



LGEA Presentation Belleplain State Forest



September 12, 2024

New Jersey's Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- Belleplain State Forest
 - Vincent Bonica
 - Milton Kern
 - Jessica August
 - Laura Petrangeli
 - Jeffrey MacMullen

- NJ Clean Energy Program
 - Sarah Walters LGEA Project Manager
 - Moussa Traore LGEA Technical Manager
 - Juno Romanick LGEA Project Auditor
 - Amanda Muench
 – LGEA Account Manager



AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
 & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Belleplain State Forest



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

Utility Consumption:

- Electric Consumption and Costs
- Propane Consumption and Costs
- Fuel Oil Consumption and Costs
- Water Consumption and Costs

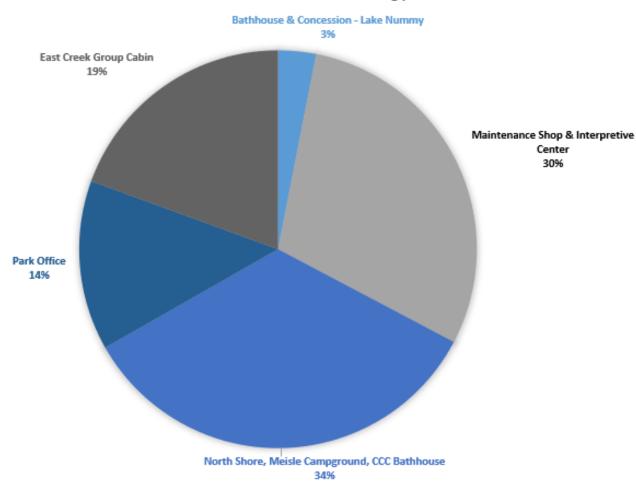
Sites Visited/Analyzed

- Bathhouse & Concession Lake Nummy
- Maintenance Shop & Interpretive Center
- North Shore
- Meisle Campground
- CCC Bathhouse
- Park Office
- East Creek Group Cabin

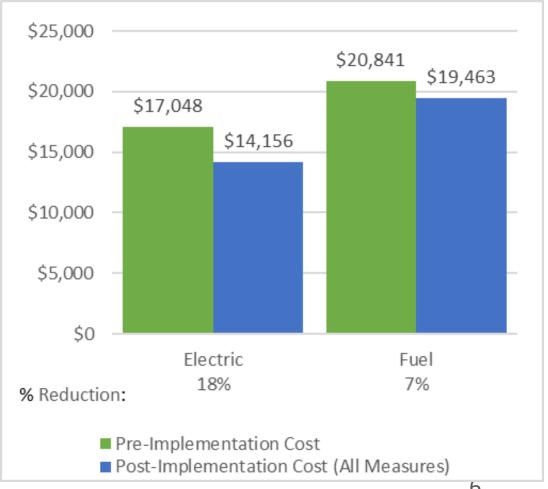


UTILITY BREAKOUT

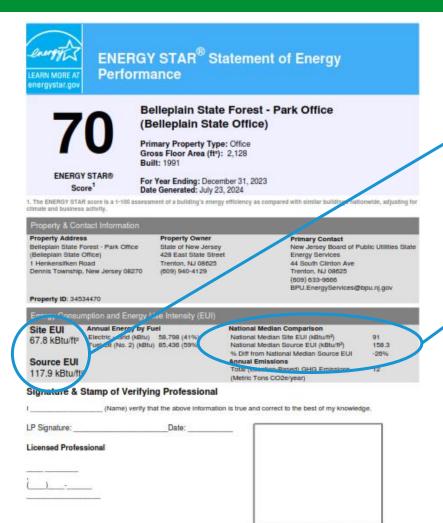
Percent of Total Annual Energy Costs



Pre & Post Implementation Cost

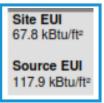


BENCHMARKING



Professional Engineer or Registered

Architect Stamp (If applicable)



