	32	0	$4	$33	$6	6.4
CPA Lodge - Office - Enclosed 9	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Restroom - Female 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Restroom - Female 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Restroom - Female 2	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,800	3, 4	Relamp	Yes	2	LED Lamps: Plug-In Lamp	Occupancy Sensor	18	1,242	0.0	54	0	$7	$100	$20	11.4
CPA Lodge - Restroom - Female 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$73	$20	2.4
CPA Lodge - Restroom - Female 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,242	0.1	249	0	$33	$380	$65	9.6
CPA Lodge - Restroom - Male 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Restroom - Male 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$189	$40	6.8
CPA Lodge - Restroom - Male 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.1	166	0	$22	$343	$55	13.2
CPA Lodge - Restroom - Male 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	1,800	3, 4	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	1,242	0.1	249	0	$33	$110	$30	2.4
CPA Lodge - Server Room 1	1	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,800	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	85	0	$11	$69	$10	5.3
CPA Lodge - Server Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Storage 2	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1
CPA Lodge - Storage Laundry	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,800	0.0	65	0	$9	$37	$10	3.1

	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
CPA Lodge - Storage 3	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,800	4	None	Yes	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Occupancy Sensor	9	1,242	0.0	22	0	$3	$270	$0	93.3
CPA Laundry - Exterior 2	1	Compact Fluorescent: (1) 23W Spiral Screw-In Lamp	Photocell		23	4,380	3	Relamp	No	1	LED Lamps: Screw-In Lamp	Photocell	9	4,380	0.0	61	0	$8	$17	$1	2.0
CPA Laundry - Mechanical 1	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	2,000		None	No	2	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	2,000	0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Office - Laundry	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
CPA Laundry - Office - Laundry	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,800	3, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	1,242	0.2	665	0	$87	$562	$115	5.1
CPA Fire Safety - Electrical Room 1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	500		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	500	0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Exterior 1	1	Incandescent: (1) 75W A19 Screw-In Lamp	Photocell		75	4,380	3	Relamp	No	1	LED Lamps: (1) A- Lamp	Photocell	12	4,380	0.0	276	0	$37	$17	$1	0.4
CPA Fire Safety - Exterior 1	2	LED - Fixtures: Wall Pack	Photocell		20	4,380		None	No	2	LED - Fixtures: Wall Pack	Photocell	20	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Garage 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,200	3, 4	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	828	0.1	222	0	$29	$416	$75	11.7
CPA Fire Safety - Garage 1	9	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,200	3, 4	Relamp	Yes	9	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	828	0.5	879	0	$115	$927	$215	6.2
CPA Fire Safety - Office - Enclosed 1	4	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,200	3, 4	Relamp	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	828	0.2	391	0	$51	$562	$115	8.7
CPA Fire Safety - Office - Enclosed 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	1,200	3, 4	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	828	0.1	111	0	$15	$189	$40	10.3
CPA Fire Safety - Restroom - Unisex 1	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
CPA Fire Safety - Restroom - Unisex 1	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	9	0	$1	$33	$6	23.0
CPA Fire Safety - Restroom - Unisex 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	1,200	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	1,200	0.0	74	0	$10	$73	$20	5.5
CPA Cypress - Corridor 1A	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Corridor 1B	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Corridor 1B	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Electrical Room 1	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	10	500		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Exterior 1	2	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Photocell		42	4,380	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Photocell	30	4,380	0.0	105	0	$14	$27	$2	1.8
CPA Cypress - Exterior 1	2	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	1,191	0	$159	$451	$100	2.2
CPA Cypress - Exterior 1	1	Metal Halide: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	75	4,380	0.0	964	0	$128	$471	$50	3.3
CPA Cypress - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	10	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 1B	8	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	8	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 1B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	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
CPA Cypress - Lounge/Kitchen 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	10	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 1A	8	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	8	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Mechanical 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	10	500		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Mechanical 1B	3	LED - Fixtures: Wall Mount	Wall Switch	S	10	500		None	No	3	LED - Fixtures: Wall Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Residential 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Residential 1B-1	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Residential 1B-2	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Storage K	1	LED - Fixtures: Wall Mount	Wall Switch	S	10	500		None	No	1	LED - Fixtures: Wall Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Server Room 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	36	0	$5	$73	$20	11.2
CPA Cypress - Restroom - Unisex 1A	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Restroom - Unisex 1A	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Restroom - Unisex 1B	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Restroom - Unisex 1B	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 2A	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9
CPA Cypress - Lounge/Kitchen 2A	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9
CPA Cypress - Lounge/Kitchen 2A	14	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	14	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 2A	14	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	40	1,200		None	No	14	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	40	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Lounge/Kitchen 2A	14	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	14	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Corridor/Vanity 2A	14	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	40	1,200		None	No	14	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	40	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Corridor/Vanity 2A	14	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	14	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Corridor/Vanity 2A	28	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	28	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Residential 2A-1	14	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	14	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Residential 2A-2	14	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	14	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Cypress - Restroom - Unisex 2A	14	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	14	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	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
CPA Tamarack - Corridor 1A	5	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	53	0	$7	$250	$50	28.9
CPA Tamarack - Kitchen/Lounge 1A	5	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	26	0	$3	$125	$25	28.9
CPA Tamarack - Kitchen/Lounge 1A	5	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	53	0	$7	$250	$50	28.9
CPA Tamarack - Kitchen/Lounge 1A	5	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	53	0	$7	$250	$50	28.9
CPA Tamarack - Kitchen/Lounge 1A	5	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	5	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Tamarack - Kitchen/Lounge 1A	5	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	5	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.1	188	0	$25	$253	$25	9.2
CPA Tamarack - Residential 1A-1	5	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	53	0	$7	$250	$50	28.9
CPA Tamarack - Residential 1A-2	5	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	53	0	$7	$250	$50	28.9
CPA Tamarack - Restroom - Unisex 1A	5	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	5	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	26	0	$3	$125	$25	28.9
CPA Tamarack - Restroom - Unisex 1A	5	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.2	284	0	$37	$344	$50	7.9
CPA Tamarack - Corridor/Vanity 1B	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Tamarack - Corridor/Vanity 1B	4	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	1,200	2	Relamp & Reballast	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,200	0.1	174	0	$23	$259	$24	10.3
CPA Tamarack - Kitchen/Lounge 1B	4	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Tamarack - Kitchen/Lounge 1B	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Tamarack - Kitchen/Lounge 1B	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Tamarack - Kitchen/Lounge 1B	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Tamarack - Kitchen/Lounge 1B	4	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.1	150	0	$20	$202	$20	9.2
CPA Tamarack - Residential 1B	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Tamarack - Restroom - Unisex 1B	4	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Tamarack - Storage 1B	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	500		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	500	0.0	0	0	$0	$0	$0	0.0
CPA Tamarack - Electrical Room	1	Compact Fluorescent: (1) 23W Spiral Screw-In Lamp	Wall Switch	S	23	500	3	Relamp	No	1	LED Lamps: Screw-In Lamp	Wall Switch	16	500	0.0	4	0	$1	$17	$1	32.2
CPA Tamarack - Server Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$10	11.2
CPA Tamarack - Kitchen/Lounge 2A	14	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Tamarack - Kitchen/Lounge 2A	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9
CPA Tamarack - Kitchen/Lounge 2A	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9

