LGEA Presentation

State of New Jersey – Bug Lab

June 23, 2023

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

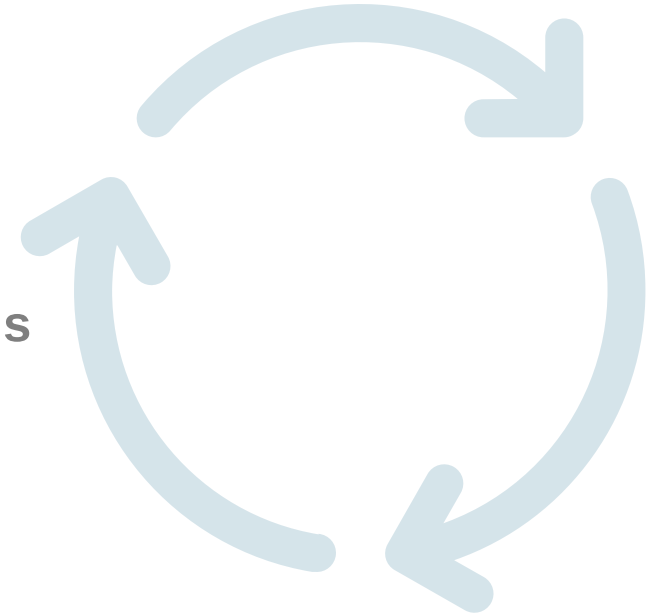
- *State of New Jersey – Bug Lab*
  - Anthony Faraca
  - Brian Irving
  - Joseph Blusnavage
  - Sara Bluhm Gibson
  - Yuliia Herhel
  - Justin Heeney
- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Moussa Traore – LGEA Lead Auditor
  - Nicholas Nocco – LGEA Project Auditor
  - Daniel Krasowsky – 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)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for State of New Jersey - Bug Lab

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
- Building Automation System (BAS)
- Lab Refrigeration

Utility Consumption:

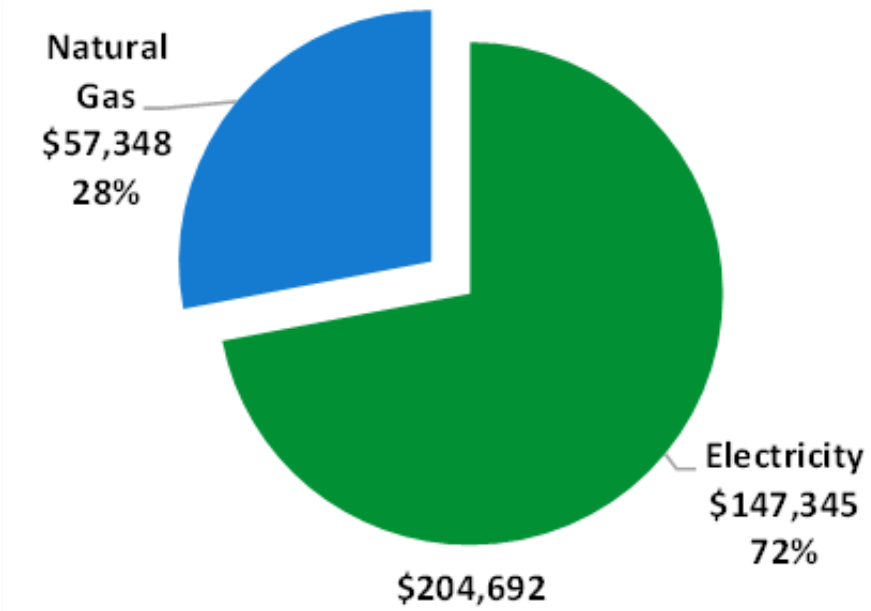
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

