# *LGEA Presentation*

# *Rumson Fairhaven Regional High School*

April 21, 2023

New Jersey's
Clean Energy Program

*Lighting the way to New Jersey's Clean Energy Future*

# INTRODUCTIONS

- *Rumson Fairhaven Regional High School*
  - Robert Romano – Buildings & Ground Supervisor

- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Thierry Nicolas – LGEA Project Auditor
  - Meredith Coley – LGEA Account Manager

- *Utility Energy Efficiency Programs*
  - Michael Mandzik – New Jersey Natural Gas
  - Sirajuddin Shaikh – JCP&L

# AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified & other recommendations
- Additional Scope – PV Assessment
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Rumson Fairhaven Regional High School

# 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
- Kitchen and Cooking Equipment

## Utility Consumption:

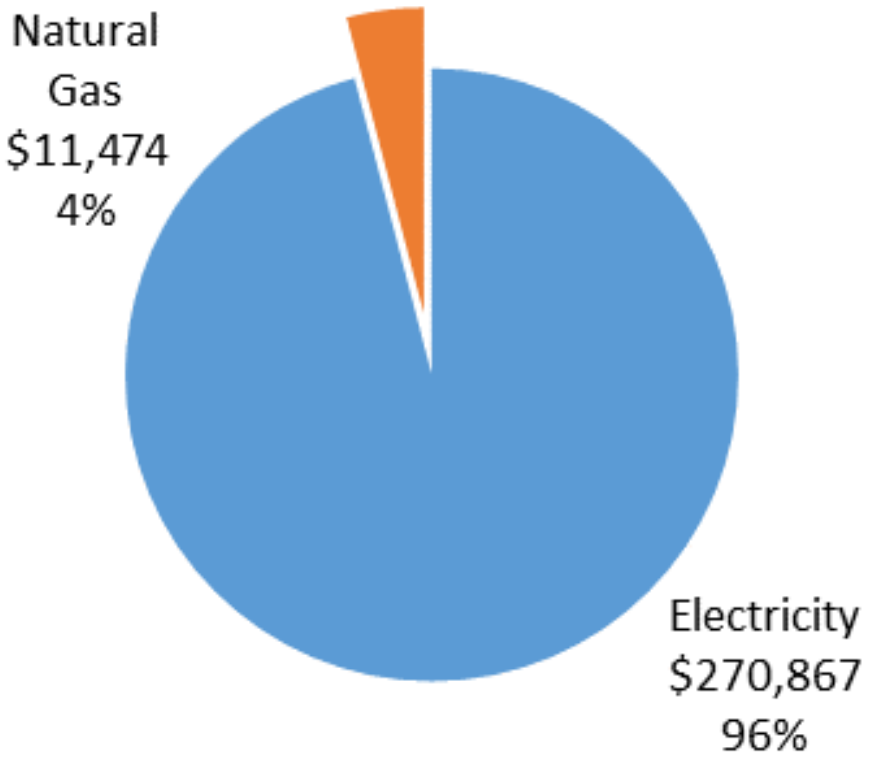
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

## Sites Visited/Analyzed

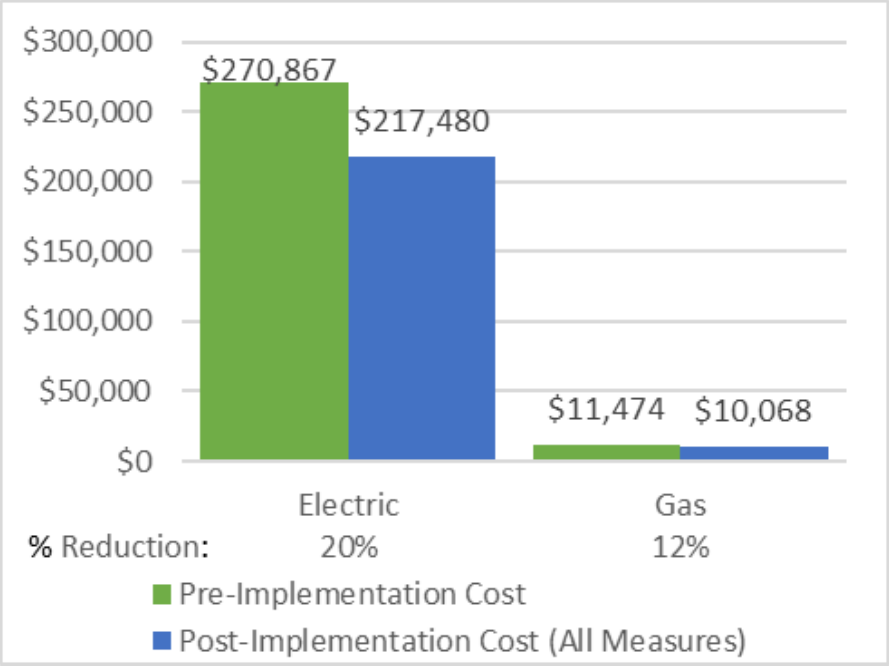
- Rumson Fairhaven Regional High School
- Pole Barn
- Concession Stand