	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
CPA Tamarack - Kitchen/Lounge 2A	14	LED Lamps: (1) 14W A19 Screw-In Lamp	Wall Switch	S	14	1,200		None	No	14	LED Lamps: (1) 14W A19 Screw-In Lamp	Wall Switch	14	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Tamarack - Kitchen/Lounge 2A	14	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	14	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Tamarack - Kitchen/Lounge 2A	14	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	14	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.3	527	0	$69	$707	$70	9.2
CPA Tamarack - Corridor/Vanity 2A	14	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Tamarack - Corridor/Vanity 2A	14	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Tamarack - Corridor/Vanity 2A	14	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	14	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.4	795	0	$104	$963	$140	7.9
CPA Tamarack - Residential 2A-1	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9
CPA Tamarack - Residential 2A-2	14	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.1	148	0	$19	$700	$140	28.9
CPA Tamarack - Restroom - Unisex 2A	14	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	14	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Tamarack - Exterior 1	1	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Photocell		42	4,380	3	Relamp	No	1	LED Lamps: Plug-In Lamp	Photocell	30	4,380	0.0	53	0	$7	$14	$1	1.8
CPA Tamarack - Exterior 1	2	Halogen Incandescent: (1) 80W Screw-in Lamps	Photocell		80	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	12	4,380	0.0	596	0	$79	$289	$100	2.4
CPA Tamarack - Exterior 1	1	Metal Halide: (1) Wall Pack	Photocell		250	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	75	4,380	0.0	767	0	$102	$471	$50	4.1
CPA Sycamore - Corridor/Vanity 1A	6	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	6	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Sycamore - Corridor/Vanity 1A	6	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.2	341	0	$45	$413	$60	7.9
CPA Sycamore - Kitchen/Lounge 1A	6	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	6	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	63	0	$8	$300	$60	28.9
CPA Sycamore - Kitchen/Lounge 1A	6	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	6	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	63	0	$8	$300	$60	28.9
CPA Sycamore - Kitchen/Lounge 1A	6	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	6	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Sycamore - Kitchen/Lounge 1A	6	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	6	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.1	226	0	$30	$303	$30	9.2
CPA Sycamore - Residential 1A	6	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	6	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Sycamore - Restroom - Unisex 1A	6	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	6	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Sycamore - Corridor/Vanity 2A	7	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	37	0	$5	$175	$35	28.9
CPA Sycamore - Corridor/Vanity 2A	7	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.2	397	0	$52	$481	$70	7.9
CPA Sycamore - Kitchen/Lounge 2A	7	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Sycamore - Kitchen/Lounge 2A	7	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Sycamore - Kitchen/Lounge 2A	7	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	7	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	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
CPA Sycamore - Kitchen/Lounge 2A	7	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	7	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.1	263	0	$35	$354	$35	9.2
CPA Sycamore - Residential 2A-1	7	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Sycamore - Residential 2A-2	7	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	74	0	$10	$350	$70	28.9
CPA Sycamore - Restroom - Unisex 2A	7	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	7	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	37	0	$5	$175	$35	28.9
CPA Sycamore - Electrical Room 1	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	500		None	No	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	500	0.0	0	0	$0	$0	$0	0.0
CPA Sycamore - Exterior 1	13	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Photocell		42	4,380	3	Relamp	No	13	LED Lamps: Plug-In Lamp	Photocell	30	4,380	0.0	683	0	$91	$176	$13	1.8
CPA Sycamore - Exterior 1	1	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	596	0	$79	$225	$50	2.2
CPA Sycamore - Exterior 1	1	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	596	0	$79	$225	$50	2.2
CPA Sycamore - Exterior 1	1	Metal Halide: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	75	4,380	0.0	964	0	$128	$471	$50	3.3
CPA Sycamore - Server Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$10	11.2
CPA Mulberry - Lounge/Kitchen 1B	2	LED - Fixtures: Wall Mount	Wall Switch	S	10	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 1B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 1A	3	LED - Fixtures: Wall Mount	Wall Switch	S	10	1,200		None	No	3	LED - Fixtures: Wall Mount	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 1A	6	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	6	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 1A	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Mechanical 1A	2	LED - Fixtures: Wall Mount	Wall Switch	S	10	500		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Mechanical 1B	2	LED - Fixtures: Wall Mount	Wall Switch	S	10	500		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Residential 1A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Residential 1B-1	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Residential 1B-2	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Restroom - Unisex 1A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Restroom - Unisex 1A	2	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Restroom - Unisex 1B	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Restroom - Unisex 1B	3	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	3	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	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