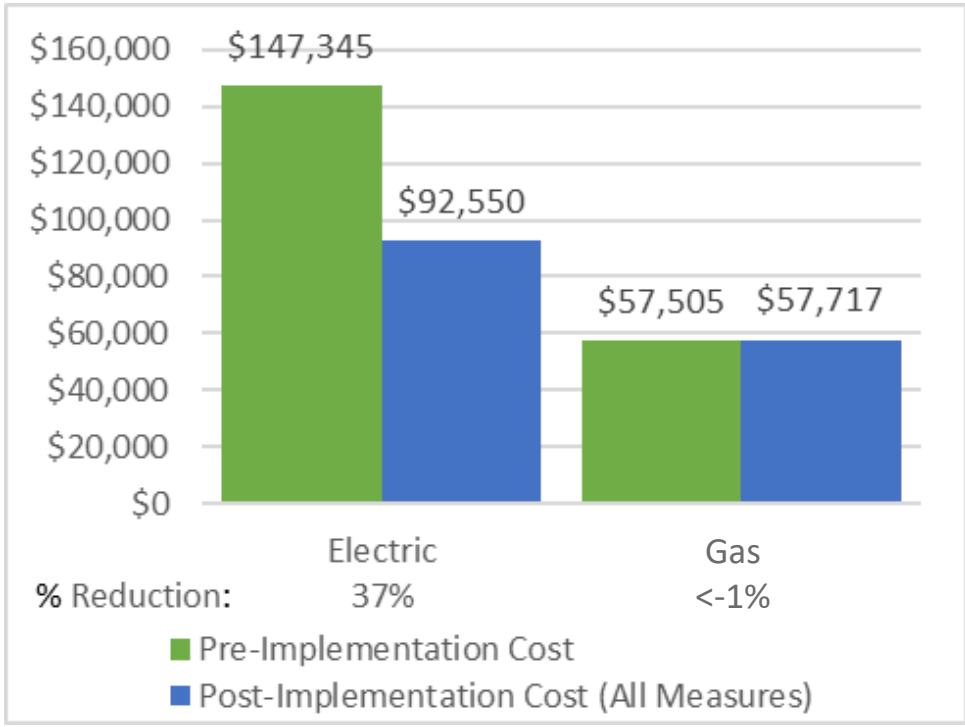
- Main Building
- Equipment Storage Garage
- Greenhouse 1
- Greenhouse 2

Utility Breakout

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



New Jersey's cleanenergy program™

BENCHMARKING

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Phillip Alampi Beneficial Insect Laboratory (PABIL"Bug Lab" Campus)

Primary Property Type: Laboratory
Gross Floor Area (ft²): 28,413
Built: 1984

For Year Ending: December 31, 2022
Date Generated: April 24, 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
Phillip Alampi Beneficial Insect Laboratory (PABIL "Bug Lab" Campus) 20 Cosey Road Ewing Township, New Jersey 08628	State of New Jersey 428 East State Street Trenton, NJ 08625 (609) 940-4129	New Jersey Board of Public Utilities State Energy Services 44 South Clinton Ave Trenton, NJ 08625 (609) 633-9666 BPU.EnergyServices@bpu.nj.gov

Property ID: 25316588

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
350.3 kBtu/ft²

Source EUI
575.7 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	3,375,743 (34%)
Natural Gas (kBtu)	6,576,694 (66%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	193.6
National Median Source EUI (kBtu/ft²)	318.2
% Diff from National Median Source EUI	81%

