

# *LGEA Presentation NJDEP – 9 Ewing (PAL)*

November 20, 2024



## New Jersey's Clean Energy Program

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

# INTRODUCTIONS

- *NJDEP – 9 Ewing (PAL)*
  - Jeffery MacMullen
  - Laura Petrangeli
  - Jess August
  - Stephen Myers
  - Casey Shaw (BPU)
- *HAVCO*
  - Chris Steward
  - John Chitren
- *NJ Clean Energy Program*
  - Sarah Walters – LGEA Project Manager
  - Moussa Traore – LGEA Technical Manager
  - Nick Nocco– LGEA Project Auditor

# 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 9 Ewing (PAL)

# LGEA PROCESS

- Application Approval
- Initial Call
- Facility Interviews
- Audit
- Benchmarking & Analysis
- Draft Reports
- LGEA Presentation
- Final Reports



# 9 EWING (PAL)

## Overview of Systems, Baseline & Existing Conditions:

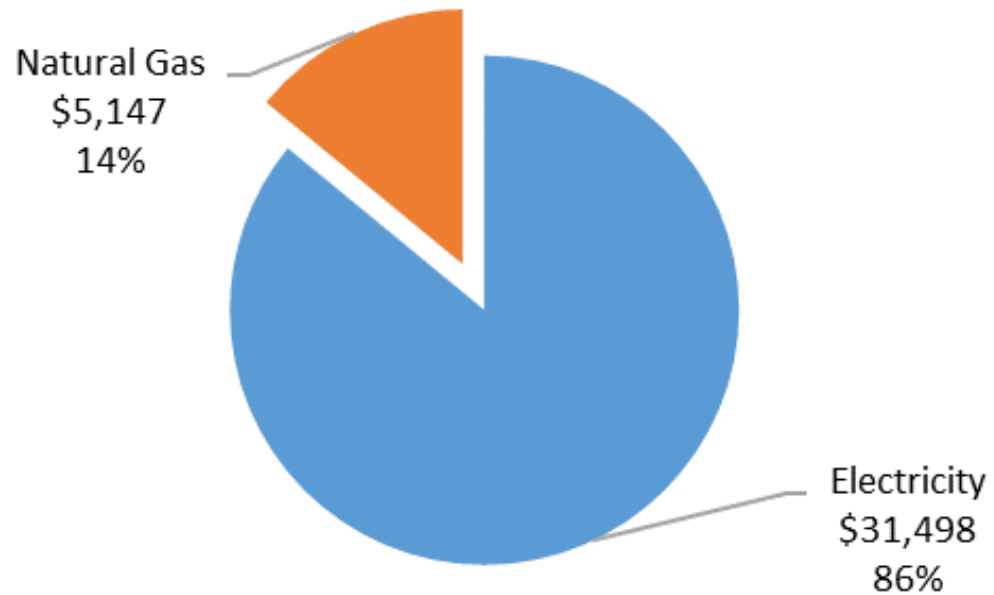
- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment

