



LGEA Presentation

Monmouth Regional High School

May 16, 2023



New Jersey's Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- *Monmouth Regional High School*

- Maria Parry
- Frank Reinecke
- Jackey Roach

- *NJ Clean Energy Program*

- Sarah Walters – LGEA Project Manager
- Moussa Traore – LGEA Lead Auditor
- Ryan Knippenberg – LGEA Project Auditor

- *Utility Energy Efficiency Programs*

- John Sousa – JCP&L (TRC)
- Michael Mandzik – NJNG

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 Monmouth Regional High School

LGEA PROCESS

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



MONMOUTH REGIONAL HIGH SCHOOL

Overview of Systems, Baseline & Existing Conditions:

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

Utility Consumption:

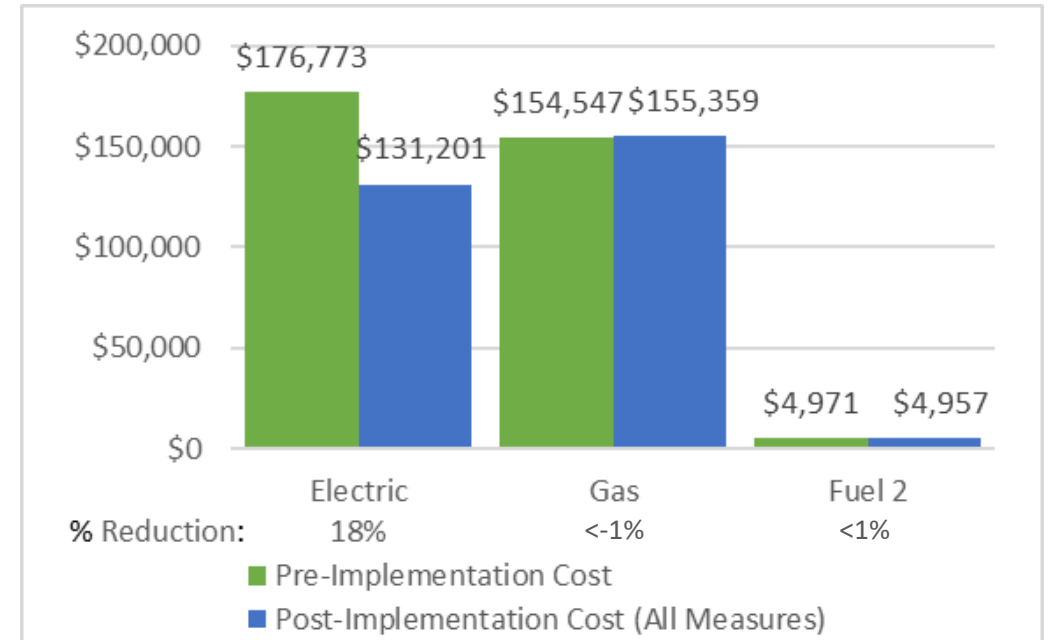
- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Fuel Oil #2 Consumption and Costs
- Solar Consumption

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

**ENERGY STAR® Statement of Energy Performance**
LEARN MORE AT energystar.gov

62
ENERGY STAR® Score¹

Monmouth Regional High School (campus)
Primary Property Type: K-12 School
Gross Floor Area (ft²): 222,130
Built: 1960
For Year Ending: September 30, 2022
Date Generated: April 04, 2023

