LGEA Presentation

Twin Lights Historic Site

March 28, 2025

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

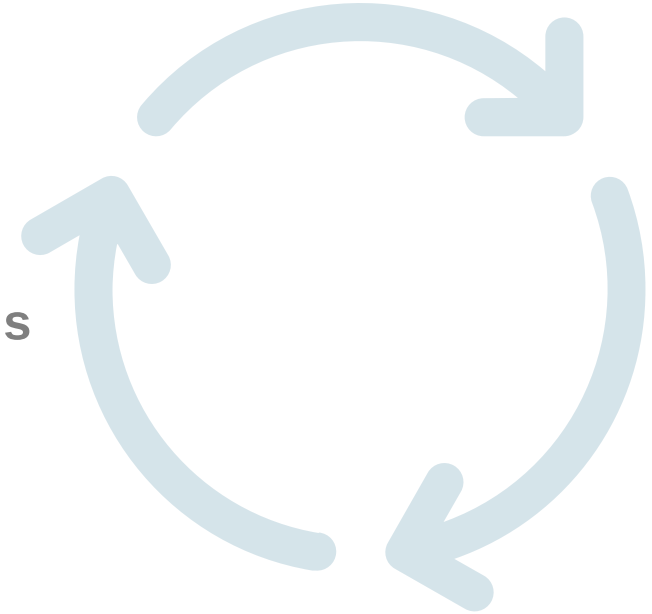
- *Twin Lights Historic Site*
  - Nicholas Wood
  - Maggie Mitchell-Strehl
  - Jessica August
  - Laura Petrangeli
  - Jeffrey MacMullen
- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Moussa Traore – LGEA Technical Manager
  - Nick Nocco – LGEA Project Auditor
  - Amanda Muench – LGEA Account Manager
- *Utility Energy Efficiency Programs*
  - Tiffany Lewis – JCP&L

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 Twin Lights Historic Site

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
- Natural Gas Consumption and Costs
- Water Consumption and Costs