# Utility Breakout

Percent of Total Annual Energy Costs




Pre & Post Implementation Cost



# BENCHMARKING

**ENERGY STAR® Statement of Energy Performance**

LEARN MORE AT energystar.gov

**67**

ENERGY STAR® Score[1]

**Rumson-Fairhaven Regional High School (Campus)**

**Primary Property Type:** K-12 School
**Gross Floor Area (ft²):** 188,875
**Built:** 1936

**For Year Ending:** September 30, 2022
**Date Generated:** March 09, 2023

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 |
|---|---|---|
| Rumson-Fairhaven Regional High School (Campus)<br>74 Ridge Road<br>Rumson, New Jersey 07760 | Rumson-Fairhaven Regional High School<br>74 Ridge Road<br>Rumson, NJ 07760<br>(732) 639-2029 | Robert Romano<br>74 Ridge Road<br>Rumson, NJ 07760<br>(732) 639-2029<br>rromano@rumsonfairhaven.org |

**Property ID:** 24399074

**Energy Consumption and Energy Use Intensity (EUI)**

**Site EUI**
43.2 kBtu/ft²

**Source EUI**
115.1 kBtu/ft²

| Annual Energy by Fuel | | |
|---|---|---|
| Natural Gas (kBtu) | 642,087 | (8%) |
| Electric - Grid (kBtu) | 7,524,378 | (92%) |

| National Median Comparison | |
|---|---|
| National Median Site EUI (kBtu/ft²) | 51.8 |
| National Median Source EUI (kBtu/ft²) | 137.8 |
| % Diff from National Median Source EUI | -16% |
| **Annual Emissions** | |
| Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) | 690 |

**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**
43.2 kBtu/ft²

**Source EUI**
115.1 kBtu/ft²

**National Median Comparison**

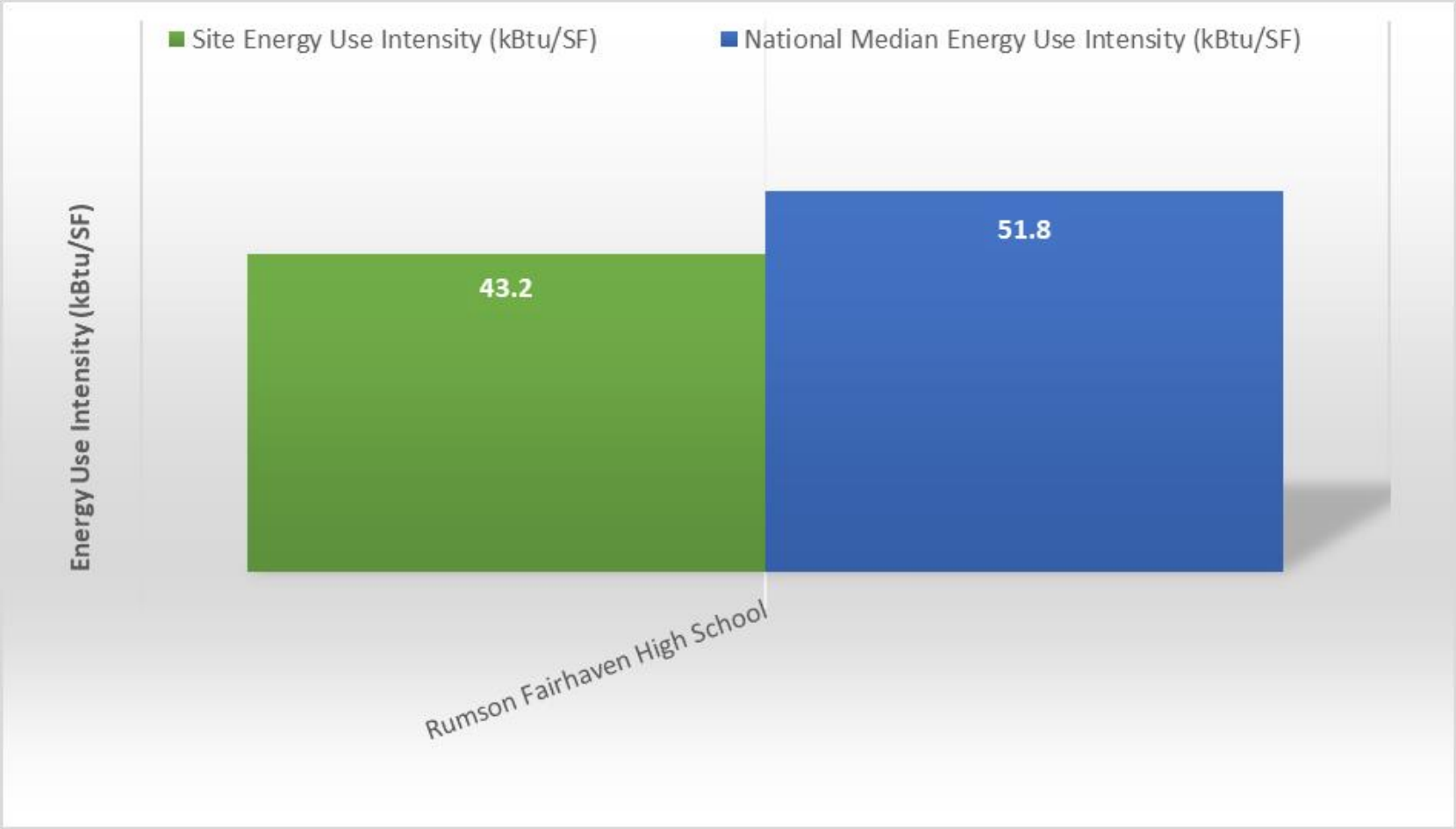
| | |
|---|---|
| National Median Site EUI (kBtu/ft²) | 51.8 |
| National Median Source EUI (kBtu/ft²) | 137.8 |
| % Diff from National Median Source EUI | -16% |

