

LGEA Presentation

Forest Fire Service, Div. A

July 30, 2024

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future



INTRODUCTIONS

- *State of NJ – Forest Fire Div. A*
 - Eric Weber
 - 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
- *Utility Energy Efficiency Programs*
 - Sirajuddin Shaikh – JCP&L
 - Tiffany Lewis – JCP&L
 - Andrew Doss – JCP&L

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**asures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Forest Fire Service, Div. A

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:

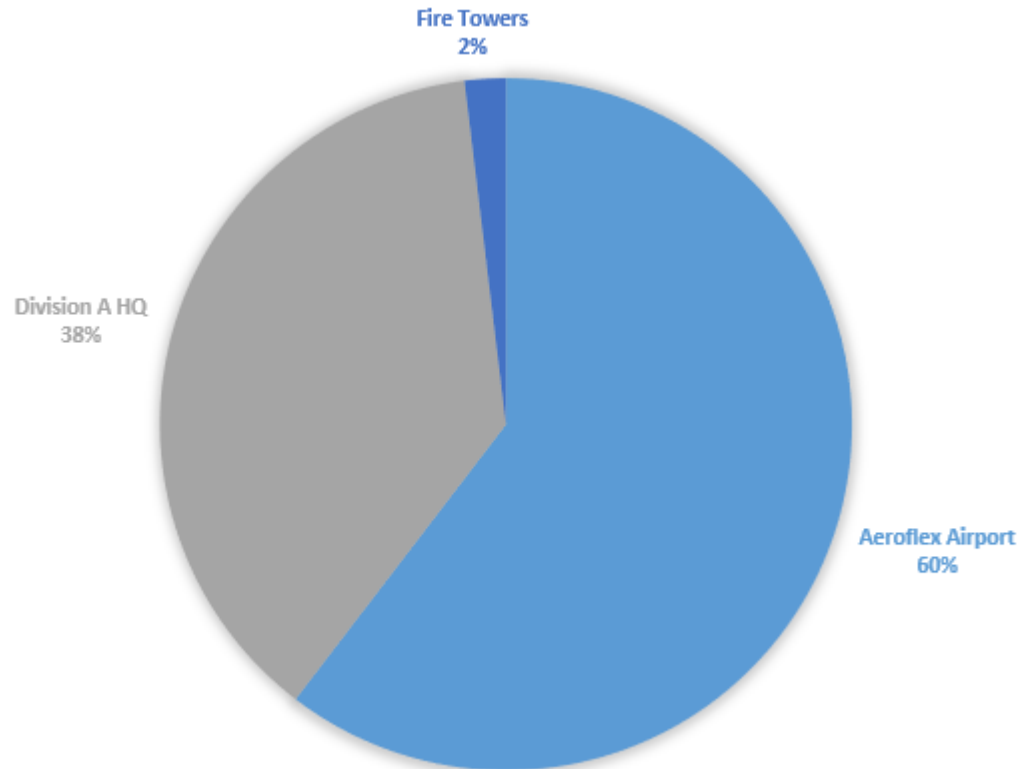
- Electric Consumption and Costs
- Propane Consumption and Costs

Sites Visited/Analyzed

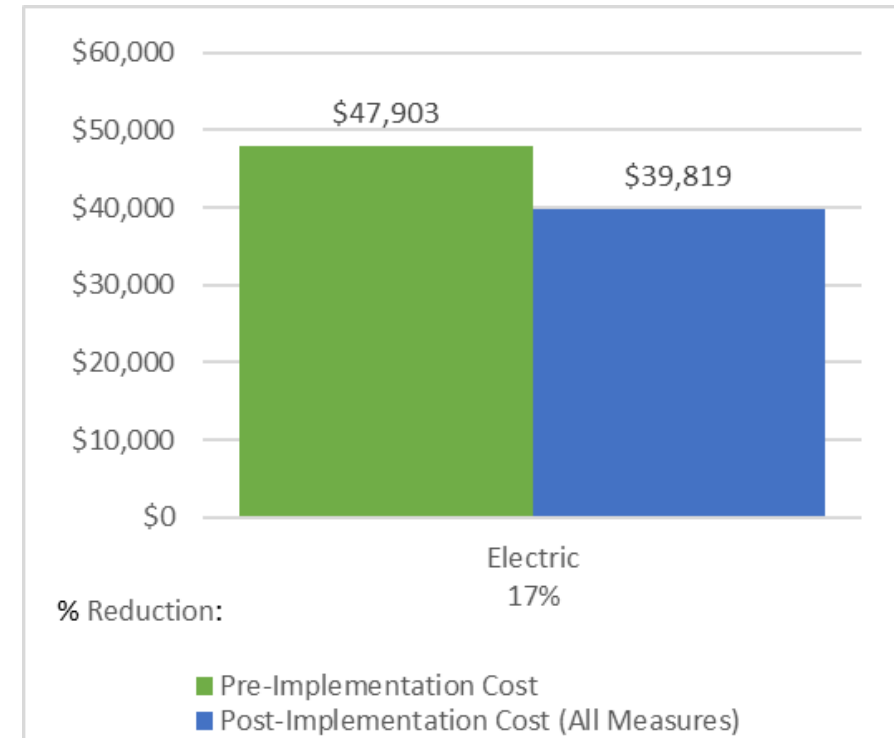
- Division A Headquarters Building
- Fire Towers
 - Beafort Fire Tower
 - Budd Lake Fire Tower
 - Carfish Fire Tower
 - Greystone Fire Tower
 - Culver Fire Tower
 - Ramapo Fire Tower
- Aeroflex Airport

