LGEA Presentation

Township of Cranbury

April 1, 2022

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

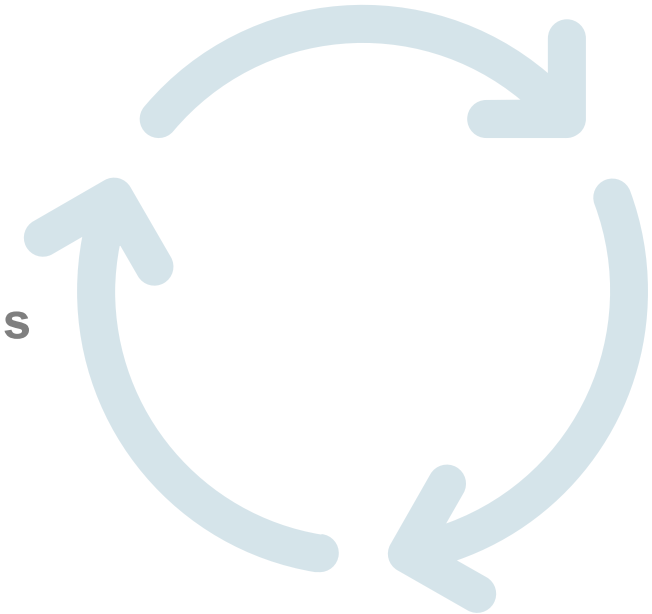
- *Township of Cranbury*
  - Barbara Rogers – Mayor
  - Theresa Vaccaro – Member of Green Team & Township Sustainability Sub Committee
- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Moussa Traore – LGEA Lead Auditor
  - Meredith Coley – LGEA Account Manager

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)
- C&I Transition of EE Programs
- Questions regarding the draft audit report
- Next steps for Township of Cranbury

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:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment

Utility Consumption:

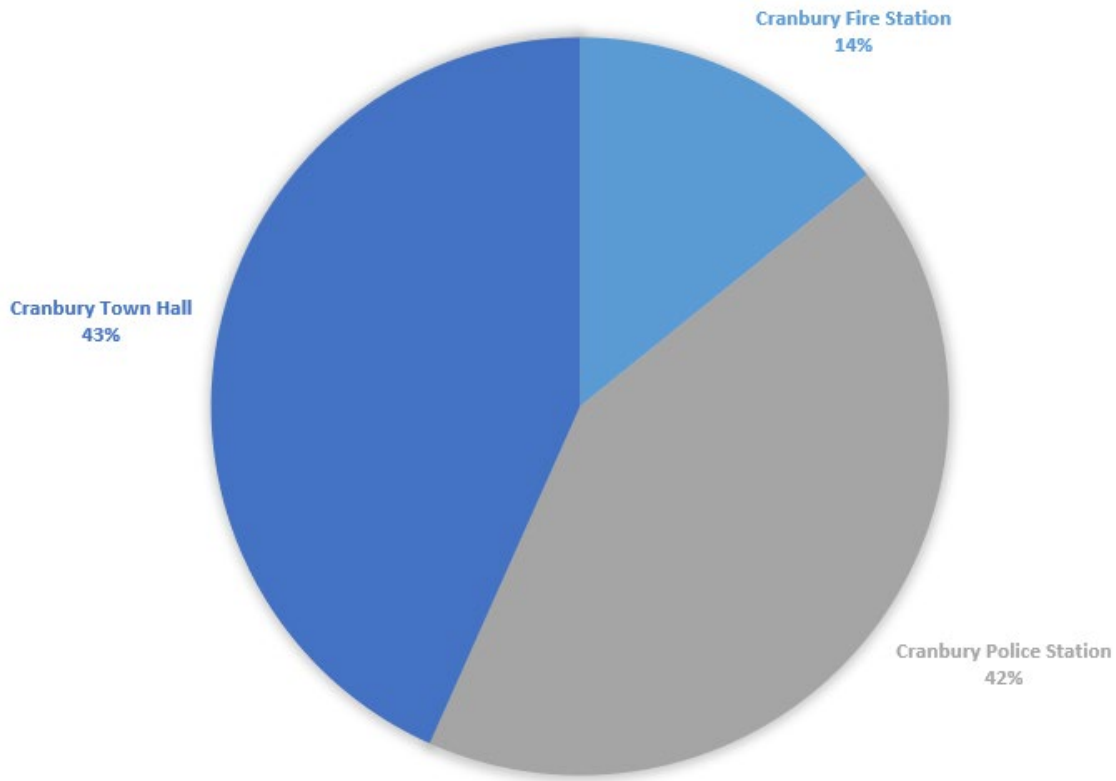
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

