LGEA Presentation

NJDHS – Woodbine Developmental Center

March 5, 2025

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

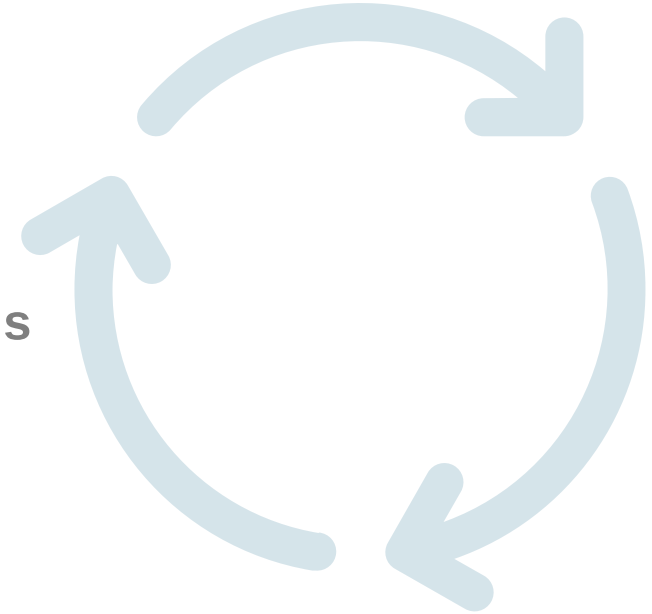
- *NJDHS – Woodbine DC*
  - Christian Casteel
  - Falguni Mittal
  - Juan Perez
  - Robert Creamer
  - Timothy McCabe
- *NJBPU*
  - Sara Bluhm Gibson
  - Yulia Grinberg
- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Program Manager
  - Moussa Traore – LGEA Technical Manager
  - Eduardo Garcia – LGEA Project Auditor
- *Utility Energy Efficiency Programs*
  - Nathalie Roccatti – South Jersey Gas
  - Kim Byk – South Jersey Gas

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Woodbine Developmental Center

LGEA Process

- Application Approval
- Initial Call
- Facility Interviews
- Audit
- Benchmarking & Analysis
- Draft Reports
- LGEA Presentation
- Final Reports



Site Visit & Utility Analysis

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Process Equipment
- Food Service and Refrigeration Equipment

Utility Consumption & Costs:

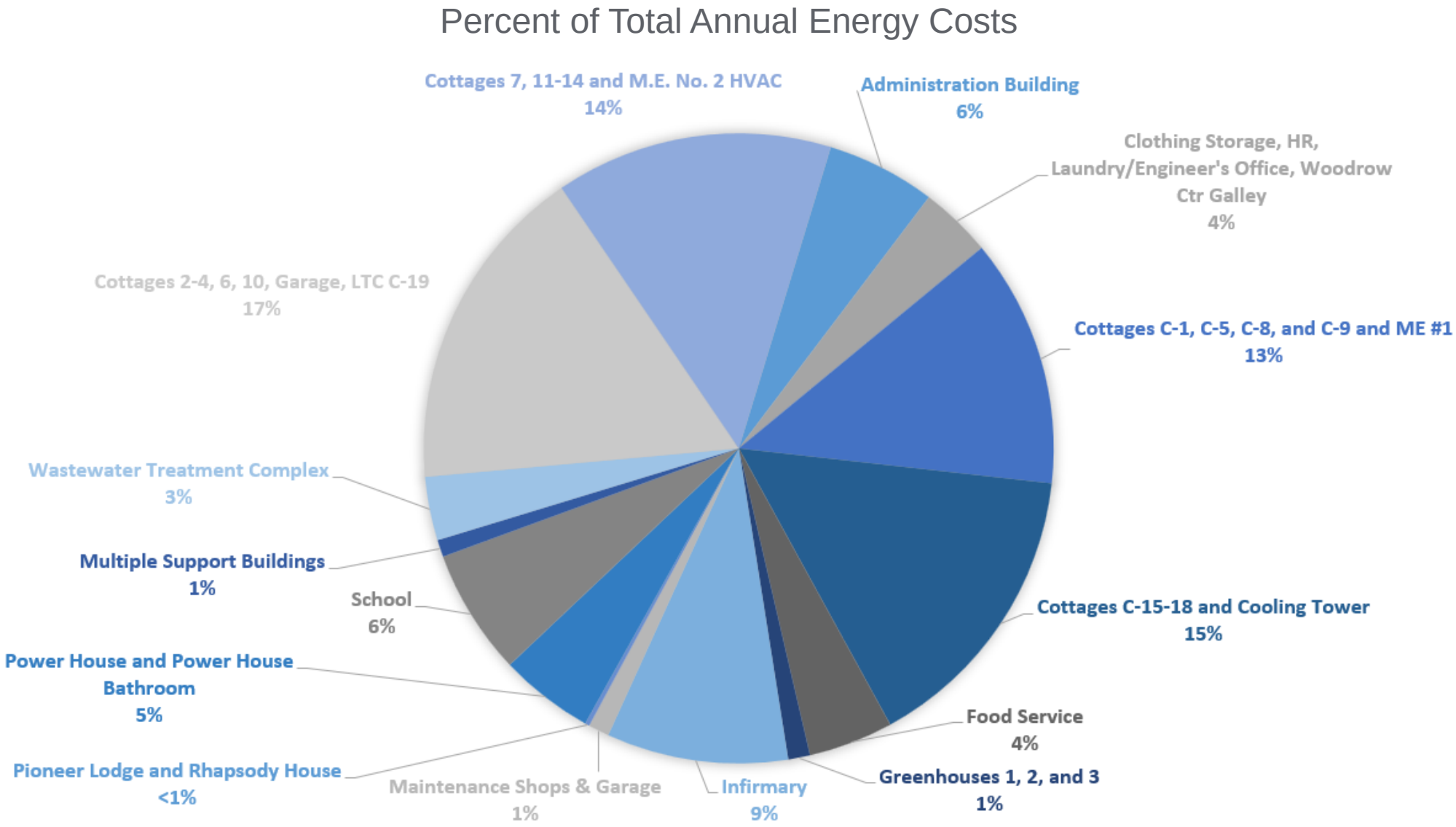
- Electric
- Natural Gas
- Fuel Oil
- Methane
- Propane

Sites Visited/Analyzed

- Administration Building
- Clothing Storage, HR, Laundry/Engineer's Office, Woodrow Ctr Galley
- Cottages C-1, C-5, C-8, C-9, and ME #1
- Cottages C-2, C-3, C-6, C10, Cottage Garage, LTC C-19
- Cottages C-7, C-11 through C-14 and ME #2 HVAC
- Cottages C-15 through C-18 and Cooling Tower
- Food Service
- Greenhouses 1, 2, and 3
- Infirmary
- Maintenance Shops & Auto Garage (Maintenance, Plumbing, Carpentry, Paint)
- Pioneer Lodge and Rhapsody House
- Powerhouse and Powerhouse Bathroom
- WDC School
- Support Buildings (Garages, Transformer, Storages, Root Cellar, Barn-Grounds Office, Utility Tunnel, Pole Barns, Pool Building #2)
- Wastewater Treatment Plant

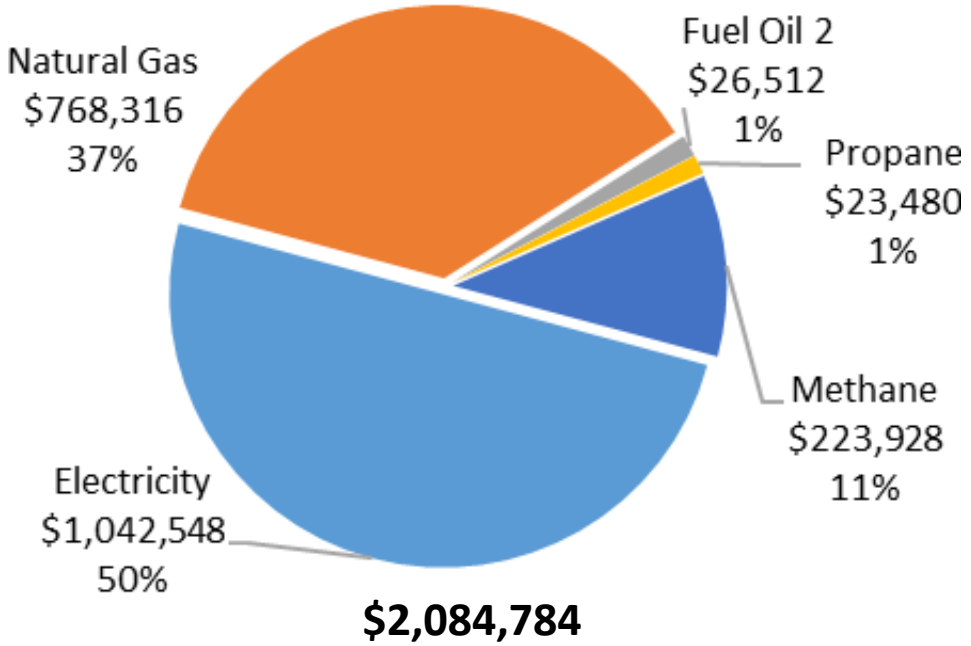
BPU New Jersey's cleanenergy program™

Utility Breakout (1 of 2)

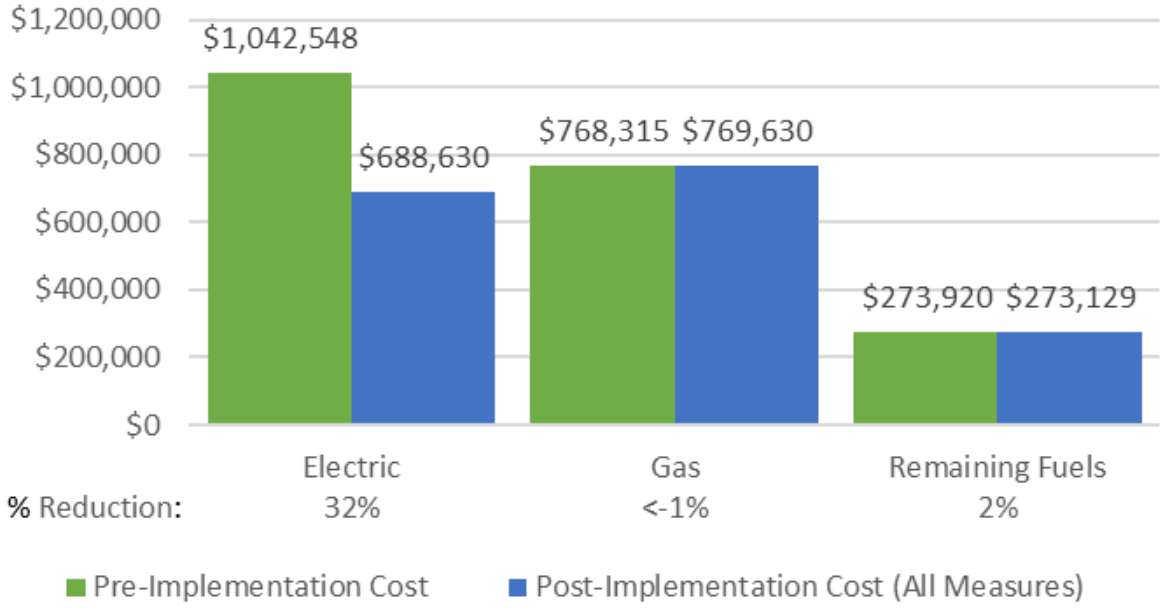


Utility Breakout (2 of 2)

