


LGEA Presentation

Bernardsville Public Library

January 18, 2024



New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- *Bernardsville Public Library*
 - Joanna Askey – Capital Project Coordinator
 - Laura Cole – Facilities Manager
 - Fran Daley – Director
 - Nancy Verduin – Library Trustee
 - Norm Luik - Handyman
- *NJ Clean Energy Program*
 - Sarah Walters – LGEA Project Manager
 - Moussa Traore – LGEA Technical Manager
 - Juno Romanick – LGEA Project Auditor
 - Melissa Lott – LGEA Account Manager
- *JCP&L Utility Representatives*
 - John Sousa
 - Gary Joshua
 - Andrew Doss

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 Bernardsville Public Library

LGEA PROCESS

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



BERNARDSVILLE PUBLIC LIBRARY

Overview of Systems, Baseline & Existing Conditions:

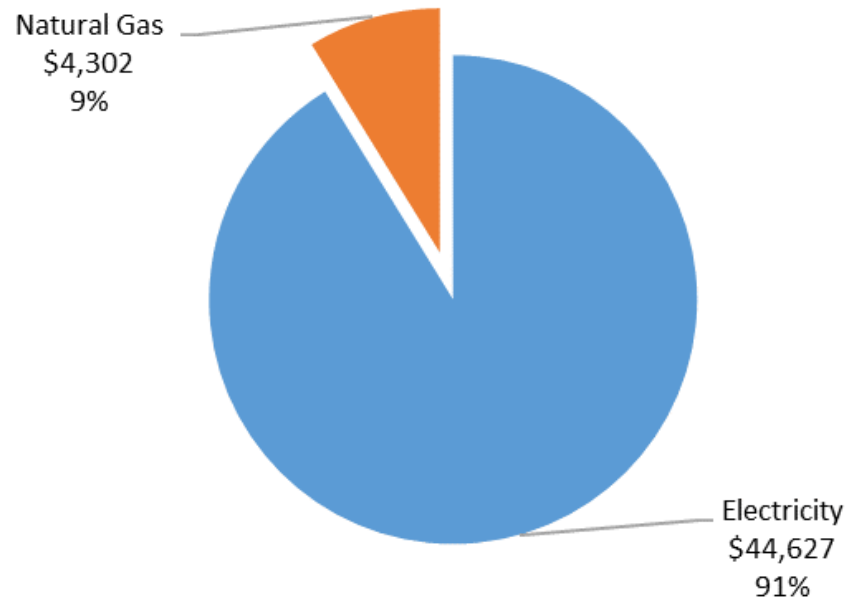
- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- BAS

Utility Consumption:

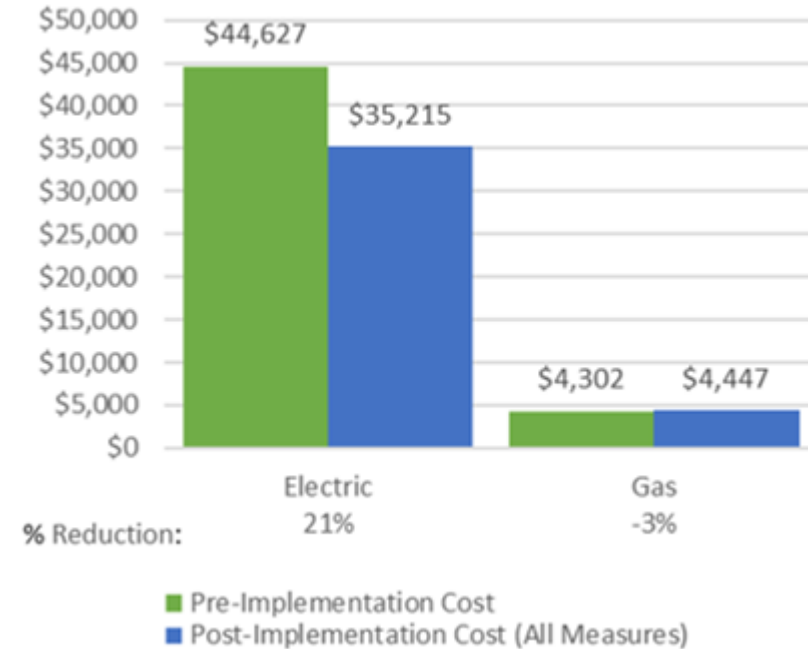
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