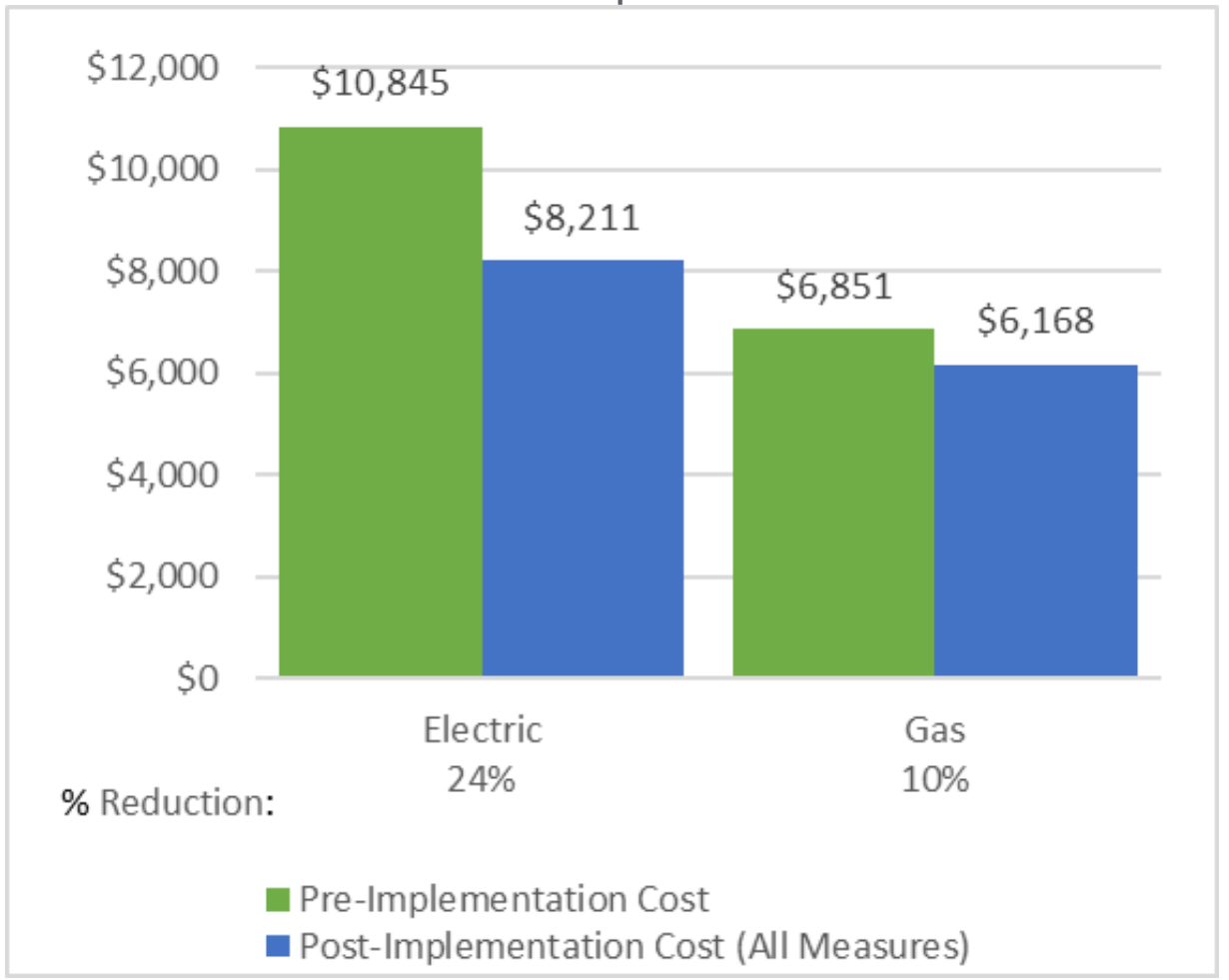
Sites Visited/Analyzed

- Twin Lights Museum & Lighthouses
- Twin Lights Powerhouse

Utility Breakout

Percent of Total Annual Energy Costs

Pre & Post Implementation Cost



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BENCHMARKING

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Twin Lights State Historic Site (Campus)

Primary Property Type: Other - Public Services
Gross Floor Area (ft²): 8,500
Built: 1862

For Year Ending: August 31, 2024
Date Generated: February 10, 2025

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
Twin Lights State Historic Site Museum, Lighthouse & Powerhouse 2 Light House Road Highlands, New Jersey 07732	State of New Jersey 428 East State Street Trenton, New Jersey 08625 (609) 940-4129	New Jersey Board of Public Utilities State Energy Services 44 South Clinton Avenue Trenton, NJ 08625 (609) 633-9666 BPU.EnergyServices@bpu.nj.gov

Property ID: 45354602

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 75.1 kBtu/ft²	**Annual Energy by Fuel**		**Annual Emissions**	
	Electric - Grid (kBtu)	203,643 (32%)	Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	41
	Natural Gas (kBtu)	435,091 (68%)		
Source EUI 120.8 kBtu/ft²	**National Median Comparison**		**Green Power**	
	National Median Site EUI (kBtu/ft²)	55.5	Green Power – Onsite (kWh)	N/A
	National Median Source EUI (kBtu/ft²)	89.3	Green Power – Offsite (kWh)	0
	% Diff from National Median Source EUI	35%	Percent of RECs Retained	N/A

Signature & Stamp of Verifying Professional

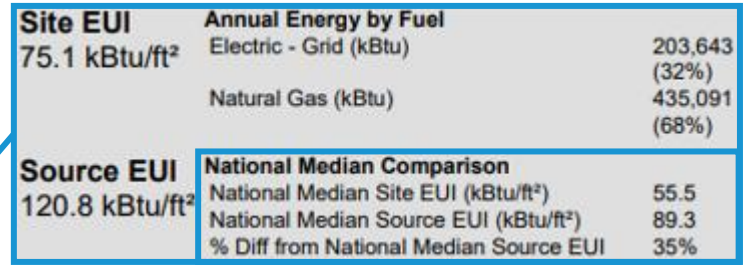
I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