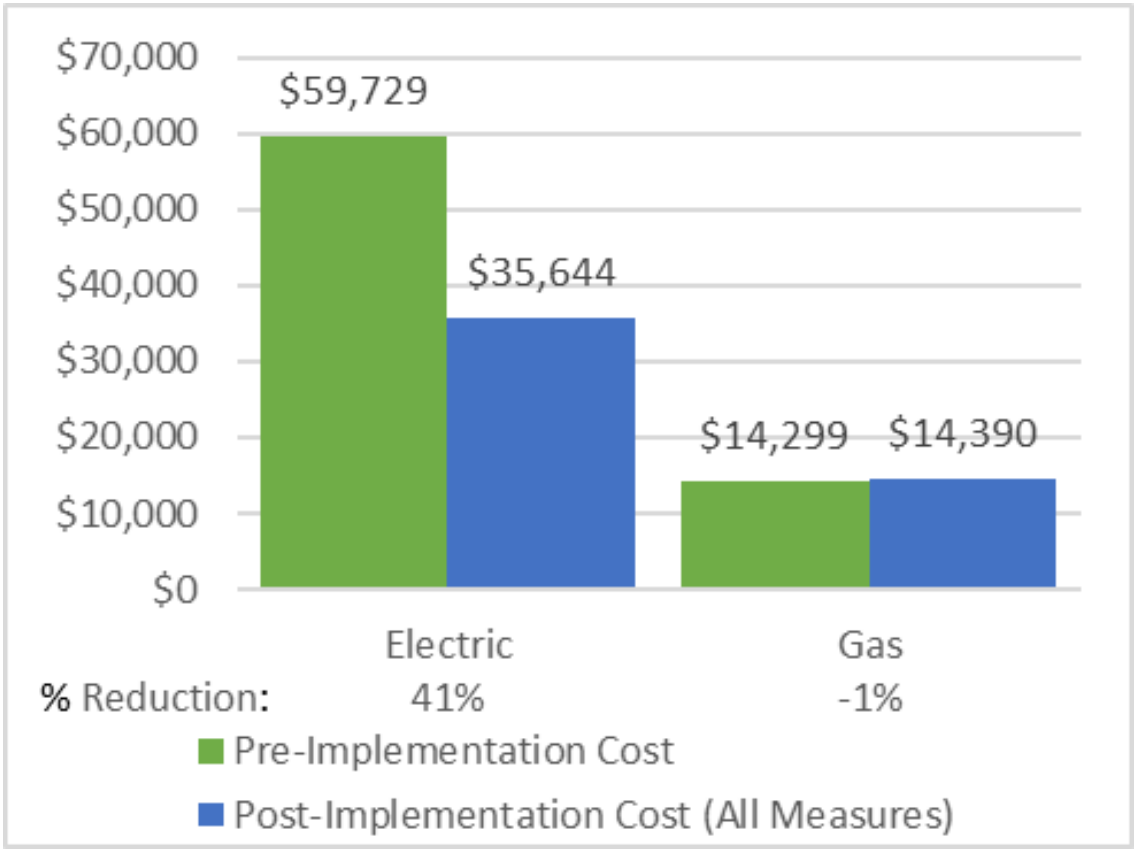
- Cranbury Town Hall
- Cranbury Fire Station
- Cranbury Police Station