 National Median Comparison
 91

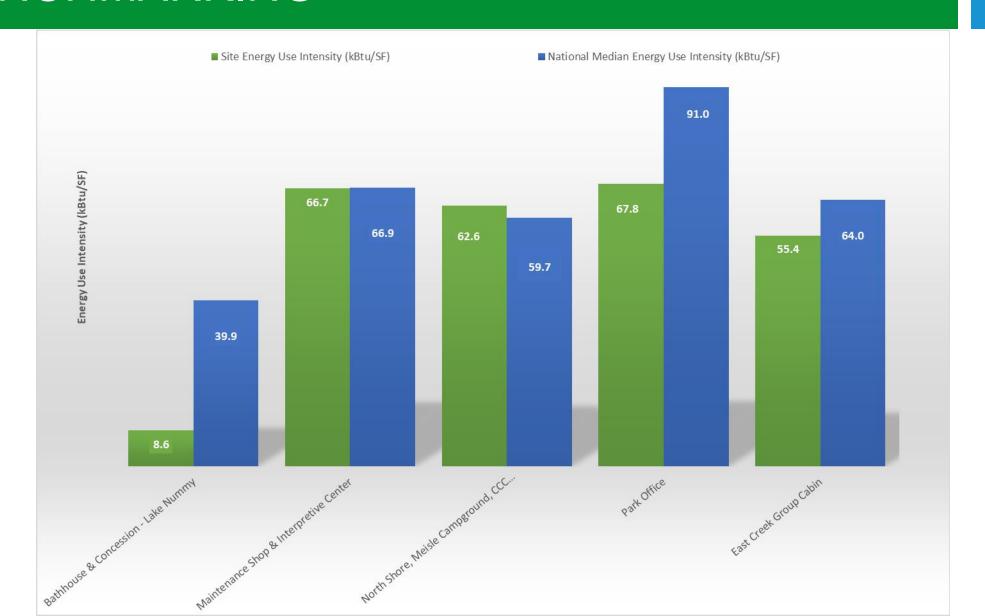
 National Median Site EUI (kBtu/ft²)
 158.3

 % Diff from National Median Source EUI
 -26%

Site Name	Energy Star Score
Bathhouse & Concession - Lake Nummy	N/A
Maintenance Shop & Interpretive Center	N/A
North Shore, Meisle Campground, CCC Bathhouse	N/A
Park Office	70
East Creek Group Cabin	N/A

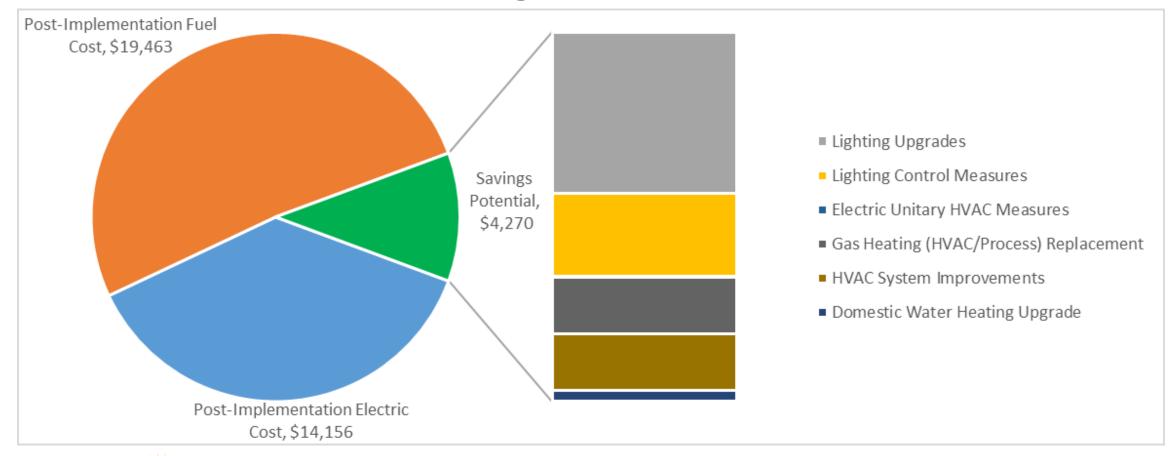
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