## Utility Consumption & Costs:

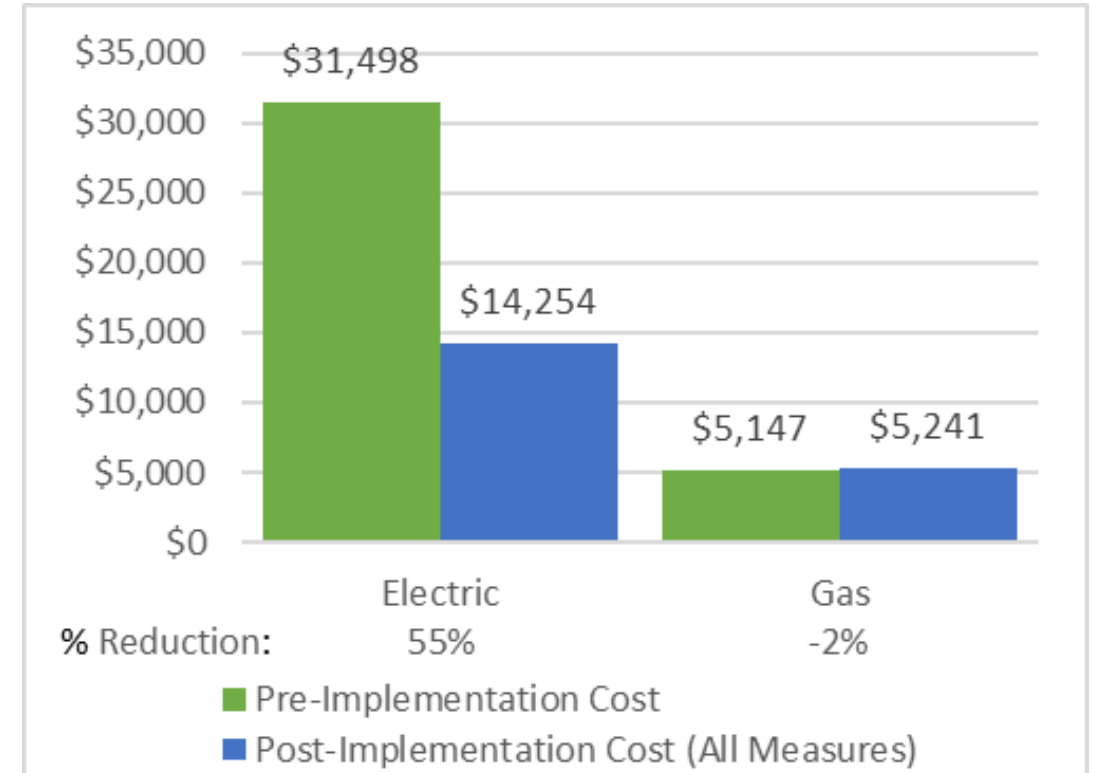
- Electric
- Natural Gas
- Water

# UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



# BENCHMARKING



LEARN MORE AT  
energystar.gov

ENERGY STAR® Statement of Energy Performance

82

ENERGY STAR® Score<sup>1</sup>

DEP - Public Land Administration  
(9 Ewing PAL Building)

Primary Property Type: Office  
Gross Floor Area (ft²): 19,360  
Built: 1910

For Year Ending: June 30, 2024  
Date Generated: October 06, 2024

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

|                                                                                                     |                                                                                                              |                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Property Address</b><br>DEP - Public Land Administration<br>9 Ewing<br>Trenton, New Jersey 08608 | <b>Property Owner</b><br>State of New Jersey<br>428 East State Street<br>Trenton, NJ 08625<br>(609) 940-4129 | <b>Primary Contact</b><br>New Jersey Board of Public Utilities State Energy Services<br>44 South Clinton Ave<br>Trenton, NJ 08625<br>(609) 633-9666<br>BPU.EnergyServices@bpu.nj.gov |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Property ID: 36205153

Energy Consumption and Energy Use Intensity (EUI)

|                                     |                                                                                                                                                             |                                      |                                                                                                             |                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Site EUI</b><br>51.5 kBtu/ft²    | <b>Annual Energy by Fuel</b><br>Electric - Grid (kBtu)<br>Natural Gas (kBtu)                                                                                | 602,097<br>(60%)<br>394,672<br>(40%) | <b>Annual Emissions</b><br>Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)<br>74               |                 |
| <b>Source EUI</b><br>108.5 kBtu/ft² | <b>National Median Comparison</b><br>National Median Site EUI (kBtu/ft²)<br>National Median Source EUI (kBtu/ft²)<br>% Diff from National Median Source EUI | 86<br>181.3<br>-40%                  | <b>Green Power</b><br>Green Power - Onsite (kWh)<br>Green Power - Offsite (kWh)<br>Percent of RECs Retained | N/A<br>0<br>N/A |