Annual Emissions

Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	643

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
350.3 kBtu/ft²

Source EUI
575.7 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	193.6
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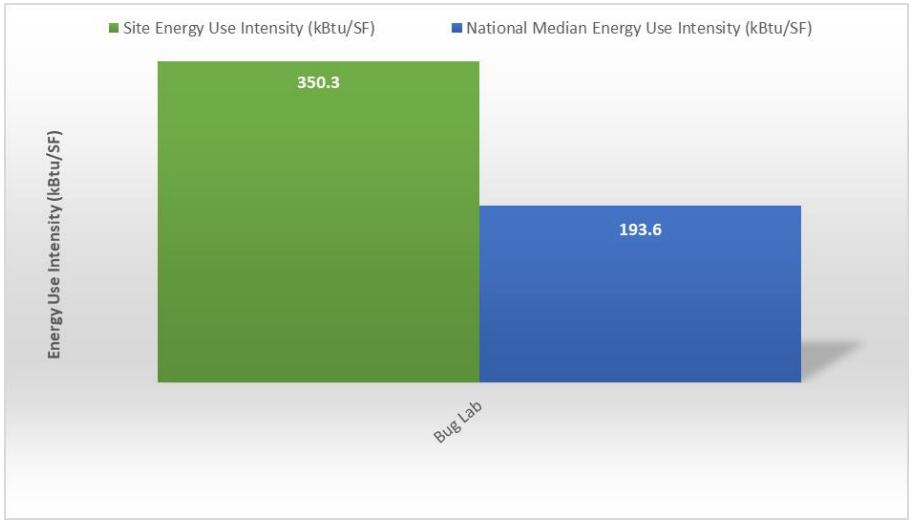
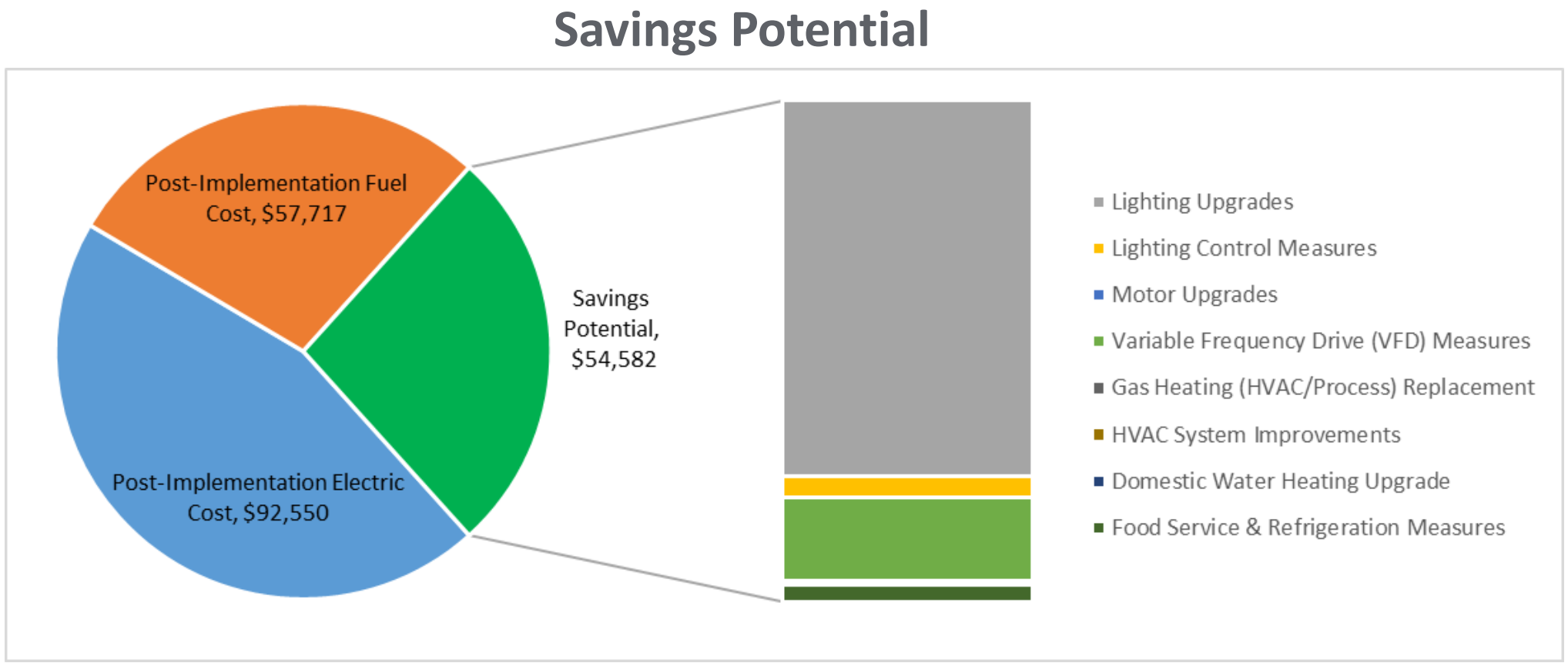
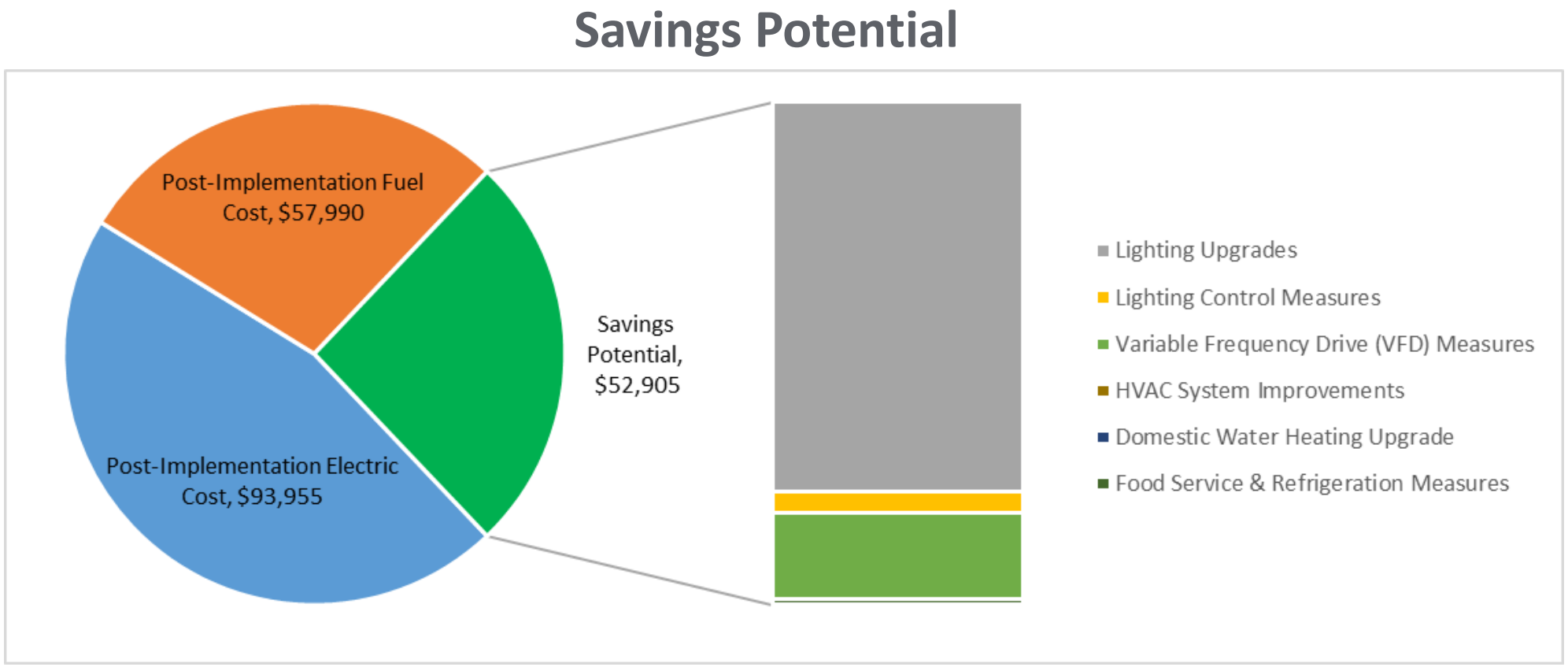


ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

All Opportunities



Cost Effective Opportunities



BUG LAB CAMPUS

#	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			**276,149**	**42.1**	**-56**	**$40,924**	**$61,800**	**$3,911**	**$57,889**	**1.4**	**271,541**
ECM 1	Install LED Fixtures	Yes	224,902	30.8	-45	$33,332	$43,013	$650	$42,363	1.3	221,192
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,988	0.4	0	$294	$598	$80	$518	1.8	1,952
ECM 3	Retrofit Fixtures with LED Lamps	Yes	49,259	10.9	-10	$7,297	$18,189	$3,181	$15,008	2.1	48,397
Lighting Control Measures			**15,317**	**3.3**	**-3**	**$2,268**	**$23,605**	**$5,000**	**$18,605**	**8.2**	**15,042**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	13,180	2.8	-3	$1,952	$19,195	$2,060	$17,135	8.8	12,944
ECM 5	Install High/Low Lighting Controls	Yes	2,136	0.4	0	$316	$4,410	$2,940	$1,470	4.6	2,098
Motor Upgrades			**645**	**0.1**	**0**	**$97**	**$2,613**	**$0**	**$2,613**	**27.0**	**650**
ECM 6	Premium Efficiency Motors	No	645	0.1	0	$97	$2,613	$0	$2,613	27.0	650
Variable Frequency Drive (VFD) Measures			**60,513**	**13.6**	**0**	**$9,078**	**$47,678**	**$3,825**	**$43,853**	**4.8**	**60,936**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	60,513	13.6	0	$9,078	$47,678	$3,825	$43,853	4.8	60,936
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**30**	**$273**	**$9,686**	**$0**	**$9,686**	**35.5**	**3,555**
ECM 8	Install High Efficiency Unit Heaters	No	0	0.0	30	$273	$9,686	$0	$9,686	35.5	3,555
HVAC System Improvements			**0**	**0.0**	**3**	**$29**	**$76**	**$10**	**$66**	**2.3**	**376**
ECM 9	Install Pipe Insulation	Yes	0	0.0	3	$29	$76	$10	$66	2.3	376
Domestic Water Heating Upgrade			**0**	**0.0**	**2**	**$17**	**$34**	**$16**	**$18**	**1.0**	**222**
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	2	$17	$34	$16	$18	1.0	222
Food Service & Refrigeration Measures			**12,649**	**1.1**	**0**	**$1,897**	**$33,319**	**$2,000**	**$31,319**	**16.5**	**12,737**
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	3,927	0.5	0	$589	$5,605	$600	$5,005	8.5	3,954
ECM 12	Refrigeration Controls	No	5,049	0.2	0	$757	$12,373	$450	$11,923	15.7	5,084
ECM 13	Replace Refrigeration Equipment	No	3,673	0.4	0	$551	$15,341	$950	$14,391	26.1	3,699
TOTALS (COST EFFECTIVE MEASURES)			**355,905**	**59.5**	**-54**	**$52,905**	**$138,798**	**$13,362**	**$125,436**	**2.4**	**352,071**
TOTALS (ALL MEASURES)			**365,273**	**60.2**	**-24**	**$54,582**	**$178,811**	**$14,762**	**$164,049**	**3.0**	**365,059**

* - 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).