BENCHMARKING



ALL OPPORTUNITIES

Savings Potential





ALL OPPORTUNITIES

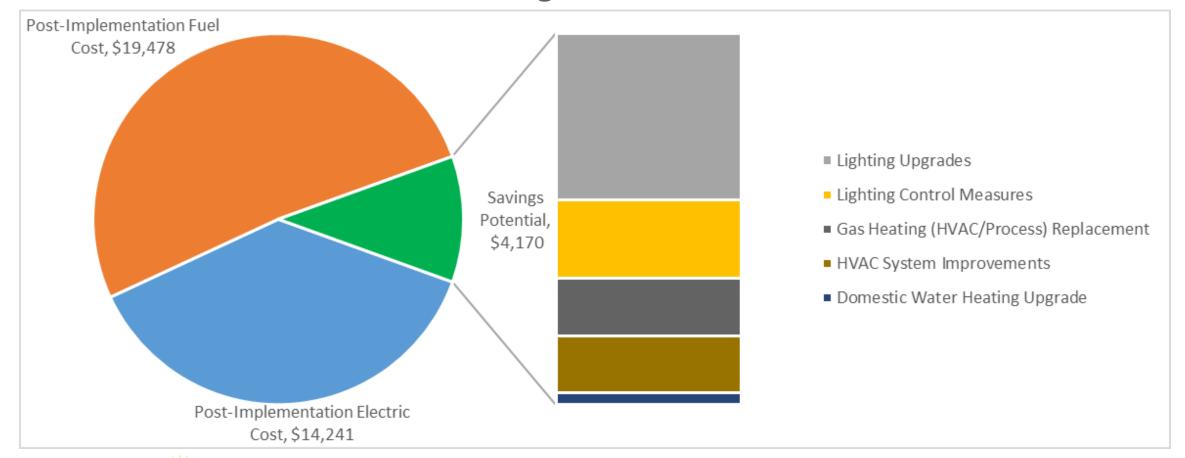
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO ₂ e Emissions Reduction (lbs)
Lighting	Upgrades	9,646	2.4	-2.2	\$1,866	\$5,340	\$650	\$4,690	2.5	9,375
ECM 1	Install LED Fixtures	2,321	0.0	0.0	\$459	\$660	\$100	\$560	1.2	2,338
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,007	0.9	-1.3	\$564	\$1,790	\$210	\$1,580	2.8	2,831
	Retrofit Fixtures with LED Lamps	4,223	1.4	-0.9	\$822	\$2,800	\$340	\$2,460	3.0	4,112
ECM 4	Install LED Exit Signs	95	0.0	0.0	\$22	\$90	\$0	\$90	4.1	95
Lighting	Control Measures	4,793	0.3	-0.4	\$955	\$5,610	\$600	\$5,010	5.2	4,759
ECM 5	Install Occupancy Sensor Lighting Controls	1,026	0.3	-0.4	\$196	\$4,890	\$600	\$4,290	21.9	966
ECM 6	Photocell Controls	3,767	0.0	0.0	\$760	\$720	\$0	\$720	0.9	3,793
Unitary	HVAC Measures	61	0.0	0.0	\$14	\$2,800	\$0	\$2,800	197.6	62
ECM 7	Install High Efficiency Air Conditioning Units	61	0.0	0.0	\$14	\$2,800	\$0	\$2,800	197.6	62
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	31.4	\$653	\$7,000	\$1,000	\$6,000	9.2	5,142
ECM 8	Install High Efficiency Furnaces	0	0.0	31.4	\$653	\$7,000	\$1,000	\$6,000	9.2	5,142
HVAC Sy	stem Improvements	394	0.0	26.2	\$648	\$1,900	\$270	\$1,630	2.5	4,684
ECM 9	Install Pipe Insulation	394	0.0	26.2	\$648	\$1,900	\$270	\$1,630	2.5	4,684
Domest	ic Water Heating Upgrade	311	0.0	2.9	\$134	\$700	\$140	\$560	4.2	780
ECM 10	Install Low-Flow DHW Devices	311	0.0	2.9	\$134	\$700	\$140	\$560	4.2	780
	TOTALS (ALL MEASURES)	15,204	2.8	58.0	\$4,270	\$23,350	\$2,660	\$20,690	4.8	24,802