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



New Jersey's cleanenergy program™

BENCHMARKING

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

DHS - Woodbine Developmental Center

Primary Property Type: Residential Care Facility
Gross Floor Area (ft²): 545,251
Built: 1921

For Year Ending: June 30, 2023
Date Generated: July 31, 2024

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

Property & Contact Information

Property Address	Property Owner	Primary Contact
DHS - Woodbine Developmental Center (WDC Campus) 1175 DeHirsch Avenue Woodbine, New Jersey 08270	State of New Jersey 428 East State Street Trenton, NJ 08625 (609) 940-4129	New Jersey Board of Public Utilities State Energy Services 44 South Clinton Ave Trenton, NJ 08625 (609) 633-9666 BPU.EnergyServices@bpu.nj.gov

Property ID: 29308036
Unique Building Identifier (UBID): 87F765MV+86J-171-167-182-182

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
129.2 kBtu/ft²

Source EUI
187.2 kBtu/ft²

Annual Energy by Fuel

Fuel Oil (No. 2) (kBtu)	946,252 (1%)
Natural Gas (kBtu)	52,433,294 (74%)
Propane (kBtu)	545,238 (1%)
Electric - Grid (kBtu)	16,098,148 (23%)
Other: (kBtu)	420,600 (1%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	74.2
National Median Source EUI (kBtu/ft²)	107.5
% Diff from National Median Source EUI	74%

Annual Emissions

Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	N/A

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

___ _____
,
(___)___-_____
_____

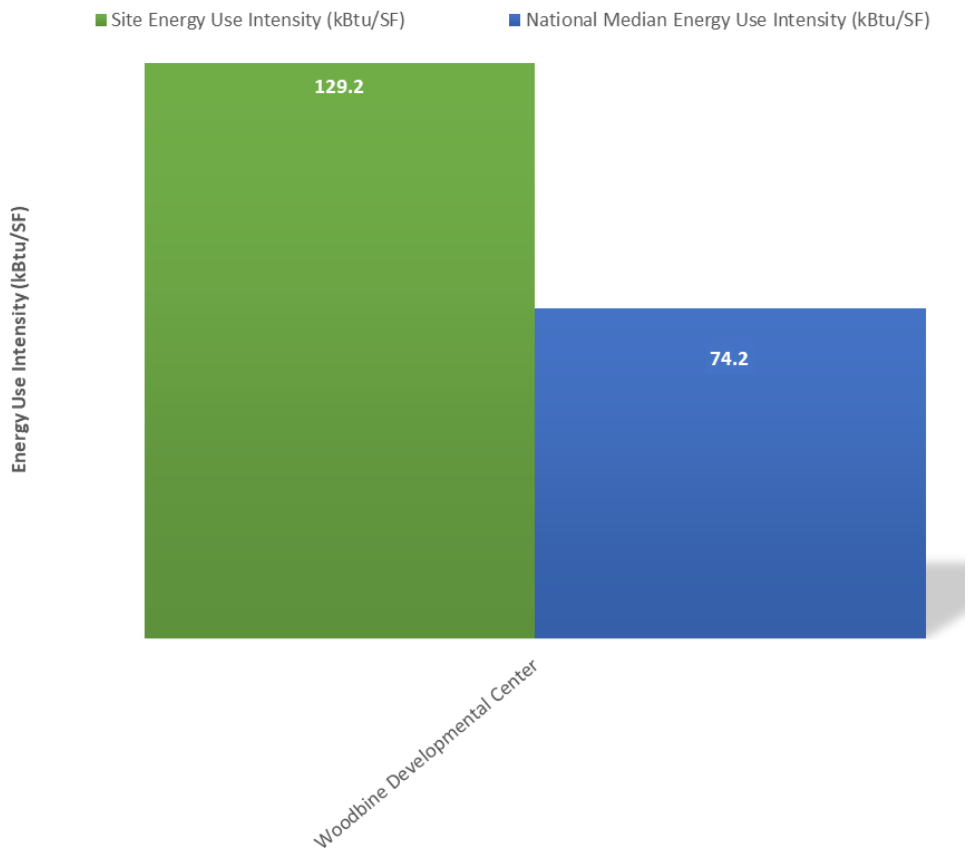
Professional Engineer or Registered Architect Stamp (if applicable)

Site EUI
129.2 kBtu/ft²

Source EUI
187.2 kBtu/ft²

National Median Comparison

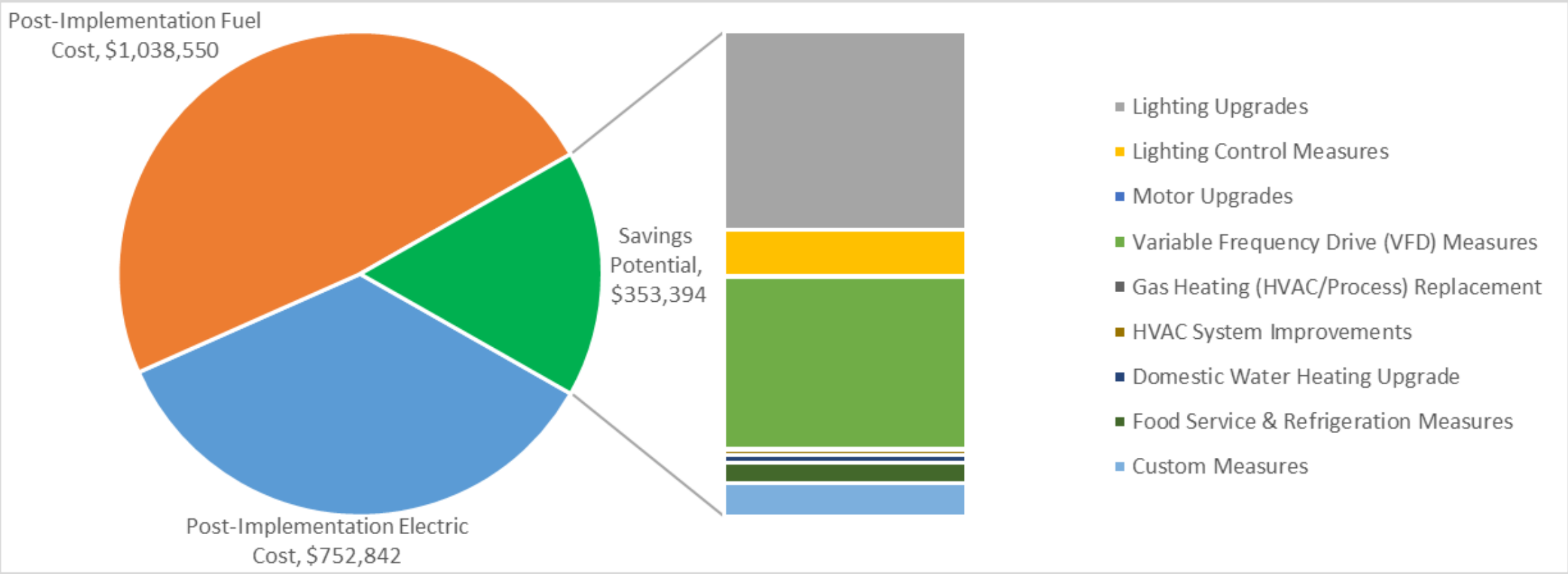
National Median Site EUI (kBtu/ft²)	74.2
National Median Source EUI (kBtu/ft²)	107.5
% Diff from National Median Source EUI	74%



ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES (1 OF 2)

#	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		**954,277**	**190.5**	**-178.9**	**$144,942**	**$480,180**	**$73,640**	**$406,540**	**2.8**	**939,997**
ECM 1	Install LED Fixtures	124,482	6.4	-4.8	$18,834	$89,160	$11,000	$78,160	4.1	124,788
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,233	0.5	-0.3	$183	$780	$100	$680	3.7	1,209
ECM 3	Retrofit Fixtures with LED Lamps	707,786	172.0	-148.2	$107,842	$350,930	$62,540	$288,390	2.7	695,382
ECM 4	Install LED Exit Signs	120,777	11.6	-25.6	$18,083	$39,310	$0	$39,310	2.2	118,619
Lighting Control Measures		**221,314**	**52.9**	**-46.3**	**$33,735**	**$262,290**	**$58,280**	**$204,010**	**6.0**	**217,444**
ECM 5	Install Occupancy Sensor Lighting Controls	193,308	48.5	-40.6	$29,577	$236,610	$40,860	$195,750	6.6	189,902
ECM 6	Install Daylight Photocell Controls	1,514	0.0	0.0	$228	$1,470	$0	$1,470	6.4	1,524
ECM 7	Install High/Low Lighting Controls	26,492	4.5	-5.6	$3,930	$24,210	$17,420	$6,790	1.7	26,018
Motor Upgrades		**1,049**	**0.2**	**0.0**	**$158**	**$1,300**	**$0**	**$1,300**	**8.2**	**1,056**
ECM 8	Premium Efficiency Motors	1,049	0.2	0.0	$158	$1,300	$0	$1,300	8.2	1,056
Variable Frequency Drive (VFD) Measures		**827,970**	**180.5**	**0.0**	**$125,418**	**$1,040,300**	**$62,100**	**$978,200**	**7.8**	**833,759**
ECM 9	Install VFDs on Constant Volume (CV) Fans	559,086	100.3	0.0	$84,682	$660,600	$37,100	$623,500	7.4	562,995
ECM 10	Install VFDs on Chilled Water Pumps	25,590	9.3	0.0	$3,857	$43,200	$6,000	$37,200	9.6	25,769
ECM 11	Install VFDs on Heating Water Pumps	54,583	5.0	0.0	$8,368	$165,300	$4,200	$161,100	19.3	54,965
ECM 12	Install VFDs on Cooling Tower Fans	6,433	-0.3	0.0	$970	$16,600	$2,200	$14,400	14.9	6,478
ECM 13	Install Boiler Draft Fan VFDs	70,071	26.8	0.0	$10,562	$54,600	$5,600	$49,000	4.6	70,561
ECM 14	Install VFDs on Boiler Feedwater Pumps	92,332	36.8	0.0	$13,917	$48,600	$5,900	$42,700	3.1	92,977
ECM 15	Install VFDs on Condensate Pumps	19,876	2.6	0.0	$3,062	$51,400	$1,100	$50,300	16.4	20,014

ALL OPPORTUNITIES (2 OF 2)