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING



ENERGY STAR® Statement of Energy Performance

N/A

FFSA - Division A Headquarters Building

Primary Property Type: Other - Public Services
Gross Floor Area (ft²): 17,000
Built: 2006

For Year Ending: December 31, 2022
Date Generated: May 13, 2024

ENERGY STAR® Score¹

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
FFSA - Division A Headquarters Building
240 Main Street
Andover, New Jersey 07821

Property Owner
State of New Jersey
428 East State Street
Trenton, NJ 08625
(609) 940-4129

Primary Contact
New Jersey Board of Public Utilities State Energy Services
44 South Clinton Ave
Trenton, NJ 08625
6096339666
BPU.EnergyServices@bpu.nj.gov

Property ID: 29009711

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
22.7 kBtu/ft²

Annual Energy by Fuel
Electric (kBtu) 385,187 (100%)

Source EUI
63.4 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²) 31.9
National Median Source EUI (kBtu/ft²) 89.3
% Diff from National Median Source EUI -29%

Annual Emissions
Total (Location-Based) GHG Emissions 35
(Metric Tons CO2e/year)

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
22.7 kBtu/ft²

Source EUI
63.4 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²) 31.9

National Median Source EUI (kBtu/ft²) 89.3

% Diff from National Median Source EUI -29%

Annual Emissions

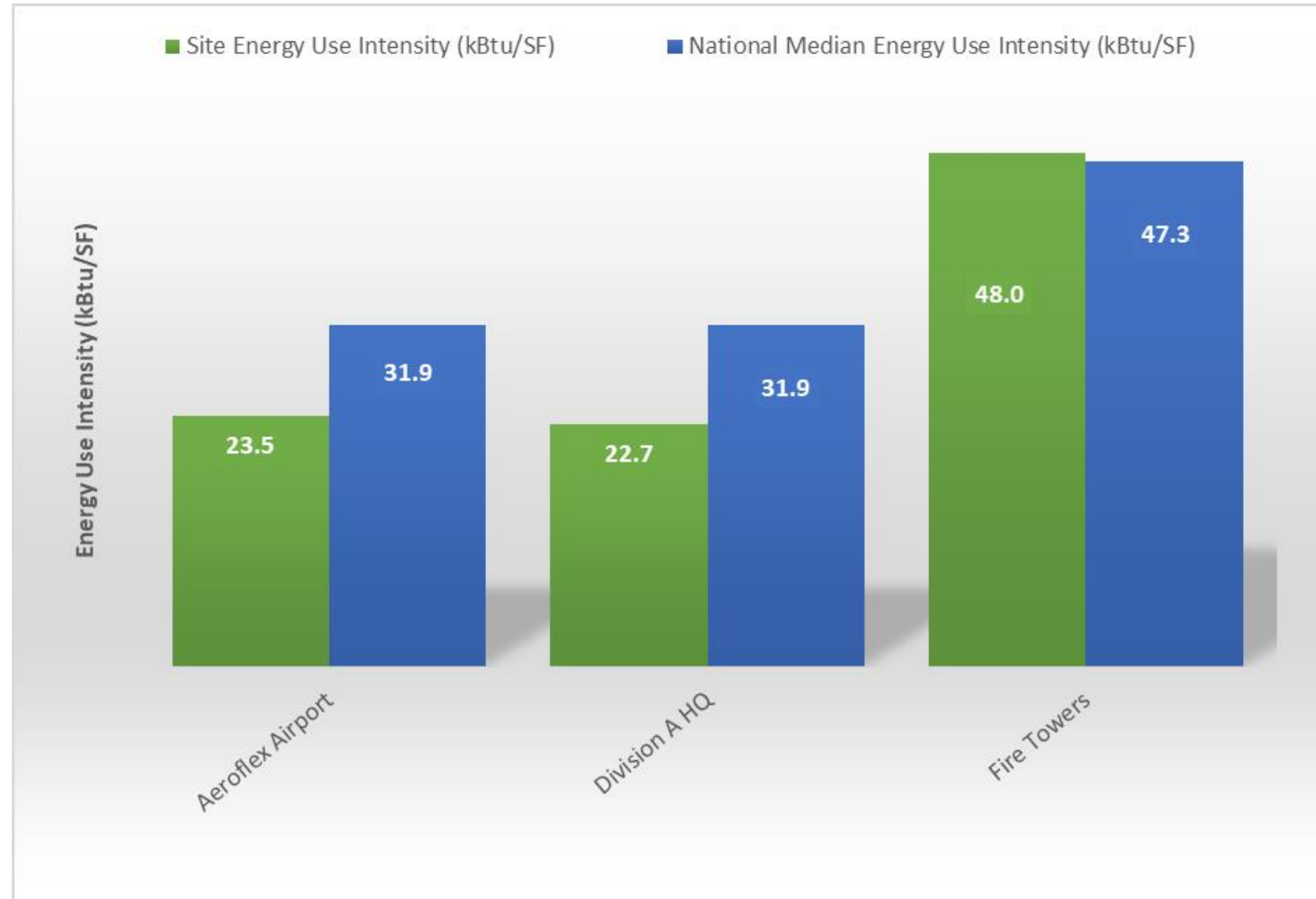
Total (Location-Based) GHG Emissions 35

(Metric Tons CO2e/year)

Site Name	ENERGY STAR® Score
Aeroflex Airport	N/A
Division A HQ	N/A
Fire Towers	N/A

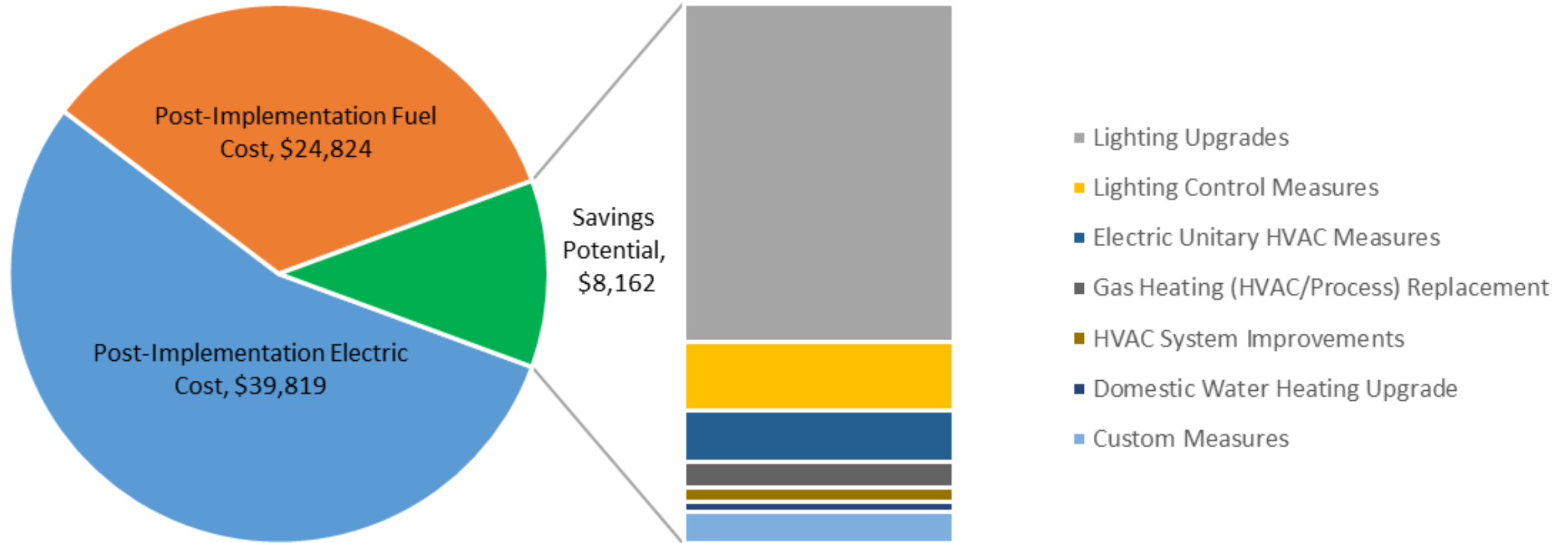
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