CPA Mulberry - Lounge/Kitchen 2A	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Mulberry - Lounge/Kitchen 2A	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Mulberry - Lounge/Kitchen 2A	8	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	8	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 2A	8	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	40	1,200		None	No	8	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	40	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Lounge/Kitchen 2A	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Corridor/Vanity 2A	8	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	S	40	1,200		None	No	8	LED - Fixtures: Ambient 1x4 Fixture	Wall Switch	40	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Corridor/Vanity 2A	8	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	8	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Corridor/Vanity 2A	16	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	16	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Residential 2A-1	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Residential 2A-2	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Restroom - Unisex 2A	8	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	8	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Electrical Room 1	1	LED - Fixtures: Ceiling Mount	Wall Switch	S	10	500		None	No	1	LED - Fixtures: Ceiling Mount	Wall Switch	10	500	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Exterior 1	9	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Photocell		42	4,380	3	Relamp	No	9	LED Lamps: Plug-In Lamp	Photocell	30	4,380	0.0	473	0	$63	$122	$9	1.8
CPA Mulberry - Exterior 1	1	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	596	0	$79	$225	$50	2.2
CPA Mulberry - Exterior 1	1	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	596	0	$79	$225	$50	2.2
CPA Mulberry - Exterior 1	1	Metal Halide: (1) 250W Lamp	Photocell		295	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	75	4,380	0.0	964	0	$128	$471	$50	3.3
CPA Mulberry - Server Room 1	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$10	11.2
CPA Mulberry - Corridor 1A	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Corridor 1B	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Ambient - 2' - Direct Fixture	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Corridor 1B	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Corridor 1A	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Butternut - Kitchen/Lounge 1A	2	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	11	0	$1	$50	$10	28.9
CPA Butternut - Kitchen/Lounge 1A	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Butternut - Kitchen/Lounge 1A	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Butternut - Kitchen/Lounge 1A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	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
CPA Butternut - Kitchen/Lounge 1A	2	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.0	75	0	$10	$101	$10	9.2
CPA Butternut - Residential 1A-1	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Butternut - Residential 1A-2	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	21	0	$3	$100	$20	28.9
CPA Butternut - Restroom - Unisex 1A	2	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	11	0	$1	$50	$10	28.9
CPA Butternut - Restroom - Unisex 1A	2	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.1	114	0	$15	$138	$20	7.9
CPA Butternut - Corridor/Vanity 1B	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Butternut - Corridor/Vanity 1B	3	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	S	50	1,200	2	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,200	0.1	131	0	$17	$194	$18	10.3
CPA Butternut - Kitchen/Lounge 1B	3	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	16	0	$2	$75	$15	28.9
CPA Butternut - Kitchen/Lounge 1B	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Butternut - Kitchen/Lounge 1B	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Butternut - Kitchen/Lounge 1B	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Kitchen/Lounge 1B	3	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.1	113	0	$15	$152	$15	9.2
CPA Butternut - Residential 1B	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	32	0	$4	$150	$30	28.9
CPA Butternut - Restroom - Unisex 1B	3	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	16	0	$2	$75	$15	28.9
CPA Butternut - Storage 1B	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	500		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	500	0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Electrical Room	1	Compact Fluorescent: (1) 23W spiral Screw-In Lamp	Wall Switch	S	23	500	3	Relamp	No	1	LED Lamps: Screw-In Lamp	Wall Switch	16	500	0.0	4	0	$1	$17	$1	32.2
CPA Butternut - Server Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	500	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	500	0.0	18	0	$2	$37	$10	11.2
CPA Butternut - Kitchen/Lounge 2A	8	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Butternut - Kitchen/Lounge 2A	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Butternut - Kitchen/Lounge 2A	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Butternut - Kitchen/Lounge 2A	8	LED Lamps: (1) 14W A19 Screw-In Lamp	Wall Switch	S	14	1,200		None	No	8	LED Lamps: (1) 14W A19 Screw-In Lamp	Wall Switch	14	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Kitchen/Lounge 2A	8	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	8	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Kitchen/Lounge 2A	8	Linear Fluorescent - EST12: 4' T12 (34W) - 1L	Wall Switch	S	43	1,200	2	Relamp & Reballast	No	8	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	1,200	0.2	301	0	$39	$404	$40	9.2
CPA Butternut - Corridor/Vanity 2A	8	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Butternut - Corridor/Vanity 2A	8	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	42	0	$6	$200	$40	28.9