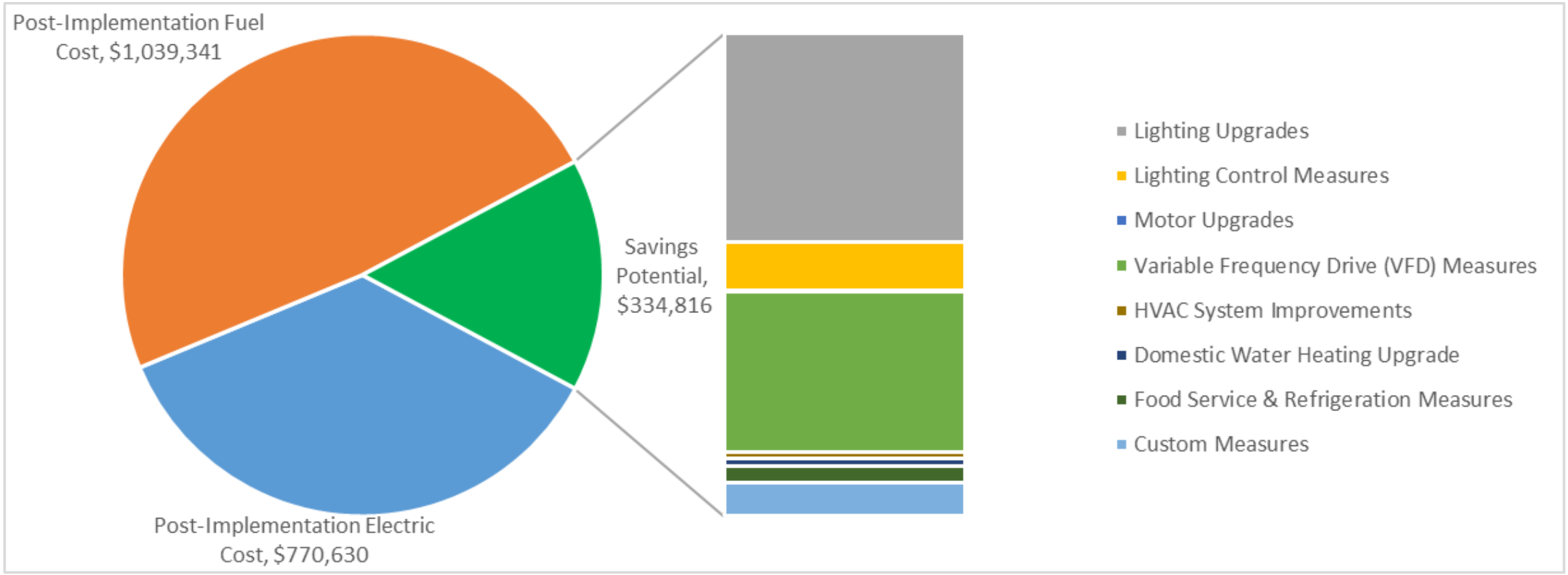
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**24.1**	**$588**	**$12,600**	**$400**	**$12,200**	**20.8**	**3,948**
ECM 16	Install High Efficiency Hot Water Boilers	0	0.0	24.1	$588	$12,600	$400	$12,200	20.8	3,948
HVAC System Improvements		**23,488**	**0.0**	**37.5**	**$3,991**	**$8,010**	**$1,060**	**$6,950**	**1.7**	**28,039**
ECM 17	Install Pipe Insulation	23,488	0.0	37.5	$3,991	$8,010	$1,060	$6,950	1.7	28,039
Domestic Water Heating Upgrade		**30,395**	**0.0**	**68.9**	**$5,525**	**$20,510**	**$4,140**	**$16,370**	**3.0**	**38,680**
ECM 18	Install Low-Flow DHW Devices	30,395	0.0	68.9	$5,525	$20,510	$4,140	$16,370	3.0	38,680
Food Service & Refrigeration Measures		**99,090**	**12.7**	**0.0**	**$15,168**	**$171,900**	**$8,500**	**$163,400**	**10.8**	**99,783**
ECM 19	Dishwasher Replacement	66,004	9.5	0.0	$9,949	$113,000	$5,800	$107,200	10.8	66,465
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	3,146	0.4	0.0	$474	$4,500	$480	$4,020	8.5	3,168
ECM 21	Refrigeration Controls	6,364	0.1	0.0	$959	$26,650	$1,070	$25,580	26.7	6,409
ECM 22	Replace Refrigeration Equipment	18,056	2.1	0.0	$2,722	$26,400	$1,000	$25,400	9.3	18,182
ECM 23	Vending Machine Control	5,521	0.6	0.0	$1,064	$1,350	$150	$1,200	1.1	5,559
Custom Measures		**157,006**	**0.0**	**0.0**	**$23,869**	**$143,200**	**$0**	**$143,200**	**6.0**	**158,104**
ECM 24	Replace Electric Water Heater with Heat Pump Water Heater	130,896	0.0	0.0	$19,931	$97,200	$0	$97,200	4.9	131,811
ECM 25	Install Automated Dissolved Oxygen Aeration Control	26,110	0.0	0.0	$3,938	$46,000	$0	$46,000	11.7	26,293
TOTALS (ALL MEASURES)		**2,314,589**	**436.8**	**-94.7**	**$353,394**	**$2,140,290**	**$208,120**	**$1,932,170**	**5.5**	**2,320,811**

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

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

Cost Effective Opportunities

Savings Potential



Cost Effective Opportunities

#	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		**954,256**	**190.4**	**-178.9**	**$144,939**	**$480,080**	**$73,620**	**$406,460**	**2.8**	**939,977**
ECM 1	Install LED Fixtures	124,482	6.4	-4.8	$18,834	$89,160	$11,000	$78,160	4.1	124,788
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,233	0.5	-0.3	$183	$780	$100	$680	3.7	1,209
ECM 3	Retrofit Fixtures with LED Lamps	707,765	171.9	-148.2	$107,839	$350,830	$62,520	$288,310	2.7	695,362
ECM 4	Install LED Exit Signs	120,777	11.6	-25.6	$18,083	$39,310	$0	$39,310	2.2	118,619
Lighting Control Measures		**221,314**	**52.9**	**-46.3**	**$33,735**	**$262,290**	**$58,280**	**$204,010**	**6.0**	**217,444**
ECM 5	Install Occupancy Sensor Lighting Controls	193,308	48.5	-40.6	$29,577	$236,610	$40,860	$195,750	6.6	189,902
ECM 6	Install Daylight Photocell Controls	1,514	0.0	0.0	$228	$1,470	$0	$1,470	6.4	1,524
ECM 7	Install High/Low Lighting Controls	26,492	4.5	-5.6	$3,930	$24,210	$17,420	$6,790	1.7	26,018
Motor Upgrades		**1,049**	**0.2**	**0.0**	**$158**	**$1,300**	**$0**	**$1,300**	**8.2**	**1,056**
ECM 8	Premium Efficiency Motors	1,049	0.2	0.0	$158	$1,300	$0	$1,300	8.2	1,056
Variable Frequency Drive (VFD) Measures		**741,958**	**167.1**	**0.0**	**$111,835**	**$729,100**	**$56,600**	**$672,500**	**6.0**	**747,146**
ECM 9	Install VFDs on Constant Volume (CV) Fans	529,941	93.0	0.0	$79,878	$544,600	$34,700	$509,900	6.4	533,647
ECM 10	Install VFDs on Chilled Water Pumps	25,590	9.3	0.0	$3,857	$43,200	$6,000	$37,200	9.6	25,769
ECM 11	Install VFDs on Heating Water Pumps	17,591	1.5	0.0	$2,652	$21,500	$2,200	$19,300	7.3	17,714
ECM 12	Install VFDs on Cooling Tower Fans	6,433	-0.3	0.0	$970	$16,600	$2,200	$14,400	14.9	6,478
ECM 13	Install Boiler Draft Fan VFDs	70,071	26.8	0.0	$10,562	$54,600	$5,600	$49,000	4.6	70,561
ECM 14	Install VFDs on Boiler Feedwater Pumps	92,332	36.8	0.0	$13,917	$48,600	$5,900	$42,700	3.1	92,977
HVAC System Improvements		**23,463**	**0.0**	**37.5**	**$3,987**	**$7,740**	**$1,020**	**$6,720**	**1.7**	**28,014**
ECM 17	Install Pipe Insulation	23,463	0.0	37.5	$3,987	$7,740	$1,020	$6,720	1.7	28,014
Domestic Water Heating Upgrade		**30,395**	**0.0**	**68.9**	**$5,525**	**$20,510**	**$4,140**	**$16,370**	**3.0**	**38,680**
ECM 18	Install Low-Flow DHW Devices	30,395	0.0	68.9	$5,525	$20,510	$4,140	$16,370	3.0	38,680
Food Service & Refrigeration Measures		**72,349**	**8.3**	**0.0**	**$11,137**	**$40,650**	**$4,030**	**$36,620**	**3.3**	**72,855**
ECM 19	Dishwasher Replacement	48,539	5.5	0.0	$7,317	$21,200	$2,800	$18,400	2.5	48,878
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	3,146	0.4	0.0	$474	$4,500	$480	$4,020	8.5	3,168
ECM 22	Replace Refrigeration Equipment	15,144	1.7	0.0	$2,283	$13,600	$600	$13,000	5.7	15,249
ECM 23	Vending Machine Control	5,521	0.6	0.0	$1,064	$1,350	$150	$1,200	1.1	5,559
Custom Measures		**154,552**	**0.0**	**0.0**	**$23,499**	**$131,200**	**$0**	**$131,200**	**5.6**	**155,633**
ECM 24	Replace Electric Water Heater with Heat Pump Water Heater	128,442	0.0	0.0	$19,561	$85,200	$0	$85,200	4.4	129,340
ECM 25	Install Automated Dissolved Oxygen Aeration Control	26,110	0.0	0.0	$3,938	$46,000	$0	$46,000	11.7	26,293
TOTALS		**2,199,335**	**418.9**	**-118.8**	**$334,816**	**$1,672,870**	**$197,690**	**$1,475,180**	**4.4**	**2,200,804**

* - All incentives presented in this table are included as placesholders 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).