ENERGY STAR® Statement of Energy Performance

Bernardsville Public Library

N/A

Primary Property Type: Library
Gross Floor Area (ft²): 17,100
Built: 1998

For Year Ending: April 30, 2023
Date Generated: November 02, 2023

ENERGY STAR® Score¹

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 Bernardsville Public Library 1 Anderson Hill Road Bernardsville, New Jersey 07924	Property Owner Bernardsville Public Library 1 Anderson Hill Road Bernardsville, NJ 07924 (908) 766-0118	Primary Contact Joanna Askey 1 Anderson Hill Road Bernardsville, NJ 07924 (908) 766-0118 ext. 15 jaskey@bernardsvillelibrary.org
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Property ID: 28511278

Energy Consumption and Energy Use Intensity (EUI)

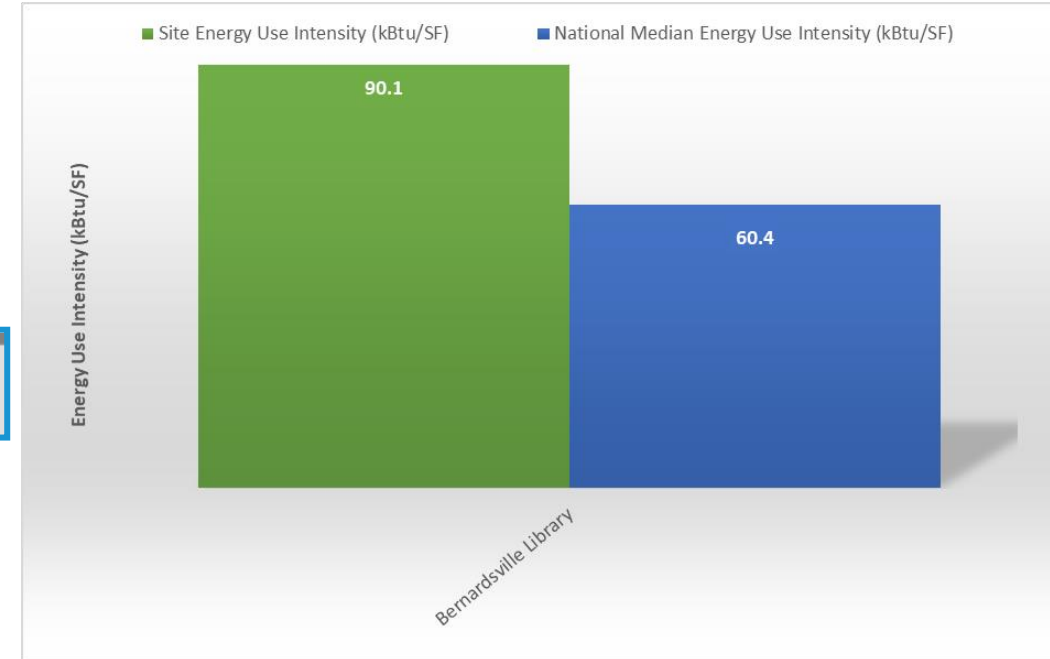
Site EUI 90.1 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) 372,765 (24%) Electric - Grid (kBtu) 1,168,492 (76%)	National Median Comparison National Median Site EUI (kBtu/ft²) 60.4 National Median Source EUI (kBtu/ft²) 143.6 % Diff from National Median Source EUI 49%
Source EUI 214.2 kBtu/ft²	Annual Emissions Total (Location Based) GHG Emissions (Metric Tons CO2e/year) 125	