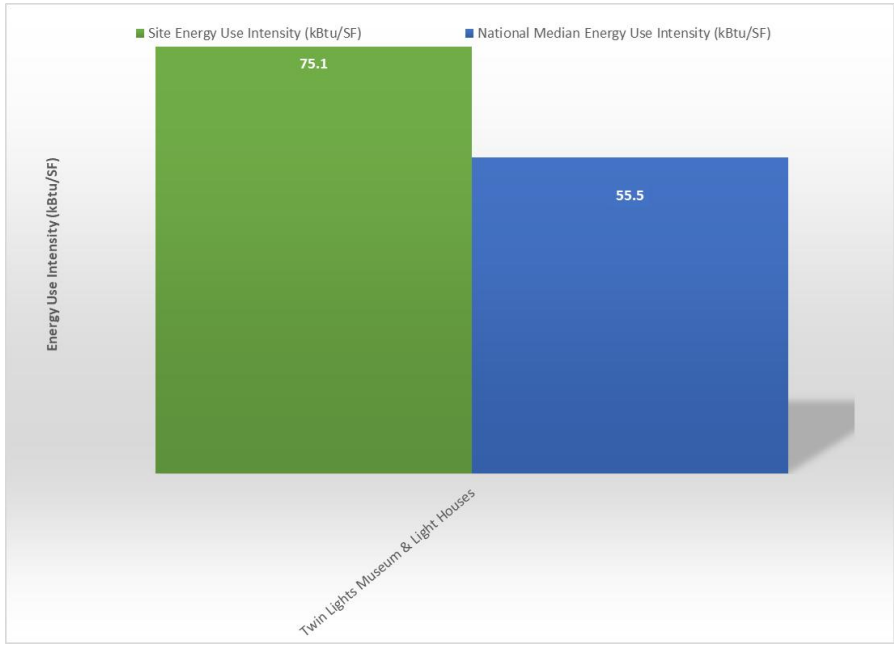
LP Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