WDC School

#	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			**146,416**	**29.1**	**-23**	**$21,817**	**$81,930**	**$11,720**	**$70,210**	**3.2**	**144,777**
ECM 1	Install LED Fixtures	Yes	60,006	6.4	-5	$8,991	$38,490	$3,950	$34,540	3.8	59,861
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	51	0.1	0	$8	$90	$10	$80	10.6	50
ECM 3	Retrofit Fixtures with LED Lamps	Yes	77,571	21.8	-16	$11,514	$39,960	$7,760	$32,200	2.8	76,232
ECM 4	Install LED Exit Signs	Yes	8,788	0.9	-2	$1,304	$3,390	$0	$3,390	2.6	8,634
Lighting Control Measures			**26,018**	**7.2**	**-5**	**$3,861**	**$23,900**	**$4,030**	**$19,870**	**5.1**	**25,563**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	24,204	6.7	-5	$3,592	$21,930	$2,420	$19,510	5.4	23,781
ECM 6	Install High/Low Lighting Controls	Yes	1,814	0.5	0	$269	$1,970	$1,610	$360	1.3	1,782
Variable Frequency Drive (VFD) Measures			**24,857**	**4.0**	**0**	**$3,747**	**$74,900**	**$1,600**	**$73,300**	**19.6**	**25,031**
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	12,369	3.1	0	$1,864	$55,200	$1,000	$54,200	29.1	12,455
ECM 8	Install VFDs on Heating Water Pumps	Yes	8,214	0.6	0	$1,238	$10,200	$400	$9,800	7.9	8,272
ECM 9	Install VFDs on Condensate Pumps	No	4,274	0.3	0	$644	$9,500	$200	$9,300	14.4	4,304
Domestic Water Heating Upgrade			**4,026**	**0.0**	**0**	**$607**	**$1,160**	**$260**	**$900**	**1.5**	**4,054**
ECM 10	Install Low-Flow DHW Devices	Yes	4,026	0.0	0	$607	$1,160	$260	$900	1.5	4,054
Custom Measures			**6,752**	**0.0**	**0**	**$1,018**	**$5,600**	**$0**	**$5,600**	**5.5**	**6,799**
ECM 11	Replace Electric Water Heater with Heat Pump Water Heater	Yes	6,752	0.0	0	$1,018	$5,600	$0	$5,600	5.5	6,799
TOTALS (COST EFFECTIVE MEASURES)			**191,427**	**36.9**	**-28**	**$28,541**	**$122,790**	**$16,410**	**$106,380**	**3.7**	**189,466**
TOTALS (ALL MEASURES)			**208,070**	**40.3**	**-28**	**$31,050**	**$187,490**	**$17,610**	**$169,880**	**5.5**	**206,225**

* - 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).

SUPPORT BUILDINGS

#	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			**5,210**	**1.0**	**0**	**$784**	**$4,820**	**$740**	**$4,080**	**5.2**	**5,246**
ECM 1	Install LED Fixtures	Yes	2,632	0.0	0	$396	$2,500	$300	$2,200	5.6	2,651
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,577	1.0	0	$388	$2,320	$440	$1,880	4.8	2,595
Lighting Control Measures			**2,172**	**0.8**	**0**	**$327**	**$4,350**	**$1,120**	**$3,230**	**9.9**	**2,188**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,172	0.8	0	$327	$4,350	$1,120	$3,230	9.9	2,188
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**24**	**$588**	**$12,600**	**$400**	**$12,200**	**20.8**	**3,948**
ECM 4	Install High Efficiency Hot Water Boilers	No	0	0.0	24	$588	$12,600	$400	$12,200	20.8	3,948
HVAC System Improvements			**25**	**0.0**	**0**	**$4**	**$270**	**$40**	**$230**	**59.9**	**26**
ECM 5	Install Pipe Insulation	No	25	0.0	0	$4	$270	$40	$230	59.9	26
Domestic Water Heating Upgrade			**14**	**0.0**	**0**	**$2**	**$20**	**$10**	**$10**	**4.8**	**14**
ECM 6	Install Low-Flow DHW Devices	Yes	14	0.0	0	$2	$20	$10	$10	4.8	14
TOTALS (COST EFFECTIVE MEASURES)			**7,396**	**1.8**	**0**	**$1,113**	**$9,190**	**$1,870**	**$7,320**	**6.6**	**7,448**
TOTALS (ALL MEASURES)			**7,421**	**1.8**	**24**	**$1,705**	**$22,060**	**$2,310**	**$19,750**	**11.6**	**11,422**

* - 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).

CLOTHING STORAGE, HR, LAUNDRY/ENGINEER'S OFFICE, WOODROW CTR GALLEY

#	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			**29,036**	**8.6**	**-5**	**$4,316**	**$24,520**	**$3,790**	**$20,730**	**4.8**	**28,608**
ECM 1	Install LED Fixtures	Yes	5,090	0.0	0	$767	$5,650	$450	$5,200	6.8	5,125
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,001	0.4	0	$148	$600	$80	$520	3.5	982
ECM 3	Retrofit Fixtures with LED Lamps	Yes	19,728	7.9	-4	$2,924	$16,920	$3,260	$13,660	4.7	19,347
ECM 4	Install LED Exit Signs	Yes	3,217	0.3	-1	$477	$1,350	$0	$1,350	2.8	3,154
Lighting Control Measures			**7,637**	**3.1**	**-2**	**$1,132**	**$12,800**	**$2,210**	**$10,590**	**9.4**	**7,488**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	7,637	3.1	-2	$1,132	$12,800	$2,210	$10,590	9.4	7,488
Variable Frequency Drive (VFD) Measures			**9,833**	**2.7**	**0**	**$1,482**	**$21,800**	**$600**	**$21,200**	**14.3**	**9,902**
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	9,833	2.7	0	$1,482	$21,800	$600	$21,200	14.3	9,902
HVAC System Improvements			**800**	**0.0**	**0**	**$121**	**$900**	**$120**	**$780**	**6.5**	**806**
ECM 7	Install Pipe Insulation	Yes	800	0.0	0	$121	$900	$120	$780	6.5	806
Domestic Water Heating Upgrade			**862**	**0.0**	**0**	**$130**	**$500**	**$110**	**$390**	**3.0**	**868**
ECM 8	Install Low-Flow DHW Devices	Yes	862	0.0	0	$130	$500	$110	$390	3.0	868
Food Service & Refrigeration Measures			**8,088**	**0.9**	**0**	**$1,219**	**$9,800**	**$600**	**$9,200**	**7.5**	**8,145**
ECM 9	Replace Refrigeration Equipment	Yes	8,088	0.9	0	$1,219	$9,800	$600	$9,200	7.5	8,145
Custom Measures			**1,020**	**0.0**	**0**	**$154**	**$4,000**	**$0**	**$4,000**	**26.0**	**1,027**
ECM 10	Replace Electric Water Heater with Heat Pump Water Heater	No	1,020	0.0	0	$154	$4,000	$0	$4,000	26.0	1,027
TOTALS (COST EFFECTIVE MEASURES)			**46,423**	**12.6**	**-7**	**$6,918**	**$48,520**	**$6,830**	**$41,690**	**6.0**	**45,915**
TOTALS (ALL MEASURES)			**57,276**	**15.4**	**-7**	**$8,554**	**$74,320**	**$7,430**	**$66,890**	**7.8**	**56,844**

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

COTTAGES C-7, C-11, C-12, C-13, C-14, ME #2 HVAC

#	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			**123,579**	**23.1**	**-25**	**$18,351**	**$62,680**	**$9,420**	**$53,260**	**2.9**	**121,552**
ECM 1	Install LED Fixtures	Yes	7,604	0.0	0	$1,146	$4,940	$1,400	$3,540	3.1	7,657
ECM 2	Retrofit Fixtures with LED Lamps	Yes	95,711	21.2	-20	$14,199	$51,270	$8,020	$43,250	3.0	93,993
ECM 3	Install LED Exit Signs	Yes	20,265	1.9	-4	$3,006	$6,470	$0	$6,470	2.2	19,901
Lighting Control Measures			**29,766**	**6.2**	**-6**	**$4,416**	**$38,260**	**$7,730**	**$30,530**	**6.9**	**29,232**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	20,468	5.2	-4	$3,036	$32,340	$3,960	$28,380	9.3	20,101
ECM 5	Install High/Low Lighting Controls	Yes	9,297	1.0	-2	$1,379	$5,920	$3,770	$2,150	1.6	9,131
Variable Frequency Drive (VFD) Measures			**142,660**	**18.0**	**0**	**$21,502**	**$155,000**	**$6,000**	**$149,000**	**6.9**	**143,658**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	132,086	17.3	0	$19,908	$109,700	$4,400	$105,300	5.3	133,009
ECM 7	Install VFDs on Heating Water Pumps	No	7,375	0.8	0	$1,112	$37,000	$500	$36,500	32.8	7,427
ECM 8	Install VFDs on Cooling Tower Fans	Yes	3,200	-0.1	0	$482	$8,300	$1,100	$7,200	14.9	3,222
HVAC System Improvements			**0**	**0.0**	**37**	**$417**	**$980**	**$140**	**$840**	**2.0**	**4,387**
ECM 9	Install Pipe Insulation	Yes	0	0.0	37	$417	$980	$140	$840	2.0	4,387
Domestic Water Heating Upgrade			**973**	**0.0**	**66**	**$883**	**$3,880**	**$800**	**$3,080**	**3.5**	**8,723**
ECM 10	Install Low-Flow DHW Devices	Yes	973	0.0	66	$883	$3,880	$800	$3,080	3.5	8,723
TOTALS (COST EFFECTIVE MEASURES)			**289,604**	**46.5**	**73**	**$44,458**	**$223,800**	**$23,590**	**$200,210**	**4.5**	**300,124**
TOTALS (ALL MEASURES)			**296,979**	**47.3**	**73**	**$45,570**	**$260,800**	**$24,090**	**$236,710**	**5.2**	**307,551**

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PIONEER LODGE & RHAPSODY HOUSE

#	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			**4,936**	**2.4**	**-1**	**$736**	**$6,050**	**$810**	**$5,240**	**7.1**	**4,880**
ECM 1	Install LED Fixtures	Yes	1,270	0.0	0	$192	$880	$100	$780	4.1	1,279
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,972	2.4	-1	$441	$4,900	$710	$4,190	9.5	2,920
ECM 3	Install LED Exit Signs	Yes	694	0.1	0	$103	$270	$0	$270	2.6	682
Lighting Control Measures			**530**	**0.4**	**0**	**$79**	**$1,320**	**$160**	**$1,160**	**14.7**	**521**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	530	0.4	0	$79	$1,320	$160	$1,160	14.7	521
HVAC System Improvements			**478**	**0.0**	**0**	**$72**	**$380**	**$40**	**$340**	**4.7**	**482**
ECM 5	Install Pipe Insulation	Yes	478	0.0	0	$72	$380	$40	$340	4.7	482
Domestic Water Heating Upgrade			**196**	**0.0**	**0**	**$30**	**$390**	**$70**	**$320**	**10.8**	**198**
ECM 6	Install Low-Flow DHW Devices	Yes	196	0.0	0	$30	$390	$70	$320	10.8	198
Custom Measures			**1,434**	**0.0**	**0**	**$216**	**$8,000**	**$0**	**$8,000**	**37.0**	**1,444**
ECM 7	Replace Electric Water Heater with Heat Pump Water Heater	No	1,434	0.0	0	$216	$8,000	$0	$8,000	37.0	1,444
TOTALS (COST EFFECTIVE MEASURES)			**6,140**	**2.9**	**-1**	**$916**	**$8,140**	**$1,080**	**$7,060**	**7.7**	**6,081**
TOTALS (ALL MEASURES)			**7,574**	**2.9**	**-1**	**$1,132**	**$16,140**	**$1,080**	**$15,060**	**13.3**	**7,525**

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COTTAGES C-2, C-3, C-4, C-6, C-10, COTTAGE GARAGE, LTC C-19

