

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Jamesburg Board of Education

July 9, 2019



INTRODUCTIONS

Jamesburg Board of Education

- Brian Betze – Superintendent
- Nick Mackres – Business Administrator
- Scott Danberry – Supervisor of Buildings & Ground
- *NJ Clean Energy Program*
 - Aimee Lalonde – TRC Auditor
 - Sarah Walters – TRC Account Manager
 - Tony O'Donnell – TRC Outreach Manager
 - Arif Welcher – BPU Government/Business Manager

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Jamesburg BOE

LGEA PROCESS

- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- Exit Meeting Presentation
- Final Report

SITE VISIT & UTILITY ANALYSIS

Overview of Systems, Baseline & Existing Conditions:

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

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

- Grace Breckwedel Middle School
- John F. Kennedy Elementary School



BENCHMARKING

John F. Kennedy ES

ENERGY STAR® Statement of Energy Performance

54
ENERGY STAR® Score¹

John F. Kennedy Elementary School
Primary Property Type: K-12 School
Gross Floor Area (ft²): 65,000
Built: 1950
For Year Ending: July 31, 2019
Date Generated: May 09, 2019

Property & Contact Information

Property Address	Property Owner	Primary Contact
John F. Kennedy Elementary School 28 Front Street Jamesburg, New Jersey 08831	Jamesburg Board of Education 13 Augusta Street Jamesburg, NJ 08831	Nick Mackles 13 Augusta Street Jamesburg, NJ 08831 (732) 646-2203 nmackles@jamesburg.org

Property ID: 6706823

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 49.4 kBtu/ft ²	Annual Energy by Fuel Natural Gas (kBtu) 1,736,037 (54%) Electric - Grd (kBtu) 1,473,382 (46%)	National Median Comparison National Median Site EUI (kBtu/ft ²) 51.8 National Median Source EUI (kBtu/ft ²) 99 % Diff from National Median Source EUI -5%
Source EUI 91.5 kBtu/ft ²	Annual Emissions Greenhouse Gas Emissions (Metric Tons CO ₂ e/year) 242	

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional _____

Professional Engineer Stamp (if applicable)

Site EUI
49.4 kBtu/ft²

Building Name	ENERGY STAR® Score
Grace Breckwedel MS	80
John F. Kennedy ES	54

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

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	99,144	34.7	-20.5	\$11,817.95	\$75,266.94	\$14,423.00	\$60,843.94	5.1	97,433
Install LED Fixtures	6,252	2.9	-1.3	\$742.46	\$22,765.86	\$1,200.00	\$21,565.86	29.0	6,142
Retrofit Fixtures with LED Lamps	92,893	31.8	-19.2	\$11,075.49	\$52,501.08	\$13,223.00	\$39,278.08	3.5	91,290
Lighting Control Measures	2,423	0.8	-0.5	\$288.00	\$3,088.00	\$270.00	\$2,818.00	9.8	2,381
Install Occupancy Sensor Lighting Controls	2,423	0.8	-0.5	\$288.00	\$3,088.00	\$270.00	\$2,818.00	9.8	2,381
Variable Frequency Drive (VFD) Measures	15,009	0.8	104.3	\$2,825.84	\$21,258.09	\$750.00	\$20,508.09	7.3	27,323
Install VFDs on Heating Water Pumps	6,278	0.7	0.0	\$769.00	\$12,542.30	\$0.00	\$12,542.30	16.3	6,322
Install VFDs on Kitchen Hood Fan Motors	8,731	0.1	104.3	\$2,056.84	\$8,715.79	\$750.00	\$7,965.79	3.9	21,001
Electric Unitary HVAC Measures	7,427	3.4	0.0	\$903.52	\$47,544.71	\$2,687.00	\$44,857.71	49.6	7,479
Install High Efficiency Air Conditioning Units	7,427	3.4	0.0	\$903.52	\$47,544.71	\$2,687.00	\$44,857.71	49.6	7,479
Gas Heating (HVAC/Process) Replacement	0	0.0	203.0	\$1,943.86	\$42,035.08	\$4,817.20	\$37,217.88	19.1	23,769
Install High Efficiency Hot Water Boilers	0	0.0	181.6	\$1,739.07	\$34,875.36	\$4,017.20	\$30,858.16	17.7	21,264
Install High Efficiency Furnaces	0	0.0	21.4	\$204.79	\$7,159.72	\$800.00	\$6,359.72	31.1	2,505
Domestic Water Heating Upgrade	36,708	15.3	-101.7	\$3,467.09	\$15,707.99	\$3,700.00	\$12,007.99	3.5	25,056
Install Tankless Water Heater	4,308	1.8	-14.7	\$386.97	\$496.66	\$300.00	\$196.66	0.5	2,617
Install Gas-Fired Booster Water Heater	32,400	13.5	-144.0	\$2,534.56	\$14,860.00	\$3,400.00	\$11,460.00	4.5	15,766
Food Service Equipment & Refrigeration Measures	10,992	0.7	45.0	\$1,767.52	\$30,936.52	\$1,760.00	\$29,176.52	16.5	16,342
Food Service Equipment Replacement	0	0.0	45.0	\$431.30	\$16,598.81	\$750.00	\$15,848.81	36.7	5,274
Refrigerator/Freezer Case Electrically Commutated Motors	2,556	0.3	0.0	\$310.34	\$2,729.70	\$360.00	\$2,369.70	7.6	2,574
Refrigeration Controls	6,031	0.1	0.0	\$731.33	\$8,251.81	\$450.00	\$7,801.81	10.7	6,074
Replace Refrigeration Equipment	2,405	0.3	0.0	\$294.55	\$3,356.20	\$200.00	\$3,156.20	10.7	2,421
TOTALS	171,703	55.6	229.6	\$23,013.78	\$235,837.33	\$28,407.20	\$207,430.13	9.0	199,782

