

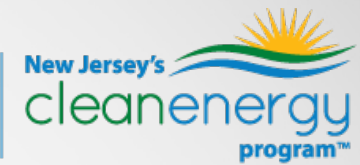
New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Keyport Board of Education

TRC Energy Services

August 27, 2018

Introductions



- *Keyport Board of Education*
 - Dr. Lisa Savoia – Superintendent
 - Anthony Rapolla – Business Administrator
 - Dylan Borders – Supervisor of Buildings & Grounds
- *NJ Clean Energy Program*
 - Brian DeLuca, CEM – Program Administrator
 - Moussa Traore - Auditor
 - Sarah Walters – Account Manager
 - Arif Welcher – BPU Ombudsman

Agenda

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

LGEA Process



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

Site Visit and Utility Analysis

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Sites Visited/Analyzed

- *Keyport Central School*
- *Keyport High School*

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Solar Photovoltaic (PV) Generation

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	301,352	64.7	0.0	\$38,148.50	\$220,180.03	\$30,890.00	\$189,290.03	5.0	303,459
Install LED Fixtures	80,658	13.7	0.0	\$10,167.63	\$99,926.63	\$12,400.00	\$87,526.63	8.6	81,222
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	418	0.1	0.0	\$51.11	\$234.00	\$20.00	\$214.00	4.2	421
Retrofit Fixtures with LED Lamps	220,208	51.0	0.0	\$27,921.50	\$119,696.73	\$18,470.00	\$101,226.73	3.6	221,748
Install LED Exit Signs	68	0.0	0.0	\$8.26	\$322.67	\$0.00	\$322.67	39.1	68
Lighting Control Measures	60,785	11.1	0.0	\$7,658.78	\$70,802.00	\$7,095.00	\$63,707.00	8.3	61,210
Install Occupancy Sensor Lighting Controls	53,701	9.9	0.0	\$6,770.12	\$60,602.00	\$7,095.00	\$53,507.00	7.9	54,076
Install High/Low Lighting Controls	7,085	1.3	0.0	\$888.66	\$10,200.00	\$0.00	\$10,200.00	11.5	7,134
Motor Upgrades	5,347	1.3	0.0	\$678.19	\$45,606.05	\$0.00	\$45,606.05	67.2	5,384
Premium Efficiency Motors	5,347	1.3	0.0	\$678.19	\$45,606.05	\$0.00	\$45,606.05	67.2	5,384
Electric Unitary HVAC Measures	5,633	3.7	0.0	\$702.93	\$16,458.42	\$1,012.00	\$15,446.42	22.0	5,673
Install High Efficiency Electric AC	5,633	3.7	0.0	\$702.93	\$16,458.42	\$1,012.00	\$15,446.42	22.0	5,673
Gas Heating (HVAC/Process) Replacement	0	0.0	139.7	\$1,584.65	\$163,136.72	\$9,059.60	\$154,077.12	97.2	16,361
Install High Efficiency Steam Boilers	0	0.0	139.7	\$1,584.65	\$163,136.72	\$9,059.60	\$154,077.12	97.2	16,361
Domestic Water Heating Upgrade	0	0.0	57.9	\$654.75	\$19,314.06	\$698.00	\$18,616.06	28.4	6,781
Install High Efficiency Gas Water Heater	0	0.0	0.7	\$8.13	\$11,500.21	\$398.00	\$11,102.21	1365.6	83
Install Tankless Water Heater	0	0.0	2.2	\$24.58	\$7,541.39	\$300.00	\$7,241.39	294.6	252
Install Low-Flow Domestic Hot Water Devices	0	0.0	55.0	\$622.04	\$272.46	\$0.00	\$272.46	0.4	6,445
Food Service Equipment & Refrigeration Measures	8,250	0.7	0.0	\$1,046.27	\$4,561.20	\$310.00	\$4,251.20	4.1	8,308
Refrigerator/Freezer Case Electrically Commutated Motors	3,932	0.5	0.0	\$498.66	\$1,213.20	\$160.00	\$1,053.20	2.1	3,959
Refrigeration Controls	4,318	0.2	0.0	\$547.61	\$3,348.00	\$150.00	\$3,198.00	5.8	4,348
TOTALS	381,368	81.5	197.6	\$50,474.07	\$540,058.48	\$49,064.60	\$490,993.88	9.7	407,176