#	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			**183,230**	**28.5**	**-36**	**$27,215**	**$67,020**	**$11,480**	**$55,540**	**2.0**	**180,276**
ECM 1	Install LED Fixtures	Yes	7,937	0.0	0	$1,196	$5,270	$1,500	$3,770	3.2	7,992
ECM 2	Retrofit Fixtures with LED Lamps	Yes	150,544	26.2	-31	$22,347	$52,010	$9,980	$42,030	1.9	147,978
ECM 3	Install LED Exit Signs	Yes	24,749	2.3	-5	$3,672	$9,740	$0	$9,740	2.7	24,305
Lighting Control Measures			**44,876**	**7.9**	**-9**	**$6,661**	**$40,840**	**$10,760**	**$30,080**	**4.5**	**44,109**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	33,453	6.9	-7	$4,963	$28,680	$3,460	$25,220	5.1	32,852
ECM 5	Install Photocell Controls	Yes	1,514	0.0	0	$228	$1,470	$0	$1,470	6.4	1,524
ECM 6	Install High/Low Lighting Controls	Yes	9,910	1.0	-2	$1,470	$10,690	$7,300	$3,390	2.3	9,732
Variable Frequency Drive (VFD) Measures			**77,536**	**9.6**	**0**	**$11,687**	**$36,000**	**$5,600**	**$30,400**	**2.6**	**78,078**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	59,579	6.7	0	$8,980	$13,400	$2,000	$11,400	1.3	59,996
ECM 8	Install VFDs on Chilled Water Pumps	Yes	8,580	1.9	0	$1,293	$11,300	$1,800	$9,500	7.3	8,640
ECM 9	Install VFDs on Heating Water Pumps	Yes	9,377	1.0	0	$1,413	$11,300	$1,800	$9,500	6.7	9,443
HVAC System Improvements			**6,622**	**0.0**	**0**	**$998**	**$1,120**	**$160**	**$960**	**1.0**	**6,669**
ECM 10	Install Pipe Insulation	Yes	6,622	0.0	0	$998	$1,120	$160	$960	1.0	6,669
Domestic Water Heating Upgrade			**7,060**	**0.0**	**3**	**$1,096**	**$2,610**	**$600**	**$2,010**	**1.8**	**7,439**
ECM 11	Install Low-Flow DHW Devices	Yes	7,060	0.0	3	$1,096	$2,610	$600	$2,010	1.8	7,439
Custom Measures			**20,627**	**0.0**	**0**	**$3,109**	**$24,400**	**$0**	**$24,400**	**7.8**	**20,771**
ECM 12	Replace Electric Water Heater with Heat Pump Water Heater	Yes	20,627	0.0	0	$3,109	$24,400	$0	$24,400	7.8	20,771
TOTALS (COST EFFECTIVE MEASURES)			**339,952**	**46.0**	**-43**	**$50,766**	**$171,990**	**$28,600**	**$143,390**	**2.8**	**337,342**
TOTALS (ALL MEASURES)			**339,952**	**46.0**	**-43**	**$50,766**	**$171,990**	**$28,600**	**$143,390**	**2.8**	**337,342**

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COTTAGES C-1, C-5, C-8, C-9, ME #1

#	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			**125,529**	**24.0**	**-25**	**$18,648**	**$58,440**	**$8,770**	**$49,670**	**2.7**	**123,527**
ECM 1	Install LED Fixtures	Yes	9,794	0.0	0	$1,476	$6,580	$700	$5,880	4.0	9,862
ECM 2	Retrofit Fixtures with LED Lamps	Yes	85,083	21.1	-18	$12,624	$46,500	$8,070	$38,430	3.0	83,562
ECM 3	Install LED Exit Signs	Yes	30,653	2.9	-7	$4,548	$5,360	$0	$5,360	1.2	30,103
Lighting Control Measures			**23,371**	**5.6**	**-5**	**$3,467**	**$28,190**	**$5,540**	**$22,650**	**6.5**	**22,952**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	23,371	5.6	-5	$3,467	$28,190	$5,540	$22,650	6.5	22,952
Variable Frequency Drive (VFD) Measures			**79,134**	**14.9**	**0**	**$11,928**	**$153,500**	**$6,000**	**$147,500**	**12.4**	**79,687**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	68,725	14.3	0	$10,359	$107,400	$4,400	$103,000	9.9	69,205
ECM 6	Install VFDs on Heating Water Pumps	No	7,176	0.7	0	$1,082	$37,800	$500	$37,300	34.5	7,226
ECM 7	Install VFDs on Cooling Tower Fans	Yes	3,233	-0.1	0	$487	$8,300	$1,100	$7,200	14.8	3,256
HVAC System Improvements			**3,311**	**0.0**	**0**	**$499**	**$560**	**$80**	**$480**	**1.0**	**3,334**
ECM 8	Install Pipe Insulation	Yes	3,311	0.0	0	$499	$560	$80	$480	1.0	3,334
Domestic Water Heating Upgrade			**1,808**	**0.0**	**0**	**$272**	**$2,810**	**$550**	**$2,260**	**8.3**	**1,820**
ECM 9	Install Low-Flow DHW Devices	Yes	1,808	0.0	0	$272	$2,810	$550	$2,260	8.3	1,820
Food Service & Refrigeration Measures			**48,539**	**5.5**	**0**	**$7,317**	**$21,200**	**$2,800**	**$18,400**	**2.5**	**48,878**
ECM 10	Dishwasher Replacement	Yes	48,539	5.5	0	$7,317	$21,200	$2,800	$18,400	2.5	48,878
Custom Measures			**45,900**	**0.0**	**0**	**$6,919**	**$27,300**	**$0**	**$27,300**	**3.9**	**46,221**
ECM 11	Replace Electric Water Heater with Heat Pump Water Heater	Yes	45,900	0.0	0	$6,919	$27,300	$0	$27,300	3.9	46,221
TOTALS (COST EFFECTIVE MEASURES)			**320,416**	**49.3**	**-30**	**$47,969**	**$254,200**	**$23,240**	**$230,960**	**4.8**	**319,194**
TOTALS (ALL MEASURES)			**327,592**	**50.1**	**-30**	**$49,050**	**$292,000**	**$23,740**	**$268,260**	**5.5**	**326,420**

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ADMINISTRATIVE BUILDING

#	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			**52,327**	**13.9**	**-10**	**$10,868**	**$28,890**	**$5,060**	**$23,830**	**2.2**	**51,464**
ECM 1	Install LED Fixtures	Yes	2,111	0.0	0	$443	$4,390	$350	$4,040	9.1	2,126
ECM 2	Retrofit Fixtures with LED Lamps	Yes	47,441	13.6	-10	$9,848	$23,430	$4,710	$18,720	1.9	46,611
ECM 3	Install LED Exit Signs	Yes	2,775	0.3	-1	$576	$1,070	$0	$1,070	1.9	2,727
Lighting Control Measures			**15,070**	**4.3**	**-3**	**$3,128**	**$19,780**	**$3,720**	**$16,060**	**5.1**	**14,806**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	15,070	4.3	-3	$3,128	$19,780	$3,720	$16,060	5.1	14,806
Variable Frequency Drive (VFD) Measures			**10,444**	**2.1**	**0**	**$2,192**	**$52,700**	**$1,100**	**$51,600**	**23.5**	**10,517**
ECM 5	Install VFDs on Constant Volume (CV) Fans	No	6,943	1.5	0	$1,457	$39,000	$800	$38,200	26.2	6,991
ECM 6	Install VFDs on Heating Water Pumps	No	2,382	0.5	0	$500	$9,400	$200	$9,200	18.4	2,399
ECM 7	Install VFDs on Condensate Pumps	No	1,119	0.1	0	$235	$4,300	$100	$4,200	17.9	1,127
HVAC System Improvements			**563**	**0.0**	**0**	**$118**	**$360**	**$40**	**$320**	**2.7**	**567**
ECM 8	Install Pipe Insulation	Yes	563	0.0	0	$118	$360	$40	$320	2.7	567
Domestic Water Heating Upgrade			**2,961**	**0.0**	**0**	**$622**	**$290**	**$90**	**$200**	**0.3**	**2,982**
ECM 9	Install Low-Flow DHW Devices	Yes	2,961	0.0	0	$622	$290	$90	$200	0.3	2,982
Food Service & Refrigeration Measures			**3,909**	**0.4**	**0**	**$821**	**$1,080**	**$100**	**$980**	**1.2**	**3,936**
ECM 10	Vending Machine Control	Yes	3,909	0.4	0	$821	$1,080	$100	$980	1.2	3,936
Custom Measures			**3,376**	**0.0**	**0**	**$709**	**$4,000**	**$0**	**$4,000**	**5.6**	**3,400**
ECM 11	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,376	0.0	0	$709	$4,000	$0	$4,000	5.6	3,400
TOTALS (COST EFFECTIVE MEASURES)			**78,205**	**18.6**	**-14**	**$16,265**	**$54,400**	**$9,010**	**$45,390**	**2.8**	**77,154**
TOTALS (ALL MEASURES)			**88,649**	**20.7**	**-14**	**$18,458**	**$107,100**	**$10,110**	**$96,990**	**5.3**	**87,671**

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

FOOD SERVICE

#	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			**31,609**	**7.5**	**-6**	**$4,696**	**$16,320**	**$2,980**	**$13,340**	**2.8**	**31,108**
ECM 1	Install LED Fixtures	Yes	1,905	0.0	0	$287	$1,330	$150	$1,180	4.1	1,919
ECM 2	Retrofit Fixtures with LED Lamps	Yes	26,298	7.2	-5	$3,903	$13,650	$2,830	$10,820	2.8	25,845
ECM 3	Install LED Exit Signs	Yes	3,406	0.3	-1	$505	$1,340	$0	$1,340	2.7	3,345
Lighting Control Measures			**7,913**	**2.2**	**-2**	**$1,174**	**$7,040**	**$910**	**$6,130**	**5.2**	**7,771**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	7,913	2.2	-2	$1,174	$7,040	$910	$6,130	5.2	7,771
Variable Frequency Drive (VFD) Measures			**11,676**	**3.0**	**0**	**$1,760**	**$27,800**	**$700**	**$27,100**	**15.4**	**11,758**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	11,676	3.0	0	$1,760	$27,800	$700	$27,100	15.4	11,758
HVAC System Improvements			**2,251**	**0.0**	**0**	**$339**	**$380**	**$40**	**$340**	**1.0**	**2,266**
ECM 6	Install Pipe Insulation	Yes	2,251	0.0	0	$339	$380	$40	$340	1.0	2,266
Domestic Water Heating Upgrade			**957**	**0.0**	**0**	**$144**	**$90**	**$30**	**$60**	**0.4**	**963**
ECM 7	Install Low-Flow DHW Devices	Yes	957	0.0	0	$144	$90	$30	$60	0.4	963
Food Service & Refrigeration Measures			**34,030**	**5.3**	**0**	**$5,129**	**$126,750**	**$4,550**	**$122,200**	**23.8**	**34,268**
ECM 8	Dishwasher Replacement	No	17,465	4.0	0	$2,632	$91,800	$3,000	$88,800	33.7	17,587
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	3,146	0.4	0	$474	$4,500	$480	$4,020	8.5	3,168
ECM 10	Refrigeration Controls	No	6,364	0.1	0	$959	$26,650	$1,070	$25,580	26.7	6,409
ECM 11	Replace Refrigeration Equipment	Yes	7,055	0.8	0	$1,063	$3,800	$0	$3,800	3.6	7,105
Custom Measures			**18,464**	**0.0**	**0**	**$2,783**	**$4,000**	**$0**	**$4,000**	**1.4**	**18,593**
ECM 12	Replace Electric Water Heater with Heat Pump Water Heater	Yes	18,464	0.0	0	$2,783	$4,000	$0	$4,000	1.4	18,593
TOTALS (COST EFFECTIVE MEASURES)			**83,070**	**14.0**	**-8**	**$12,434**	**$63,930**	**$5,140**	**$58,790**	**4.7**	**82,731**
TOTALS (ALL MEASURES)			**106,899**	**18.1**	**-8**	**$16,025**	**$182,380**	**$9,210**	**$173,170**	**10.8**	**106,727**