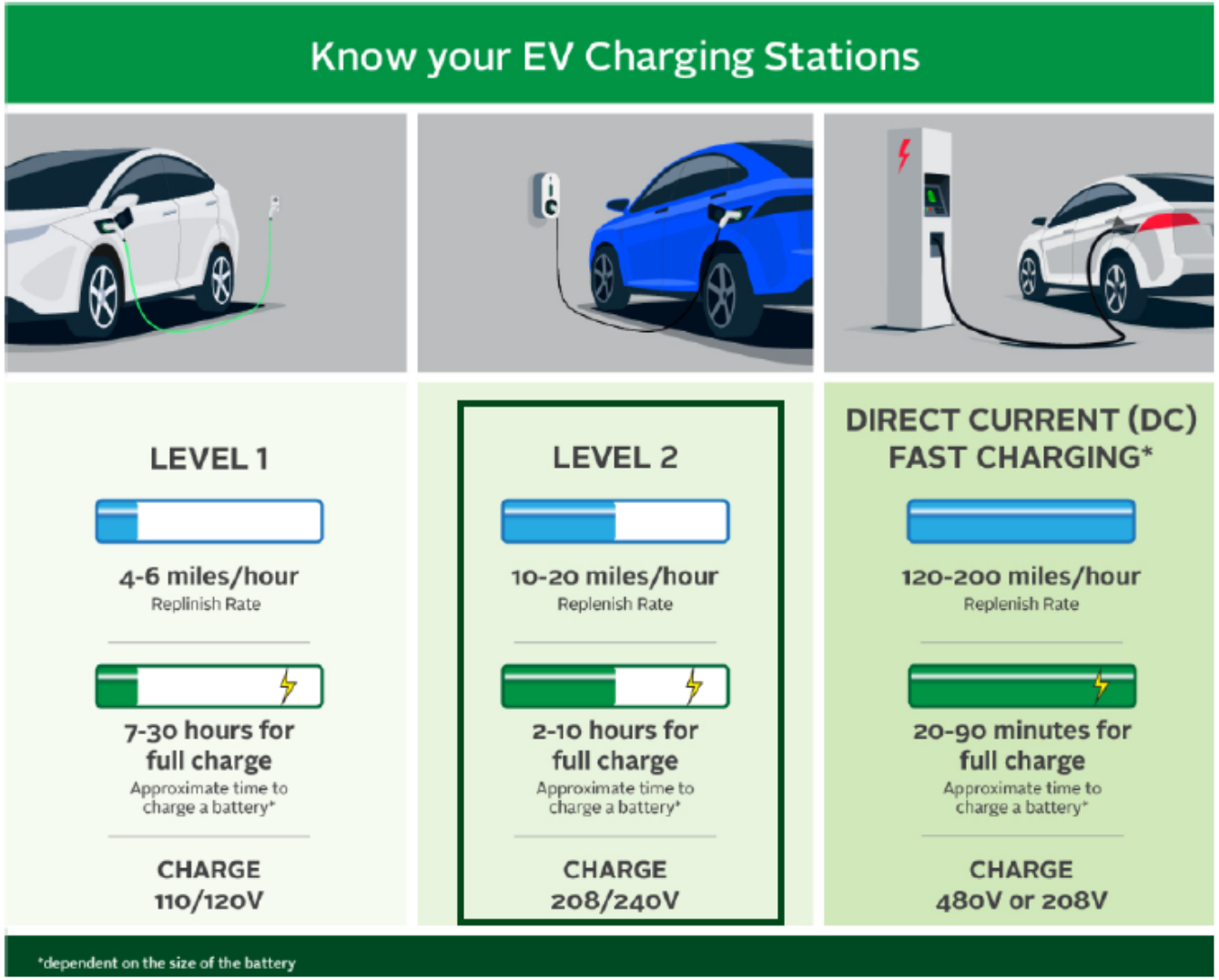
Energy Efficient Best Practices

- 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

EV Charging Station Potential

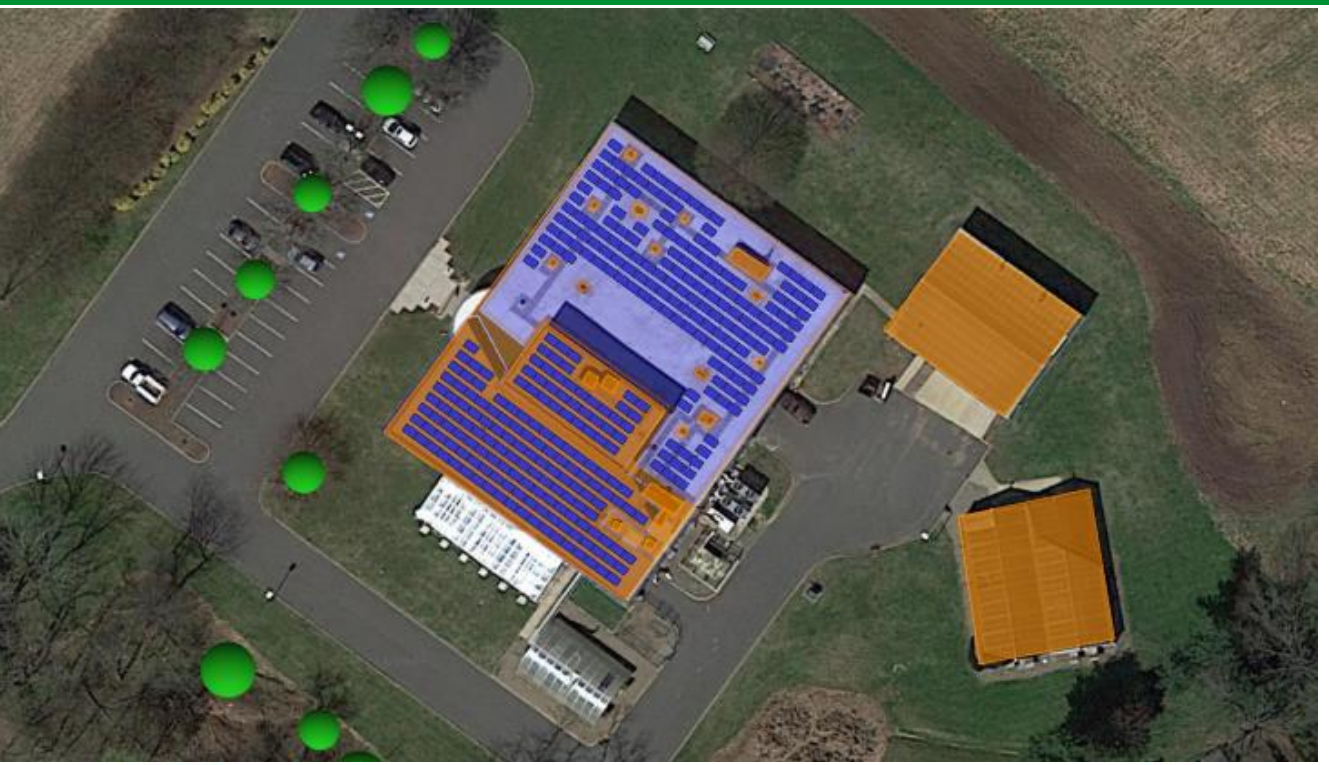
NJCleanEnergy.com/EV



	Bug Lab
Potential:	**Medium**

Solar Energy Generation Potential

NJCleanEnergy.com/renewable-energy



Findings

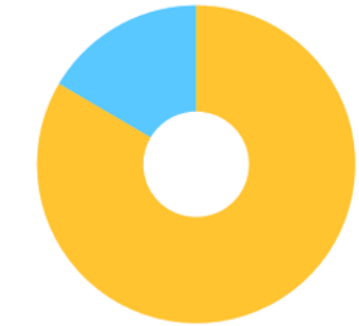
Solar PV Equipment Description
Solar Panels: (319) LG Electronics LG400Q1C-A6
Inverters: (7) Fronius USA Fronius Symo 15.0-3 (480V)