Utility Breakout

Percent of Total Annual Energy Costs

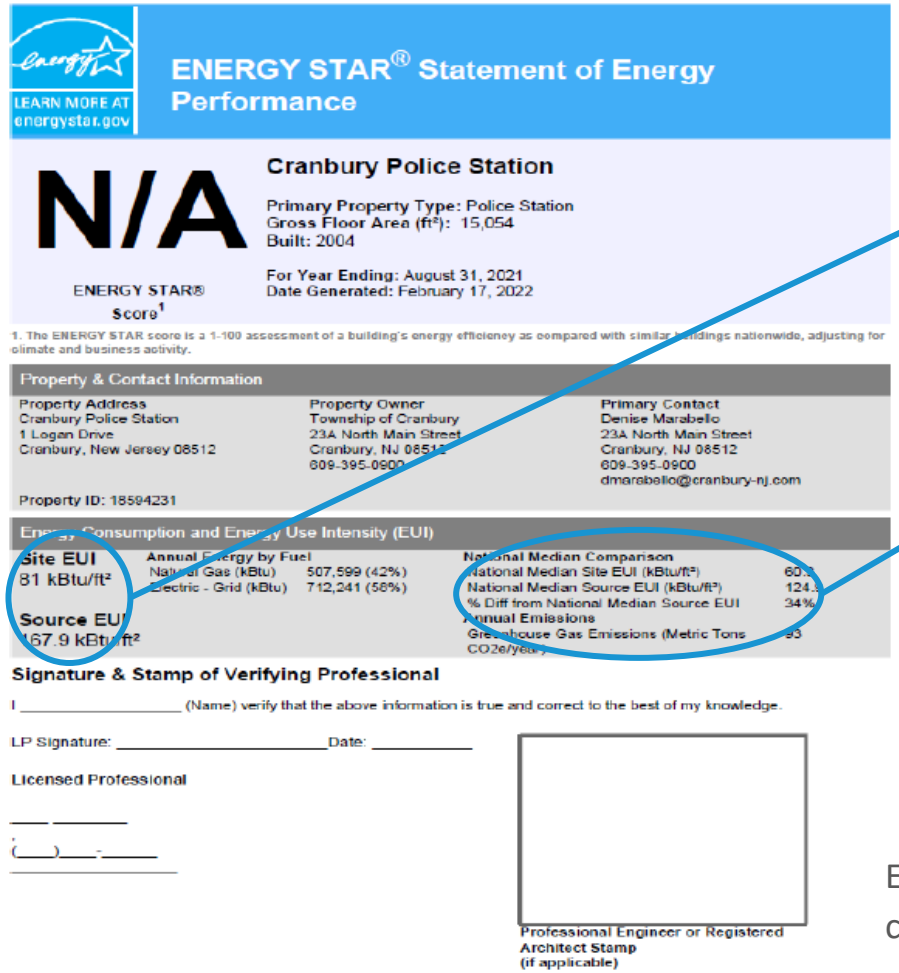


Pre & Post Implementation Cost



New Jersey's cleanenergy program™

BENCHMARKING



ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

Cranbury Police Station

Primary Property Type: Police Station
Gross Floor Area (ft²): 15,054
Built: 2004

For Year Ending: August 31, 2021
Date Generated: February 17, 2022

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
Cranbury Police Station 1 Logan Drive Cranbury, New Jersey 08512	Township of Cranbury 23A North Main Street Cranbury, NJ 08512 609-395-0900	Denise Marabello 23A North Main Street Cranbury, NJ 08512 609-395-0900 dmarabello@cranbury-nj.com

Property ID: 18594231

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
81 kBtu/ft²

Source EUI
167.9 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	507,599 (42%)
Electric - Grid (kBtu)	712,241 (58%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	60.3
National Median Source EUI (kBtu/ft²)	124.9
% Diff from National Median Source EUI	34%

Annual Emissions
Greenhouse Gas Emissions (Metric Tons CO2e/year) 93

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
81 kBtu/ft²

Source EUI
167.9 kBtu/ft²

National Median Comparison

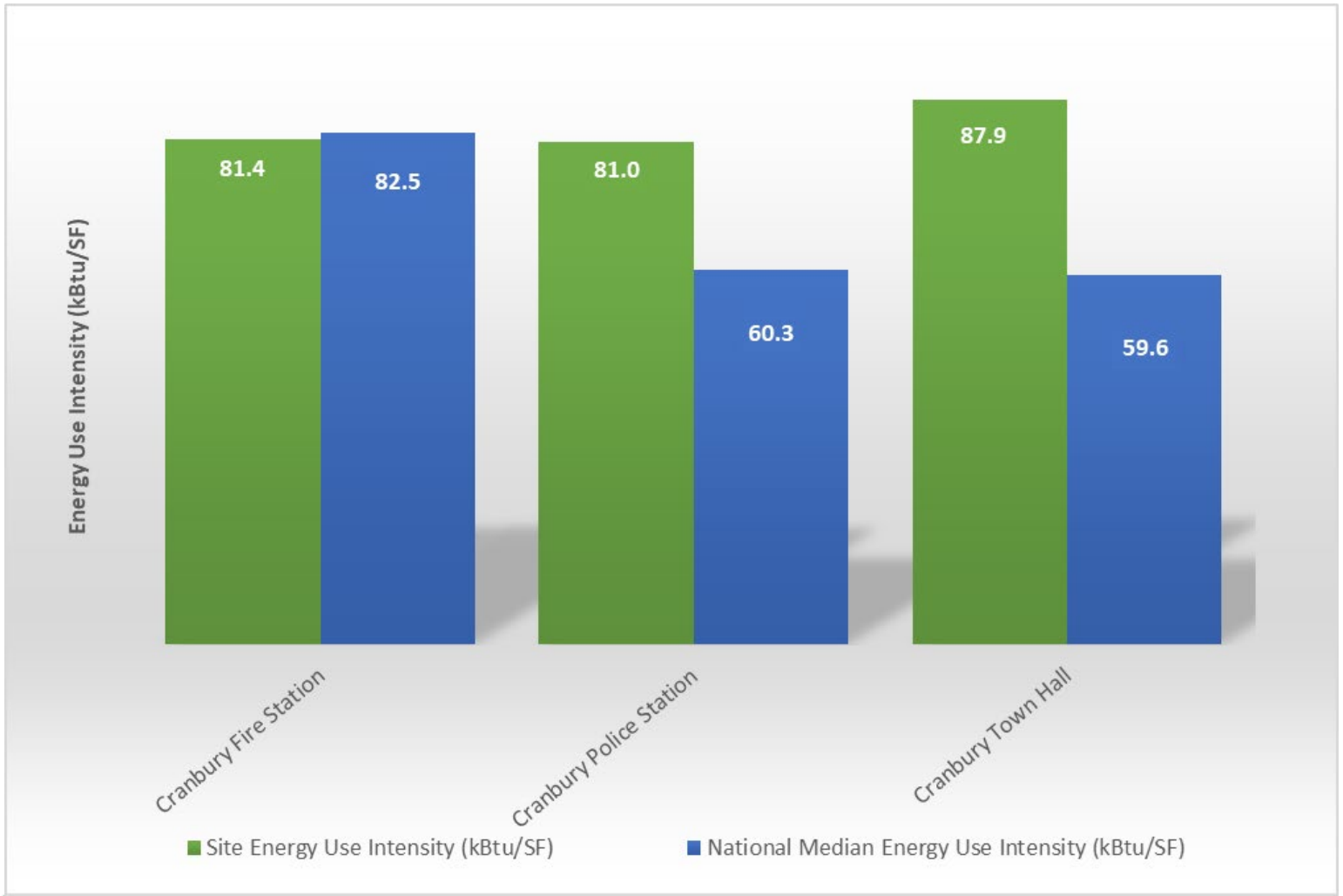
National Median Site EUI (kBtu/ft²)	60.3
National Median Source EUI (kBtu/ft²)	124.9
% Diff from National Median Source EUI	34%