^{* -} 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 (\$)		CO ₂ e Emissions Reduction (lbs)
Lighting	Upgrades	9,646	2.4	-2.2	\$1,866	\$5,340	\$650	\$4,690	2.5	9,375
ECM 1	Install LED Fixtures	2,321	0.0	0.0	\$459	\$660	\$100	\$560	1.2	2,338
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,007	0.9	-1.3	\$564	\$1,790	\$210	\$1,580	2.8	2,831
ECM 3	Retrofit Fixtures with LED Lamps	4,223	1.4	-0.9	\$822	\$2,800	\$340	\$2,460	3.0	4,112
ECM 4	Install LED Exit Signs	95	0.0	0.0	\$22	\$90	\$0	\$90	4.1	95
Lighting	Control Measures	4,421	0.2	-0.3	\$885	\$2,850	\$260	\$2,590	2.9	4,408
ECM 5	Install Occupancy Sensor Lighting Controls	654	0.2	-0.3	\$125	\$2,130	\$260	\$1,870	15.0	615
ECM 6	Photocell Controls	3,767	0.0	0.0	\$760	\$720	\$0	\$720	0.9	3,793
HVAC Sy	stem Improvements	394	0.0	25.5	\$633	\$1,220	\$170	\$1,050	1.7	4,565
ECM 9	Install Pipe Insulation	394	0.0	25.5	\$633	\$1,220	\$170	\$1,050	1.7	4,565
Domest	ic Water Heating Upgrade	311	0.0	2.9	\$134	\$700	\$140	\$560	4.2	780
ECM 10	Install Low-Flow DHW Devices	311	0.0	2.9	\$134	\$700	\$140	\$560	4.2	780
	TOTALS	14,771	2.6	57.4	\$4,170	\$17,110	\$2,220	\$14,890	3.6	24,270

^{* -} 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).

MAINTENANCE SHOP & INTERPRETIVE CENTER

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			3,109	0.8	-1	\$572	\$1,740	\$180	\$1,560	2.7	2,992
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,350	0.5	-1	\$244	\$990	\$120	\$870	3.6	1,265
ECM 2	Retrofit Fixtures with LED Lamps	Yes	1,759	0.4	0	\$328	\$750	\$60	\$690	2.1	1,726
Lighting Control Measures			172	0.1	0	\$31	\$810	\$100	\$710	22.9	161
ECM 3	Install Occupancy Sensor Lighting Controls	No	172	0.1	0	\$31	\$810	\$100	\$710	22.9	161
HVAC Sy	ystem Improvements		317	0.0	25	\$617	\$1,170	\$160	\$1,010	1.6	4,487
ECM 4	Install Pipe Insulation	Yes	317	0.0	25	\$617	\$1,170	\$160	\$1,010	1.6	4,487
Domestic Water Heating Upgrade			204	0.0	0	\$39	\$30	\$0	\$30	0.8	206
ECM 5	Install Low-Flow DHW Devices	Yes	204	0.0	0	\$39	\$30	\$0	\$30	0.8	206
TOTALS (COST EFFECTIVE MEASURES)		3,630	0.8	25	\$1,227	\$2,940	\$340	\$2,600	2.1	7,685	
	TOTALS (ALL MEASURES)		3,802	0.9	25	\$1,258	\$3,750	\$440	\$3,310	2.6	7,846

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LAKE NUMMY

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)		Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			505	0.5	0	\$117	\$920	\$170	\$750	6.4	509
ECM 1	Retrofit Fixtures with LED Lamps	Yes	411	0.5	0	\$95	\$830	\$170	\$660	7.0	413
ECM 2	Install LED Exit Signs	Yes	95	0.0	0	\$22	\$90	\$0	\$90	4.1	95
Lighting	Control Measures		31	0.0	0	\$7	\$810	\$100	\$710	98.9	31
ECM 3	Install Occupancy Sensor Lighting Controls	No	31	0.0	0	\$7	\$810	\$100	\$710	98.9	31
Unitary	HVAC Measures		61	0.0	0	\$14	\$2,800	\$0	\$2,800	197.5	62
ECM 4	Install High Efficiency Air Conditioning Units	No	61	0.0	0	\$14	\$2,800	\$0	\$2,800	197.5	62
TOTALS (COST EFFECTIVE MEASURES)			505	0.5	0	\$117	\$920	\$170	\$750	6.4	509
TOTALS (ALL MEASURES)			598	0.6	0	\$138	\$4,530	\$270	\$4,260	30.8	602

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North Shore, Meisle Campground, CCC Bathhouse