BENCHMARKING



ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES

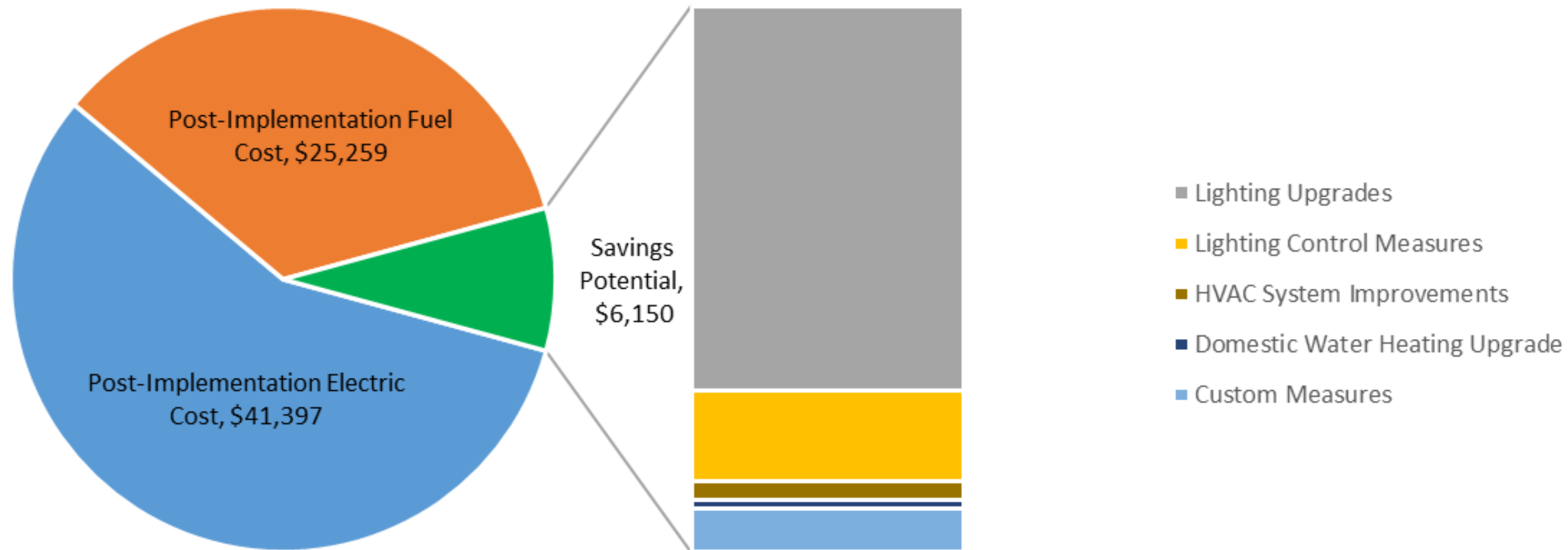
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$) *	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs) **	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		37,300	15.5	-13.4	\$5,120	\$54,210	\$5,670	\$48,540	9.5	35,663
ECM 1	Install LED Fixtures	14,750	4.8	-3.9	\$2,078	\$30,650	\$1,200	\$29,450	14.2	14,304
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	203	0.1	-0.1	\$31	\$200	\$30	\$170	5.6	192
ECM 3	Retrofit Fixtures with LED Lamps	22,347	10.5	-9.4	\$3,011	\$23,360	\$4,440	\$18,920	6.3	21,167
Lighting Control Measures		7,904	3.0	-3.3	\$1,023	\$8,780	\$1,270	\$7,510	7.3	7,485
ECM 4	Install Occupancy Sensor Lighting Controls	7,559	2.9	-3.2	\$972	\$8,220	\$990	\$7,230	7.4	7,157
ECM 5	Install High/Low Lighting Controls	345	0.1	-0.1	\$51	\$560	\$280	\$280	5.5	327
Unitary HVAC Measures		5,049	3.5	0.0	\$791	\$51,200	\$2,600	\$48,600	61.4	5,085
ECM 6	Install High Efficiency Air Conditioning Units	5,049	3.5	0.0	\$791	\$51,200	\$2,600	\$48,600	61.4	5,085
Gas Heating (HVAC/Process) Replacement		0	0.0	16.1	\$379	\$13,600	\$400	\$13,200	34.8	2,280
ECM 7	Install High Efficiency Hot Water Boilers	0	0.0	16.1	\$379	\$13,600	\$400	\$13,200	34.8	2,280
HVAC System Improvements		1,550	0.0	0.0	\$206	\$1,100	\$160	\$940	4.6	1,561
ECM 8	Install Pipe Insulation	1,550	0.0	0.0	\$206	\$1,100	\$160	\$940	4.6	1,561
Domestic Water Heating Upgrade		491	0.0	4.0	\$159	\$3,590	\$340	\$3,250	20.5	1,056
ECM 9	Install High Efficiency Gas-Fired Water Heater	0	0.0	2.3	\$55	\$3,500	\$300	\$3,200	57.9	333
ECM 10	Install Low-Flow DHW Devices	491	0.0	1.6	\$103	\$90	\$40	\$50	0.5	723
Custom Measures		3,640	0.0	0.0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
ECM 11	Replace Electric Water Heater with Heat Pump Water Heater	3,640	0.0	0.0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
TOTALS (ALL MEASURES)		55,934	22.0	3.3	\$8,162	\$137,480	\$10,440	\$127,040	15.6	56,795