Site Name	ENERGY STAR® Score
Cranbury Town Hall	N/A
Cranbury Fire Station	N/A
Cranbury Police Station	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.

BPU New Jersey's cleanenergy program™

BENCHMARKING



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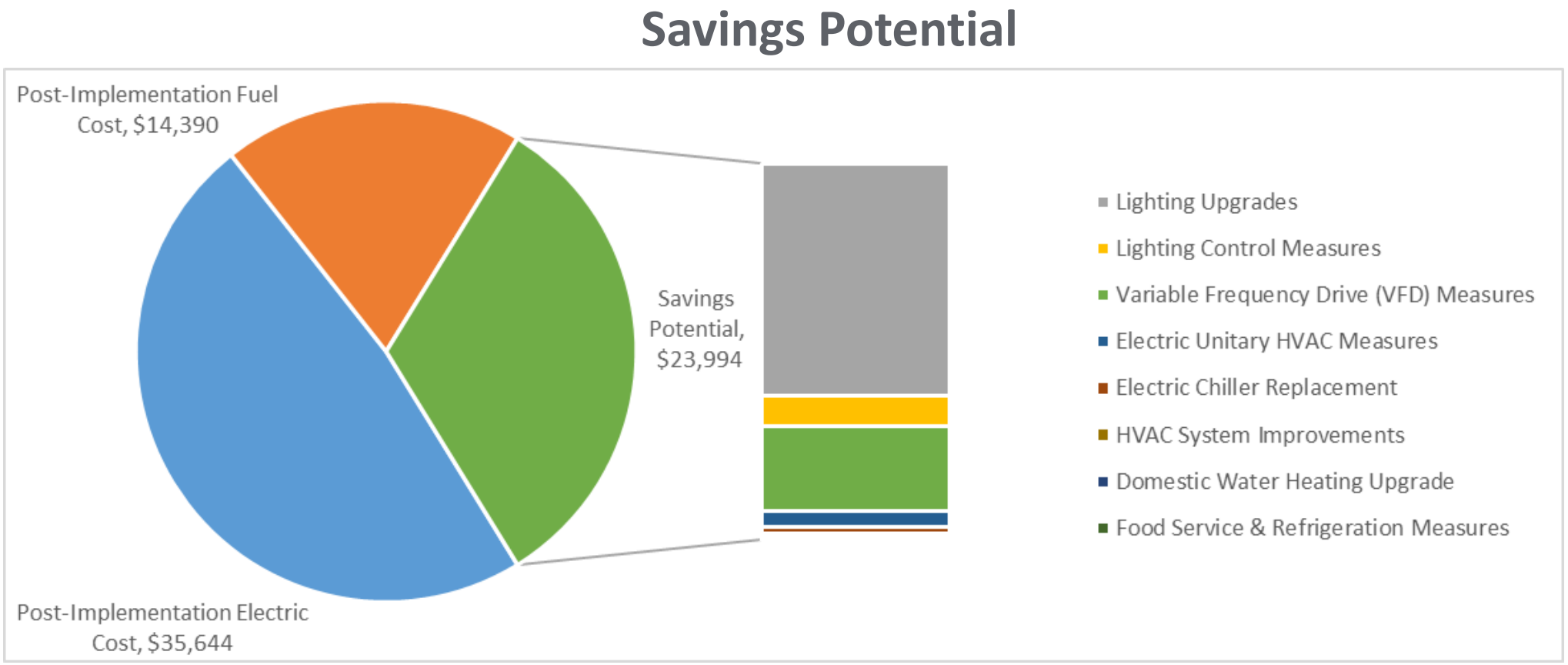
All Opportunities