| Site Name | ENERGY STAR® Score |
|---|---|
| Rumson-Fairhaven Regional High School (Campus) | 67 |

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.

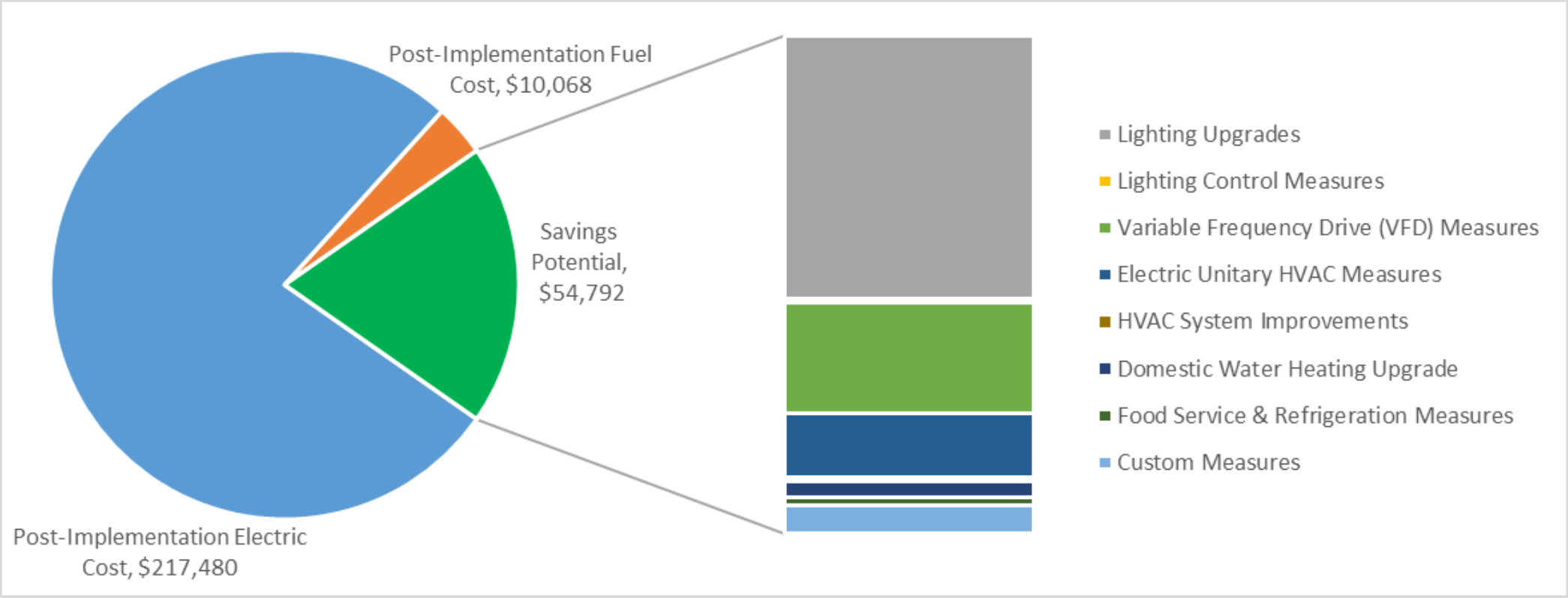
New Jersey's cleanenergy program™

# BENCHMARKING



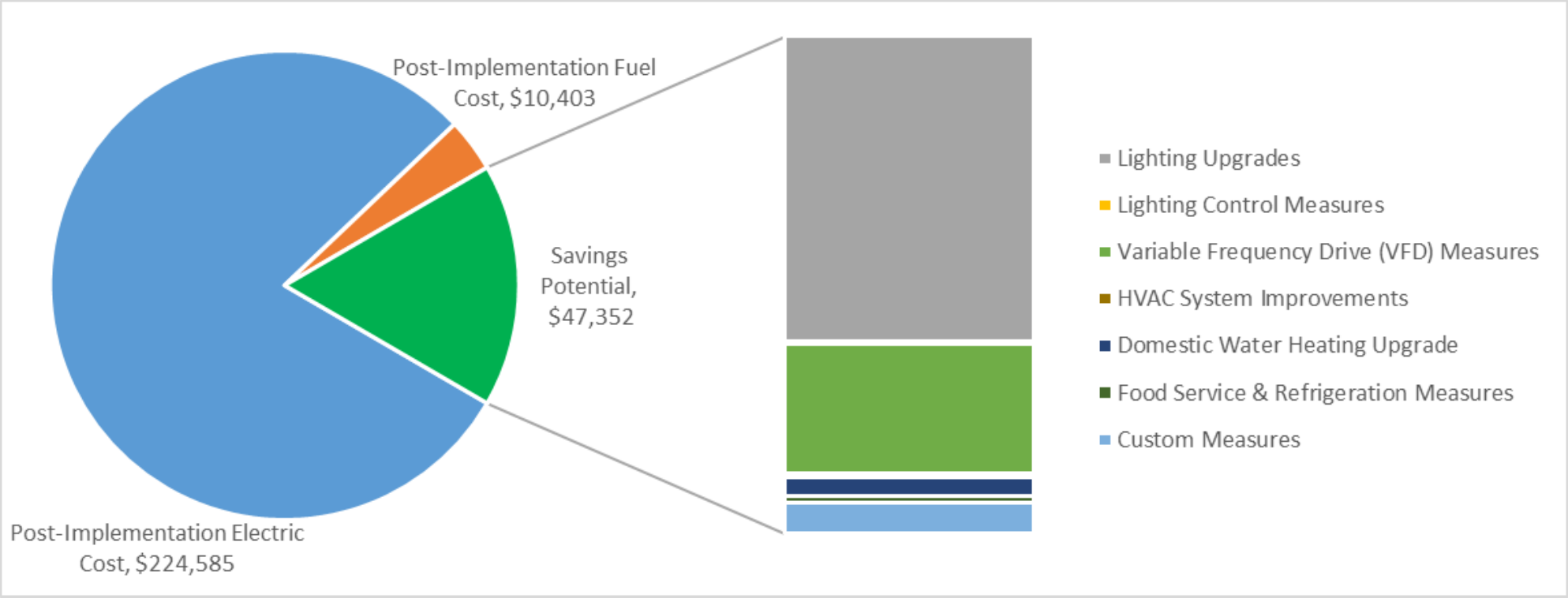
# All Opportunities

## Savings Potential



# Cost Effective Opportunities

## Savings Potential



# RUMSON FAIRHAVEN REGIONAL HIGH 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** | | | **236,184** | **38.0** | **0** | **$28,993** | **$60,483** | **$14,760** | **$45,723** | **1.6** | **237,835** |
| ECM 1 | Install LED Fixtures | Yes | 5,256 | 0.0 | 0 | $645 | $3,429 | $450 | $2,979 | 4.6 | 5,293 |
| ECM 2 | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes | 2,266 | 0.4 | 0 | $278 | $788 | $106 | $682 | 2.5 | 2,282 |
| ECM 3 | Retrofit Fixtures with LED Lamps | Yes | 228,662 | 37.5 | 0 | $28,070 | $56,265 | $14,204 | $42,061 | 1.5 | 230,261 |
| **Lighting Control Measures** | | | **2,738** | **0.5** | **0** | **$336** | **$1,890** | **$245** | **$1,645** | **4.9** | **2,757** |
| ECM 4 | Install Occupancy Sensor Lighting Controls | Yes | 2,738 | 0.5 | 0 | $336 | $1,890 | $245 | $1,645 | 4.9 | 2,757 |
| **Variable Frequency Drive (VFD) Measures** | | | **99,678** | **31.7** | **0** | **$12,236** | **$124,845** | **$13,300** | **$111,545** | **9.1** | **100,375** |
| ECM 5 | Install VFDs on Constant Volume (CV) Fans | Yes | 99,678 | 31.7 | 0 | $12,236 | $124,845 | $13,300 | $111,545 | 9.1 | 100,375 |
| **Unitary HVAC Measures** | | | **57,883** | **63.6** | **0** | **$7,106** | **$966,092** | **$36,727** | **$929,365** | **130.8** | **58,288** |
| ECM 6 | Install High Efficiency Heat Pumps | No | 57,883 | 63.6 | 0 | $7,106 | $966,092 | $36,727 | $929,365 | 130.8 | 58,288 |