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

COST EFFECTIVE OPPORTUNITIES

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO _{2e} Emissions Reduction (lbs)
Lighting Upgrades		99,144	34.7	-20.5	\$11,817.95	\$75,266.94	\$14,423.00	\$60,843.94	5.1	97,433
ECM 1	Install LED Fixtures	6,252	2.9	-1.3	\$742.46	\$22,765.86	\$1,200.00	\$21,565.86	29.0	6,142
ECM 2	Retrofit Fixtures with LED Lamps	92,893	31.8	-19.2	\$11,075.49	\$52,501.08	\$13,223.00	\$39,278.08	3.5	91,290
Lighting Control Measures		2,295	0.7	-0.5	\$272.51	\$2,818.00	\$235.00	\$2,583.00	9.5	2,255
ECM 3	Install Occupancy Sensor Lighting Controls	2,295	0.7	-0.5	\$272.51	\$2,818.00	\$235.00	\$2,583.00	9.5	2,255
Variable Frequency Drive (VFD) Measures		8,731	0.1	104.3	\$2,056.84	\$8,715.79	\$750.00	\$7,965.79	3.9	21,001
ECM 4	Install VFDs on Kitchen Hood Fan Motors	8,731	0.1	104.3	\$2,056.84	\$8,715.79	\$750.00	\$7,965.79	3.9	21,001
Domestic Water Heating Upgrade		36,708	15.3	-101.7	\$3,467.09	\$15,707.99	\$3,700.00	\$12,007.99	3.5	25,056
ECM 5	Install Tankless Water Heater	4,308	1.8	-14.7	\$386.97	\$496.66	\$300.00	\$196.66	0.5	2,617
ECM 6	Install Gas-Fired Booster Water Heater	32,400	13.5	-144.0	\$2,534.56	\$14,860.00	\$3,400.00	\$11,460.00	4.5	15,766
ECM 7	Install Low-Flow DHW Devices	0	0.0	57.0	\$545.56	\$351.33	\$0.00	\$351.33	0.6	6,673
Food Service Equipment & Refrigeration Measures		6,874	0.4	0.0	\$831.82	\$6,596.30	\$560.00	\$6,036.30	7.3	6,922
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	2,556	0.3	0.0	\$310.34	\$2,729.70	\$360.00	\$2,369.70	7.6	2,574
ECM 9	Refrigeration Controls	4,318	0.1	0.0	\$521.48	\$3,866.60	\$200.00	\$3,666.60	7.0	4,348
TOTALS		153,752	51.1	-18.5	\$18,446.21	\$109,105.02	\$19,668.00	\$89,437.02	4.8	152,666