* - 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades		31,341	15.3	-13.2	\$4,334	\$38,360	\$5,620	\$32,740	7.6	29,696
ECM 1	Install LED Fixtures	8,793	4.7	-3.6	\$1,292	\$14,820	\$1,150	\$13,670	10.6	8,338
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	203	0.1	-0.1	\$31	\$200	\$30	\$170	5.6	192
ECM 3	Retrofit Fixtures with LED Lamps	22,345	10.5	-9.4	\$3,011	\$23,340	\$4,440	\$18,900	6.3	21,165
Lighting Control Measures		7,904	3.0	-3.3	\$1,023	\$8,780	\$1,270	\$7,510	7.3	7,485
ECM 4	Install Occupancy Sensor Lighting Controls	7,559	2.9	-3.2	\$972	\$8,220	\$990	\$7,230	7.4	7,157
ECM 5	Install High/Low Lighting Controls	345	0.1	-0.1	\$51	\$560	\$280	\$280	5.5	327
HVAC System Improvements		1,550	0.0	0.0	\$206	\$1,100	\$160	\$940	4.6	1,561
ECM 8	Install Pipe Insulation	1,550	0.0	0.0	\$206	\$1,100	\$160	\$940	4.6	1,561
Domestic Water Heating Upgrade		491	0.0	1.6	\$103	\$90	\$40	\$50	0.5	723
ECM 10	Install Low-Flow DHW Devices	491	0.0	1.6	\$103	\$90	\$40	\$50	0.5	723
Custom Measures		3,640	0.0	0.0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
ECM 11	Replace Electric Water Heater with Heat Pump Water Heater	3,640	0.0	0.0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
TOTALS		44,926	18.3	-14.9	\$6,150	\$53,330	\$7,090	\$46,240	7.5	43,131

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

DIVISION A HEADQUARTERS

#	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			20,059	11.7	-8	\$2,947	\$26,980	\$3,600	\$23,380	7.9	19,016
ECM 1	Install LED Fixtures	Yes	8,793	4.7	-4	\$1,292	\$14,820	\$1,150	\$13,670	10.6	8,338
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	195	0.1	0	\$29	\$180	\$20	\$160	5.6	185
ECM 3	Retrofit Fixtures with LED Lamps	Yes	11,071	6.9	-5	\$1,626	\$11,980	\$2,430	\$9,550	5.9	10,493
Lighting Control Measures			2,172	0.9	-1	\$319	\$4,370	\$760	\$3,610	11.3	2,058
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,827	0.9	-1	\$268	\$3,810	\$480	\$3,330	12.4	1,731
ECM 5	Install High/Low Lighting Controls	Yes	345	0.1	0	\$51	\$560	\$280	\$280	5.5	327
Unitary HVAC Measures			5,049	3.5	0	\$791	\$51,200	\$2,600	\$48,600	61.4	5,085
ECM 6	Install High Efficiency Air Conditioning Units	No	5,049	3.5	0	\$791	\$51,200	\$2,600	\$48,600	61.4	5,085
Domestic Water Heating Upgrade			0	0.0	4	\$93	\$3,550	\$320	\$3,230	34.6	562
ECM 7	Install High Efficiency Gas-Fired Water Heater	No	0	0.0	2	\$55	\$3,500	\$300	\$3,200	57.9	333
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$38	\$50	\$20	\$30	0.8	229
TOTALS (COST EFFECTIVE MEASURES)			22,231	12.6	-8	\$3,304	\$31,400	\$4,380	\$27,020	8.2	21,304
TOTALS (ALL MEASURES)			27,280	16.1	-5	\$4,151	\$86,100	\$7,280	\$78,820	19.0	26,721

* - 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).