Site EUI
90.1 kBtu/ft²

Source EUI
214.2 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	60.4
National Median Source EUI (kBtu/ft²)	143.6
% Diff from National Median Source EUI	49%



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: _____

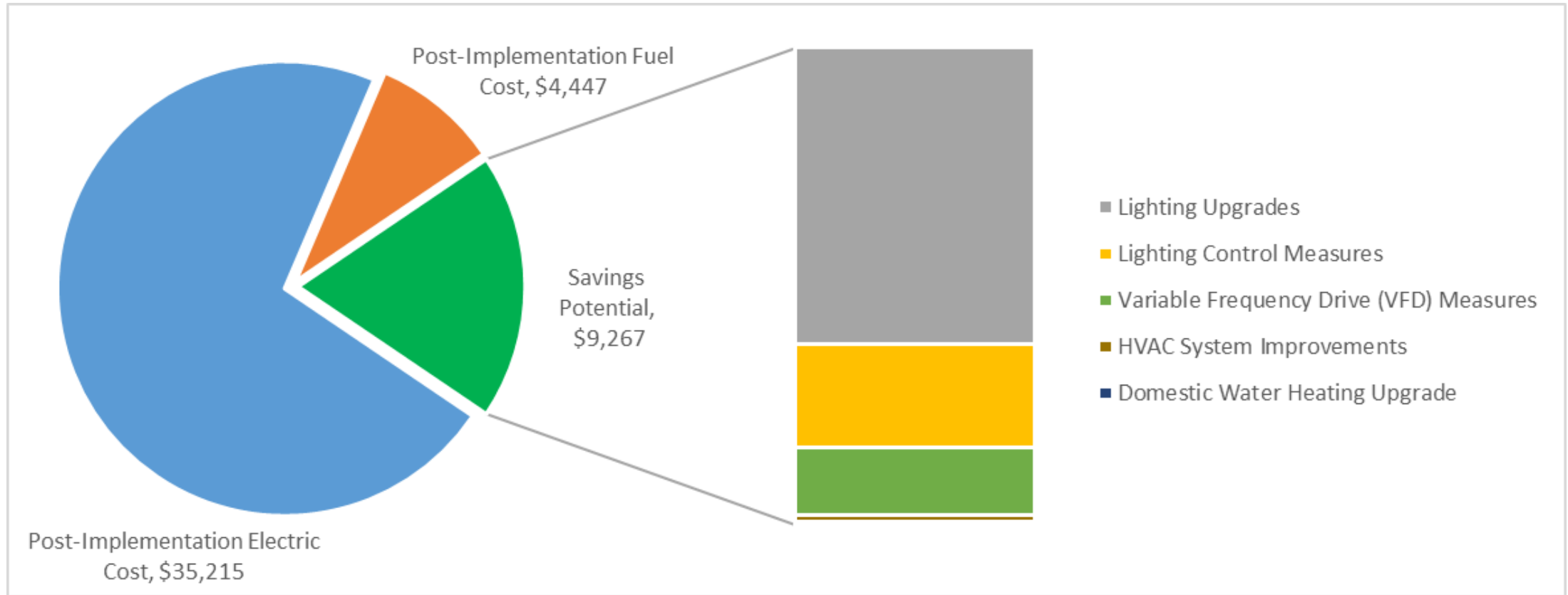
Licensed Professional

Professional Engineer or Registered Architect Stamp (if applicable)