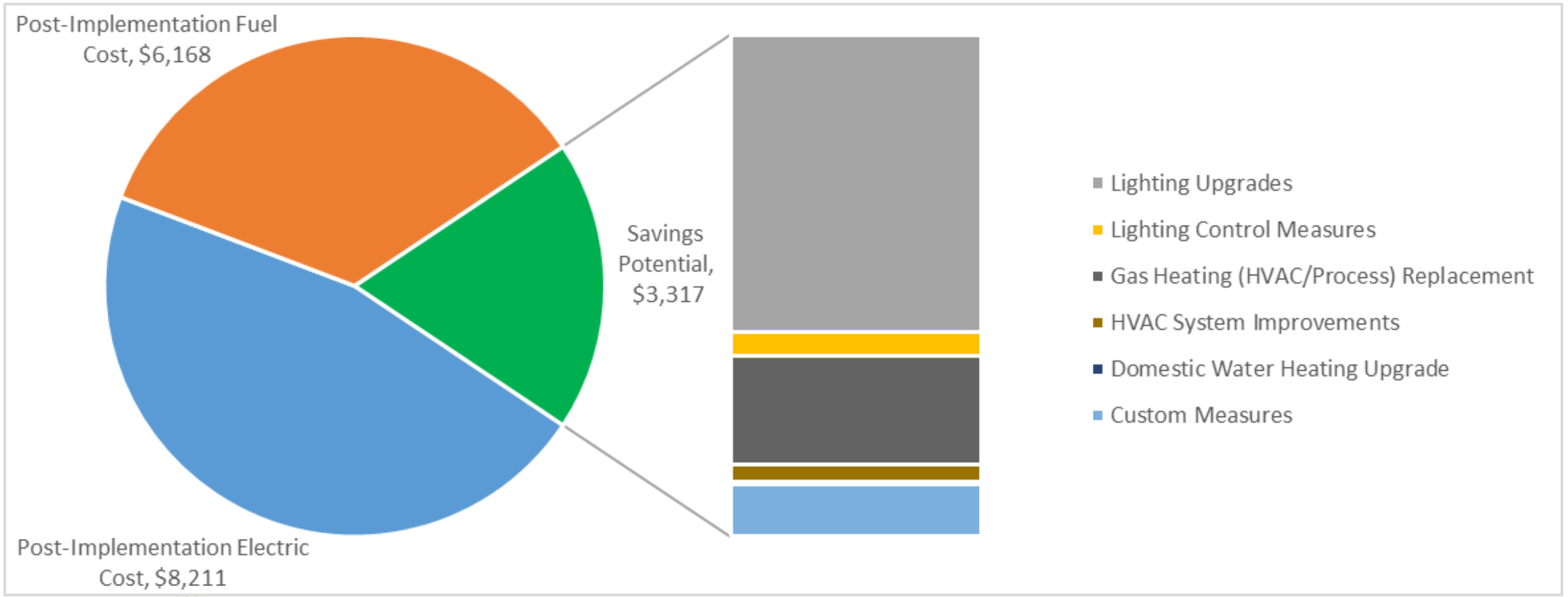




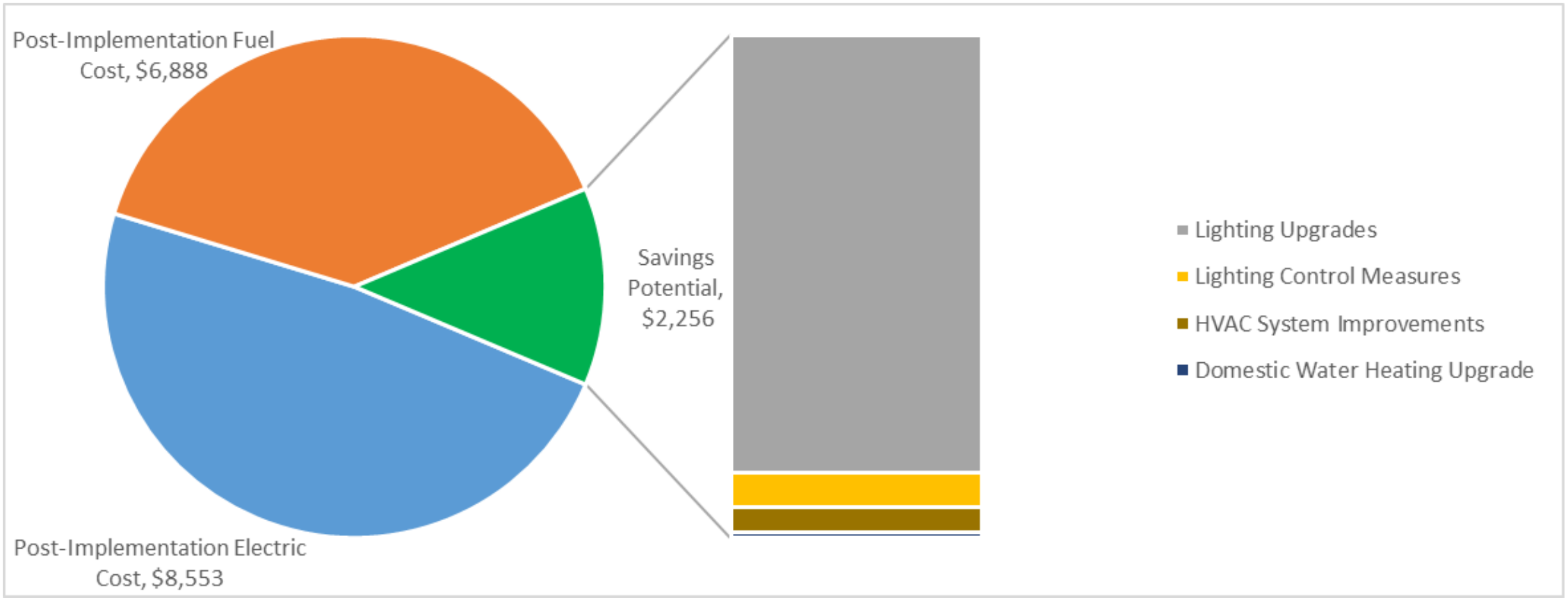
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