ALL OPPORTUNITIES

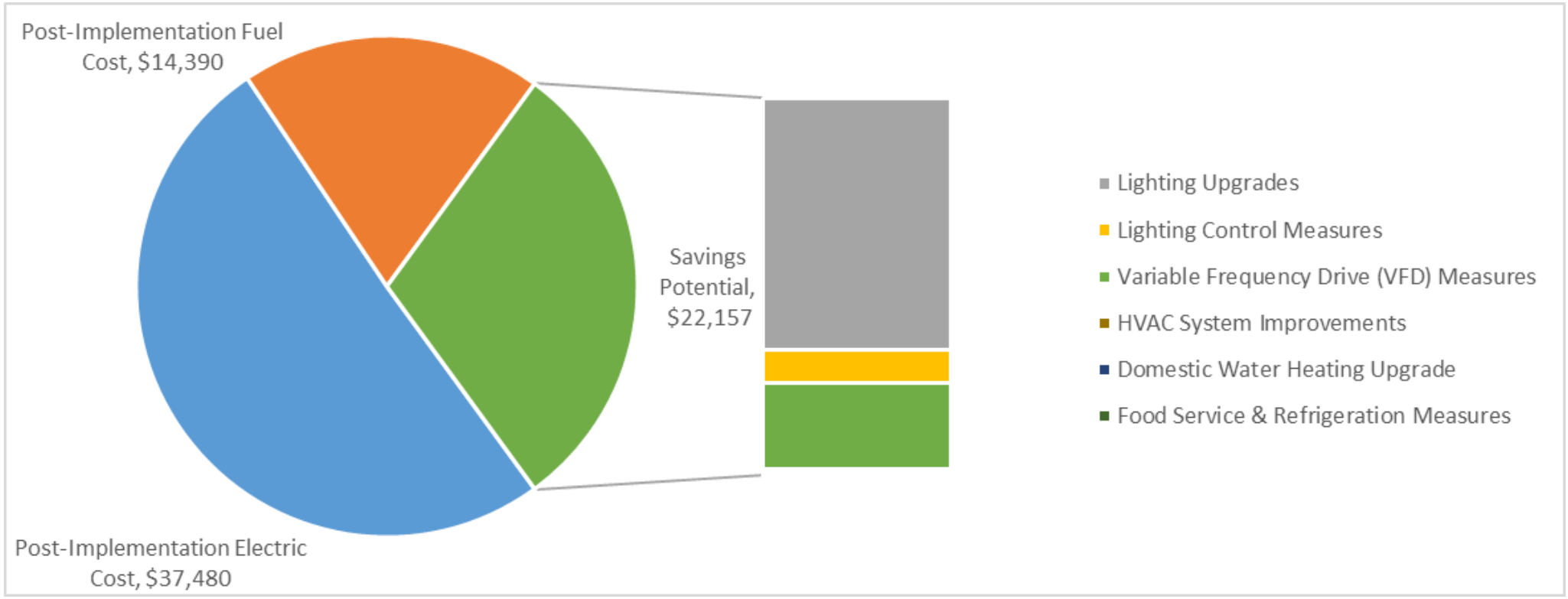
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**105,452**	**16.5**	**-16.9**	**$14,789**	**$33,985**	**$6,119**	**$27,866**	**1.9**	**104,214**
ECM 1	Install LED Fixtures	25,573	0.0	0.0	$3,907	$11,046	$1,390	$9,656	2.5	25,752
ECM 2	Retrofit Fixtures with LED Lamps	79,879	16.5	-16.9	$10,882	$22,940	$4,729	$18,211	1.7	78,462
Lighting Control Measures		**14,952**	**3.0**	**-3.2**	**$2,023**	**$15,188**	**$3,910**	**$11,278**	**5.6**	**14,683**
ECM 3	Install Occupancy Sensor Lighting Controls	9,883	2.4	-2.1	$1,362	$11,768	$1,590	$10,178	7.5	9,705
ECM 4	Install High/Low Lighting Controls	5,069	0.6	-1.1	$661	$3,420	$2,320	$1,100	1.7	4,978
Variable Frequency Drive (VFD) Measures		**39,163**	**9.7**	**0.0**	**$5,399**	**$42,860**	**$5,225**	**$37,635**	**7.0**	**39,437**
ECM 5	Install VFDs on Constant Volume (CV) Fans	27,371	7.4	0.0	$3,657	$27,927	$3,275	$24,652	6.7	27,562
ECM 6	Install VFDs on Chilled Water Pumps	9,129	1.9	0.0	$1,349	$8,152	$1,800	$6,352	4.7	9,193
ECM 7	Install VFDs on Heating Water Pumps	2,663	0.3	0.0	$393	$6,781	$150	$6,631	16.9	2,682
Electric Unitary HVAC Measures		**7,535**	**5.1**	**0.0**	**$973**	**$56,298**	**$3,508**	**$52,791**	**54.2**	**7,588**
ECM 8	Install High Efficiency Air Conditioning Units	7,535	5.1	0.0	$973	$56,298	$3,508	$52,791	54.2	7,588
Electric Chiller Replacement		**3,179**	**3.0**	**0.0**	**$470**	**$44,313**	**$900**	**$43,413**	**92.4**	**3,201**
ECM 9	Install High Efficiency Chillers	3,179	3.0	0.0	$470	$44,313	$900	$43,413	92.4	3,201
HVAC System Improvements		**0**	**0.0**	**3.1**	**$28**	**$46**	**$16**	**$30**	**1.1**	**361**
ECM 10	Install Pipe Insulation	0	0.0	3.1	$28	$46	$16	$30	1.1	361
Domestic Water Heating Upgrade		**0**	**0.0**	**6.6**	**$59**	**$100**	**$50**	**$50**	**0.8**	**778**
ECM 11	Install Low-Flow DHW Devices	0	0.0	6.6	$59	$100	$50	$50	0.8	778
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0.0**	**$252**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 12	Vending Machine Control	1,954	0.2	0.0	$252	$460	$50	$410	1.6	1,968
TOTALS		**172,236**	**37.4**	**-10.3**	**$23,994**	**$193,251**	**$19,778**	**$173,473**	**7.2**	**172,230**