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



BERNARDSVILLE PUBLIC LIBRARY

#	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			44,776	11.6	-9	\$5,762	\$14,493	\$3,036	\$11,457	2.0	43,985
ECM 1	Retrofit Fixtures with LED Lamps	Yes	44,776	11.6	-9	\$5,762	\$14,493	\$3,036	\$11,457	2.0	43,985
Lighting Control Measures			15,480	4.0	-3	\$1,992	\$12,498	\$1,635	\$10,863	5.5	15,203
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	15,480	4.0	-3	\$1,992	\$12,498	\$1,635	\$10,863	5.5	15,203
Variable Frequency Drive (VFD) Measures			9,977	3.1	0	\$1,308	\$11,114	\$1,800	\$9,314	7.1	10,047
ECM 3	Install VFD on Variable Air Volume (VAV) Fans	Yes	9,977	3.1	0	\$1,308	\$11,114	\$1,800	\$9,314	7.1	10,047
HVAC System Improvements			1,011	0.0	0	\$133	\$119	\$20	\$99	0.7	1,018
ECM 4	Install Pipe Insulation	Yes	1,011	0.0	0	\$133	\$119	\$20	\$99	0.7	1,018
Domestic Water Heating Upgrade			556	0.0	0	\$73	\$57	\$22	\$35	0.5	560
ECM 5	Install Low-Flow DHW Devices	Yes	556	0.0	0	\$73	\$57	\$22	\$35	0.5	560
TOTALS (COST EFFECTIVE MEASURES)			71,801	18.6	-13	\$9,267	\$38,282	\$6,513	\$31,768	3.4	70,813
TOTALS (ALL MEASURES)			71,801	18.6	-13	\$9,267	\$38,282	\$6,513	\$31,768	3.4	70,813

* - 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

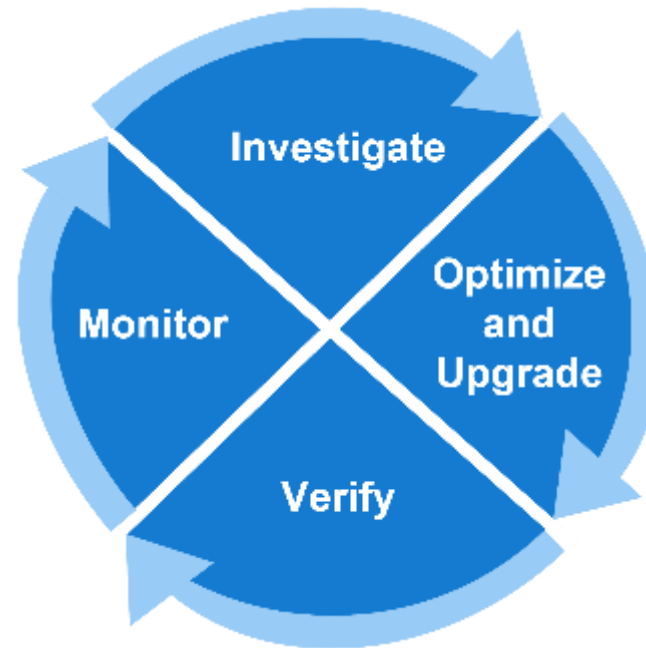


- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Use Window Treatments/Coverings
- Clean and/or Replace HVAC filters
- Check and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls
- Water Conservation

See individual reports for specific EE Best Practices by building

MEASURES FOR FUTURE CONSIDERATION

- Retro-Commissioning Study
- VRF Systems
 - Multiple indoor units connected to a common outdoor unit
 - Scalability
 - Variable capacity
 - Distributed control
 - Simultaneous heating and cooling capability



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

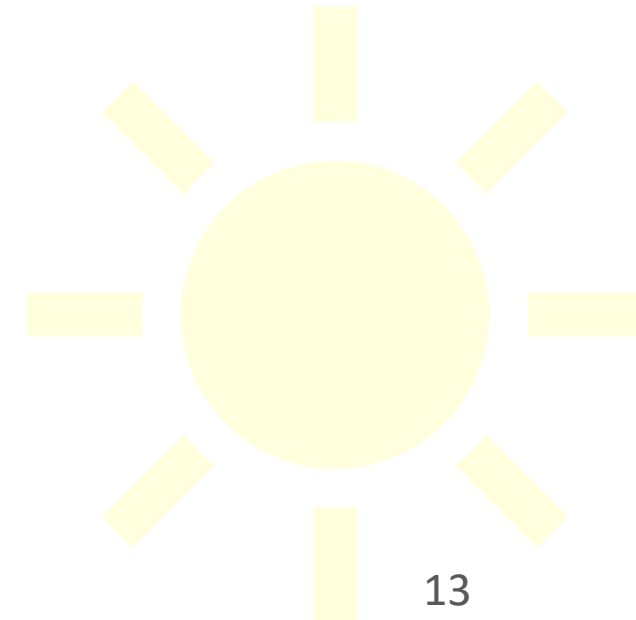
	Bernardsville Public Library
Potential:	Medium



SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Bernardsville Library
<i>Potential:</i>	HIGH
<i>System Potential: (kW)</i>	92
<i>Electric Generation: (kWh per year)</i>	109,606
<i>Displaced Cost: (per year)</i>	\$14,370



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

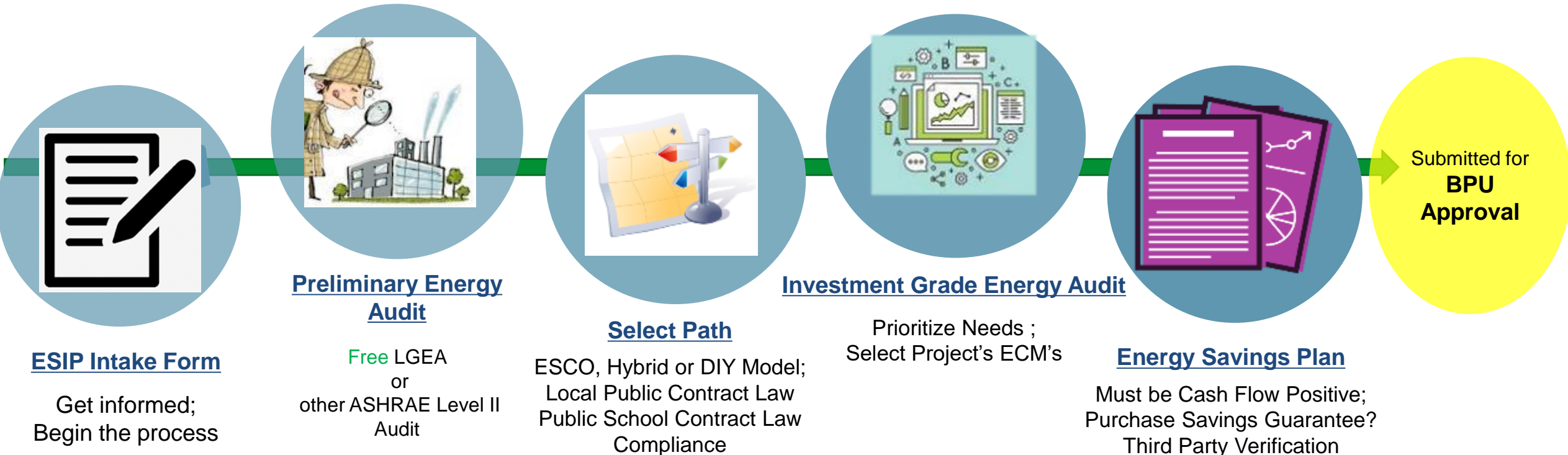
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- 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

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



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

JCP&L

Sirajuddin Shaikh - sirshaikh@firstenergycorp.com
John Sousa - JSousa@trccompanies.com

PSE&G

Dave Kirsch – David.Kirsch@pseg.com
Steve Barba – Steven.T.Barba@pseg.com

FOR MORE INFORMATION

Sarah Walters – LGEA Project Manager

SWalters@trccompanies.com

(732) 589-7372

Moussa Traore – LGEA Technical Manager

MTraore@trccompanies.com

(732) 902-1797

Melissa Lott – LGEA Account Manager

MLott@trccompanies.com

(732) 589-7397

Juno Romanick – LGEA Energy Auditor

JRomanick@trccompanies.com

(732) 674-1803

THANK YOU