	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
CPA Butternut - Corridor/Vanity 2A	8	Linear Fluorescent - EST12: 4' T12 (34W) - 2L	Wall Switch	S	72	1,200	2	Relamp & Reballast	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	1,200	0.2	454	0	$59	$550	$80	7.9
CPA Butternut - Residential 2A-1	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Butternut - Residential 2A-2	8	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$400	$80	28.9
CPA Butternut - Restroom - Unisex 2A	8	Compact Fluorescent: (1) 13W Biaxial Plug-In Lamp	Wall Switch	S	13	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	9	1,200	0.0	42	0	$6	$200	$40	28.9
CPA Butternut - Exterior 1	4	Compact Fluorescent: (1) 42W Biaxial Plug-In Lamp	Photocell		42	4,380	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Photocell	30	4,380	0.0	210	0	$28	$54	$4	1.8
CPA Butternut - Exterior 1	2	Halogen Incandescent: (2) 80W Screw-in Lamps	Photocell		160	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	24	4,380	0.0	1,191	0	$159	$451	$100	2.2
CPA Butternut - Exterior 1	1	Metal Halide: (1) Wall Pack	Photocell		250	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	75	4,380	0.0	767	0	$102	$471	$50	4.1
CPA Mimosa - Corridor/Vanity 1A	3	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	3	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 1A	6	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	6	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 1B	3	LED - Fixtures: (1) Wall Mount	Wall Switch	S	20	1,200		None	No	3	LED - Fixtures: (1) Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 1B	6	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	6	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Exterior 1	3	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Photocell	13	4,380	0.0	512	0	$68	$150	$0	2.2
CPA Mimosa - Exterior 1	2	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	2	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Exterior 1	1	Metal Halide: (1) 150W Lamp	Photocell		190	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	45	4,380	0.0	635	0	$85	$346	$50	3.5
CPA Mimosa - Lounge/Kitchen 1A	6	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	6	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 1A	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 1B	6	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	6	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 1B	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Mechanical	6	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	6	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	26	0	$3	$300	$60	69.4
CPA Mimosa - Residential 1A-1	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 1A-2	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 1B-1	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 1B-2	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Restroom - 1A	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Restroom - 1B	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	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
CPA Mimosa - Corridor/Vanity 2A	3	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	3	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 2A	6	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	6	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 2B	3	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	3	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Corridor/Vanity 2B	6	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	6	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 2A	6	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	6	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 2A	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 2B	6	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	6	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Lounge/Kitchen 2B	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 2A	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 2A	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 2B	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Residential 2B	3	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	3	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Restroom - 2A	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Restroom - 2B	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	3	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Storage 2A	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	13	0	$2	$150	$30	69.4
CPA Mimosa - Storage 2B	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	13	0	$2	$150	$30	69.4
CPA Mimosa - Server Room 1	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	3	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	13	0	$2	$150	$30	69.4
CPA Mimosa - Stairs 1	3	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	None		26	8,736	3	Relamp	No	3	LED Lamps: Plug-In Lamp	None	18	8,736	0.0	231	0	$30	$150	$30	4.0
CPA Mimosa - Stairs 1	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Stairs 1	6	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	6	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Mimosa - Stairs 1	12	LED - Fixtures: Linear Strip	None		32	8,736		None	No	12	LED - Fixtures: Linear Strip	None	32	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Redwood - Corridor/Vanity 1A	8	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Redwood - Corridor/Vanity 1A	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	1,200	3	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,200	0.0	84	0	$11	$130	$24	9.6
CPA Redwood - Exterior 1	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	1	LED Lamps: Plug-In Lamp	Photocell	36	4,380	0.0	70	0	$9	$50	$10	4.3
CPA Redwood - Exterior 1	1	Metal Halide: (1) 150W Lamp	Photocell		190	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	45	4,380	0.0	635	0	$85	$346	$50	3.5