| **HVAC System Improvements** | | | **0** | **0.0** | **22** | **$390** | **$2,824** | **$424** | **$2,400** | **6.2** | **2,558** |
| ECM 7 | Install Pipe Insulation | Yes | 0 | 0.0 | 22 | $390 | $2,824 | $424 | $2,400 | 6.2 | 2,558 |
| **Domestic Water Heating Upgrade** | | | **9,036** | **0.0** | **38** | **$1,790** | **$767** | **$379** | **$388** | **0.2** | **13,570** |
| ECM 8 | Install Low-Flow DHW Devices | Yes | 9,036 | 0.0 | 38 | $1,790 | $767 | $379 | $388 | 0.2 | 13,570 |
| **Food Service & Refrigeration Measures** | | | **4,760** | **0.3** | **19** | **$919** | **$12,319** | **$755** | **$11,564** | **12.6** | **6,994** |
| ECM 9 | Food Service Equipment Replacement | No | 0 | 0.0 | 19 | $335 | $9,290 | $500 | $8,790 | 26.2 | 2,200 |
| ECM 10 | Refrigerator/Freezer Case Electrically Commutated Motors | Yes | 983 | 0.1 | 0 | $121 | $607 | $80 | $527 | 4.4 | 990 |
| ECM 11 | Refrigeration Controls | Yes | 2,165 | 0.0 | 0 | $266 | $2,193 | $125 | $2,068 | 7.8 | 2,180 |
| ECM 12 | Vending Machine Control | Yes | 1,612 | 0.2 | 0 | $198 | $230 | $50 | $180 | 0.9 | 1,623 |
| **Custom Measures** | | | **24,619** | **0.0** | **0** | **$3,022** | **$3,950** | **$0** | **$3,950** | **1.3** | **24,791** |
| ECM 13 | Replace Electric Water Heater with Heat Pump Water Heater | Yes | 24,619 | 0.0 | 0 | $3,022 | $3,950 | $0 | $3,950 | 1.3 | 24,791 |
| **TOTALS (COST EFFECTIVE MEASURES)** | | | **377,015** | **70.5** | **60** | **$47,352** | **$197,788** | **$29,363** | **$168,425** | **3.6** | **386,680** |
| **TOTALS (ALL MEASURES)** | | | **434,898** | **134.1** | **79** | **$54,792** | **$1,173,170** | **$66,590** | **$1,106,580** | **20.2** | **447,168** |

* - 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).