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

MAINTENANCE SHOPS & AUTO GARAGE

#	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			**7,438**	**1.7**	**-1**	**$1,106**	**$4,880**	**$840**	**$4,040**	**3.7**	**7,329**
ECM 1	Install LED Fixtures	Yes	1,085	0.0	0	$164	$1,650	$150	$1,500	9.2	1,092
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	181	0.1	0	$27	$90	$10	$80	3.0	177
ECM 3	Retrofit Fixtures with LED Lamps	Yes	6,173	1.7	-1	$916	$3,140	$680	$2,460	2.7	6,059
Lighting Control Measures			**4,136**	**1.2**	**-1**	**$613**	**$7,740**	**$870**	**$6,870**	**11.2**	**4,056**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	4,136	1.2	-1	$613	$7,740	$870	$6,870	11.2	4,056
HVAC System Improvements			**1,200**	**0.0**	**0**	**$181**	**$1,230**	**$130**	**$1,100**	**6.1**	**1,208**
ECM 5	Install Pipe Insulation	Yes	1,200	0.0	0	$181	$1,230	$130	$1,100	6.1	1,208
Domestic Water Heating Upgrade			**334**	**0.0**	**0**	**$50**	**$110**	**$40**	**$70**	**1.4**	**336**
ECM 6	Install Low-Flow DHW Devices	Yes	334	0.0	0	$50	$110	$40	$70	1.4	336
Food Service & Refrigeration Measures			**2,918**	**0.3**	**0**	**$440**	**$6,670**	**$50**	**$6,620**	**15.0**	**2,939**
ECM 7	Replace Refrigeration Equipment	No	1,307	0.1	0	$197	$6,400	$0	$6,400	32.5	1,316
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	$243	$270	$50	$220	0.9	1,623
TOTALS (COST EFFECTIVE MEASURES)			**14,719**	**3.0**	**-2**	**$2,194**	**$14,230**	**$1,930**	**$12,300**	**5.6**	**14,552**
TOTALS (ALL MEASURES)			**16,026**	**3.2**	**-2**	**$2,391**	**$20,630**	**$1,930**	**$18,700**	**7.8**	**15,867**

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

GREENHOUSES 1, 2, AND 3

#	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			**21**	**0.1**	**0**	**$3**	**$100**	**$20**	**$80**	**28.3**	**20**
ECM 1	Retrofit Fixtures with LED Lamps	No	21	0.1	0	$3	$100	$20	$80	28.3	20
TOTALS (COST EFFECTIVE MEASURES)			**0**	**0.0**	**0**	**$0**	**$0**	**$0**	**$0**	**0.0**	**0**
TOTALS (ALL MEASURES)			**21**	**0.1**	**0**	**$3**	**$100**	**$20**	**$80**	**28.3**	**20**

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POWERHOUSE

#	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			**6,229**	**0.5**	**-1**	**$933**	**$3,600**	**$460**	**$3,140**	**3.4**	**6,207**
ECM 1	Install LED Fixtures	Yes	3,767	0.0	0	$568	$2,650	$250	$2,400	4.2	3,793
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,462	0.5	-1	$365	$950	$210	$740	2.0	2,414
Lighting Control Measures			**780**	**0.2**	**0**	**$116**	**$810**	**$90**	**$720**	**6.2**	**765**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	780	0.2	0	$116	$810	$90	$720	6.2	765
Variable Frequency Drive (VFD) Measures			**162,402**	**63.6**	**0**	**$24,479**	**$103,200**	**$11,500**	**$91,700**	**3.7**	**163,538**
ECM 4	Install Boiler Draft Fan VFDs	Yes	70,071	26.8	0	$10,562	$54,600	$5,600	$49,000	4.6	70,561
ECM 5	Install VFDs on Boiler Feedwater Pumps	Yes	92,332	36.8	0	$13,917	$48,600	$5,900	$42,700	3.1	92,977
HVAC System Improvements			**340**	**0.0**	**0**	**$51**	**$410**	**$60**	**$350**	**6.8**	**342**
ECM 6	Install Pipe Insulation	Yes	340	0.0	0	$51	$410	$60	$350	6.8	342
Domestic Water Heating Upgrade			**152**	**0.0**	**0**	**$23**	**$120**	**$20**	**$100**	**4.4**	**153**
ECM 7	Install Low-Flow DHW Devices	Yes	152	0.0	0	$23	$120	$20	$100	4.4	153
TOTALS (COST EFFECTIVE MEASURES)			**169,903**	**64.3**	**-1**	**$25,602**	**$108,140**	**$12,130**	**$96,010**	**3.8**	**171,006**
TOTALS (ALL MEASURES)			**169,903**	**64.3**	**-1**	**$25,602**	**$108,140**	**$12,130**	**$96,010**	**3.8**	**171,006**

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WASTEWATER TREATMENT PLANT

#	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			**1,935**	**0.9**	**0**	**$292**	**$1,960**	**$350**	**$1,610**	**5.5**	**1,949**
ECM 1	Install LED Fixtures	Yes	324	0.0	0	$49	$270	$50	$220	4.5	326
ECM 2	Retrofit Fixtures with LED Lamps	Yes	1,266	0.9	0	$191	$1,510	$300	$1,210	6.3	1,275
ECM 3	Install LED Exit Signs	Yes	345	0.0	0	$52	$180	$0	$180	3.5	347
Lighting Control Measures			**345**	**0.2**	**0**	**$52**	**$880**	**$120**	**$760**	**14.6**	**347**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	345	0.2	0	$52	$880	$120	$760	14.6	347
HVAC System Improvements			**34**	**0.0**	**0**	**$5**	**$140**	**$20**	**$120**	**23.6**	**34**
ECM 5	Install Pipe Insulation	Yes	34	0.0	0	$5	$140	$20	$120	23.6	34
Domestic Water Heating Upgrade			**56**	**0.0**	**0**	**$8**	**$20**	**$10**	**$10**	**1.2**	**56**
ECM 6	Install Low-Flow DHW Devices	Yes	56	0.0	0	$8	$20	$10	$10	1.2	56
Custom Measures			**26,110**	**0.0**	**0**	**$3,938**	**$46,000**	**$0**	**$46,000**	**11.7**	**26,293**
ECM 7	Install Automated Dissolved Oxygen Aeration Control	Yes	26,110	0.0	0	$3,938	$46,000	$0	$46,000	11.7	26,293
TOTALS (COST EFFECTIVE MEASURES)			**28,480**	**1.2**	**0**	**$4,295**	**$49,000**	**$500**	**$48,500**	**11.3**	**28,679**
TOTALS (ALL MEASURES)			**28,480**	**1.2**	**0**	**$4,295**	**$49,000**	**$500**	**$48,500**	**11.3**	**28,679**

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

INFIRMARY

#	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			**90,880**	**27.2**	**-17**	**$13,508**	**$53,090**	**$8,800**	**$44,290**	**3.3**	**89,518**
ECM 1	Install LED Fixtures	Yes	10,797	0.0	0	$1,627	$7,520	$850	$6,670	4.1	10,872
ECM 2	Retrofit Fixtures with LED Lamps	Yes	67,822	25.8	-14	$10,062	$40,790	$7,950	$32,840	3.3	66,605
ECM 3	Install LED Exit Signs	Yes	12,261	1.4	-3	$1,819	$4,780	$0	$4,780	2.6	12,041
Lighting Control Measures			**20,173**	**7.6**	**-4**	**$2,993**	**$30,980**	**$6,700**	**$24,280**	**8.1**	**19,811**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	14,702	5.7	-3	$2,181	$25,350	$1,960	$23,390	10.7	14,438
ECM 5	Install High/Low Lighting Controls	Yes	5,471	2.0	-1	$812	$5,630	$4,740	$890	1.1	5,373
Motor Upgrades			**1,049**	**0.2**	**0**	**$158**	**$1,300**	**$0**	**$1,300**	**8.2**	**1,056**
ECM 6	Premium Efficiency Motors	Yes	1,049	0.2	0	$158	$1,300	$0	$1,300	8.2	1,056
Variable Frequency Drive (VFD) Measures			**65,311**	**23.9**	**0**	**$9,844**	**$57,300**	**$6,800**	**$50,500**	**5.1**	**65,768**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	65,311	23.9	0	$9,844	$57,300	$6,800	$50,500	5.1	65,768
HVAC System Improvements			**1,242**	**0.0**	**0**	**$187**	**$200**	**$30**	**$170**	**0.9**	**1,250**
ECM 8	Install Pipe Insulation	Yes	1,242	0.0	0	$187	$200	$30	$170	0.9	1,250
Domestic Water Heating Upgrade			**6,612**	**0.0**	**0**	**$997**	**$1,350**	**$390**	**$960**	**1.0**	**6,658**
ECM 9	Install Low-Flow DHW Devices	Yes	6,612	0.0	0	$997	$1,350	$390	$960	1.0	6,658
Custom Measures			**17,145**	**0.0**	**0**	**$2,584**	**$4,000**	**$0**	**$4,000**	**1.5**	**17,265**
ECM 10	Replace Electric Water Heater with Heat Pump Water Heater	Yes	17,145	0.0	0	$2,584	$4,000	$0	$4,000	1.5	17,265
TOTALS (COST EFFECTIVE MEASURES)			**202,411**	**58.9**	**-21**	**$30,271**	**$148,220**	**$22,720**	**$125,500**	**4.1**	**201,326**
TOTALS (ALL MEASURES)			**202,411**	**58.9**	**-21**	**$30,271**	**$148,220**	**$22,720**	**$125,500**	**4.1**	**201,326**

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COTTAGES C-15, C-16, C-17, C-18, COOLING TOWER

