

LGEA Presentation

Mansfield Elementary School

July 24, 2023

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future



INTRODUCTIONS

- *Mansfield Elementary School*
 - Paul DeAngelo – Business Administrator
 - Joseph Kady – Facility Manager
- *NJ Clean Energy Program*
 - Sarah Walters – LGEA Project Manager
 - Moussa Traore – LGEA Technical Manager
 - Ryan Knippenberg – LGEA Project Auditor
 - Amanda Muench – LGEA Account Manager

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 Mansfield Elementary School

LGEA PROCESS

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



MANSFIELD ELEMENTARY SCHOOL

Overview of Systems, Baseline & Existing Conditions:

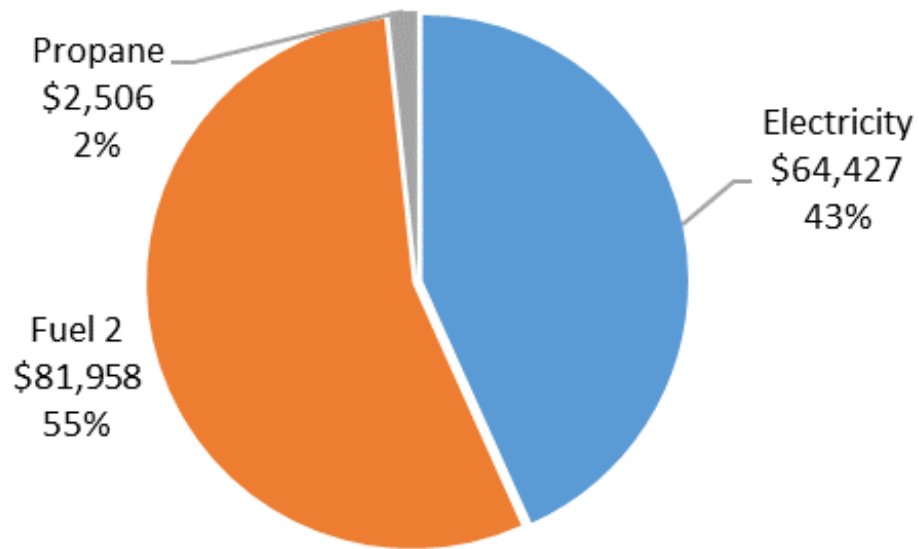
- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Food Service Equipment

Utility Consumption:

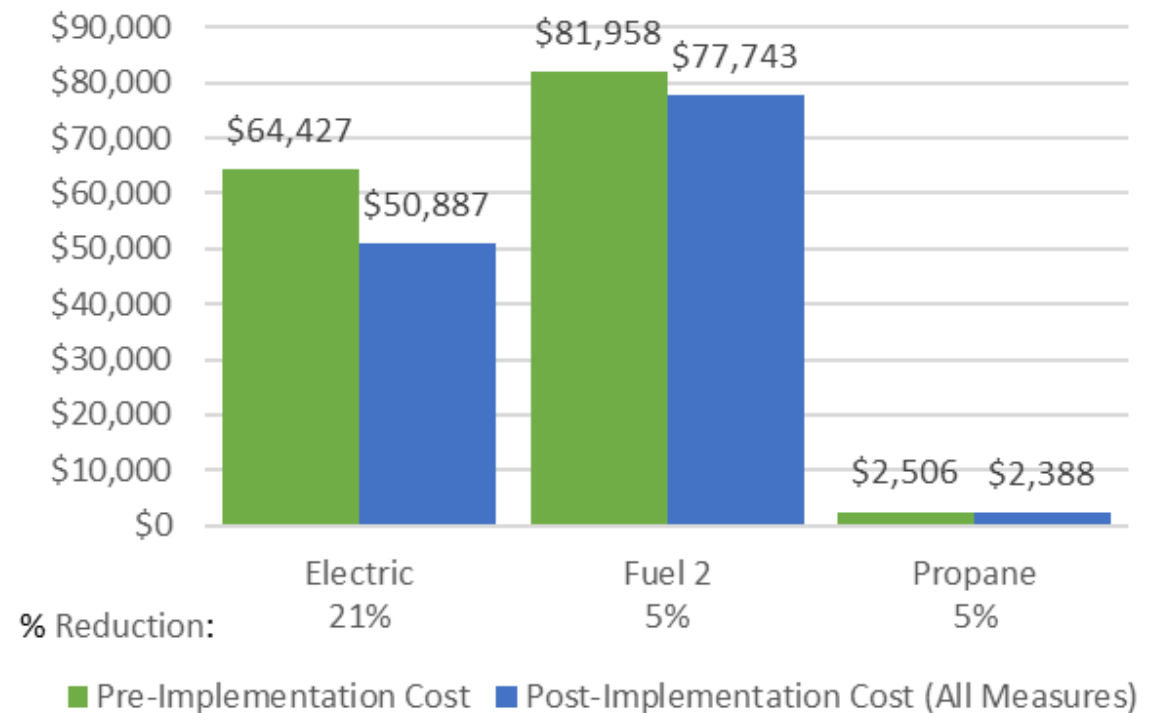
- Electric Consumption and Costs
- Fuel Oil and Propane Consumption and Costs