All Opportunities

Savings Potential



Cost Effective Opportunities



TWIN LIGHTS MUSEUM & LIGHTHOUSES

#	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			**11,791**	**3.3**	**-2**	**$1,966**	**$3,690**	**$390**	**$3,300**	**1.7**	**11,624**
ECM 1	Install LED Fixtures	Yes	1,656	0.3	0	$275	$660	$50	$610	2.2	1,626
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	416	0.3	0	$69	$610	$70	$540	7.8	408
ECM 3	Retrofit Fixtures with LED Lamps	Yes	9,719	2.6	-2	$1,622	$2,420	$270	$2,150	1.3	9,590
Lighting Control Measures			**913**	**0.3**	**0**	**$152**	**$2,500**	**$980**	**$1,520**	**10.0**	**896**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	382	0.1	0	$64	$810	$100	$710	11.2	375
ECM 5	Install High/Low Lighting Controls	Yes	531	0.2	0	$88	$1,690	$880	$810	9.2	521
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**46**	**$719**	**$22,400**	**$2,000**	**$20,400**	**28.4**	**5,367**
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	46	$719	$22,400	$2,000	$20,400	28.4	5,367
HVAC System Improvements			**674**	**0.0**	**0**	**$114**	**$280**	**$20**	**$260**	**2.3**	**679**
ECM 7	Install Pipe Insulation	Yes	674	0.0	0	$114	$280	$20	$260	2.3	679
Domestic Water Heating Upgrade			**139**	**0.0**	**0**	**$24**	**$10**	**$0**	**$10**	**0.4**	**140**
ECM 8	Install Low-Flow DHW Devices	Yes	139	0.0	0	$24	$10	$0	$10	0.4	140
Custom Measures			**2,022**	**0.0**	**0**	**$342**	**$5,900**	**$0**	**$5,900**	**17.3**	**2,036**
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	No	2,022	0.0	0	$342	$5,900	$0	$5,900	17.3	2,036
TOTALS (COST EFFECTIVE MEASURES)			**13,516**	**3.6**	**-2**	**$2,256**	**$6,480**	**$1,390**	**$5,090**	**2.3**	**13,339**
TOTALS (ALL MEASURES)			**15,538**	**3.6**	**44**	**$3,317**	**$34,780**	**$3,390**	**$31,390**	**9.5**	**20,742**

* - 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).

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

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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