#	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			**145,902**	**21.9**	**-29**	**$21,670**	**$65,880**	**$8,400**	**$57,480**	**2.7**	**143,537**
ECM 1	Install LED Fixtures	Yes	10,162	0.0	0	$1,532	$7,040	$800	$6,240	4.1	10,233
ECM 2	Retrofit Fixtures with LED Lamps	Yes	122,117	20.6	-26	$18,117	$53,480	$7,600	$45,880	2.5	119,926
ECM 3	Install LED Exit Signs	Yes	13,624	1.3	-3	$2,021	$5,360	$0	$5,360	2.7	13,379
Lighting Control Measures			**38,528**	**6.0**	**-8**	**$5,716**	**$45,400**	**$14,320**	**$31,080**	**5.4**	**37,836**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	38,528	6.0	-8	$5,716	$45,400	$14,320	$31,080	5.4	37,836
Variable Frequency Drive (VFD) Measures			**244,116**	**38.7**	**0**	**$36,796**	**$358,100**	**$22,200**	**$335,900**	**9.1**	**245,822**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	192,565	27.7	0	$29,026	$229,000	$16,400	$212,600	7.3	193,911
ECM 6	Install VFDs on Chilled Water Pumps	Yes	17,010	7.4	0	$2,564	$31,900	$4,200	$27,700	10.8	17,129
ECM 7	Install VFDs on Heating Water Pumps	No	20,059	1.4	0	$3,024	$59,600	$800	$58,800	19.4	20,199
ECM 8	Install VFDs on Condensate Pumps	No	14,482	2.2	0	$2,183	$37,600	$800	$36,800	16.9	14,583
HVAC System Improvements			**6,622**	**0.0**	**0**	**$998**	**$1,080**	**$160**	**$920**	**0.9**	**6,669**
ECM 9	Install Pipe Insulation	Yes	6,622	0.0	0	$998	$1,080	$160	$920	0.9	6,669
Domestic Water Heating Upgrade			**4,385**	**0.0**	**0**	**$661**	**$7,160**	**$1,160**	**$6,000**	**9.1**	**4,415**
ECM 10	Install Low-Flow DHW Devices	Yes	4,385	0.0	0	$661	$7,160	$1,160	$6,000	9.1	4,415
Food Service & Refrigeration Measures			**1,606**	**0.2**	**0**	**$242**	**$6,400**	**$400**	**$6,000**	**24.8**	**1,617**
ECM 11	Replace Refrigeration Equipment	No	1,606	0.2	0	$242	$6,400	$400	$6,000	24.8	1,617
Custom Measures			**16,178**	**0.0**	**0**	**$2,439**	**$15,900**	**$0**	**$15,900**	**6.5**	**16,291**
ECM 12	Replace Electric Water Heater with Heat Pump Water Heater	Yes	16,178	0.0	0	$2,439	$15,900	$0	$15,900	6.5	16,291
TOTALS (COST EFFECTIVE MEASURES)			**421,189**	**63.0**	**-37**	**$63,074**	**$396,320**	**$44,640**	**$351,680**	**5.6**	**419,789**
TOTALS (ALL MEASURES)			**457,336**	**66.8**	**-37**	**$68,522**	**$499,920**	**$46,640**	**$453,280**	**6.6**	**456,188**

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Energy Efficient Best Practices

- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Use Window Treatments/Coverings
- Clean and/or Replace HVAC filters
- Check and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls
- Water Conservation

See individual reports for specific EE Best Practices by building

BPU | New Jersey's cleanenergy program™

WATER BEST PRACTICES

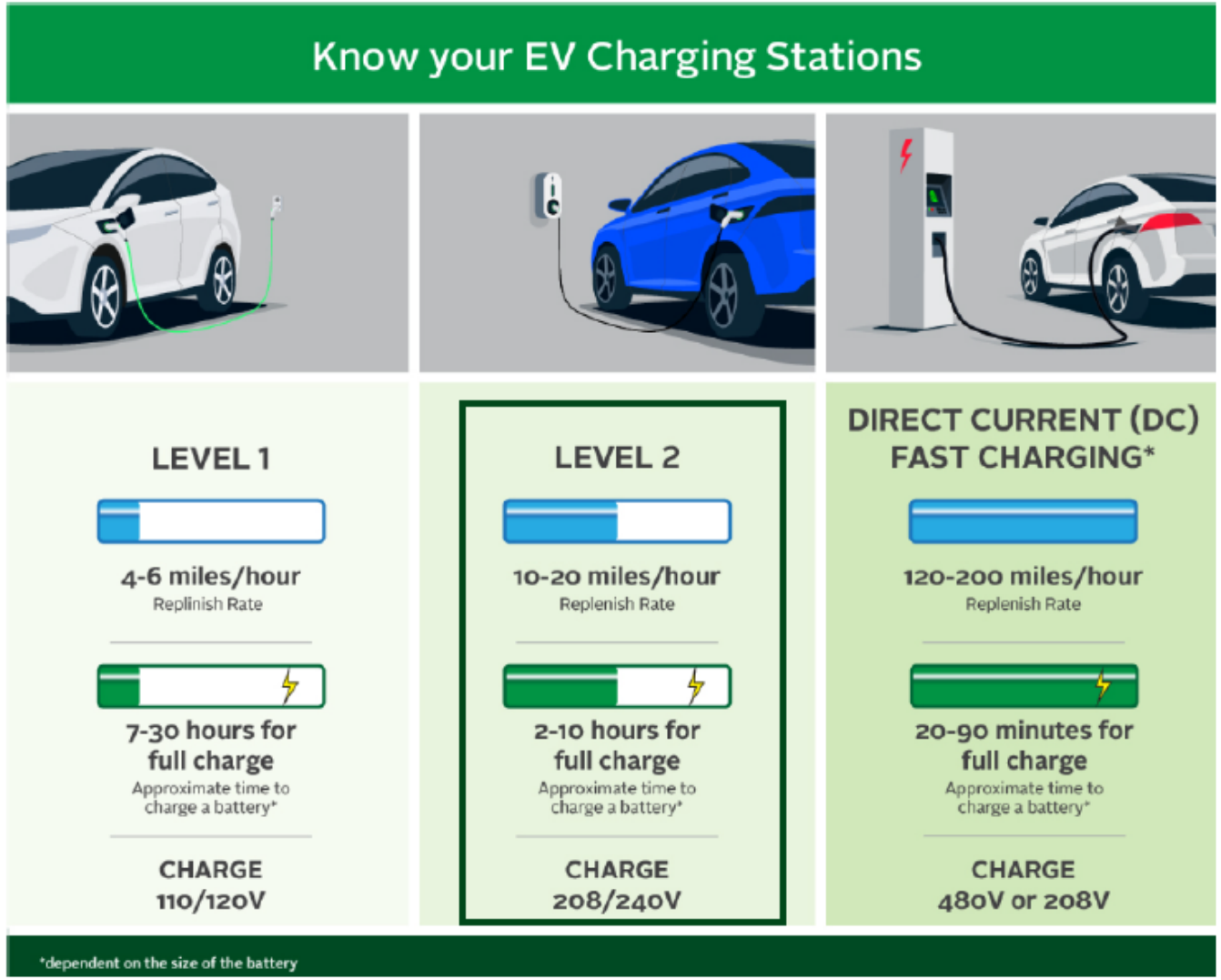
- Leak Detection and Repair
- Toilets and Urinals
- Faucets and Showerheads
- Commercial Kitchen Equipment
- Laundry Equipment
- Cooling Towners
- Steam Boiler System
- Pools and Spas
- Laboratory and Medical Equipment
- Water Metering and Submetering
- Vehicle Washing
- Single Pass Cooling System
- Landscaping and Irrigation
- On-Site Alternative Water Sources

See individual reports for specific Water Best Practices by building

BPU New Jersey's cleanenergy program™

EV Charging Station Potential

NJCleanEnergy.com/EV

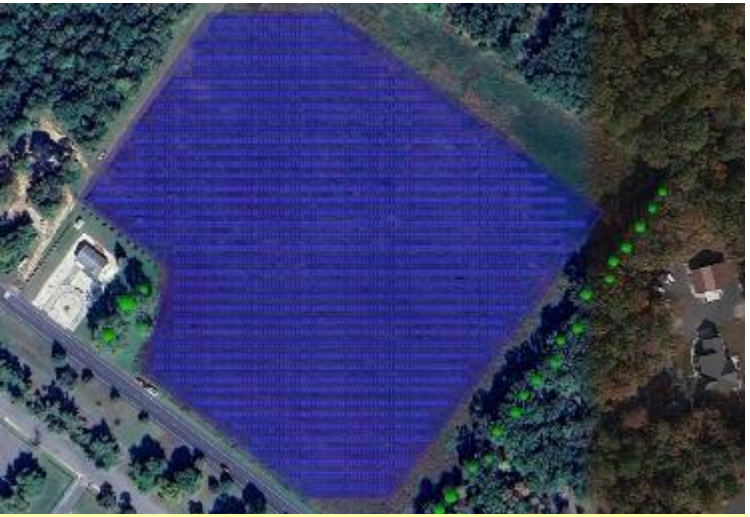


	Woodbine DC – Most Sites
Potential:	**Medium**

Solar Energy Generation Potential

NJCleanEnergy.com/renewable-energy

Option 1: Railroad Field



Option 2: Tower Field

Option 3: Campus

4.8 MW Solar PV System:
All three proposed configurations are expected to generate a total energy output of about 6,760,000 kWh, accounting for 100% of the site's total electricity consumption for the year 2022-2023. The PV systems are sized to achieve Net Zero Energy.

500 kWh BESS: The sizing of the battery has been optimized to ensure that the projected annual cost savings remain within a positive range for the battery installation project. Please take note that the site's highest electricity demand for month of August 2022 is approximately 2,013 kW. Opting for a larger battery to sustain the entire electric load of the facilities during a power outage is not a financially viable solution

Combined Heat & Power Potential

	Woodbine DC
Potential:	**HIGH**
System Type:	Recip Engine
System Potential: (kW)	260
Electric Generation: (kWh per year)	2,120,560
Thermal Generation: (MBtu per year)	10,521,240
Displaced Cost: (per year)	$187,243

FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

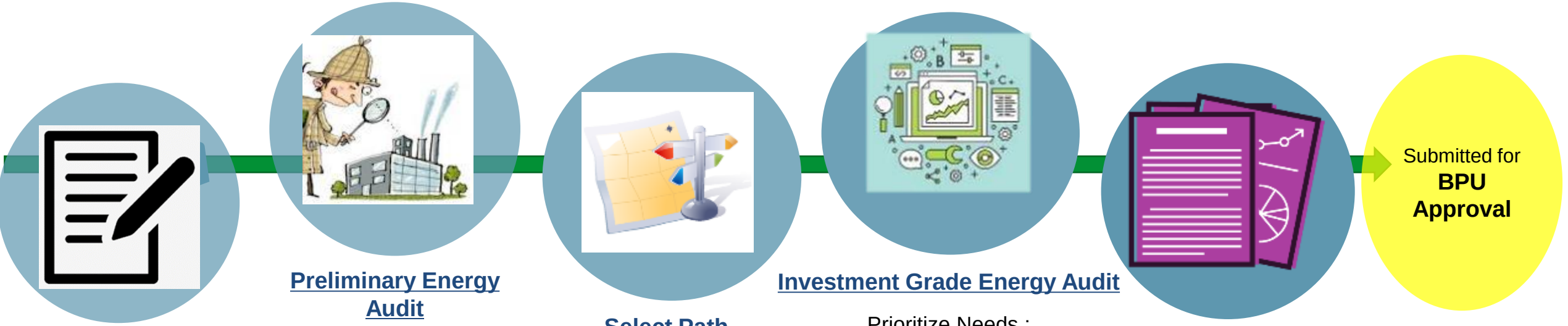
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting = NJ ESIP Program
- A creative tool and financing mechanism that allows public entities to make energy efficiency improvements without impacting their budgets
- Administered by the NJBPU
- Project is paid for with the value of its own energy savings
- 2 Options: Lease Purchase Loan or Bond
- 15 or 20 year pay back term
- NJBPU Approved Incentive Programs
    - Utility or NJCEP
- Can be combined with Federal/State Grants
- No upfront capital expenses
- No referendum or impact to tax payers