Signature & Stamp of Verifying Professional

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

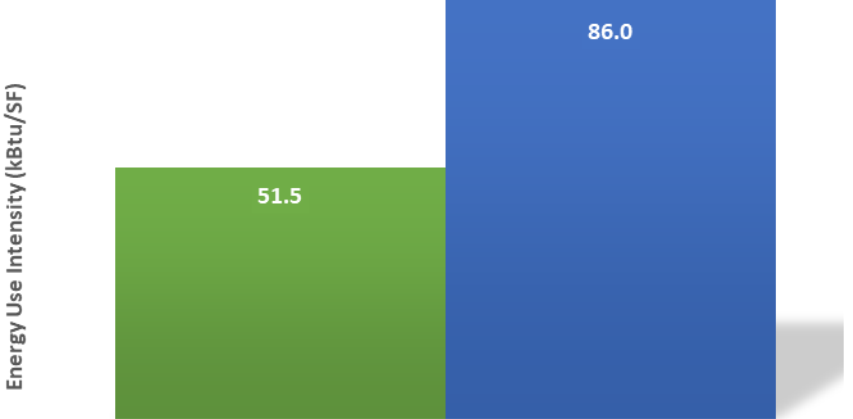
LP Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Licensed Professional

\_\_\_\_\_  
( ) - \_\_\_\_\_

Professional Engineer or Registered Architect Stamp (if applicable)

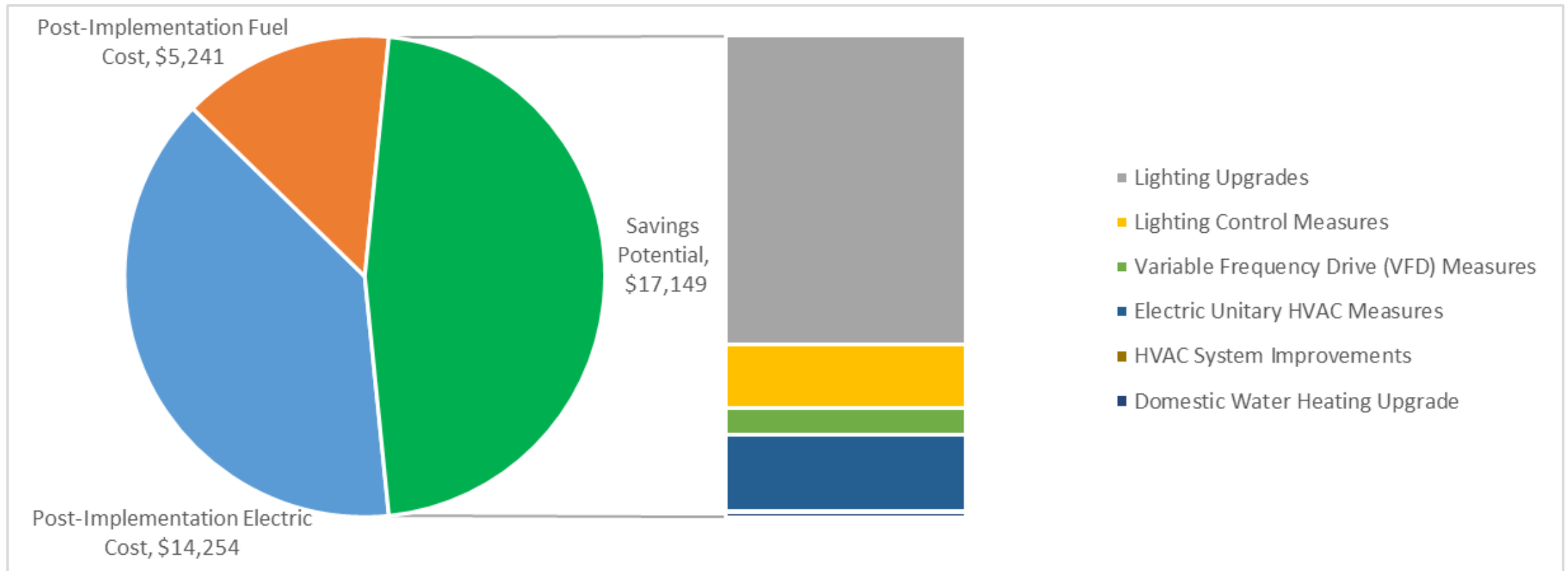
■ Site Energy Use Intensity (kBtu/SF) ■ National Median Energy Use Intensity (kBtu/SF)