* - 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).

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		**105,452**	**16.5**	**-16.9**	**$14,789**	**$33,985**	**$6,119**	**$27,866**	**1.9**	**104,214**
ECM 1	Install LED Fixtures	25,573	0.0	0.0	$3,907	$11,046	$1,390	$9,656	2.5	25,752
ECM 2	Retrofit Fixtures with LED Lamps	79,879	16.5	-16.9	$10,882	$22,940	$4,729	$18,211	1.7	78,462
Lighting Control Measures		**14,952**	**3.0**	**-3.2**	**$2,023**	**$15,188**	**$3,910**	**$11,278**	**5.6**	**14,683**
ECM 3	Install Occupancy Sensor Lighting Controls	9,883	2.4	-2.1	$1,362	$11,768	$1,590	$10,178	7.5	9,705
ECM 4	Install High/Low Lighting Controls	5,069	0.6	-1.1	$661	$3,420	$2,320	$1,100	1.7	4,978
Variable Frequency Drive (VFD) Measures		**36,500**	**9.4**	**0.0**	**$5,006**	**$36,079**	**$5,075**	**$31,004**	**6.2**	**36,755**
ECM 5	Install VFDs on Constant Volume (CV) Fans	27,371	7.4	0.0	$3,657	$27,927	$3,275	$24,652	6.7	27,562
ECM 6	Install VFDs on Chilled Water Pumps	9,129	1.9	0.0	$1,349	$8,152	$1,800	$6,352	4.7	9,193
HVAC System Improvements		**0**	**0.0**	**3.1**	**$28**	**$46**	**$16**	**$30**	**1.1**	**361**
ECM 10	Install Pipe Insulation	0	0.0	3.1	$28	$46	$16	$30	1.1	361
Domestic Water Heating Upgrade		**0**	**0.0**	**6.6**	**$59**	**$100**	**$50**	**$50**	**0.8**	**778**
ECM 11	Install Low-Flow DHW Devices	0	0.0	6.6	$59	$100	$50	$50	0.8	778
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0.0**	**$252**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 12	Vending Machine Control	1,954	0.2	0.0	$252	$460	$50	$410	1.6	1,968
TOTALS		**158,859**	**29.1**	**-10.3**	**$22,157**	**$85,859**	**$15,220**	**$70,639**	**3.2**	**158,759**