New Jersey's cleanenergy program™

Energy Savings Improvement Program

NJCleanEnergy.com/ESIP



ESIP Intake Form

Get informed;
Begin the process

Preliminary Energy Audit

Free LGEA
or
other ASHRAE Level II Audit

Select Path

ESCO, Hybrid or DIY Model;
Local Public Contract Law
Public School Contract Law
Compliance

Investment Grade Energy Audit

Prioritize Needs ;
Select Project's ECM's

Energy Savings Plan

Must be Cash Flow Positive;
Purchase Savings Guarantee?
Third Party Verification

Submitted for **BPU Approval**

New Jersey's cleanenergy program™

Energy Savings Improvement Program

NJCleanEnergy.com/ESIP

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

ESIP@bpu.nj.gov

o: 609.913.6295

c: 609.915.0903

State Facilities Initiative (SFI)

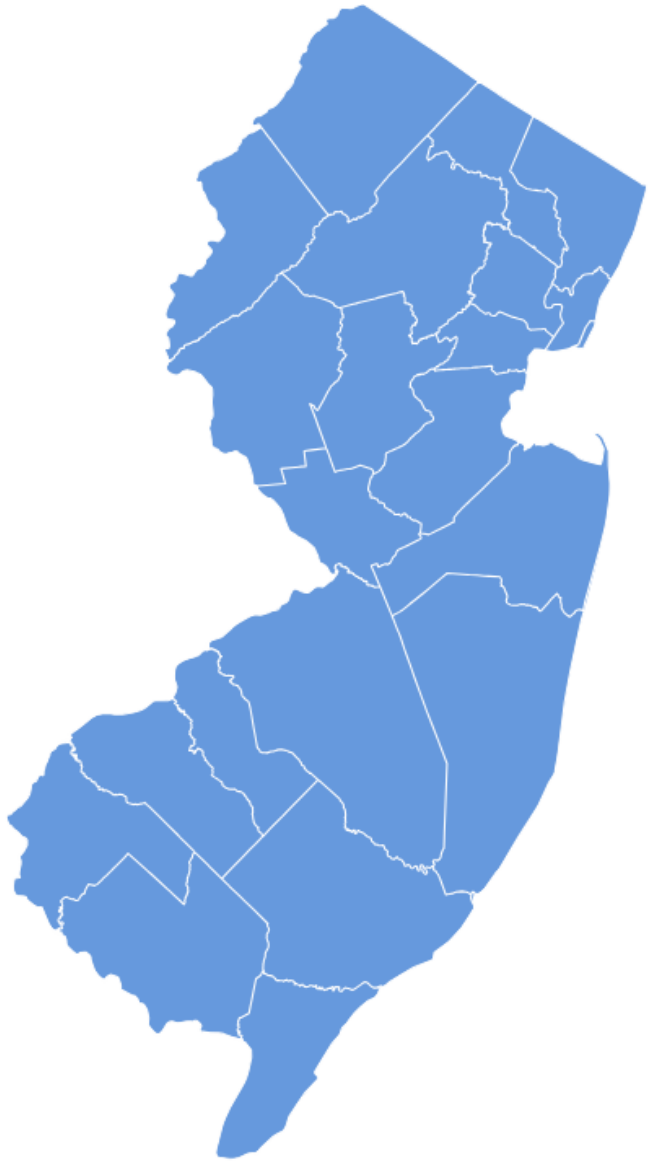
The State Facilities Initiative (SFI)

This program is for State-owned facilities.

The program identifies and implements Energy Efficiency projects in State-owned facilities or State-sponsored projects with the objective of producing energy and cost savings. The funding provided to the SFI is directly in line with EMP Goals 3.3.5 and 4.1.1.

EMP Goal 3.3.5 seeks to "[i]mprove energy efficiency in, and retrofit state buildings to, a high performance standard."

EMP Goal 4.1.1 addresses electrifying State facilities.



C&I Energy Efficiency Programs

NJCleanEnergy.com

LOCAL GOVERNMENT CUSTOMERS

COMMERCIAL & INSTITUTIONAL CUSTOMERS

LARGE ENERGY CUSTOMERS

EXISTING BUILDINGS

MEASUREMENT & AUDITS

FREE Energy Audits

RETROFITS

Prescriptive & Custom Rebates

Direct Install

Engineered Solutions

And more from your local utility!

Incentives up to $4 million for eligible projects

NEW CONSTRUCTION

Prescriptive & Custom Rebates for New Construction and Gut Rehabs

Pay for Performance incentives for buildings over 50,000 sq. ft.

DISTRIBUTED ENERGY RESOURCES

Combined Heat & Power and Fuel Cell Installation Incentives

Microgrid Development

Battery Storage

Muni EV Fleets

Key:

Programs run by investor-owned utility companies

Programs run by NJCEP

UTILITY RUN ENERGY EFFICIENCY PROGRAMS*

NJCleanEnergy.com/Transition

PRESCRIPTIVE & CUSTOM REBATES:

- Individual high efficiency equipment rebates for renovation, remodeling, and equipment replacement
- Flexibility to do a little or a lot
- No size requirement

DIRECT INSTALL:

- Turn-key retrofit program to replace outdated and inefficient equipment including, lighting, HVAC, refrigeration, etc.
- The facility must have an average electric peak demand <200kW in the previous year to qualify

ENERGY MANAGEMENT :

- Includes the Building Tune-up (BT), Retro-commissioning (RCx), and Strategic Energy Management (SEM) subprograms. These subprograms offer a comprehensive mix of custom energy-savings measures such as basic HVAC tune-ups, building systems tune-ups, controls' calibration, diagnostic testing, and installation of measures to enhance your building's energy performance and savings.

ENGINEERED SOLUTIONS:

- Comprehensive, whole-building approach to saving energy
- The facility must have an average electric peak demand >200kW in the previous year to qualify

Other programs may be available to you. Check with your Utility Provider to see a full list of offering and what you may be qualified for.

Utility Run Energy Efficiency Programs

Atlantic City Electric

Paul Miles – Paul.Miles@exeloncorp.com
Alex Haver – AHaver@trccompanies.com

South Jersey Gas

Nathalie Roccatti – NRoccatti@trcccompanies.com
Kim Byk – KByk@appliedenergygroup.com

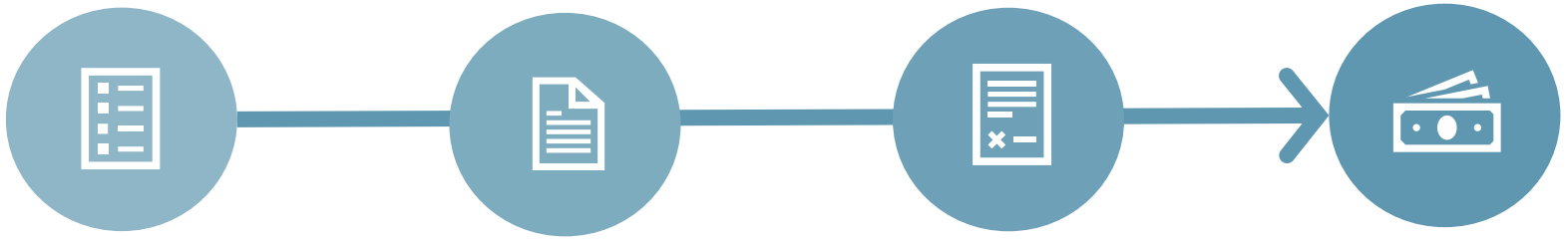
Large Energy Users

NJCleanEnergy.com/LEUP

WHO	Large C&I entities who have paid a minimum of $5,000,000 in the previous 12 months of utility bills
SIZE TO QUALIFY	The average peak demand of all facilities submitted ≥400kW and/or 4,000 DTh
ABOUT	• Encourages large C&I utility customers to self-invest in energy efficiency, combined heat & power, and fuel cell projects • Must have ability to "bank" funds for up to two fiscal years
INCENTIVE CAP	Maximum incentive per entity is the lesser of: • $4 million, • 75% of total project cost, or • 90% of NJCEP contribution or annual energy saving caps ($0.33/kWh and $3.75/therm)

Large Energy Users

NJCleanEnergy.com/LEUP



Program Enrollment

Submission and Approval of Application

Submission of Draft Energy Efficiency Plan

Reservation of Incentives (optional)

Submission of Final Energy Efficiency Plan

Commitment of Incentives

Confirmation of Installation

Incentives Paid

Combined Heat & Power - Fuel Cells

NJCleanEnergy.com/CHP

WHO	C&I customers that require on-site electric generation that either does or does not utilize waste heat
SIZE TO QUALIFY	N/A - Projects must pass a cost-effectiveness test and run 5,000 full load equivalent hours per year (3,500 for critical facilities)
ABOUT	• Combined Heat & Power (CHP) units generates electricity and recycle waste heat to provide heating or cooling • Resiliency with return on investment • Technology-neutral incentives • Fuel Cells (FC) with or without heat recovery (HR)
INCENTIVE LEVELS	• CHPs and FC with HR have a project cap of $2M - $3M • 25% bonus for critical facilities with black-start/islanding capabilities • Up to 30% incentive bonus for CHP using biofuel • FC without HR have a project cap of $1M

COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP

Eligible Technology	Size (Installed Rated Capacity)	Incentive ($/Watt) [5]	% of Total Cost Cap per project	$ Cap per project
CHP powered by non-renewable or renewable fuel source, or a combination[4]: • Gas Internal Combustion Engine • Gas Combustion Turbine • Microturbine Fuel Cell with Heat Recovery (FCHR)	≤500 kW[1]	$2.00	30-40%[2]	$2 million
	>500 kW – 1 MW[1]	$1.00		
	>1 MW – 3 MW[1]	$0.55	30%	$3 million
	>3 MW[1]	$0.35		
Fuel Cell without Heat Recovery (FCwoHR)	Same as above[1]	Applicable amount above	30%	$1 million
Waste Heat to Power (WHP)[3] Powered by non-renewable fuel source. Heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine)	≤1 MW[1]	$1.00	30%	$2 million
	>1 MW[1]	$0.50	30%	$3 million

+critical facility/blackstart bonus of 25%

New Jersey's cleanenergy program™

For More Information

Sarah Walters – LGEA Program Manager
SWalters@trccompanies.com
(732) 589-7372

Moussa Traore – LGEA Technical Manager
MTraore@trccompanies.com
(732) 902-1797

Eduardo Garcia – LGEA Energy Auditor
EGGarcia@trccompanies.com
(204) 447-2764

THANK YOU