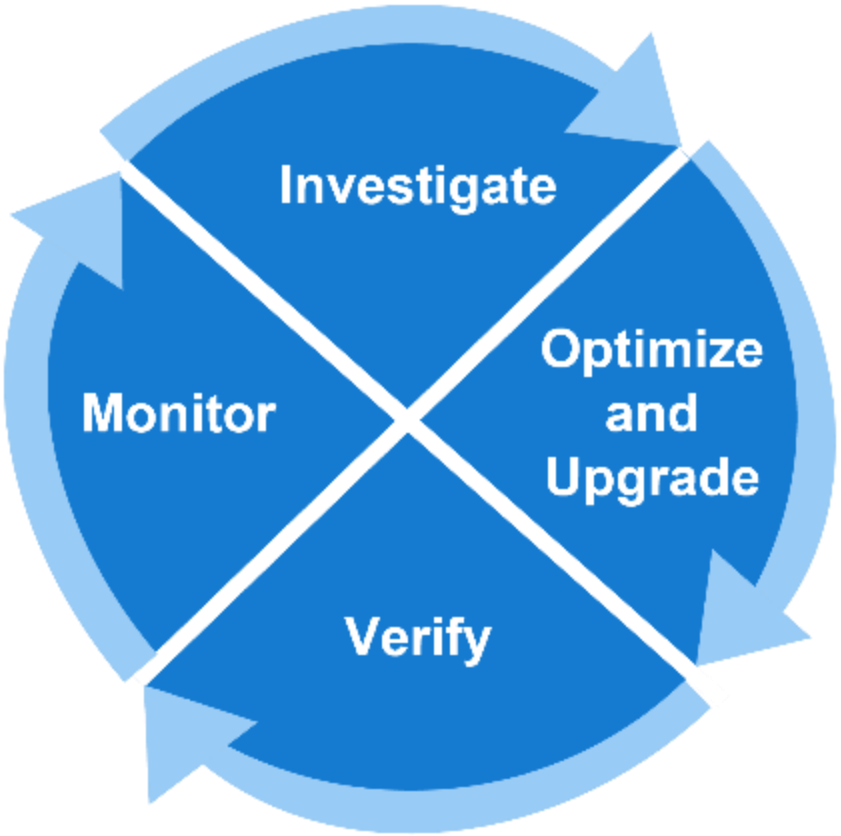
# ENERGY EFFICIENT BEST PRACTICES

- 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 practices by building***

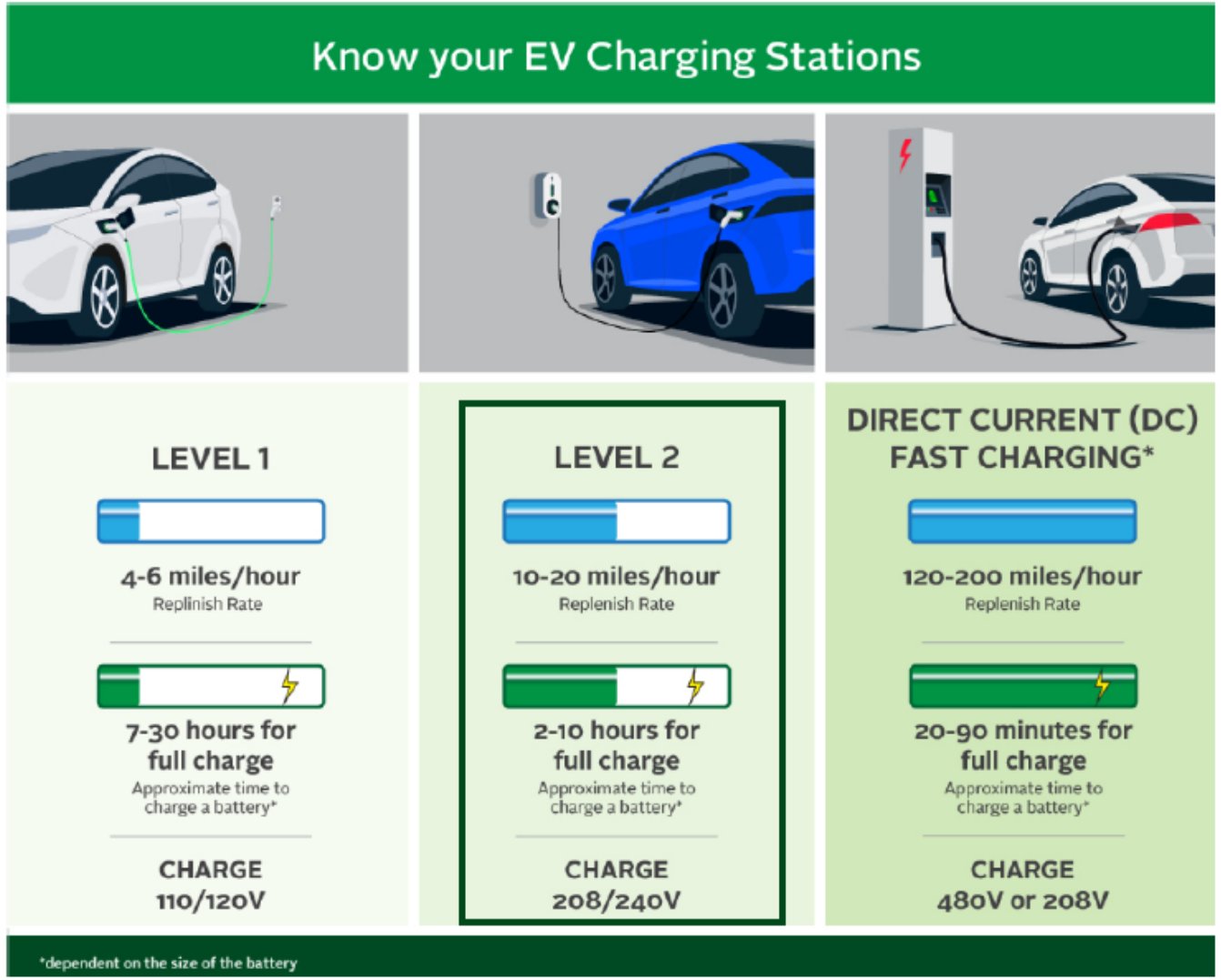
# Measures for Future Consideration

- Retro-Commissioning Study