#	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 (\$)		CO ₂ e Emissions Reduction (Ibs)
Lighting Upgrades			3,194	0.2	0	\$627	\$1,170	\$150	\$1,020	1.6	3,185
ECM 1	Install LED Fixtures	Yes	2,321	0.0	0	\$459	\$660	\$100	\$560	1.2	2,338
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	59	0.0	0	\$11	\$90	\$10	\$80	7.2	55
ECM 3	Retrofit Fixtures with LED Lamps	Yes	814	0.2	0	\$157	\$420	\$40	\$380	2.4	792
Lighting Control Measures			285	0.0	0	\$54	\$810	\$100	\$710	13.2	266
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	285	0.0	0	\$54	\$810	\$100	\$710	13.2	266
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	31	\$653	\$7,000	\$1,000	\$6,000	9.2	5,142
ECM 5	Install High Efficiency Furnaces	Yes	0	0.0	31	\$653	\$7,000	\$1,000	\$6,000	9.2	5,142
HVAC Sy	stem Improvements		0	0.0	1	\$15	\$680	\$100	\$580	38.6	119
ECM 6	Install Pipe Insulation	No	0	0.0	1	\$15	\$680	\$100	\$580	38.6	119
Domest	ic Water Heating Upgrade		0	0.0	2	\$49	\$170	\$60	\$110	2.2	388
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$49	\$170	\$60	\$110	2.2	388
TOTALS (COST EFFECTIVE MEASURES)		3,479	0.2	33	\$1,383	\$9,150	\$1,310	\$7,840	5.7	8,980	
	TOTALS (ALL MEASURES)		3,479	0.2	34	\$1,398	\$9,830	\$1,410	\$8,420	6.0	9,099

^{* -} 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).

EAST CREEK CABIN

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)		Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			1,826	0.5	-1	\$355	\$1,240	\$120	\$1,120	3.2	1,735
ECM 1	Retrofit Fluores cent Fixtures with LED Lamps and Drivers	Yes	1,338	0.3	-1	\$259	\$530	\$60	\$470	1.8	1,267
ECM 2	Retrofit Fixtures with LED Lamps	Yes	488	0.2	0	\$97	\$710	\$60	\$650	6.7	469
Lighting	Control Measures		369	0.2	0	\$71	\$1,320	\$160	\$1,160	16.3	349
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	369	0.2	0	\$71	\$1,320	\$160	\$1,160	16.3	349
Domest	ic Water Heating Upgrade		0	0.0	1	\$24	\$470	\$80	\$390	16.0	79
ECM 4	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$24	\$470	\$80	\$390	16.0	79
TOTALS (COST EFFECTIVE MEASURES)			2,195	0.7	0	\$451	\$3,030	\$360	\$2,670	5.9	2,164
	TOTALS (ALL MEASURES)		2,195	0.7	0	\$451	\$3,030	\$360	\$2,670	5.9	2,164

^{* -} 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 Pay back Period is based on net measure costs (i.e. after incentives).

PARK OFFICE

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)		Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			1,012	0.3	0	\$195	\$270	\$30	\$240	1.2	955
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	260	0.1	0	\$50	\$180	\$20	\$160	3.2	244
ECM 2	Retrofit Fixtures with LED Lamps	Yes	752	0.2	0	\$145	\$90	\$10	\$80	0.6	711
Lighting Control Measures			3,936	0.1	0	\$792	\$1,860	\$140	\$1,720	2.2	3,952
ECM 3	Install Occupancy Sensor Lighting Controls	No	169	0.1	0	\$32	\$1,140	\$140	\$1,000	30.8	159
ECM 4	Install Photocell Controls	Yes	3,767	0.0	0	\$760	\$720	\$0	\$720	0.9	3,793
Domest	ic Water Heating Upgrade		106	0.0	0	\$21	\$30	\$0	\$30	1.4	107
ECM 6	Install Low-Flow DHW Devices	Yes	106	0.0	0	\$21	\$30	\$0	\$30	1.4	107
Food Service & Refrigeration Measures			0	0.0	0	\$0	\$0	\$0	\$0	0.0	0
TOTALS (COST EFFECTIVE MEASURES)			4,962	0.3	0	\$992	\$1,070	\$40	\$1,030	1.0	4,933
	TOTALS (ALL MEASURES)		5,131	0.4	0	\$1,024	\$2,210	\$180	\$2,030	2.0	5,092