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

GRACE M. BRECKWEDEL MIDDLE SCHOOL

#	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			24,080	8.4	-5	\$2,901	\$13,364	\$3,660	\$9,704	3.3	23,659
ECM 1	Retrofit Fixtures with LED Lamps	Yes	24,080	8.4	-5	\$2,901	\$13,364	\$3,660	\$9,704	3.3	23,659
Lighting Control Measures			129	0.0	0	\$15	\$270	\$35	\$235	15.2	126
ECM 2	Install Occupancy Sensor Lighting Controls	No	129	0.0	0	\$15	\$270	\$35	\$235	15.2	126
Variable Frequency Drive (VFD) Measures			8,748	0.8	52	\$1,571	\$15,238	\$150	\$15,088	9.6	14,914
ECM 3	Install VFDs on Heating Water Pumps	No	6,278	0.7	0	\$769	\$12,542	\$0	\$12,542	16.3	6,322
ECM 4	Install VFDs on Kitchen Hood Fan Motors	Yes	2,470	0.0	52	\$802	\$2,696	\$150	\$2,546	3.2	8,592
Electric Unitary HVAC Measures			3,843	2.3	0	\$471	\$28,924	\$1,519	\$27,405	58.2	3,869
ECM 5	Install High Efficiency Air Conditioning Units	No	3,843	2.3	0	\$471	\$28,924	\$1,519	\$27,405	58.2	3,869
Gas Heating (HVAC/Process) Replacement			0	0.0	182	\$1,739	\$34,875	\$4,017	\$30,858	17.7	21,264
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	182	\$1,739	\$34,875	\$4,017	\$30,858	17.7	21,264
Domestic Water Heating Upgrade			4,308	1.8	8	\$605	\$583	\$300	\$283	0.5	5,284
ECM 7	Install Tankless Water Heater	Yes	4,308	1.8	-15	\$387	\$497	\$300	\$197	0.5	2,617
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	23	\$218	\$86	\$0	\$86	0.4	2,667
Food Service & Refrigeration Measures			5,101	0.4	45	\$1,056	\$25,250	\$1,320	\$23,930	22.7	10,410
ECM 9	Food Service Equipment Replacement	No	0	0.0	45	\$431	\$16,599	\$750	\$15,849	36.7	5,274
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	983	0.1	0	\$120	\$910	\$120	\$790	6.6	990
ECM 11	Refrigeration Controls	No	1,713	0.0	0	\$210	\$4,385	\$250	\$4,135	19.7	1,725
ECM 12	Replace Refrigeration Equipment	No	2,405	0.3	0	\$295	\$3,356	\$200	\$3,156	10.7	2,421
TOTALS (COST EFFECTIVE MEASURES)			31,842	10.4	55	\$4,429	\$17,553	\$4,230	\$13,323	3.0	38,525
TOTALS (ALL MEASURES)			46,209	13.8	282	\$8,359	\$118,505	\$11,001	\$107,504	12.9	79,526

* - All incentives presented in this table are based on NJ SmartStart equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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JOHN F. KENNEDY ELEMENTARY SCHOOL

#	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			75,064	26.2	-16	\$8,916	\$61,902	\$10,763	\$51,139	5.7	73,773
ECM 1	Install LED Fixtures	Yes	6,252	2.9	-1	\$742	\$22,766	\$1,200	\$21,566	29.0	6,142
ECM 2	Retrofit Fixtures with LED Lamps	Yes	68,812	23.4	-14	\$8,174	\$39,137	\$9,563	\$29,574	3.6	67,631
Lighting Control Measures			2,295	0.7	0	\$273	\$2,818	\$235	\$2,583	9.5	2,255
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,295	0.7	0	\$273	\$2,818	\$235	\$2,583	9.5	2,255
Variable Frequency Drive (VFD) Measures			6,261	0.0	52	\$1,255	\$6,020	\$600	\$5,420	4.3	12,409
ECM 4	Install VFDs on Kitchen Hood Fan Motors	Yes	6,261	0.0	52	\$1,255	\$6,020	\$600	\$5,420	4.3	12,409
Domestic Water Heating Upgrade			32,400	13.5	-110	\$2,862	\$15,125	\$3,400	\$11,725	4.1	19,772
ECM 7	Install Gas-Fired Booster Water Heater	Yes	32,400	13.5	-144	\$2,535	\$14,860	\$3,400	\$11,460	4.5	15,766
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	34	\$327	\$265	\$0	\$265	0.8	4,006
Food Service & Refrigeration Measures			5,891	0.3	0	\$711	\$5,686	\$440	\$5,246	7.4	5,932
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,573	0.2	0	\$190	\$1,820	\$240	\$1,580	8.3	1,584
ECM 10	Refrigeration Controls	Yes	4,318	0.1	0	\$521	\$3,867	\$200	\$3,667	7.0	4,348
TOTALS			121,910	40.7	-74	\$14,017	\$91,552	\$15,438	\$76,114	5.4	114,141