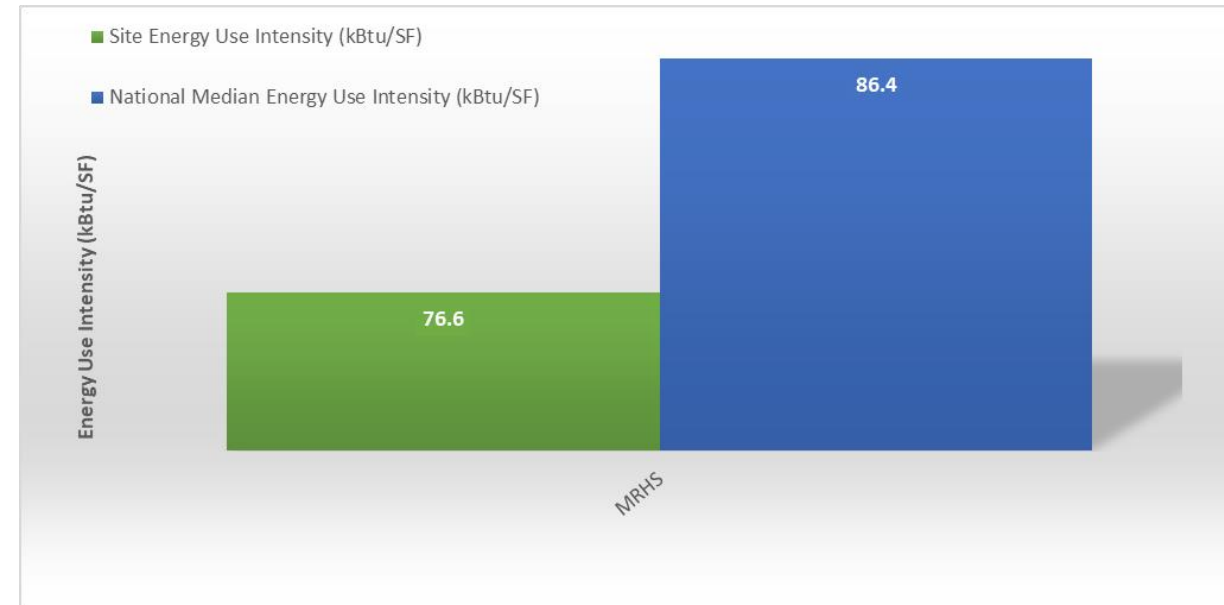
1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information																
Property Address Monmouth Regional High School (campus) 1 Norman Field Way Tinton Falls, New Jersey 07724	Property Owner Monmouth Regional High School District 1 Norman Field Way Tinton Falls, NJ 07724 (732) 542-1170	Primary Contact Maria Parry 1 Norman Field Way Tinton Falls, NJ 07724 (732) 542-1170 x 1106 mparry@monmouthregional.net														
Property ID: 5836496																
Energy Consumption and Energy Use Intensity (EUI)																
Site EUI 76.6 kBtu/ft²	Annual Energy by Fuel <table><tr><td>Electric - Grid (kBtu)</td><td>4,664,885 (27%)</td></tr><tr><td>Electric - Solar (kBtu)</td><td>2,105,518 (12%)</td></tr><tr><td>Natural Gas (kBtu)</td><td>10,077,942 (59%)</td></tr><tr><td>Fuel Oil (No. 2) (kBtu)</td><td>168,277 (1%)</td></tr></table>	Electric - Grid (kBtu)	4,664,885 (27%)	Electric - Solar (kBtu)	2,105,518 (12%)	Natural Gas (kBtu)	10,077,942 (59%)	Fuel Oil (No. 2) (kBtu)	168,277 (1%)	National Median Comparison <table><tr><td>National Median Site EUI (kBtu/ft²)</td><td>86.4</td></tr><tr><td>National Median Source EUI (kBtu/ft²)</td><td>131.5</td></tr><tr><td>% Diff from National Median Source EUI</td><td>-11%</td></tr></table>	National Median Site EUI (kBtu/ft²)	86.4	National Median Source EUI (kBtu/ft²)	131.5	% Diff from National Median Source EUI	-11%
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Source EUI 116.7 kBtu/ft²	Annual Emissions <table><tr><td>Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)</td><td>1,138</td></tr></table>	Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	1,138													
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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
76.6 kBtu/ft²