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

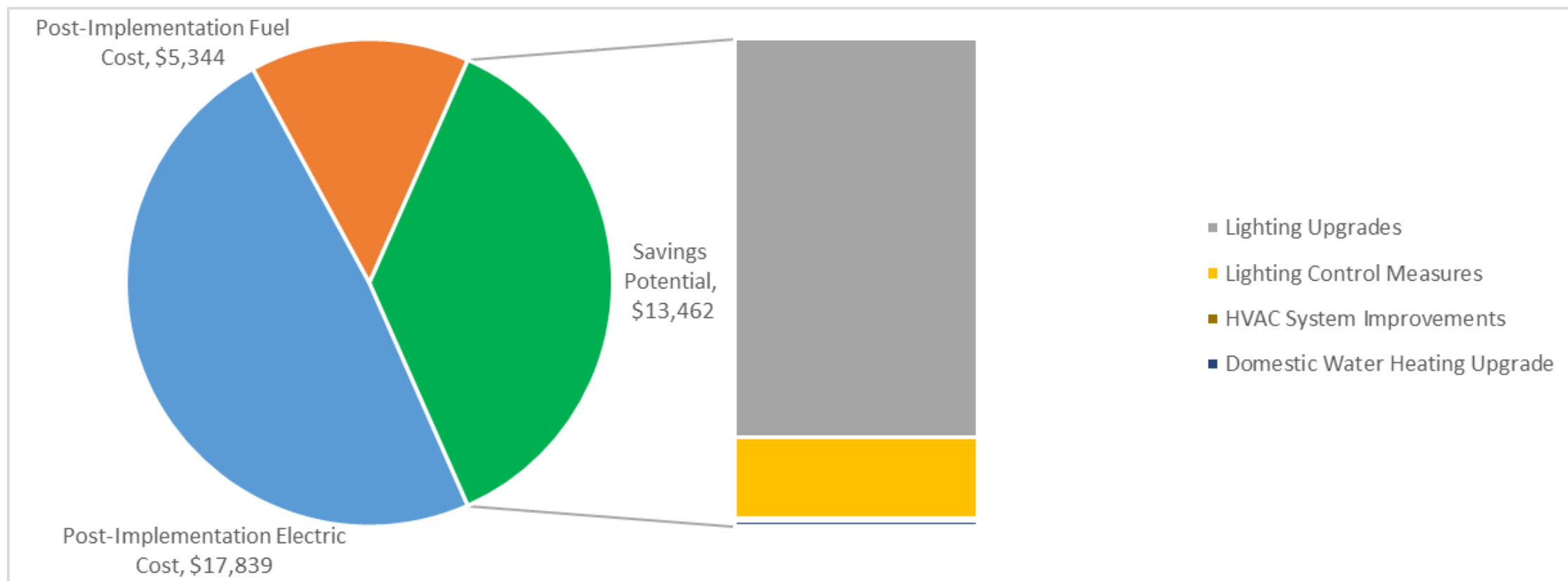
## Savings Potential





# COST EFFECTIVE OPPORTUNITIES

## Savings Potential



# 9 EWING – PAL BUILDING

| #                                              | 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 <sub>2</sub> e Emissions Reduction (lbs) |
|------------------------------------------------|----------------------------------------------------------|-----------------|-------------------------------|--------------------------|-----------------------------|---------------------------------|-------------------------|---------------------------|-----------------------------|-------------------------------|---------------------------------------------|
| <b>Lighting Upgrades</b>                       |                                                          |                 | <b>62,482</b>                 | <b>23.5</b>              | <b>-12</b>                  | <b>\$10,990</b>                 | <b>\$37,430</b>         | <b>\$6,280</b>            | <b>\$31,150</b>             | <b>2.8</b>                    | <b>61,472</b>                               |
| ECM 1                                          | Install LED Fixtures                                     | Yes             | 2,891                         | 0.0                      | 0                           | \$516                           | \$1,710                 | \$300                     | \$1,410                     | 2.7                           | 2,911                                       |
| ECM 2                                          | Retrofit Fluorescent Fixtures with LED Lamps and Drivers | Yes             | 34,179                        | 13.9                     | -7                          | \$6,007                         | \$19,220                | \$2,500                   | \$16,720                    | 2.8                           | 33,581                                      |
| ECM 3                                          | Retrofit Fixtures with LED Lamps                         | Yes             | 25,412                        | 9.6                      | -5                          | \$4,467                         | \$16,500                | \$3,480                   | \$13,020                    | 2.9                           | 24,980                                      |
| <b>Lighting Control Measures</b>               |                                                          |                 | <b>12,865</b>                 | <b>5.0</b>               | <b>-3</b>                   | <b>\$2,261</b>                  | <b>\$12,950</b>         | <b>\$1,800</b>            | <b>\$11,150</b>             | <b>4.9</b>                    | <b>12,640</b>                               |
| ECM 4                                          | Install Occupancy Sensor Lighting Controls               | Yes             | 12,143                        | 4.8                      | -3                          | \$2,134                         | \$10,710                | \$970                     | \$9,740                     | 4.6                           | 11,931                                      |
| ECM 5                                          | Install High/Low Lighting Controls                       | Yes             | 722                           | 0.2                      | 0                           | \$127                           | \$2,240                 | \$830                     | \$1,410                     | 11.1                          | 709                                         |
| <b>Variable Frequency Drive (VFD) Measures</b> |                                                          |                 | <b>5,345</b>                  | <b>2.0</b>               | <b>0</b>                    | <b>\$954</b>                    | <b>\$33,100</b>         | <b>\$700</b>              | <b>\$32,400</b>             | <b>34.0</b>                   | <b>5,382</b>                                |