	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
CPA Hickory - Residential 1A-2	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Residential 1B-2	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Residential 1B-2	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Restroom - Unisex 1A	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Hickory - Stairs A	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
CPA Hickory - Stairs A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	None		62	8,736	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	None	29	8,736	0.1	1,268	0	$166	$146	$40	0.6
CPA Hickory - Storage 1A	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	500	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	500	0.0	35	0	$5	$200	$40	34.7
CPA Hickory - Corridor/Vanity 2A	8	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Corridor/Vanity 2A	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	1,200	3	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	1,200	0.0	84	0	$11	$130	$24	9.6
CPA Hickory - Lounge/Kitchen 2A	8	Compact Fluorescent: (1) 26W Biaxial Plug-In Lamp	Wall Switch	S	26	1,200	3	Relamp	No	8	LED Lamps: Plug-In Lamp	Wall Switch	18	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Lounge/Kitchen 2A	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Residential 2A-1	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Residential 2A-2	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	1,200	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	1,200	0.0	84	0	$11	$200	$40	14.5
CPA Hickory - Restroom - Unisex 2A	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	4	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Hickory - Storage 2A	4	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Wall Switch	S	52	500	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	36	500	0.0	35	0	$5	$200	$40	34.7
CPA Buckeye - Corridor/Vanity A	4	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Corridor/Vanity A	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Janitorial 1	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	35	0	$5	$130	$24	23.0
CPA Buckeye - Lounge/Kitchen A	8	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	8	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Lounge/Kitchen A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	12	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	12	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Lounge/Kitchen A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Residential A1	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Residential A2	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Restroom - Unisex A	4	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,200		None	No	4	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Buckeye - Stairs 1	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	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
CPA Buckeye - Stairs 1	8	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	8	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Corridor/Vanity A	4	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Corridor/Vanity A	8	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	8	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Janitorial 1	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	500	3	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	500	0.0	35	0	$5	$130	$24	23.0
CPA Holly - Lounge/Kitchen A	8	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	8	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Lounge/Kitchen A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	12	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	12	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Lounge/Kitchen A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Residential A1	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Residential A2	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Restroom - Unisex A	4	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	S	10	1,200		None	No	4	LED Lamps: (1) 10W A19 Screw-In Lamp	Wall Switch	10	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Stairs 1	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Holly - Stairs 1	8	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	8	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA International - Corridor/Vanity 1A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Corridor/Vanity 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Corridor/Vanity 1B	2	LED - Fixtures: (1) Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: (1) Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Corridor/Vanity 1B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Exterior 1	2	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Photocell	36	4,380	0.0	140	0	$19	$100	$20	4.3
CPA International - Exterior 1	3	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	3	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
CPA International - Exterior 1	2	Metal Halide: (1) 150W Lamp	Photocell		190	4,380	1	Fixture Replacement	No	2	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	45	4,380	0.0	1,270	0	$169	$692	$100	3.5
CPA International - Lounge/Kitchen 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Lounge/Kitchen 1A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Lounge/Kitchen 1B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA International - Mechanical	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	18	0	$2	$200	$40	69.4
CPA International - Residential 1A-1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	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
CPA International - Stairs 1	8	LED - Fixtures: Linear Strip	None		32	8,736		None	No	8	LED - Fixtures: Linear Strip	None	32	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 1A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 1B	2	LED - Fixtures: (1) Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: (1) Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 1B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Exterior 1	2	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Photocell	36	4,380	0.0	140	0	$19	$100	$20	4.3
CPA Palm - Exterior 1	2	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	2	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Exterior 1	1	Metal Halide: (1) 150W Lamp	Photocell		190	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	45	4,380	0.0	635	0	$85	$346	$50	3.5
CPA Palm - Lounge/Kitchen 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 1A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 1B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Mechanical	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	18	0	$2	$200	$40	69.4
CPA Palm - Residential 1A-1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 1A-2	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 1B-1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 1B-2	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Restroom - 1A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Restroom - 1B	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 2A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 2A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 2B	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Corridor/Vanity 2B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 2A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	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
CPA Palm - Lounge/Kitchen 2B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Lounge/Kitchen 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Residential 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Restroom - 2A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Restroom - 2B	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Storage 2A	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Palm - Storage 2B	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Palm - Server Room 1	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Palm - Stairs 1	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	None		26	8,736	3	Relamp	No	2	LED Lamps: Plug-In Lamp	None	18	8,736	0.0	154	0	$20	$100	$20	4.0
CPA Palm - Stairs 1	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Stairs 1	4	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	4	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Palm - Stairs 1	8	LED - Fixtures: Linear Strip	None		32	8,736		None	No	8	LED - Fixtures: Linear Strip	None	32	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Corridor/Vanity 1A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Corridor/Vanity 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Corridor/Vanity 1B	2	LED - Fixtures: (1) Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: (1) Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Corridor/Vanity 1B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Exterior 1	2	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Photocell	36	4,380	0.0	140	0	$19	$100	$20	4.3
CPA Elm - Exterior 1	1	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	1	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Lounge/Kitchen 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Lounge/Kitchen 1A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Lounge/Kitchen 1B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	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
CPA Elm - Stairs 1	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Stairs 1	4	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	4	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Stairs 1	8	LED - Fixtures: Linear Strip	None		32	8,736		None	No	8	LED - Fixtures: Linear Strip	None	32	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 1A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 1A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 1B	2	LED - Fixtures: (1) Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: (1) Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 1B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Exterior 1	1	Compact Fluorescent: (2) 26W Biaxial Plug-In Lamps	Photocell		52	4,380	3	Relamp	No	1	LED Lamps: Plug-In Lamp	Photocell	36	4,380	0.0	70	0	$9	$50	$10	4.3
CPA Science - Exterior 1	1	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	1	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Science - Exterior 1	1	Metal Halide: (1) 150W Lamp	Photocell		190	4,380		None	No	1	Metal Halide: (1) 150W Lamp	Photocell	190	4,380	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 1A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 1A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	18	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	18	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 1B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 1B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Mechanical	4	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	4	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	18	0	$2	$200	$40	69.4
CPA Science - Residential 1A-1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 1A-2	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 1B-1	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 1B-2	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Restroom - 1A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Restroom - 1B	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 2A	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 2A	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 2B	2	LED - Fixtures: Wall Mount	Wall Switch	S	20	1,200		None	No	2	LED - Fixtures: Wall Mount	Wall Switch	20	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Corridor/Vanity 2B	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	4	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	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
CPA Science - Lounge/Kitchen 2A	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 2B	4	LED - Fixtures: Wall Mount	Wall Switch	S	5	1,200		None	No	4	LED - Fixtures: Wall Mount	Wall Switch	5	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Lounge/Kitchen 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 2A	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Residential 2B	2	LED - Fixtures: Ceiling Mount	Wall Switch	S	25	1,200		None	No	2	LED - Fixtures: Ceiling Mount	Wall Switch	25	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Restroom - 2A	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Restroom - 2B	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	1,200		None	No	2	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	1,200	0.0	0	0	$0	$0	$0	0.0
CPA Science - Storage 2A	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Science - Storage 2B	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Science - Server Room 1	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	Wall Switch	S	26	500	3	Relamp	No	2	LED Lamps: Plug-In Lamp	Wall Switch	18	500	0.0	9	0	$1	$100	$20	69.4
CPA Science - Stairs 1	2	Compact Fluorescent: (2) 13W Biaxial Plug-In Lamps	None		26	8,736	3	Relamp	No	2	LED Lamps: Plug-In Lamp	None	18	8,736	0.0	154	0	$20	$100	$20	4.0
CPA Science - Stairs 1	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
CPA Science - Stairs 1	4	LED - Fixtures: Ambient 1x4 Fixture	None		53	8,736		None	No	4	LED - Fixtures: Ambient 1x4 Fixture	None	53	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Elm - Stairs 1	8	LED - Fixtures: Linear Strip	None		32	8,736		None	No	8	LED - Fixtures: Linear Strip	None	32	8,736	0.0	0	0	$0	$0	$0	0.0
CPA Mech Lower	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	S	26	2,000	2	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	2,000	-0.1	-202	0	-$27	$257	$40	-8.2
CPA Mech Upper	1	Metal Halide: (1) 70W Lamp	Photocell		32	4,380	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Photocell	21	4,380	0.0	48	0	$6	$206	$50	24.3
CPA Mech Upper	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	S	42	8,736	2	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 8' Lamps	Wall Switch	72	8,736	0.0	-577	0	-$76	$257	$40	-2.9