# EV Charging Station Potential

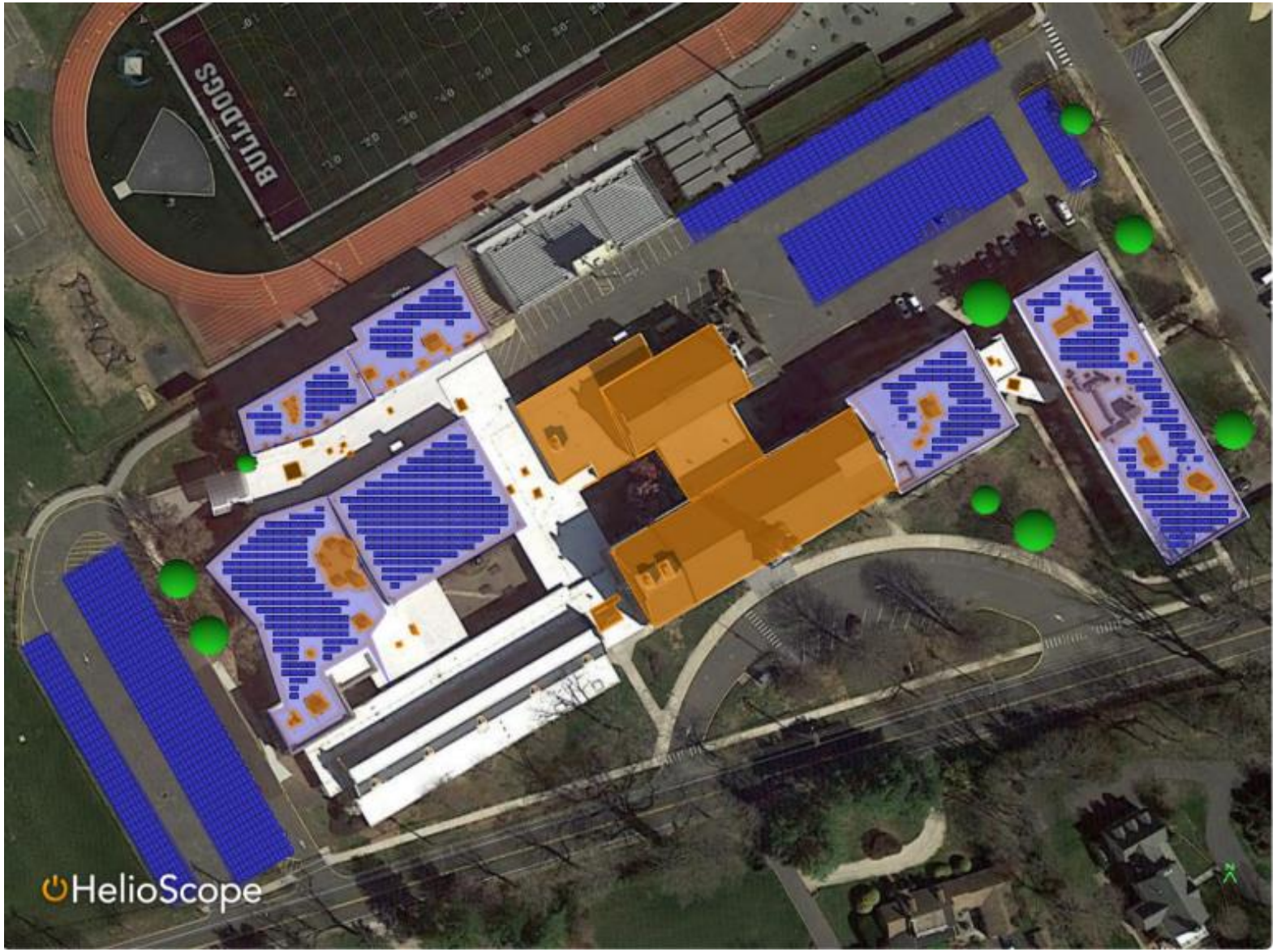
NJCleanEnergy.com/EV




| | Rumson Fairhaven Regional HS |
|---|---|
| Potential: | **Medium** |

# SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy



# SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

**Findings**

**Solar PV Equipment Description**

Solar Panels: (2,216) LG Electronics LG400Q1C-46

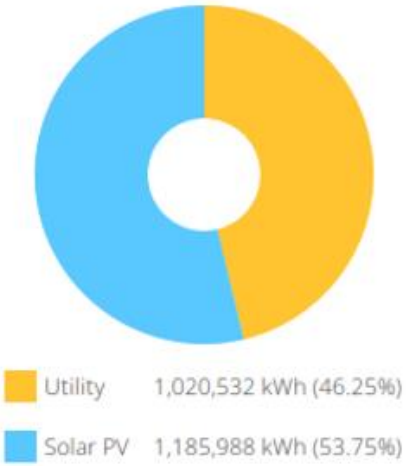
Inverters: (48) Fronius USA Fronius Symo 15.0-3 (480V)