* - All incentives presented in this table are based on NJ SmartStart equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

SOLAR ENERGY GENERATION POTENTIAL

	Grace M. Breckwedel Middle School	John F. Kennedy Elementary School
<i>Potential:</i>	HIGH	HIGH
<i>System Potential: (kW)</i>	53	131
<i>Electric Generation: (kWh per year)</i>	63,143	156,070
<i>Displaced Cost: (per year)</i>	\$7,730	\$18,850

For more information on the SREC Registration Program (SRP) please visit:

<http://www.njcleanenergy.com/renewable-energy/programs/solar-renewable-energy-certificates-srec/new-jersey-solar-renewable-energy>

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



CLEAN ENERGY PROGRAM PORTFOLIO

ELIGIBLE SECTORS

Commercial, Industrial, Government, Non-Profit, Institutional and Multifamily

INCENTIVE PROGRAMS

Equipment Rebates:

- **SmartStart**
- **CTEEP(Customer Tailored Energy Efficiency Pilot)**
- **Direct Install**
- Large Energy Users

Whole Buildings:

- Pay for Performance

Energy Generation:

- Combined Heat and Power (CHP)

OTHER PROGRAMS

Renewable Energy Generation:

- SREC Registration Program (SRP)



RECOMMENDED NJCEP INCENTIVES PER BUILDING

Entity Name	Direct Install	SmartStart	CTEEP
Grace M. Breckwedel Middle School	X	X	X
John F. Kennedy Elementary School	X	X	X



DIRECT INSTALL

NJCleanEnergy.com/DI



What is DI: Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.

Qualifications: Average electric peak demand <200 kW in the previous 12 months

- About:**
- Pre-approved participating contractors provide support and process paperwork
 - Incentives paid directly to the contractor
 - Fast project turnaround time (4-6 months)

- Incentives:**
- \$125,000 incentive funding per project/building (\$250K UEZ/OZ/MUNI/K-12 Public Schools), or
 - \$250,000 entity cap (\$4MM if UEZ/OZ/MUNI/**K-12 PS**)

DIRECT INSTALL

NJCleanEnergy.com/DI

Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), municipalities, and K-12 public schools:

INCENTIVE FUNDING

CUSTOMER

Up to **80%** of installed cost is paid directly to the contractor

20% of installed cost

All other eligible facilities:

INCENTIVE FUNDING

CUSTOMER

Up to **70%** of installed cost is paid directly to the contractor

30% of installed cost



DIRECT INSTALL

NJCleanEnergy.com/DI

Participating Contractor

Tri-State Light & Energy, Inc.

Alan Rhode

610-789-1900 x226

asr@tsle.com



SMARTSTART

NJCleanEnergy.com/SSB

What is SSB: Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement

Qualifications:

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- Prescriptive and custom designed measures
- Pre-approval required only for lighting projects with incentives >\$100,000 and all custom projects
- For measures not requiring pre-approval, applications must be submitted to the program within one year of purchase.

Incentives:

- Prescriptive: \$500,000 cap for each electric or gas account
- Custom, lesser of the following:
 - \$0.16/kWh and/or \$1.60/Therm saved annually
 - 50% of incremental installed cost
 - Buy-down to 1 year payback based on incremental cost and savings



SMARTSTART

NJCleanEnergy.com/SSB

Prescriptive Incentives

- Lighting & Lighting Controls
- Packaged HVAC
- Boilers & Water Heaters
- Chillers
- VFD's
- Food Service
- Refrigeration

Prescriptive Only:

**DOUBLE
INCENTIVES FOR
OZ/UEZ/ MUNI/K-12
PUBLIC SCHOOLS**

Custom Incentives

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms
- Project pre and post inspection required



CUSTOMER TAILORED ENERGY EFFICIENCY PILOT

NJCleanEnergy.com/CTEEP

What is CTEEP: A streamlined/single application process for participants submitting multiple different technology types.