| ECM 6                                          | Install VFDs on Constant Volume (CV) Fans                | No              | 5,345                         | 2.0                      | 0                           | \$954                           | \$33,100                | \$700                     | \$32,400                    | 34.0                          | 5,382                                       |
| <b>Unitary HVAC Measures</b>                   |                                                          |                 | <b>14,741</b>                 | <b>14.7</b>              | <b>8</b>                    | <b>\$2,733</b>                  | <b>\$117,800</b>        | <b>\$4,400</b>            | <b>\$113,400</b>            | <b>41.5</b>                   | <b>15,762</b>                               |
| ECM 7                                          | Install High Efficiency Air Conditioning Units           | No              | 14,741                        | 14.7                     | 8                           | \$2,733                         | \$117,800               | \$4,400                   | \$113,400                   | 41.5                          | 15,762                                      |
| <b>HVAC System Improvements</b>                |                                                          |                 | <b>281</b>                    | <b>0.0</b>               | <b>0</b>                    | <b>\$50</b>                     | <b>\$140</b>            | <b>\$10</b>               | <b>\$130</b>                | <b>2.6</b>                    | <b>283</b>                                  |
| ECM 8                                          | Install Pipe Insulation                                  | Yes             | 281                           | 0.0                      | 0                           | \$50                            | \$140                   | \$10                      | \$130                       | 2.6                           | 283                                         |
| <b>Domestic Water Heating Upgrade</b>          |                                                          |                 | <b>900</b>                    | <b>0.0</b>               | <b>0</b>                    | <b>\$161</b>                    | <b>\$90</b>             | <b>\$40</b>               | <b>\$50</b>                 | <b>0.3</b>                    | <b>906</b>                                  |
| ECM 9                                          | Install Low-Flow DHW Devices                             | Yes             | 900                           | 0.0                      | 0                           | \$161                           | \$90                    | \$40                      | \$50                        | 0.3                           | 906                                         |
| <b>TOTALS (COST EFFECTIVE MEASURES)</b>        |                                                          |                 | <b>76,527</b>                 | <b>28.4</b>              | <b>-15</b>                  | <b>\$13,462</b>                 | <b>\$50,610</b>         | <b>\$8,130</b>            | <b>\$42,480</b>             | <b>3.2</b>                    | <b>75,300</b>                               |
| <b>TOTALS (ALL MEASURES)</b>                   |                                                          |                 | <b>96,613</b>                 | <b>45.1</b>              | <b>-7</b>                   | <b>\$17,149</b>                 | <b>\$201,510</b>        | <b>\$13,230</b>           | <b>\$188,280</b>            | <b>11.0</b>                   | <b>96,445</b>                               |