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CRANBURY TOWN HALL

#	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			**24,317**	**6.6**	**-4**	**$3,556**	**$13,418**	**$1,777**	**$11,641**	**3.3**	**24,011**
ECM 1	Install LED Fixtures	Yes	4,497	0.0	0	$664	$3,622	$350	$3,272	4.9	4,528
ECM 2	Retrofit Fixtures with LED Lamps	Yes	19,821	6.6	-4	$2,892	$9,796	$1,427	$8,369	2.9	19,483
Lighting Control Measures			**3,299**	**1.1**	**-1**	**$481**	**$6,051**	**$1,675**	**$4,376**	**9.1**	**3,241**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,459	0.8	-1	$359	$4,206	$575	$3,631	10.1	2,416
ECM 4	Install High/Low Lighting Controls	Yes	840	0.2	0	$123	$1,845	$1,100	$745	6.1	825
Variable Frequency Drive (VFD) Measures			**18,367**	**4.2**	**0**	**$2,713**	**$25,469**	**$2,325**	**$23,144**	**8.5**	**18,496**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	6,575	1.9	0	$971	$10,536	$375	$10,161	10.5	6,621
ECM 6	Install VFDs on Chilled Water Pumps	Yes	9,129	1.9	0	$1,349	$8,152	$1,800	$6,352	4.7	9,193
ECM 7	Install VFDs on Heating Water Pumps	No	2,663	0.3	0	$393	$6,781	$150	$6,631	16.9	2,682
Electric Chiller Replacement			**3,179**	**3.0**	**0**	**$470**	**$44,313**	**$900**	**$43,413**	**92.4**	**3,201**
ECM 8	Install High Efficiency Chillers	No	3,179	3.0	0	$470	$44,313	$900	$43,413	92.4	3,201
Domestic Water Heating Upgrade			**0**	**0.0**	**2**	**$21**	**$36**	**$18**	**$18**	**0.8**	**278**
ECM 9	Install Low-Flow DHW Devices	Yes	0	0.0	2	$21	$36	$18	$18	0.8	278
TOTALS (COST EFFECTIVE MEASURES)			**43,320**	**11.6**	**-2**	**$6,379**	**$38,193**	**$5,645**	**$32,548**	**5.1**	**43,344**
TOTALS (ALL MEASURES)			**49,162**	**14.9**	**-2**	**$7,242**	**$89,287**	**$6,695**	**$82,592**	**11.4**	**49,226**

* - 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.

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CRANBURY FIRE STATION

#	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			**15,443**	**2.7**	**-1**	**$2,850**	**$7,439**	**$1,175**	**$6,264**	**2.2**	**15,384**
ECM 1	Install LED Fixtures	Yes	9,251	0.0	0	$1,715	$3,706	$340	$3,366	2.0	9,315
ECM 2	Retrofit Fixtures with LED Lamps	Yes	6,193	2.7	-1	$1,135	$3,733	$835	$2,898	2.6	6,069
Lighting Control Measures			**1,050**	**0.5**	**0**	**$192**	**$1,736**	**$230**	**$1,506**	**7.8**	**1,029**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,050	0.5	0	$192	$1,736	$230	$1,506	7.8	1,029
HVAC System Improvements			**0**	**0.0**	**2**	**$16**	**$23**	**$8**	**$15**	**1.0**	**200**
ECM 4	Install Pipe Insulation	Yes	0	0.0	2	$16	$23	$8	$15	1.0	200
Domestic Water Heating Upgrade			**0**	**0.0**	**1**	**$9**	**$14**	**$7**	**$7**	**0.8**	**111**
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	1	$9	$14	$7	$7	0.8	111
TOTALS (COST EFFECTIVE MEASURES)			**16,493**	**3.3**	**1**	**$3,067**	**$9,212**	**$1,420**	**$7,792**	**2.5**	**16,725**
TOTALS (ALL MEASURES)			**16,493**	**3.3**	**1**	**$3,067**	**$9,212**	**$1,420**	**$7,792**	**2.5**	**16,725**