FIRE TOWERS

#	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			10	0.0	0	\$2	\$40	\$10	\$30	12.5	10
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	8	0.0	0	\$2	\$20	\$10	\$10	5.1	8
ECM 2	Retrofit Fixtures with LED Lamps	No	2	0.0	0	\$0	\$20	\$0	\$20	45.3	2
TOTALS (COST EFFECTIVE MEASURES)			8	0.0	0	\$2	\$20	\$10	\$10	5.1	8
TOTALS (ALL MEASURES)			10	0.0	0	\$2	\$40	\$10	\$30	12.5	10

* - 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).

AEROFLEX AIRPORT

#	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			17,231	3.8	-5	\$2,171	\$27,190	\$2,060	\$25,130	11.6	16,638
ECM 1	Install LED Fixtures	No	5,957	0.2	0	\$786	\$15,830	\$50	\$15,780	20.1	5,965
ECM 2	Retrofit Fixtures with LED Lamps	Yes	11,274	3.6	-5	\$1,385	\$11,360	\$2,010	\$9,350	6.8	10,673
Lighting Control Measures			5,732	2.0	-2	\$704	\$4,410	\$510	\$3,900	5.5	5,426
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	5,732	2.0	-2	\$704	\$4,410	\$510	\$3,900	5.5	5,426
Gas Heating (HVAC/Process) Replacement			0	0.0	16	\$379	\$13,600	\$400	\$13,200	34.8	2,280
ECM 4	Install High Efficiency Hot Water Boilers	No	0	0.0	16	\$379	\$13,600	\$400	\$13,200	34.8	2,280
HVAC System Improvements			1,550	0.0	0	\$206	\$1,100	\$160	\$940	4.6	1,561
ECM 5	Install Pipe Insulation	Yes	1,550	0.0	0	\$206	\$1,100	\$160	\$940	4.6	1,561
Domestic Water Heating Upgrade			491	0.0	0	\$65	\$40	\$20	\$20	0.3	494
ECM 6	Install Low-Flow DHW Devices	Yes	491	0.0	0	\$65	\$40	\$20	\$20	0.3	494
Custom Measures			3,640	0.0	0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
ECM 7	Replace Electric Water Heater with Heat Pump Water Heater	Yes	3,640	0.0	0	\$484	\$5,000	\$0	\$5,000	10.3	3,665
TOTALS (COST EFFECTIVE MEASURES)			22,687	5.7	-7	\$2,844	\$21,910	\$2,700	\$19,210	6.8	21,819
TOTALS (ALL MEASURES)			28,644	5.8	9	\$4,009	\$51,340	\$3,150	\$48,190	12.0	30,065