Annual Estimated Generation: 162,530 kWh

Solar PV System Cost: $637,596

Solar PV System Rating
Power Rating: 127,600 W-DC or 125,048 W-AC-CEC

Energy Consumption Mix



2,546

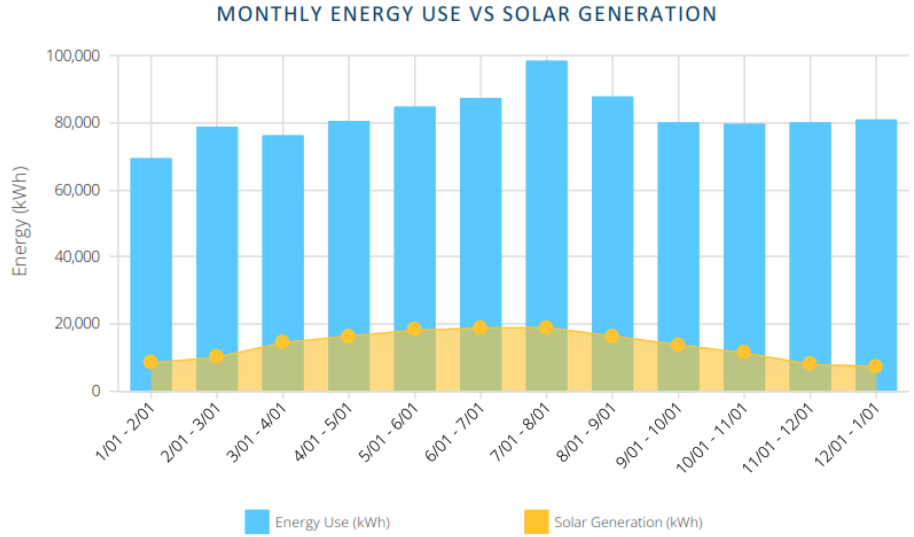
tons of CO2 Offset

5,789,589

Miles Driven By Cars

38,195

Trees Planted



FINANCING MECHANISM: ESIP

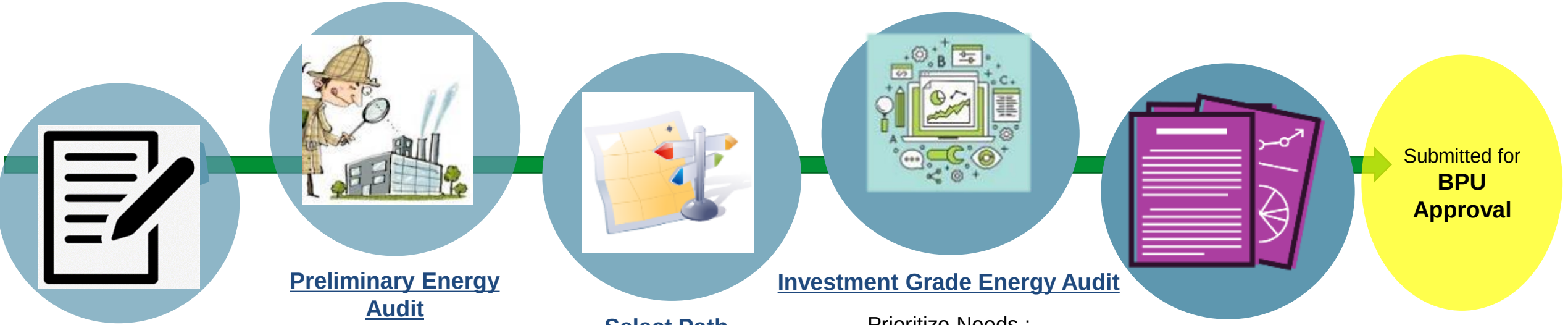
NJCleanEnergy.com/ESIP

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

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**

New Jersey's cleanenergy program™

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

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

PSE&G

David Kirsch - David.Kirsch@pseg.com
Steven Barba - Steven.T.Barba@pseg.com

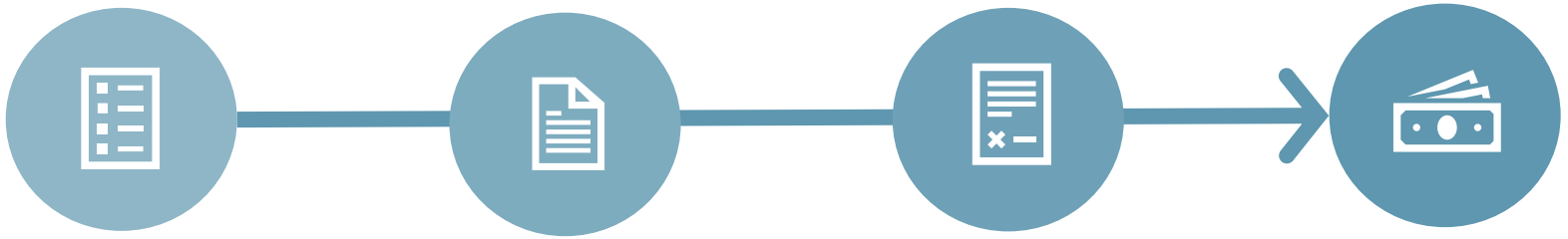
Large Energy Users

NJCleanEnergy.com/LEUP

WHO	Large C&I entities who have paid a minimum of $5,000,000 in the previous 12 months of utility bills
SIZE TO QUALIFY	The average peak demand of all facilities submitted ≥400kW and/or 4,000 DTh
ABOUT	• Encourages large C&I utility customers to self-invest in energy efficiency, combined heat & power, and fuel cell projects • Must have ability to "bank" funds for up to two fiscal years
INCENTIVE CAP	Maximum incentive per entity is the lesser of: • $4 million, • 75% of total project cost, or • 90% of NJCEP contribution or annual energy saving caps ($0.33/kWh and $3.75/therm)

Large Energy Users

NJCleanEnergy.com/LEUP



Program Enrollment

Submission and Approval of Application

Submission of Draft Energy Efficiency Plan

Reservation of Incentives (optional)

Submission of Final Energy Efficiency Plan

Commitment of Incentives

Confirmation of Installation

Incentives Paid

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

Daniel Krasowsky– LGEA Account Manager
DKrasowsky@trccompanies.com
(774) 245-8657

Nicholas Nocco– LGEA Energy Auditor
NNocco@trccompanies.com
(848)-235-4169

THANK YOU