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

**ENERGY STAR®** Statement of Energy Performance

71

ENERGY STAR® Score¹

Mansfield Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 93,515
Built: 1963

For Year Ending: November 30, 2022
Date Generated: June 05, 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 Mansfield Elementary School 50 Port Murray Road Port Murray, New Jersey 07865	Property Owner Mansfield School District 50 Port Murray Road Port Murray, NJ 07865 (908) 689-3212	Primary Contact Paul Deangelo 50 Port Murray Road Port Murray, NJ 07865 (908) 689-3212 x 1185 deangelo@mansfieldsd.org
Property ID: 25789337		

Energy Consumption and Energy Use Intensity (EUI)		
Site EUI 58.7 kBtu/ft²	Annual Energy by Fuel Propane (kbtu) 37,324 (1%) Fuel Oil (No. 2) (kbtu) 3,661,444 (67%) Electric - Grid (kbtu) 1,785,949 (33%)	National Median Comparison National Median Site EUI (kBtu/ft²) 72.3 National Median Source EUI (kBtu/ft²) 115.2 % Diff from National Median Source EUI -19%
Source EUI 93.4 kBtu/ft²	Annual GHG Emissions Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) 430	

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
58.7 kBtu/ft²

Source EUI
93.4 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	72.3
National Median Source EUI (kBtu/ft²)	115.2
% Diff from National Median Source EUI	-19%

■ Site Energy Use Intensity (kBtu/SF)

■ National Median Energy Use Intensity (kBtu/SF)