**Annual Estimated Generation:** 1,389,025 kWh

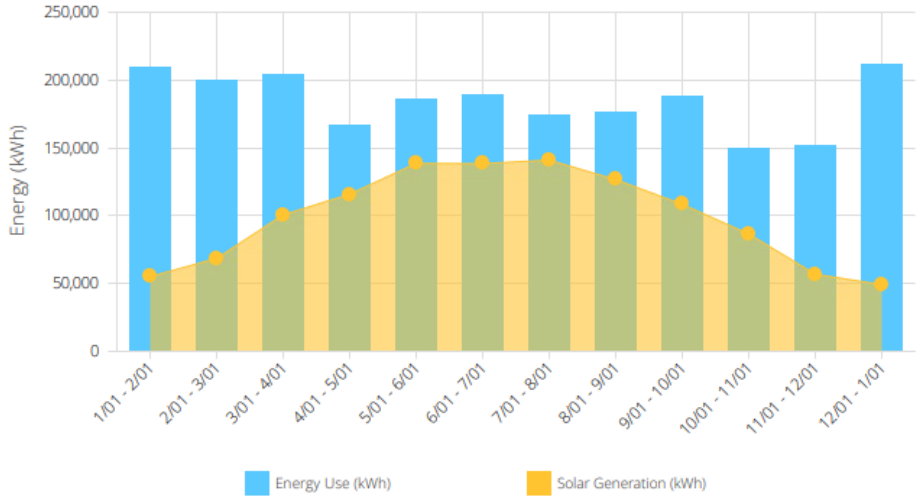
**Solar PV System Cost**: $4,697,061

**Solar PV System Rating Power Rating:** 886,400 W-DC or 868,672 W-AC-CEC

**Energy Consumption Mix**




MONTHLY ENERGY USE VS SOLAR GENERATION



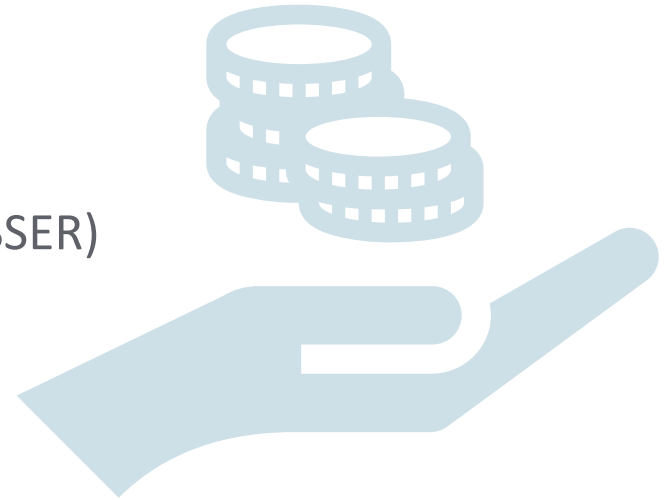

New Jersey's cleanenergy program™

# FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

## ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting = NJ ESIP
- 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
- 15 or 20 year pay back; self funding
- NJBPU Approved Incentive Programs
    - Utility or NJCEP
- Can be combined with Federal/State Pandemic Relief Funds (ESSER)
- No upfront capital expenses
- No referendum or impact to tax payers



New Jersey's cleanenergy program™

# Energy Savings Improvement Program

NJCleanEnergy.com/ESIP

**Preliminary Energy Audit**

Free LGEA
or
other ASHRAE Level II Audit

**Select Path**

ESCO, Hybrid or DIY Model;
Public Contract Law
Compliance

**Investment Grade**
**Energy Audit**

Prioritize Needs ;
Select Project's ECM's

**Energy Savings Plan Developed**

Must be Cash Flow Positive;

Savings Guarantee?

Third Party Review

Submitted for
**BPU Approval**

New Jersey's cleanenergy program™

## FOR MORE INFORMATION

**Michelle Rossi**
ESIP Coordinator
ESIP@bpu.nj.gov
o: 609.913.6295
c: 609.915.0903

# 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

New Jersey's cleanenergy program™

**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

**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

**JCP&L**

Sirajuddin Shaikh - sirshaikh@firstenergycorp.com

**New Jersey Natural Gas**

Michael Mandzik - MMandzik@njng.com

# School & Small Business Energy Efficiency Stimulus Program

NJCleanEnergy.com/SSBEE

**ABOUT**

Provides grants to ensure facilities have functional HVAC systems that are tested, adjusted, and, if necessary or cost effective, repaired, upgraded or replaced to improve performance. *(SSB-VEEVR)*

Provides grants to replace noncompliant plumbing fixtures and appliances that fail to meet water efficiency standards. *(SSB-NPFA)*

**REQUIREMENTS**

Assessment verified by a Certified Energy Auditor or TAB Technician and proof of noncompliant equipment.

**INCENTIVE CAP**

Grants shall provide no more than 75% of the approved project cost up to $5 million.

New Jersey's cleanenergy program™

# For More Information

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

**Moussa Traore – LGEA Lead Energy Auditor**
MTraore@trccompanies.com
(732) 902-1797

**Meredith Coley – LGEA Account Manager**
MColey@trccompanies.com
(252) 459-4664

**Thierry Nicolas – LGEA Energy Auditor**
TNicolas@trccompanies.com
(929) 884-3960

New Jersey's cleanenergy program™

# THANK YOU