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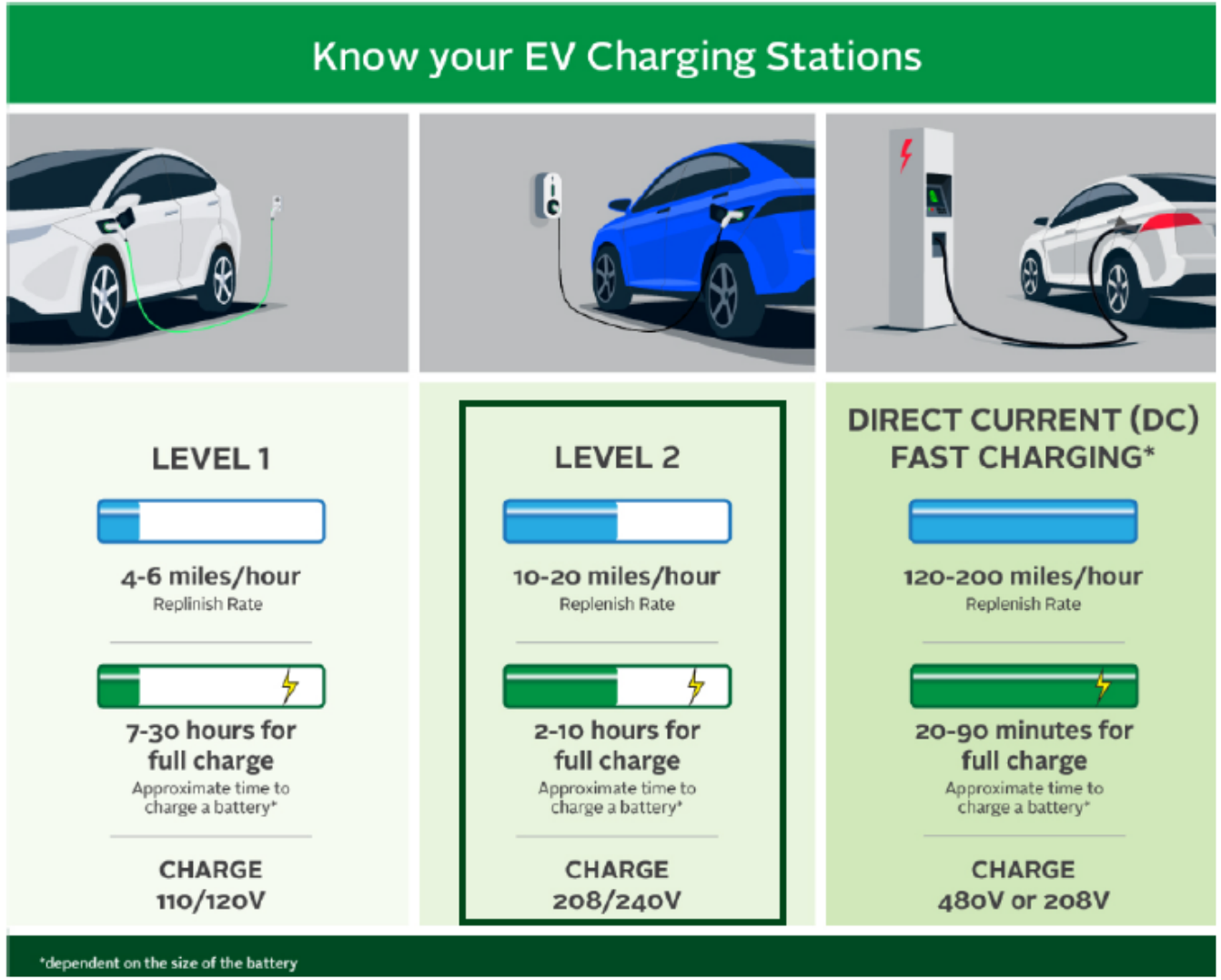
Measures for Future Consideration