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
CPA Lodge - Mechanical 2	CPA Lodge	1	Heating Hot Water Pump	1.5	80.0%	No	Marathon	8VA145TTDR5354AB	W	2,745		No	80.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Lodge - Mechanical 2	CPA Lodge	2	DHW Circulation Pump	0.0	65.0%	No	Taco	007-F5	W	8,760		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	20	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	1	Supply Fan	0.3	65.0%	No			W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Office - Laundry	CPA Laundry	1	Exhaust Fan	0.2	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Mechanical 1	CPA Laundry	1	Heating Hot Water Pump	0.3	65.0%	No	Unknown	Unknown	W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Exterior 1	CPA Laundry	1	Supply Fan	0.3	65.0%	No	Trane	YCC024F1L0BJ	B	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Cypress	CPA Cypress	22	Supply Fan	0.3	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Tamarack	CPA Tamarack	23	Supply Fan	0.3	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Sycamore	CPA Sycamore	13	Supply Fan	0.3	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Mulberry	CPA Mulberry	13	Supply Fan	0.3	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Butternut	CPA Butternut	13	Supply Fan	0.3	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Mimosa	CPA Mimosa	27	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Redwood	CPA Redwood	15	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Hickory	CPA Hickory	15	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Buckeye	CPA Buckeye	15	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Holly	CPA Holly	15	Supply Fan	0.2	65.0%	No	Unknown	Unknown	W	2,500		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
CPA Mech Lower	CPA Mech Lower	1	Heating Hot Water Pump	7.5	85.5%	No	Leland Faraday	LFI-9075A	B	3,391	6	Yes	91.0%	No		0.2	1,006	0	$134	$1,358	$0	10.1
CPA Mech Lower	CPA Mech Lower	1	Heating Hot Water Pump	7.5	85.5%	No	Reliance	P21F311	B	3,391	6	Yes	91.0%	No		0.2	1,006	0	$134	$1,358	$0	10.1
CPA Mech Upper	CPA Mech Upper	2	Heating Hot Water Pump	5.0	87.5%	No	Marathon	Unknown	W	2,745		No	87.5%	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
CPA Lodge - Mechanical Outside	CPA Lodge	1	Split-System	5.00	60.00	12.00	8.2 HSPF	York	YHE60B21SA	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	4	Electric Resistance Heat		6.82		1 COP	Chromalox	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	2	Ductless Mini-Split HP	0.75	10.90	11.00	8.5 HSPF	Mitsubishi	MSZ-GL09NA	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	4	Ductless Mini-Split HP	1.83	25.00	13.60	9.8 HSPF	Mitsubishi	MXZ-3C24NA2	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	1	Ductless Mini-Split AC	2.80		8.20		York	DCP36CSB21S	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	1	Ductless Mini-Split HP	1.67	25.00	12.70	10 HSPF	Mitsubishi	MXZ-2C20NA2	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lodge	CPA Lodge	1	Ductless Mini-Split HP	2.00	30.60	13.60	10 HSPF	Mitsubishi	MXZ-3C24NA2	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Exterior 1	CPA Laundry	1	Package Unit	2.00	37.00	12.00	0.77 AFUE	Trane	YCC024F1L0BJ	B	7	Yes	1	Package Unit	2.00	37.00	16.00	0.82 AFUE	0.3	604	2	$96	$7,376	$206	75.0
CPA Fire Safety - Restroom - Unisex 1	CPA Fire Safety - Restroom - Unisex 1	1	Electric Resistance Heat		5.12		1 COP	Sentinel	AB6-7215	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Office - Enclosed 1	CPA Fire Safety - Office - Enclosed 1	1	Packaged Terminal AC	2.00		10.00		Unknown	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Office - Enclosed 2	CPA Fire Safety - Office - Enclosed 2	1	Packaged Terminal AC	1.50		10.00		Unknown	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Garage 1	CPA Fire Safety - Garage 1	1	Unit Heater		96.00		0.77 AFUE	ITT Grinnell	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA - Cypress	CPA - Cypress	22	Package Unit	5.00	48.00	12.00	0.8 AFUE	Magicpak	60MGE4-09-361-1A	W		No							0.0	0	0	$0	$0	$0	0.0
CPA - Cypress - Electrical Room	CPA - Cypress - Electrical Room	1	Electric Resistance Heat		5.12		1 COP	Unknown	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Tamarack	CPA Tamarack	23	Package Unit	5.00	48.00	12.00	0.8 AFUE	Magicpak	60MGE4-09-361-1A	W		No							0.0	0	0	$0	$0	$0	0.0
CPA - Tamarack - Electrical Room	CPA - Tamarack - Electrical Room	1	Electric Resistance Heat		5.12		1 COP	Markel	E2215TRRW	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Sycamore	CPA Sycamore	13	Package Unit	5.00	48.00	12.00	0.8 AFUE	Magicpak	60MGE4-09-361-1A	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Sycamore - Electrical Room	CPA Sycamore - Electrical Room	1	Electric Resistance Heat		5.12		1 COP	Unknown	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Mulberry	CPA Mulberry	13	Package Unit	5.00	48.00	12.00	0.8 AFUE	Magicpak	60MGE4-09-361-1A	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Mulberry - Electrical Room	CPA Mulberry - Electrical Room	1	Electric Resistance Heat		5.12		1 COP	Unknown	Unknown	W		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
CPA Butternut	CPA Butternut	13	Package Unit	5.00	48.00	12.00	0.8 AFUE	Magicpak	60MGE4-09-361-1A	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Butternut - Electrical Room	CPA Butternut - Electrical Room	1	Electric Resistance Heat		5.12		1 COP	Unknown	Unknown	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Lower Mech Rm	CPA Lower Mech Rm	1	Unit Heater		68.24		1 COP	Qmark	MUH208	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Upper Mech Rm	CPA Upper Mech Rm	1	Unit Heater		68.24		1 COP	Emerson	Unknown	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
CPA Mech Lower	CPA Mech Lower	1	Air-Cooled Scroll Chiller	90.00	Trane	CGAM 090F 2W02 AXB2 A1A1 A1AX XA1D 1A4X XXXX	W		No							0.0	0	0	$0	$0	$0	0.0
CPA Mech Upper	CPA Mech Upper	1	Air-Cooled Scroll Chiller	56.00	York	YCAL0056EE46X EASDTXHXXRLXX XX44XX1XXXXX	W		No							0.0	0	0	$0	$0	$0	0.0