* - 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*



**Opportunities considered cost effective have a payback period less than the expedited life of the measure*

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		301,352	64.7	0.0	\$38,148.50	\$220,180.03	\$30,890.00	\$189,290.03	5.0	303,459
ECM 1	Install LED Fixtures	80,658	13.7	0.0	\$10,167.63	\$99,926.63	\$12,400.00	\$87,526.63	8.6	81,222
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	418	0.1	0.0	\$51.11	\$234.00	\$20.00	\$214.00	4.2	421
ECM 3	Retrofit Fixtures with LED Lamps	220,208	51.0	0.0	\$27,921.50	\$119,696.73	\$18,470.00	\$101,226.73	3.6	221,748
ECM 4	Install LED Exit Signs	68	0.0	0.0	\$8.26	\$322.67	\$0.00	\$322.67	39.1	68
Lighting Control Measures		60,785	11.1	0.0	\$7,658.78	\$70,802.00	\$7,095.00	\$63,707.00	8.3	61,210
ECM 5	Install Occupancy Sensor Lighting Controls	53,701	9.9	0.0	\$6,770.12	\$60,602.00	\$7,095.00	\$53,507.00	7.9	54,076
ECM 6	Install High/Low Lighting Controls	7,085	1.3	0.0	\$888.66	\$10,200.00	\$0.00	\$10,200.00	11.5	7,134
Domestic Water Heating Upgrade		0	0.0	55.0	\$622.04	\$272.46	\$0.00	\$272.46	0.4	6,445
ECM 7	Install Low-Flow Domestic Hot Water Devices	0	0.0	55.0	\$622.04	\$272.46	\$0.00	\$272.46	0.4	6,445
Food Service Equipment & Refrigeration Measures		8,250	0.7	0.0	\$1,046.27	\$4,561.20	\$310.00	\$4,251.20	4.1	8,308
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	3,932	0.5	0.0	\$498.66	\$1,213.20	\$160.00	\$1,053.20	2.1	3,959
ECM 9	Refrigeration Controls	4,318	0.2	0.0	\$547.61	\$3,348.00	\$150.00	\$3,198.00	5.8	4,348
TOTALS		370,387	76.5	55.0	\$47,475.59	\$295,815.69	\$38,295.00	\$257,520.69	5.4	379,422

* - 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).

Benchmarking



Keyport Central School

ENERGY STAR® Statement of Energy Performance

58

Primary Property Type: K-12 School
Gross Floor Area (GFA): 86,185
SUE: 1965

For Year Ending: July 31, 2017
Date Generated: June 08, 2018

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 building attributes.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Keyport Central School 500 Ocean Street Keyport, New Jersey 07022	Keyport Board of Education 219 Grand Street Keyport, NJ 07022 732-712-4100	Anthony Reynolds 300 Grand Street Keyport, NJ 07022 732-712-4100 Ext. 1100 areynolds@keyportschools.org

Property ID: 0277018

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
76.2 kWh/ft²	Electric: 54,811 kWh (71%) Natural Gas: 3,147 kWh (4%) Natural Gas: 3,147 kWh (4%)	National Median Site EUI: 81.9 kWh/ft² National Median Source EUI: 76.9 kWh/ft² % Diff from National Median Source EUI: -7%
Source EUI		Annual Emissions: 653 tons CO2e/yr

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)

Keyport High School

ENERGY STAR® Statement of Energy Performance

46

Primary Property Type: K-12 School
Gross Floor Area (GFA): 84,948
SUE: 902

For Year Ending: July 31, 2017
Date Generated: June 08, 2018

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 building attributes.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Keyport High School 300 Grand Street Keyport, New Jersey 07022	Keyport Board of Education 219 Grand Street Keyport, NJ 07022 732-712-4100	Anthony Reynolds 300 Grand Street Keyport, NJ 07022 732-712-4100 Ext. 1100 areynolds@keyportschools.org

Property ID: 0277018

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
104.2 kWh/ft²	Electric: 81,477 kWh (77%) Natural Gas: 1,705 kWh (2%) Natural Gas: 1,705 kWh (2%)	National Median Site EUI: 81.9 kWh/ft² National Median Source EUI: 76.9 kWh/ft² % Diff from National Median Source EUI: 36%
Source EUI		Annual Emissions: 653 tons CO2e/yr

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)

ENERGY STAR Scores are percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide.