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CRANBURY POLICE STATION

#	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			**65,692**	**7.1**	**-11**	**$8,383**	**$13,128**	**$3,167**	**$9,961**	**1.2**	**64,818**
ECM 1	Install LED Fixtures	Yes	11,826	0.0	0	$1,527	$3,717	$700	$3,017	2.0	11,909
ECM 2	Retrofit Fixtures with LED Lamps	Yes	53,866	7.1	-11	$6,856	$9,411	$2,467	$6,944	1.0	52,909
Lighting Control Measures			**10,603**	**1.4**	**-2**	**$1,349**	**$7,401**	**$2,005**	**$5,396**	**4.0**	**10,413**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	6,374	1.0	-1	$811	$5,826	$785	$5,041	6.2	6,260
ECM 4	Install High/Low Lighting Controls	Yes	4,229	0.4	-1	$538	$1,575	$1,220	$355	0.7	4,153
Variable Frequency Drive (VFD) Measures			**20,796**	**5.5**	**0**	**$2,686**	**$17,391**	**$2,900**	**$14,491**	**5.4**	**20,942**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	20,796	5.5	0	$2,686	$17,391	$2,900	$14,491	5.4	20,942
Unitary HVAC Measures			**7,535**	**5.1**	**0**	**$973**	**$56,298**	**$3,508**	**$52,791**	**54.2**	**7,588**
ECM 6	Install High Efficiency Air Conditioning Units	No	7,535	5.1	0	$973	$56,298	$3,508	$52,791	54.2	7,588
HVAC System Improvements			**0**	**0.0**	**1**	**$12**	**$23**	**$8**	**$15**	**1.2**	**160**
ECM 7	Install Pipe Insulation	Yes	0	0.0	1	$12	$23	$8	$15	1.2	160
Domestic Water Heating Upgrade			**0**	**0.0**	**3**	**$29**	**$50**	**$25**	**$25**	**0.9**	**389**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	3	$29	$50	$25	$25	0.9	389
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$252**	**$460**	**$50**	**$410**	**1.6**	**1,968**
ECM 9	Vending Machine Control	Yes	1,954	0.2	0	$252	$460	$50	$410	1.6	1,968
TOTALS (COST EFFECTIVE MEASURES)			**99,046**	**14.2**	**-9**	**$12,712**	**$38,454**	**$8,155**	**$30,299**	**2.4**	**98,690**
TOTALS (ALL MEASURES)			**106,581**	**19.3**	**-9**	**$13,685**	**$94,752**	**$11,663**	**$83,089**	**6.1**	**106,278**

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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 practices by building

FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting – NJ ESIP
- Financing Mechanism that allows state 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
- 15 or 20 year self-funding loan
- Recent Energy Efficiency Transition
    - NJBPU Approved Incentive Programs
        - Utility or NJCEP
- Can be combined with Federal/State Pandemic Relief Funds
- No upfront capital expenses
- No referendum or impact to tax payers

New Jersey's cleanenergy program™

Financing Mechanism: ESIP

Preliminary Energy Audit

LGEA

Select Path

ESCO Model
Hybrid Model
DIY Model

Investment Grade Energy Audit

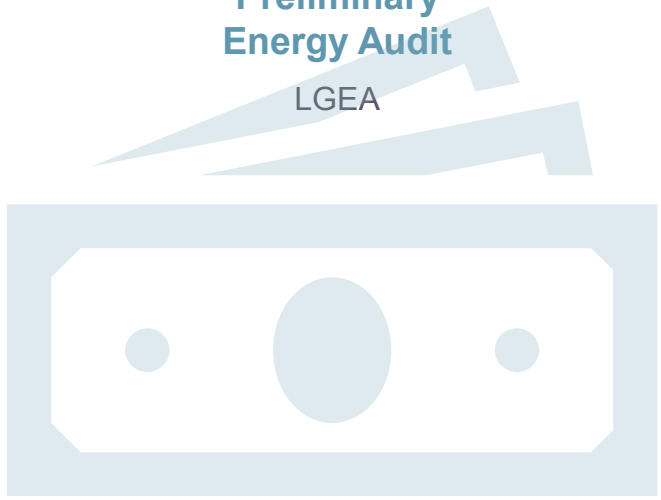
Prioritize ECM's to determine project

Energy Savings Plan Developed

Cash Flow Positive

Third Part Audit of Plan

Submitted for **BPU Approval**



New Jersey's cleanenergy program™

ENERGY SAVINGS IMPROVEMENT PROGRAM

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

ESIP@bpu.nj.gov

o: 609.633.9641

c: 609.915.0903

C&I Transition of Energy Efficiency Programs

https://www.njcleanenergy.com/transition

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

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

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

PSE&G

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Clean Fleet Electric Vehicle Incentive Program

www.NJCleanEnergy.com/EV

- Electric vehicles are now included on the State Purchasing Contract under Award T0099
- Clean Fleet Electric Vehicle Incentive Program
  - Designed to encourage local and state governments to add EVs to their fleet
    - $4,000 per battery electric vehicle (maximum of 2); and
    - $1,500 for one Level-Two EV charging station
  - Grants awarded on rolling basis until funding expended
- Questions? **EV.programs@bpu.nj.gov**

For More Information

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THANK YOU