* - 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

WATER BEST PRACTICES

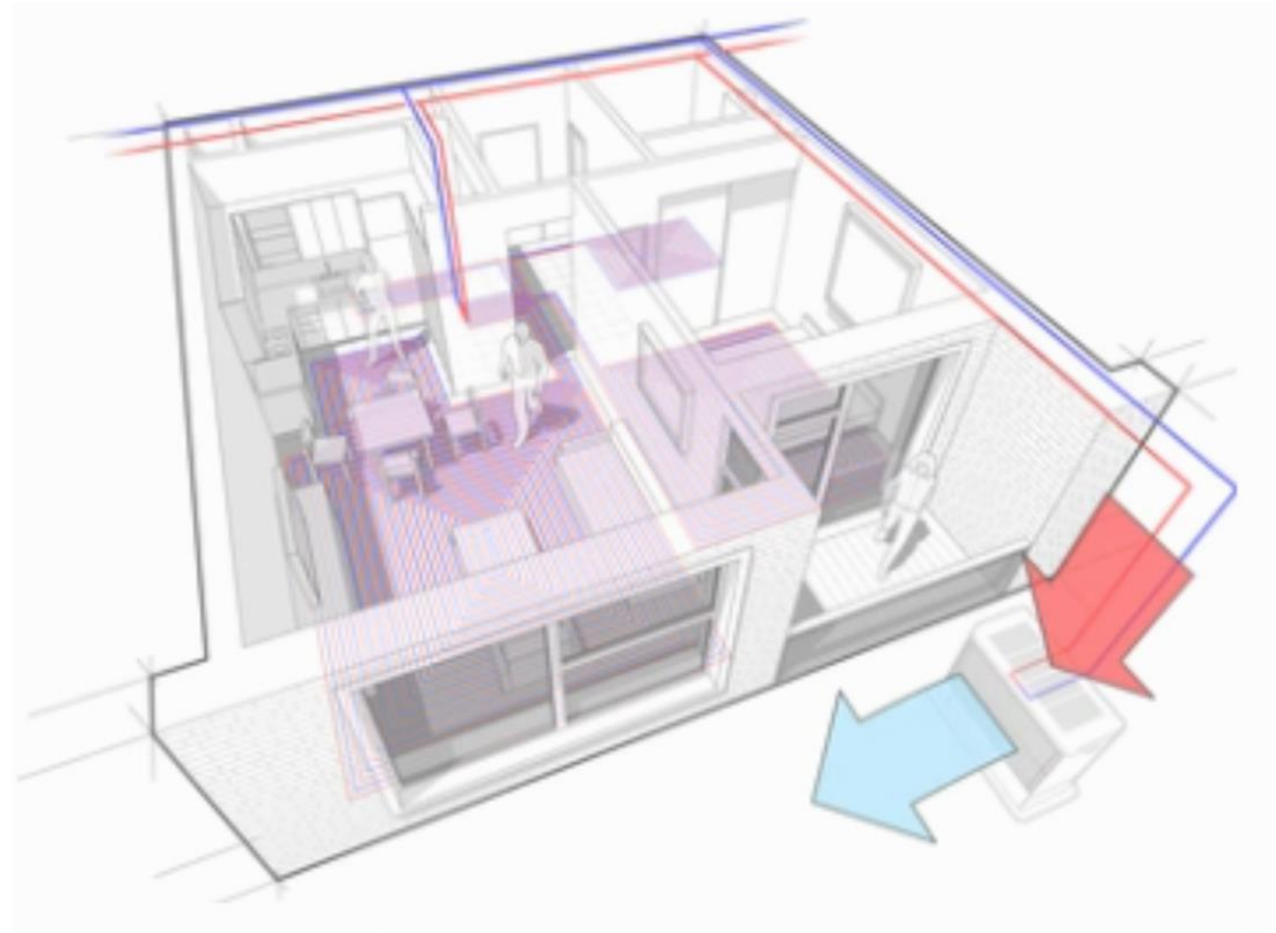


- Leak Detection and Repair
- Toilets and Urinals
- Faucets and Showerheads
- Commercial Kitchen Equipment
- Laundry Equipment
- Cooling Towers
- Steam Boiler System
- Pools and Spas
- Laboratory and Medical Equipment
- Water Metering and Submetering
- Vehicle Washing
- Single Pass Cooling System
- Landscaping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

See individual reports for specific Water Best Practices by building

MEASURES FOR FUTURE CONSIDERATION

- Upgrade to a Heat Pump System



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

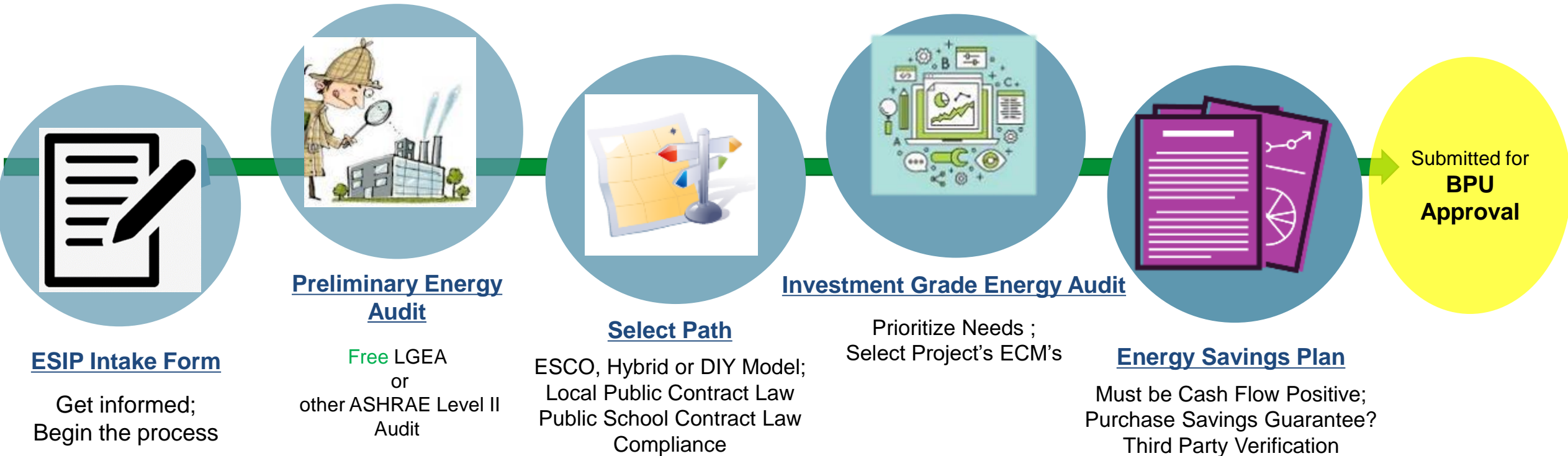
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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