- Upgrade to a Heat Pump System
- Window Replacements
- VRF Systems

EV Charging Station Potential

NJCleanEnergy.com/EV



	Twin Lights Historic Site
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

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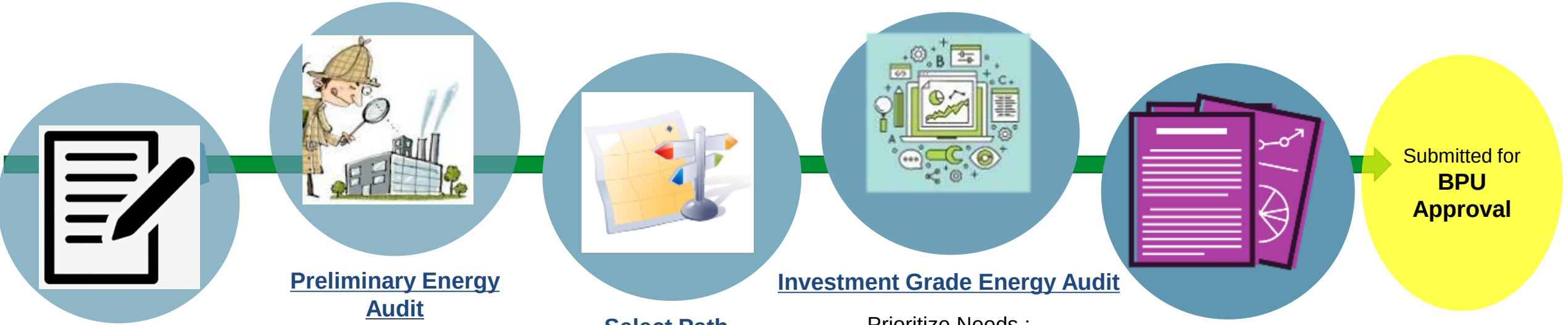
Energy Savings Improvement Program

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**

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Energy Savings Improvement Program

NJCleanEnergy.com/ESIP

FOR MORE INFORMATION

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ESIP Coordinator

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c: 609.915.0903

State Facilities Initiative (SFI)

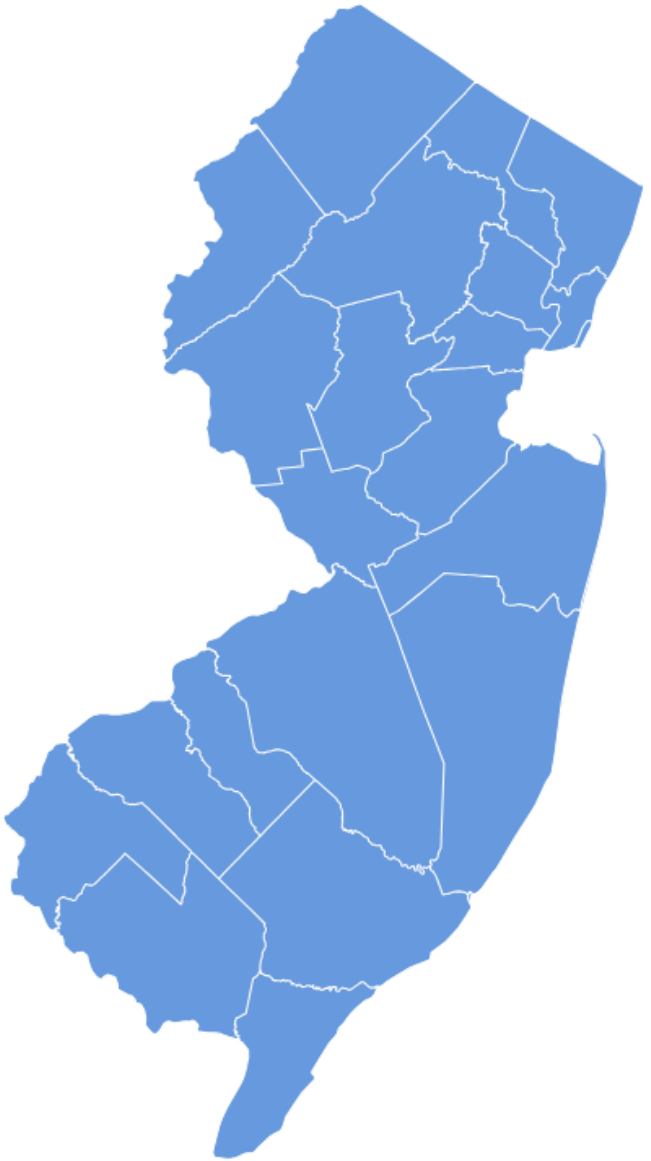
The State Facilities Initiative (SFI)

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

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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

JCP&L

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THANK YOU