\* - 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

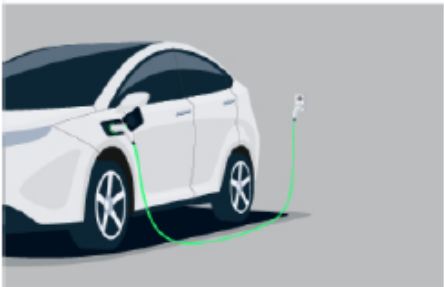
- Installation of a Building Automation System (BMS)



# EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV

## Know your EV Charging Stations



### LEVEL 1



4-6 miles/hour  
Replenish Rate



7-30 hours for  
full charge

Approximate time to  
charge a battery\*

**CHARGE**  
110/120V

### LEVEL 2



10-20 miles/hour  
Replenish Rate



2-10 hours for  
full charge

Approximate time to  
charge a battery\*

**CHARGE**  
208/240V

### DIRECT CURRENT (DC) FAST CHARGING\*



120-200 miles/hour  
Replenish Rate



20-90 minutes for  
full charge

Approximate time to  
charge a battery\*

**CHARGE**  
480V or 208V

\*dependent on the size of the battery

9 Ewing

Potential:

Medium



# FINANCING MECHANISM: ESIP

[NJCleanEnergy.com/ESIP](http://NJCleanEnergy.com/ESIP)

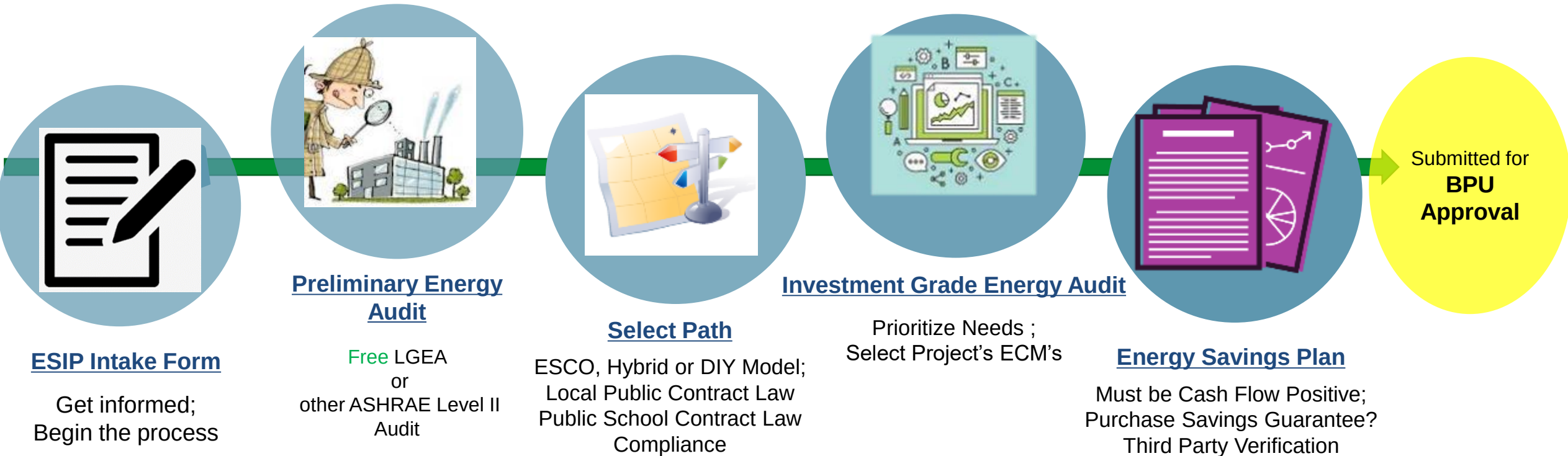
## ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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](http://NJCleanEnergy.com/ESIP)

## FOR MORE INFORMATION

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ESIP Coordinator

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# 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

## PSE&G

Dave Kirsch – [David.Kirsch@pseg.com](mailto:David.Kirsch@pseg.com)

Steve Barba – [Steven.T.Barba@pseg.com](mailto:Steven.T.Barba@pseg.com)

# FOR MORE INFORMATION

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THANK YOU