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)

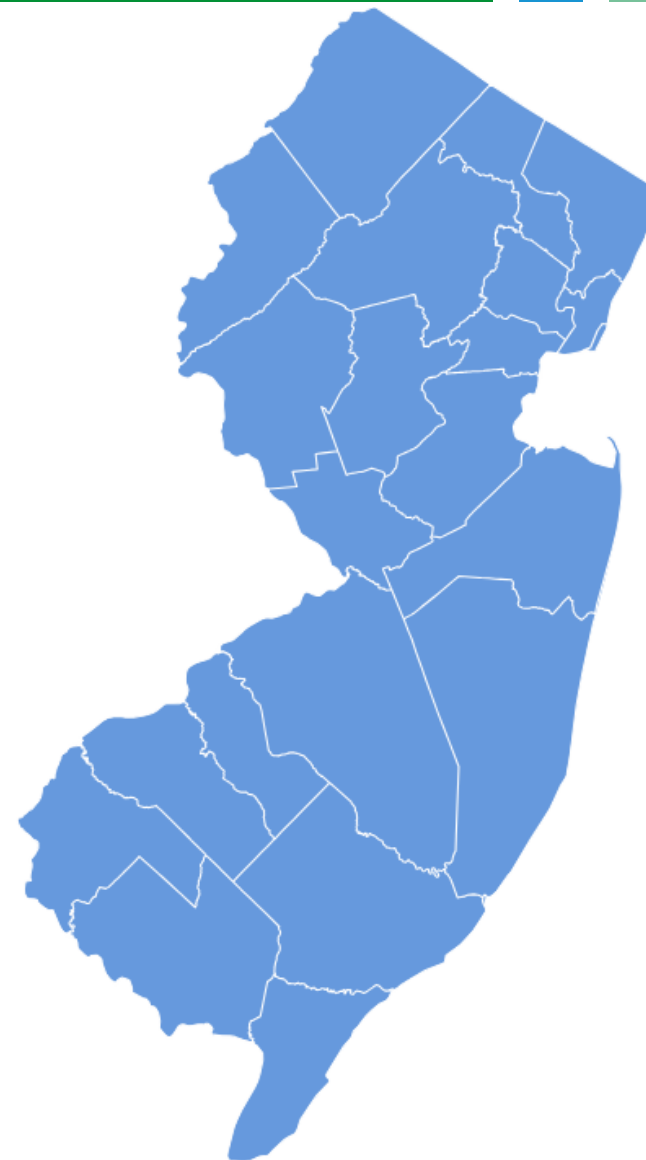
The State Facilities Initiative (SFI)

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

JCP&L

Sirajuddin Shaikh - sirshaikh@firstenergycorp.com

Tiffany Lewis – Tlewis@trccompanies.com

John Sousa - JSousa@trccompanies.com

O&R

Phil Madnick - MadnickP@oru.com

Kyle Haddock - HaddockK@oru.com

Andrew Doss – adoss@willdan.com

FOR MORE INFORMATION

Sarah Walters – LGEA Project Manager

SWalters@trccompanies.com

(732) 589-7372

Moussa Traore – LGEA Technical Manager

MTraore@trccompanies.com

(732) 902-1797

Amanda Muench – LGEA Account Manager

AMuench@trccompanies.com

(732) 612-9381

Juno Romanick – LGEA Energy Auditor

JRomanick@trccompanies.com

(732) 674-1803

THANK YOU