Qualifications:

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- On site assistance available
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

Incentives:

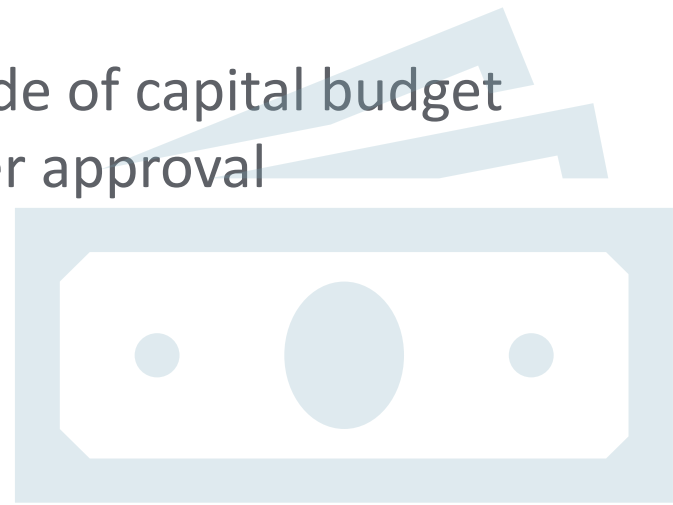
- \$250,000 fiscal year entity cap
- Technical assistance incentives for custom project evaluation (up to \$10K)

**SAME INCENTIVE
VALUES AS
SMARTSTART**

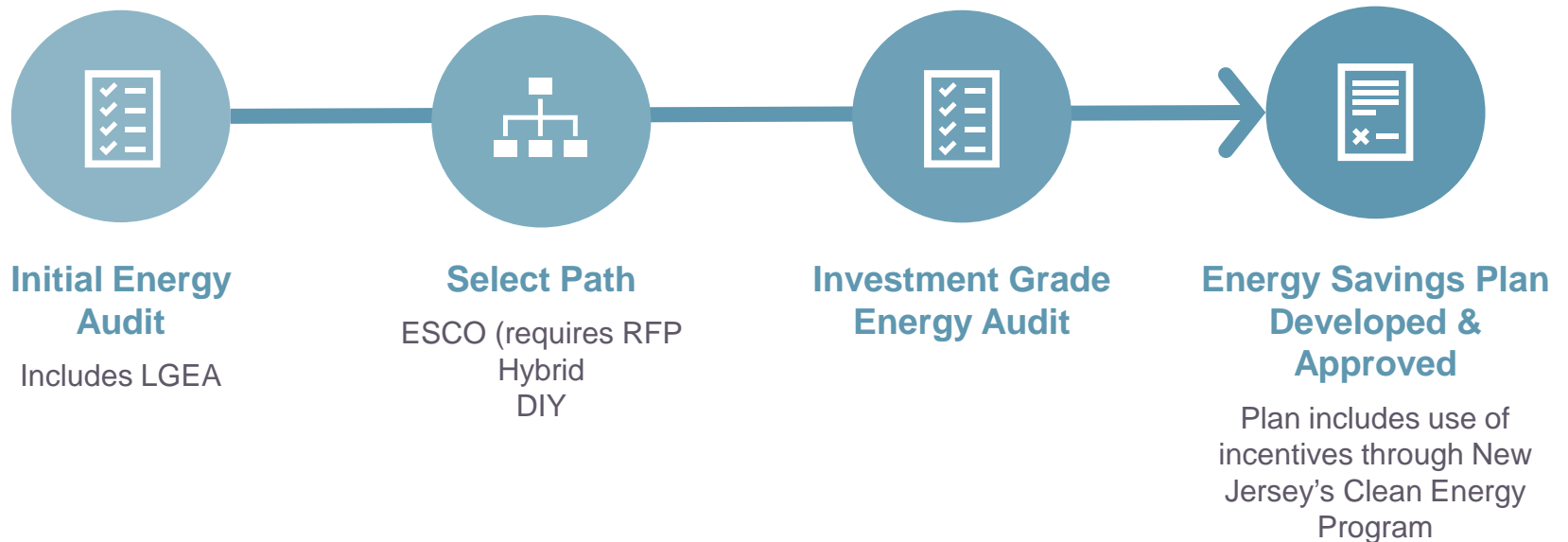
FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the BPU
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract
- Requires NO new bonding and is outside of capital budget
- Does not count as debt or require voter approval



FINANCING MECHANISM: ESIP



ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

Mike Thulen

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov



New Jersey's
cleanenergy
program™

FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (732) 855-0033

Tony O'Donnell

Regional Outreach Manager

732.259.4938

aodonnell@trccompanies.com



QUESTIONS