Source EUI
116.7 kBtu/ft²

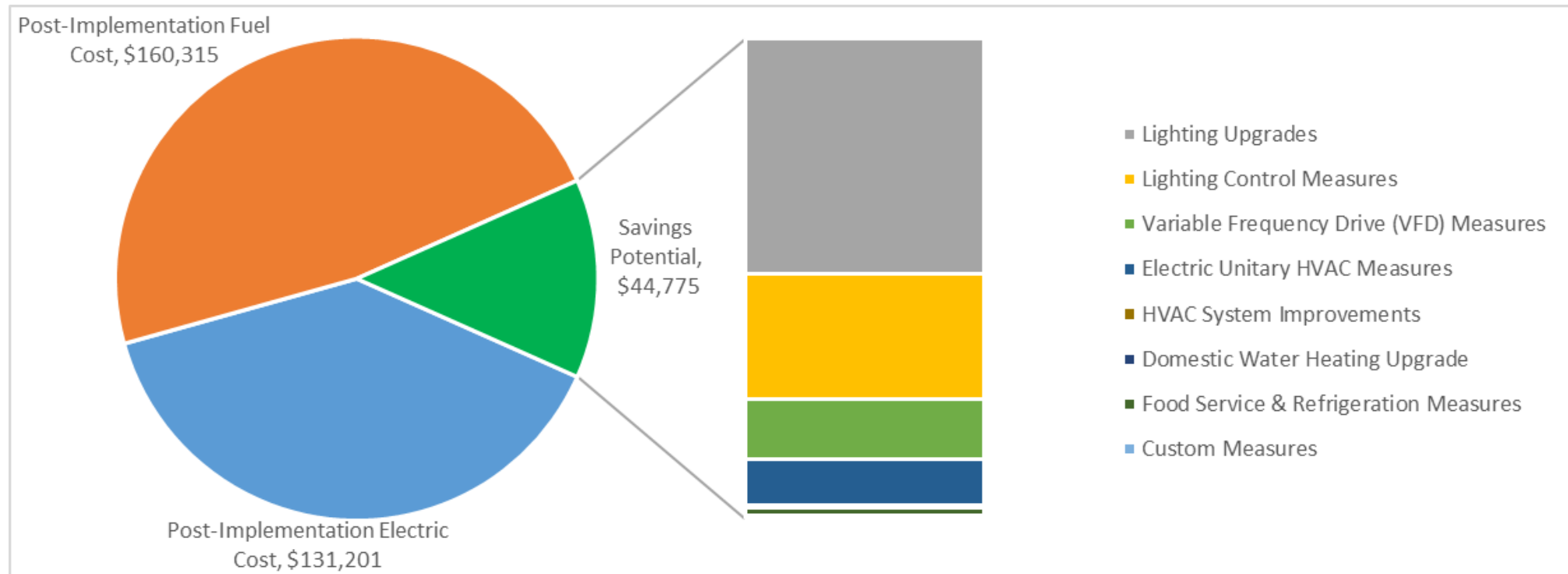
National Median Comparison

National Median Site EUI (kBtu/ft²)	86.4
National Median Source EUI (kBtu/ft²)	131.5
% Diff from National Median Source EUI	-11%

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.