Space Heating Boiler Inventory & Recommendations

		Existing Conditions						Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
CPA Lodge - Mechanical 2	CPA Lodge	2	Condensing Hot Water Boiler	138	Navien	NHB-150	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Lower	CPA Lower	2	Condensing Hot Water Boiler	712	Aerco	BMK750	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Upper	CPA Upper	2	Condensing Hot Water Boiler	712	Triad	T C-750	W		No						0.0	0	0	$0	$0	$0	0.0

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
CPA Laundry - Mechanical 1	CPA Laundry	8	13	1.50	0.0	0	8	$82	$173	$26	1.8
CPA Lower	CPA Lower	8	25	3.00	0.0	0	32	$312	$410	$50	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
CPA Lodge - Mechanical Outside	CPA Lodge	1	Storage Tank Water Heater (≤ 50 Gal)	Rheem	PROE61RHPOU	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Laundry - Mechanical 1	CPA Laundry	1	Storage Tank Water Heater (> 50 Gal)	AO Smith	BTR 180 118	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Fire Safety - Garage 1	CPA Fire Safety	1	Storage Tank Water Heater (≤ 50 Gal)	Rheem	6E732	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Cypress	CPA Cypress	2	Storage Tank Water Heater (> 50 Gal)	AO Smith	DEN-120 110	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Cypress	CPA Cypress	5	Storage Tank Water Heater (> 50 Gal)	AO Smith	DEN-120 110	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Tamarack	CPA Tamarack	7	Storage Tank Water Heater (> 50 Gal)	Rheem	ELD120-B	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Sycamore	CPA Sycamore	4	Storage Tank Water Heater (> 50 Gal)	Rheem	ELD120-E	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Mulberry	CPA Mulberry	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Butternut	CPA Butternut	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Mimosa	CPA Mimosa	6	Storage Tank Water Heater (> 50 Gal)	AO Smith	LTE 80D 200	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Redwood	CPA Redwood	4	Storage Tank Water Heater (> 50 Gal)	Bradford White	LE280T3-1NCXX	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Hickory	CPA Hickory	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Buckeye	CPA Buckeye	4	Storage Tank Water Heater (> 50 Gal)	Rheem	82V80-2	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Holly	CPA Holly	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA International	CPA International	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Palm	CPA Palm	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Elm	CPA Elm	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0
CPA Science	CPA Science	4	Storage Tank Water Heater (> 50 Gal)	Unknown	Unknown	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
CPA Lodge	9	1	Faucet Aerator (Kitchen)	2.50	1.50	0.0	82	0	$11	$7	$2	0.5
CPA Laundry - Office	9	1	Faucet Aerator (Kitchen)	2.20	1.50	0.0	0	0	$2	$7	$2	2.7
CPA Fire Safety - Restroom - Unisex 1	9	1	Faucet Aerator (Lavatory)	2.20	0.50	0.0	139	0	$19	$7	$4	0.2
CPA Residential	9	84	Showerhead	2.50	1.50	0.0	19,286	0	$2,567	$7,501	$1,260	2.4
CPA Tamerack	9	23	Faucet Aerator (Kitchen)	1.80	1.50	0.0	564	0	$75	$165	$46	1.6
CPA Sycamore	9	13	Faucet Aerator (Kitchen)	1.80	1.50	0.0	319	0	$42	$93	$26	1.6

Plug Load Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
CPA Lodge	1	Coffee Machine	1,000	No	Unknown	Unknown
CPA Lodge	6	Small Desktop	150	No	Unknown	Unknown
CPA Lodge	8	Desktop	250	No	Unknown	Unknown
CPA Lodge - Multipurpose	1	Dishwasher	800	No	GE	GDF510PSM0SS
CPA Lodge	3	Electric Space Heater	1,500	No	Varied	Varied
CPA Lodge	2	Fan	200	No	Unknown	Unknown
CPA Lodge	3	Microwave	1,500	No	Varied	Varied
CPA Lodge - Gymnasium Cardio Rm	3	Treadmill	150	No	Unknown	Unknown
CPA Lodge - Multipurpose	1	Oven/Range	1,500	No	Unknown	Unknown
CPA Lodge	4	Hand Dryer	1,000	No	World Dryer Corp	RA-5
CPA Lodge - Server Room	1	Misc. Computer Equipment	1,500	No	Varied	Varied
CPA Lodge	2	Papper Shredder	100	No	Unknown	Unknown
CPA Lodge	8	Printer	150	No	Varied	Varied
CPA Lodge	2	Copier	1,500	No	Sharp	MX-B376W
CPA Lodge	1	Projector	150	No	Unknown	Unknown
CPA Lodge	4	Mini Refrigerator	126	No	Varied	Varied
CPA Lodge - Multipurpose	1	Refrigerator	300	No	Aveeno	Unknown
CPA Lodge	4	Television	125	Yes	Varied	Varied
CPA Lodge	2	Walter Cooler	125	No	Unknown	Unknown
CPA Lodge	1	Water Fountain	115	No	Elkay	LZWSR_1D
CPA Laundry	16	Clothes Washer	1,800	Yes	Alliance	SFNNYRSP113TW01
CPA Fire Safety	5	Desktop	250	Yes	Dell	Unknown
CPA Fire Safety	2	Electric Space Heater	1,500	No	Unknown	Unknown
CPA Fire Safety	2	Microwave	1,000	Yes	Unknown	Unknown
CPA Fire Safety - Office - Enclosed 2	1	Papper Shredder	100	No	Unknown	Unknown
CPA Fire Safety	2	Printer	150	Yes	Varied	Varied
CPA Fire Safety	2	Mini Refrigerator	126	No	Unknown	Unknown
CPA Fire Safety	2	Television	125	Yes	Varied	Varied
CPA Cypress	22	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Cypress - Electrical Room	1	Electric Space Heater	1,500	No	Unknown	Unknown
CPA Cypress	22	Range/Stove Top	21,200	No	GE	JB250DF7WW
CPA Cypress	22	Refrigerator	300	No	GE	Unknown
CPA Tamarack	23	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Tamarack	23	Range/Stove Top	18,400	No	GE	JBP66W0H2WW
CPA Tamarack	23	Refrigerator	300	No	GE	GTS18FBSARWW

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
CPA Tamarack	23	Hood	240	No	Broan	40.000-H
CPA Tamarack - Restroom	23	Fan	75	No	Unknown	Unknown
CPA Sycamore	13	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Sycamore	13	Refrigerator	300	No	GE	GTS18FBSARWW
CPA Sycamore	13	Range/Stove Top	18,400	No	GE	JBP66W0H2WW
CPA Sycamore - Restroom	13	Fan	75	No	Unknown	Unknown
CPA Mulberry	13	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Mulberry	13	Refrigerator	300	No	GE	GTS18FBSARWW
CPA Mulberry	13	Range/Stove Top	18,400	No	GE	JBP66W0H2WW
CPA Mulberry - Restroom	13	Fan	75	No	Unknown	Unknown
CPA Butternut	13	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Butternut	13	Refrigerator	300	No	GE	GTS18FBSARWW
CPA Butternut	13	Range/Stove Top	18,400	No	GE	JBP66W0H2WW
CPA Butternut - Restroom	13	Fan	75	No	Unknown	Unknown
CPA Mimosa	12	Microwave	1,580	No	GE	JVM3160DF4WW
CPA Mimosa	12	Refrigerator	300	No	GE	GTS18FBSARWW
CPA Mimosa	12	Range/Stove Top	18,400	No	GE	JBP66W0H2WW
CPA Mimosa - Restroom	12	Fan	75	No	Unknown	Unknown
CPA Redwood	8	Microwave	2	No	GE	JVM1790sk01
CPA Redwood	8	Stove Top	6	No	GE	J P346S0M1SS
CPA Redwood	8	Refrigerator	300	No	GE	GTL18JBPWRBS
CPA Redwood - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Redwood	2	Coffee Machine	1,000	No	Unknown	Unknown
CPA Redwood	2	Television	125	Yes	Varied	Varied
CPA Hickory	8	Microwave	2	No	Unknown	Unknown
CPA Hickory	8	Stove Top	6	No	Unknown	Unknown
CPA Hickory	8	Refrigerator	300	No	Unknown	Unknown
CPA Hickory - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Buckeye	8	Microwave	2	No	Unknown	Unknown
CPA Buckeye	8	Stove Top	6	No	Unknown	Unknown
CPA Buckeye	8	Refrigerator	300	No	Unknown	Unknown
CPA Buckeye - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Holly	8	Microwave	2	No	Unknown	Unknown
CPA Holly	8	Stove Top	6	No	Unknown	Unknown
CPA Holly	8	Refrigerator	300	No	Unknown	Unknown