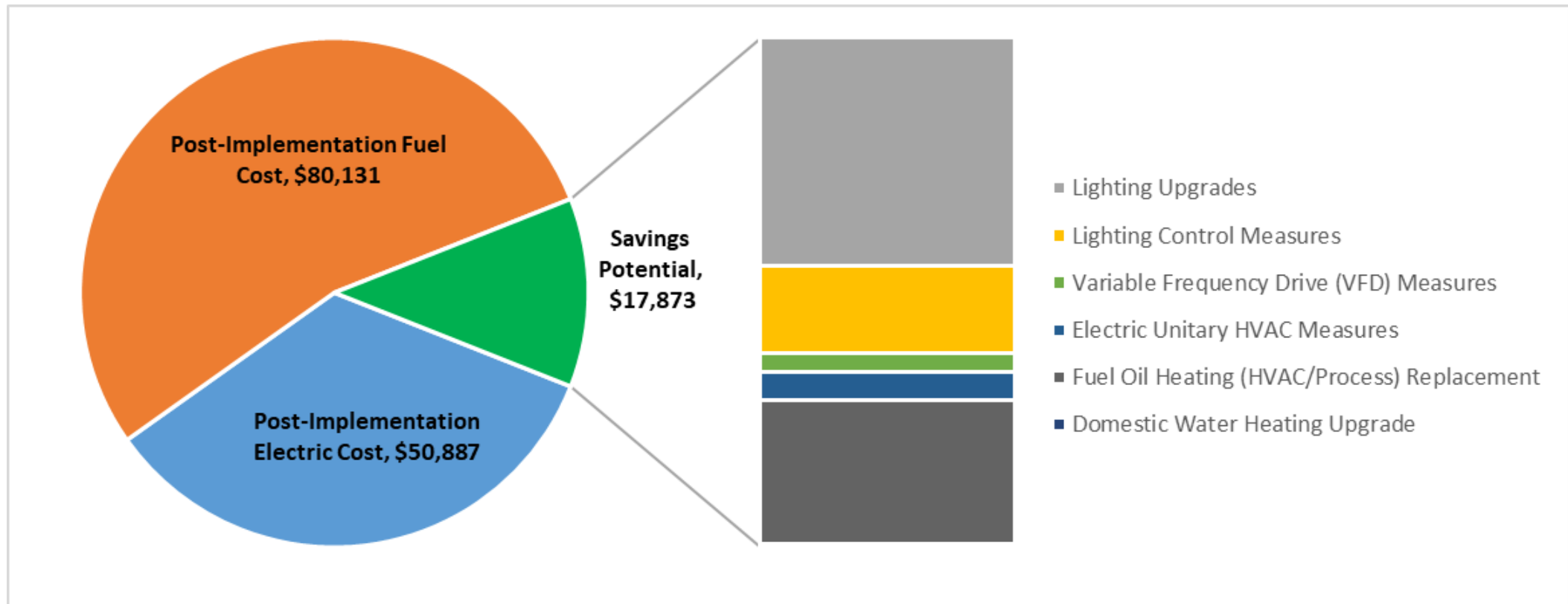
Energy Use Intensity (kBtu/SF)



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.