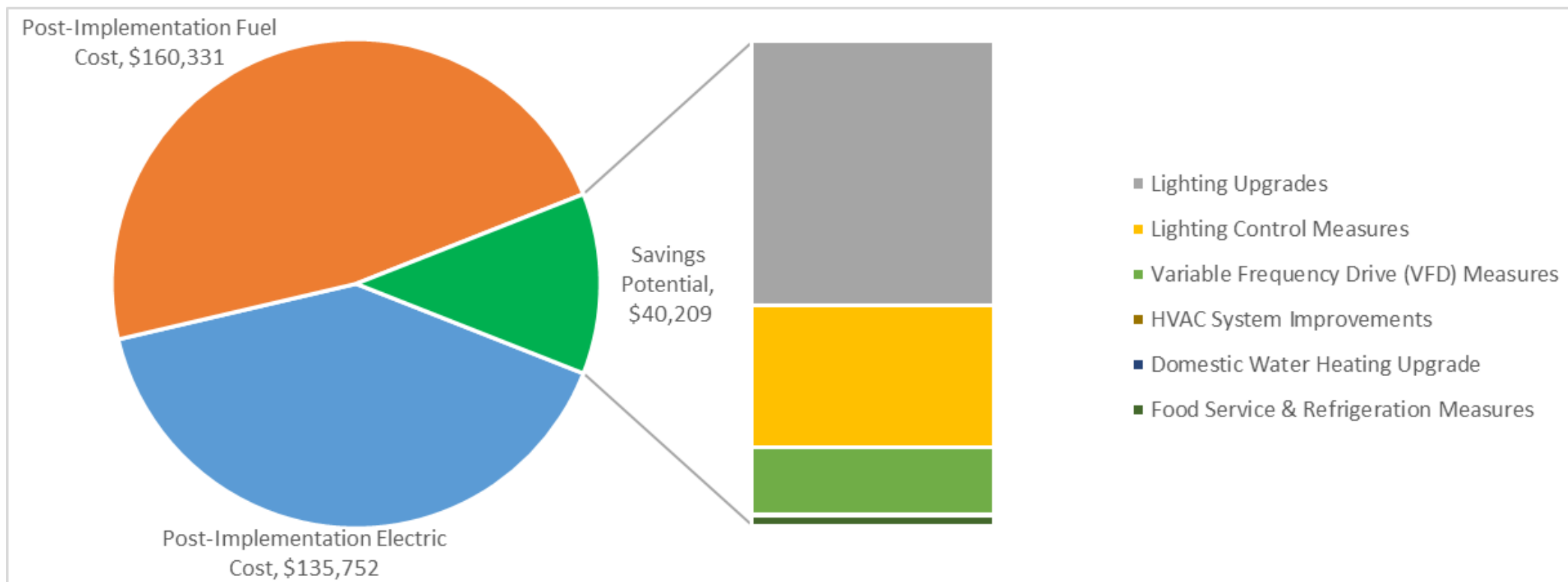
ALL OPPORTUNITIES

Savings Potential



COST EFFECTIVE OPPORTUNITIES

Savings Potential



MONMOUTH 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			173,899	31.0	-28	\$21,899	\$75,814	\$15,363	\$60,451	2.8	171,840
ECM 1	Install LED Fixtures	Yes	40,058	0.1	0	\$5,141	\$18,837	\$2,900	\$15,937	3.1	40,329
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	11,388	2.7	-2	\$1,426	\$4,412	\$618	\$3,794	2.7	11,189
ECM 3	Retrofit Fixtures with LED Lamps	Yes	122,453	28.3	-26	\$15,332	\$52,565	\$11,845	\$40,720	2.7	120,322
Lighting Control Measures			94,034	18.7	-20	\$11,773	\$75,109	\$19,620	\$55,489	4.7	92,390
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	79,896	16.5	-17	\$10,003	\$60,034	\$7,755	\$52,279	5.2	78,499
ECM 5	Install High/Low Lighting Controls	Yes	14,138	2.2	-3	\$1,770	\$15,075	\$11,865	\$3,210	1.8	13,891
Variable Frequency Drive (VFD) Measures			43,249	13.0	0	\$5,551	\$29,267	\$4,500	\$24,767	4.5	43,551
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	43,249	13.0	0	\$5,551	\$29,267	\$4,500	\$24,767	4.5	43,551
Unitary HVAC Measures			33,646	22.7	0	\$4,329	\$140,400	\$7,449	\$132,951	30.7	33,937
ECM 7	Install High Efficiency Air Conditioning Units	No	33,332	22.2	0	\$4,288	\$137,762	\$7,449	\$130,313	30.4	33,621
ECM 8	Install High Efficiency Heat Pumps	No	313	0.4	0	\$40	\$2,638	\$0	\$2,638	65.6	315
HVAC System Improvements			308	0.0	0	\$40	\$95	\$16	\$79	2.0	310
ECM 9	Install Pipe Insulation	Yes	308	0.0	0	\$40	\$95	\$16	\$79	2.0	310
Domestic Water Heating Upgrade			0	0.0	11	\$162	\$275	\$74	\$201	1.2	1,253
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	11	\$162	\$275	\$74	\$201	1.2	1,253
Food Service & Refrigeration Measures			6,113	0.6	0	\$785	\$3,053	\$260	\$2,793	3.6	6,156
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,640	0.1	0	\$211	\$1,213	\$160	\$1,053	5.0	1,652
ECM 12	Vending Machine Control	Yes	4,473	0.5	0	\$574	\$1,840	\$100	\$1,740	3.0	4,504
Custom Measures			1,846	0.0	0	\$237	\$4,140	\$0	\$4,140	17.5	1,859
ECM 13	Replace Electric Water Heater with Heat Pump Water Heater	No	1,846	0.0	0	\$237	\$4,140	\$0	\$4,140	17.5	1,859
TOTALS (COST EFFECTIVE MEASURES)			317,602	63.3	-37	\$40,209	\$183,613	\$39,833	\$143,781	3.6	315,500
TOTALS (ALL MEASURES)			353,094	86.0	-37	\$44,775	\$328,153	\$47,282	\$280,871	6.3	351,295