	Existing Conditions					
Location	**Quantity**	**Equipment Description**	**Energy Rate (W)**	**ENERGY STAR Qualified?**	**Manufacturer**	**Model**
CPA Holly - Restroom	8	Fan	75	No	Unknown	Unknown
CPA International	8	Microwave	2	No	Unknown	Unknown
CPA International	8	Stove Top	6	No	Unknown	Unknown
CPA International	8	Refrigerator	300	No	Unknown	Unknown
CPA International - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Palm	8	Microwave	2	No	Unknown	Unknown
CPA Palm	8	Stove Top	6	No	Unknown	Unknown
CPA Palm	8	Refrigerator	300	No	Unknown	Unknown
CPA Palm - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Elm	8	Microwave	2	No	Unknown	Unknown
CPA Elm	8	Stove Top	6	No	Unknown	Unknown
CPA Elm	8	Refrigerator	300	No	Unknown	Unknown
CPA Elm - Restroom	8	Fan	75	No	Unknown	Unknown
CPA Science	8	Microwave	2	No	Unknown	Unknown
CPA Science	8	Stove Top	6	No	Unknown	Unknown
CPA Science	8	Refrigerator	300	No	Unknown	Unknown
CPA Science - Restroom	8	Fan	75	No	Unknown	Unknown

Vending Machine Inventory & Recommendations

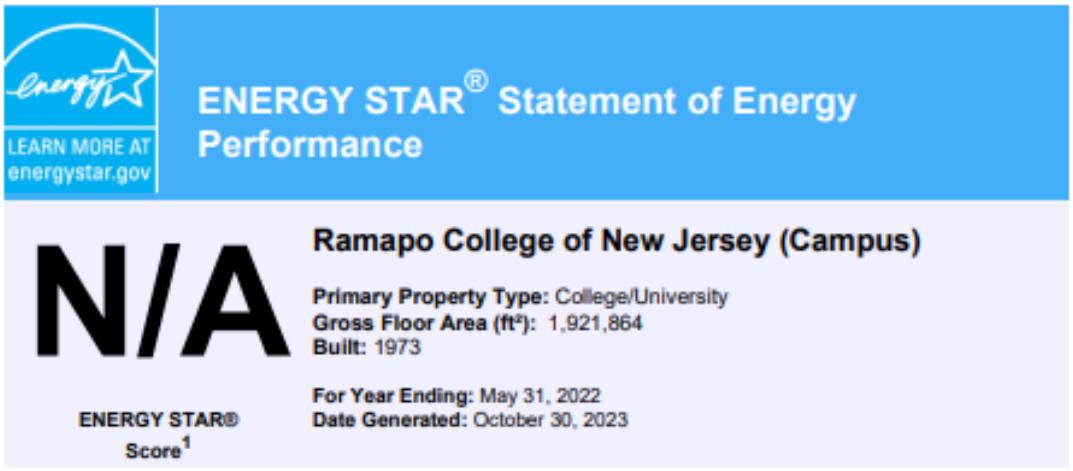
	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	**Quantity**	**Vending Machine Type**	**ECM #**	**Install Controls?**	**Total Peak kW Savings**	**Total Annual kWh Savings**	**Total Annual MMBtu Savings**	**Total Annual Energy Cost Savings**	**Estimated M&L Cost ($)**	**Total Incentives**	**Simple Payback w/ Incentives in Years**
CPA Lodge - Multipurpose	1	Refrigerated	10	Yes	0.2	1,612	0	$215	$230	$50	0.8
CPA Lodge - Multipurpose	1	Non-Refrigerated	10	Yes	0.0	343	0	$46	$230	$0	5.0

Miscellaneous Fuel Inventory

	Existing Conditions					
Location	**Quantity**	**Equipment Description**	**Input Capacity per Unit (MBh)**	**ENERGY STAR Qualified?**	**Manufacturer**	**Model**
CPA Laundry	16	Dryer	25.0	No	Alliance	SSGNYAGS113TW01
The Overlook	1	Generator	426.5	No	Cummins	GGKD-5670450
The Overlook	12	Dryer	25.0	No	Alliance	SSGNYAGS113TW01

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]

Ramapo College of New Jersey (Campus)

Primary Property Type: College/University
Gross Floor Area (ft²): 1,921,864
Built: 1973

For Year Ending: May 31, 2022
Date Generated: October 30, 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
Ramapo College of New Jersey (Campus) 505 Ramapo Valley Road & 523 Route 202 Mahwah, New Jersey 07430	Ramapo College of New Jersey 505 Ramapo Valley Road Mahwah, NJ 07430 (201) 684-7666	Mike Cunningham 505 Ramapo Valley Road Mahwah, NJ 07430 (201) 684-7666 mcunning@ramapo.edu

Property ID: 26333864

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
100.7 kBtu/ft²

Source EUI
172.2 kBtu/ft²

Annual Energy by Fuel	
Electric - Solar (kBtu)	17,625,632 (9%)
Natural Gas (kBtu)	102,253,203 (53%)
Electric - Grid (kBtu)	73,580,913 (38%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	105.6
National Median Source EUI (kBtu/ft²)	180.6
% Diff from National Median Source EUI	-5%
Annual Emissions	
Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	7,720

Signature & Stamp of Verifying Professional

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

LP Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

APPENDIX C: GLOSSARY

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

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

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