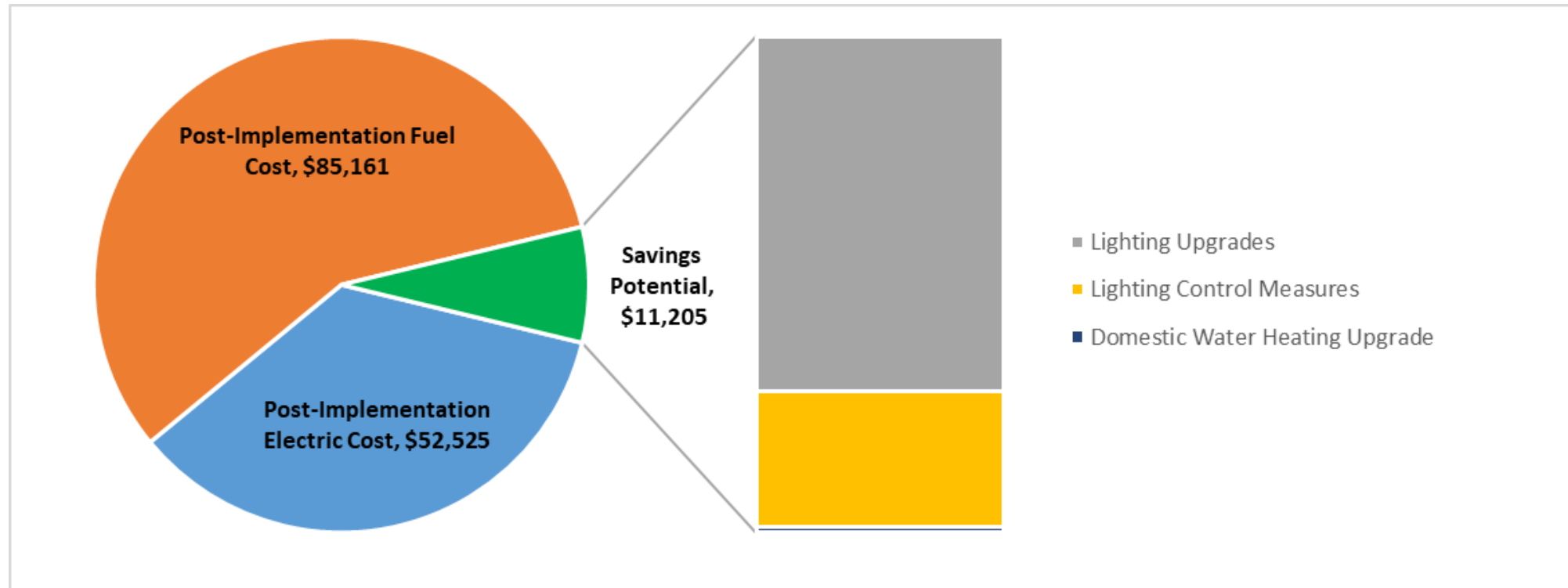
ALL OPPORTUNITIES

Savings Potential



COST EFFECTIVE OPPORTUNITIES

Savings Potential



MANSFIELD ELEMENTARY 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			69,917	17.8	-25	\$8,015	\$45,320	\$8,591	\$36,729	4.6	66,278
ECM 1	Install LED Fixtures	Yes	7,643	0.0	0	\$938	\$4,147	\$550	\$3,597	3.8	7,697
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	6,768	2.1	-3	\$767	\$5,070	\$505	\$4,565	6.0	6,352
ECM 3	Retrofit Fixtures with LED Lamps	Yes	55,506	15.7	-22	\$6,310	\$36,103	\$7,536	\$28,567	4.5	52,230
Lighting Control Measures			27,101	7.6	-11	\$3,072	\$38,133	\$8,815	\$29,318	9.5	25,436
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	21,733	6.3	-9	\$2,464	\$32,058	\$4,080	\$27,978	11.4	20,398
ECM 5	Install High/Low Lighting Controls	Yes	5,367	1.3	-2	\$608	\$6,075	\$4,735	\$1,340	2.2	5,038
Variable Frequency Drive (VFD) Measures			5,313	1.7	0	\$652	\$9,110	\$400	\$8,710	13.4	5,350
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	5,313	1.7	0	\$652	\$9,110	\$400	\$8,710	13.4	5,350
Unitary HVAC Measures			8,041	10.1	0	\$986	\$56,382	\$2,163	\$54,219	55.0	8,097
ECM 7	Install High Efficiency Air Conditioning Units	No	6,734	8.4	0	\$826	\$47,105	\$2,163	\$44,942	54.4	6,781
ECM 8	Install High Efficiency Heat Pumps	No	1,307	1.6	0	\$160	\$9,277	\$0	\$9,277	57.9	1,316
Fuel Oil Heating (HVAC/Process) Replacement			0	0.0	226	\$5,030	\$128,073	\$7,150	\$120,923	24.0	36,922
ECM 9	Install High Efficiency Hot Water Boilers	No	0	0.0	226	\$5,030	\$128,073	\$7,150	\$120,923	24.0	36,922
Domestic Water Heating Upgrade			0	0.0	2	\$118	\$153	\$10	\$143	1.2	247
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$118	\$153	\$10	\$143	1.2	247
TOTALS (COST EFFECTIVE MEASURES)			97,017	25.4	-35	\$11,205	\$83,606	\$17,416	\$66,190	5.9	91,961
TOTALS (ALL MEASURES)			110,371	37.2	191	\$17,873	\$277,171	\$27,128	\$250,042	14.0	142,330

* - 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

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

Mansfield Elementary School

Potential:

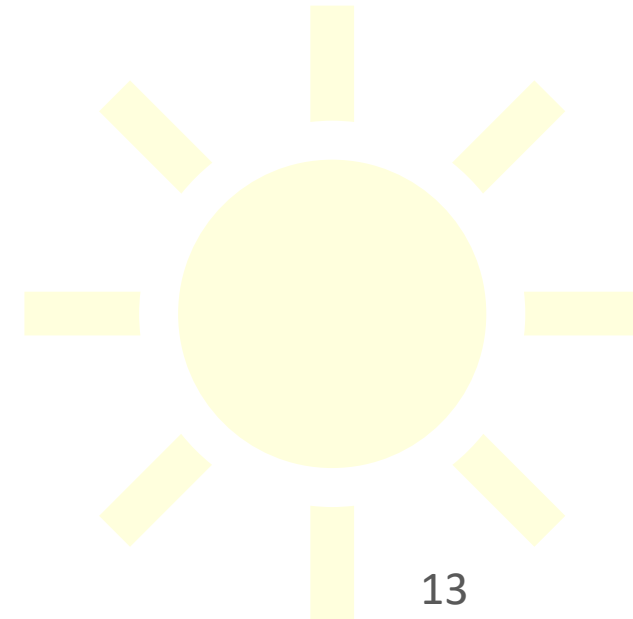
Medium



SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Mansfield ES
<i>Potential:</i>	HIGH
<i>System Potential: (kW)</i>	150
<i>Electric Generation: (kWh per year)</i>	178,705
<i>Displaced Cost: (per year)</i>	\$21,920



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

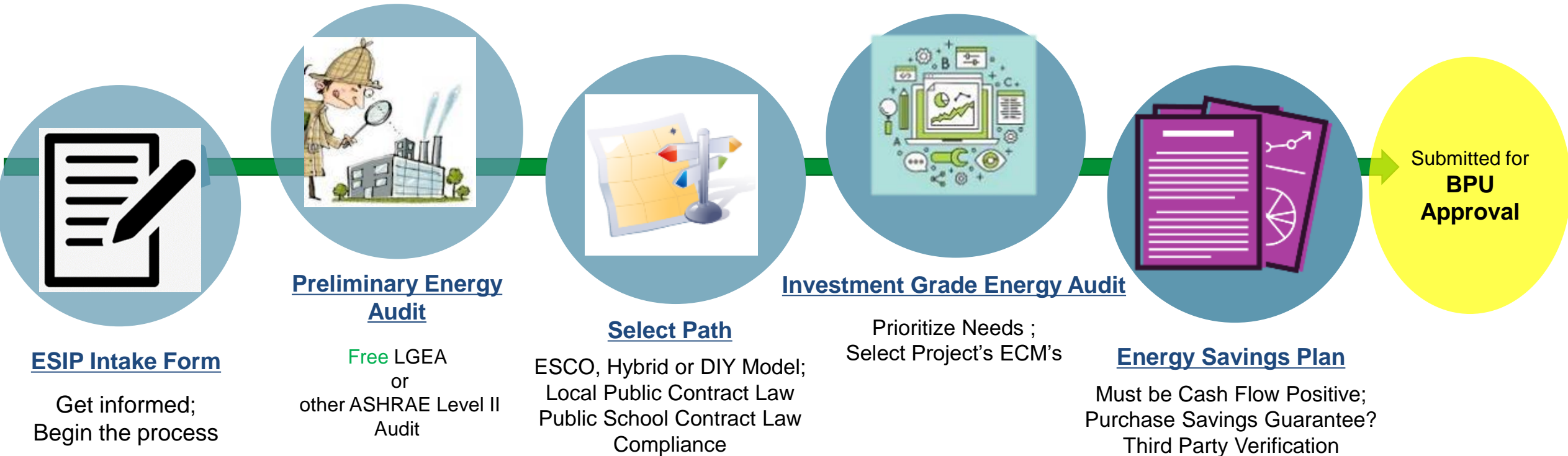
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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

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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

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

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THANK YOU