* - 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

Monmouth Regional High School

Potential:

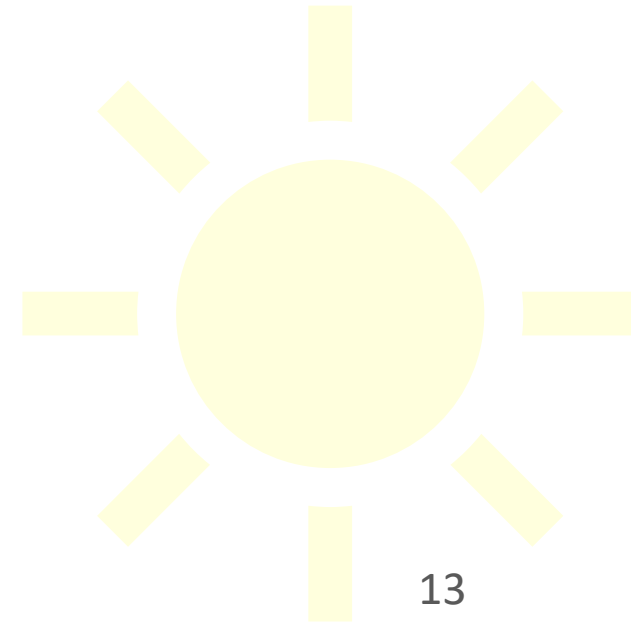
Medium



SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	MRHS
<i>Potential:</i>	MEDIUM
<i>System Potential: (kW)</i>	453
<i>Electric Generation: (kWh per year)</i>	539,691
<i>Displaced Cost: (per year)</i>	\$69,270



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

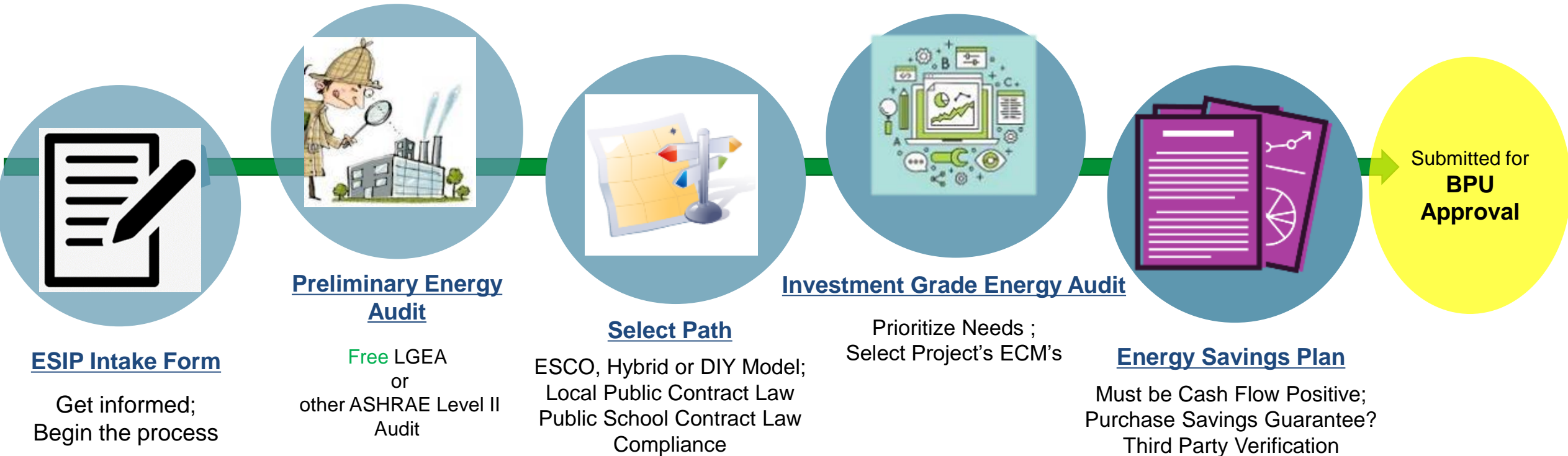
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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