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ENERGY EFFICIENT BEST PRACTICES



- Reduce Air Leakage
- Close Doors and Windows
- Develop a LightingMaintenance 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



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



MEASURES FOR FUTURE CONSIDERATION

- Disaggregate Boiler System
- Upgrade to a Heat Pump System



EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV

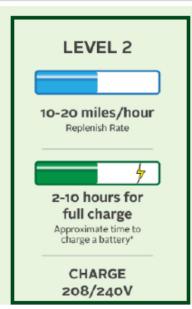
Know your EV Charging Stations

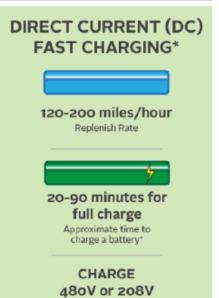












Belleplain State Forest – Park Office

Potential: Medium



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

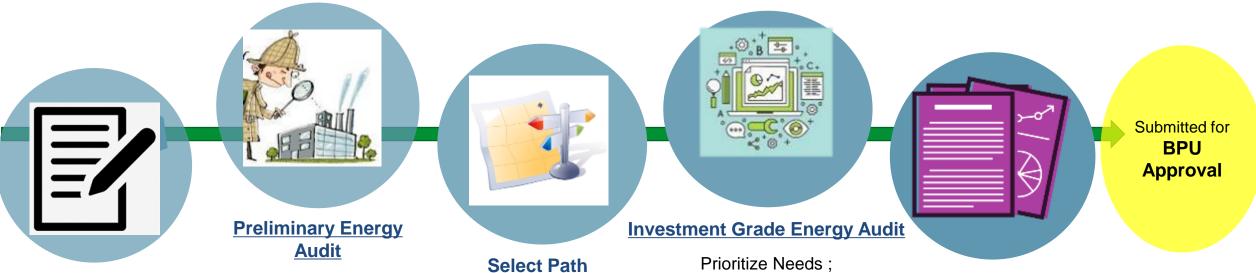
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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



ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP



ESIP Intake Form

Get informed; Begin the process Free LGEA

or

other ASHRAE Level II Audit

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

Select Project's ECM's

Energy Savings Plan

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



ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP

FOR MORE INFORMATION

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STATE FACILITIES INITIATIVE (SFI)

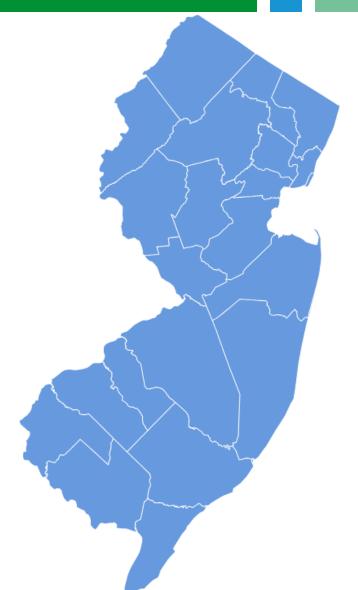
The State Facilities Initiative (SFI)

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.



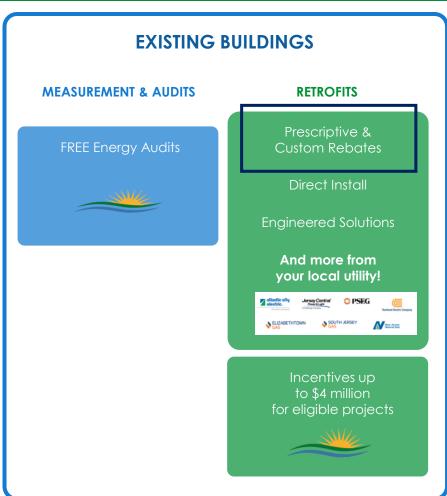
C&I ENERGY EFFICIENCY PROGRAMS

NJCleanEnergy.com

LOCAL GOVERNMENT CUSTOMERS

COMMERCIAL & INSTITUTIONAL CUSTOMERS

LARGE ENERGY CUSTOMERS

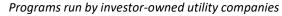
















UTILITY RUN ENERGY EFFICIENCY PROGRAMS*

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

UTILITY RUN ENERGY EFFICIENCY PROGRAMS

ACE

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FOR MORE INFORMATION

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