Keyport Central 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			142,995	39.4	0.0	\$18,785.06	\$105,686.77	\$16,405.00	\$89,281.77	4.8	143,995
ECM 1	Install LED Fixtures	Yes	33,542	6.3	0.0	\$4,406.39	\$40,115.81	\$6,000.00	\$34,115.81	7.7	33,777
ECM 2	Retrofit Fixtures with LED Lamps	Yes	109,453	33.2	0.0	\$14,378.67	\$65,570.96	\$10,405.00	\$55,165.96	3.8	110,218
Lighting Control Measures			24,875	5.4	0.0	\$3,267.76	\$35,910.00	\$3,325.00	\$32,585.00	10.0	25,049
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	22,414	4.8	0.0	\$2,944.55	\$30,910.00	\$3,325.00	\$27,585.00	9.4	22,571
ECM 4	Install High/Low Lighting Controls	Yes	2,460	0.5	0.0	\$323.20	\$5,000.00	\$0.00	\$5,000.00	15.5	2,477
Motor Upgrades			2,681	0.7	0.0	\$352.15	\$21,109.68	\$0.00	\$21,109.68	59.9	2,699
	Premium Efficiency Motors	No	2,681	0.7	0.0	\$352.15	\$21,109.68	\$0.00	\$21,109.68	59.9	2,699
Electric Unitary HVAC Measures			1,551	0.9	0.0	\$203.76	\$5,984.88	\$368.00	\$5,616.88	27.6	1,562
	Install High Efficiency Electric AC	No	1,551	0.9	0.0	\$203.76	\$5,984.88	\$368.00	\$5,616.88	27.6	1,562
Gas Heating (HVAC/Process) Replacement			0	0.0	58.1	\$653.72	\$50,466.44	\$2,997.60	\$47,468.84	72.6	6,804
	Install High Efficiency Steam Boilers	No	0	0.0	58.1	\$653.72	\$50,466.44	\$2,997.60	\$47,468.84	72.6	6,804
Domestic Water Heating Upgrade			0	0.0	37.1	\$417.46	\$172.08	\$0.00	\$172.08	0.4	4,345
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	37.1	\$417.46	\$172.08	\$0.00	\$172.08	0.4	4,345
Food Service Equipment & Refrigeration Measures			4,125	0.3	0.0	\$541.89	\$2,280.60	\$155.00	\$2,125.60	3.9	4,154
ECM 6	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,966	0.2	0.0	\$258.27	\$606.60	\$80.00	\$526.60	2.0	1,980
ECM 7	Refrigeration Controls	Yes	2,159	0.1	0.0	\$283.62	\$1,674.00	\$75.00	\$1,599.00	5.6	2,174
TOTALS FOR HIGH PRIORITY MEASURES			171,995	45.1	37.1	\$23,012.17	\$144,049.45	\$19,885.00	\$124,164.45	5.4	177,542
TOTALS FOR ALL EVALUATED MEASURES			176,226	46.8	95.2	\$24,221.80	\$221,610.45	\$23,250.60	\$198,359.85	8.2	188,608

* - 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).

Keyport High 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			158,357	25.3	0.0	\$19,363.44	\$114,493.26	\$14,485.00	\$100,008.26	5.2	159,464
ECM 1	Install LED Fixtures	Yes	47,116	7.4	0.0	\$5,761.24	\$59,810.82	\$6,400.00	\$53,410.82	9.3	47,446
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	418	0.1	0.0	\$51.11	\$234.00	\$20.00	\$214.00	4.2	421
ECM 3	Retrofit Fixtures with LED Lamps	Yes	110,755	17.8	0.0	\$13,542.83	\$54,125.77	\$8,065.00	\$46,060.77	3.4	111,530
ECM 4	Install LED Exit Signs	Yes	68	0.0	0.0	\$8.26	\$322.67	\$0.00	\$322.67	39.0	68
ECM 0	Install LED Refrigerated Case Lighting	Yes	0	0.0	0.0	\$0.00	\$0.00	\$0.00	\$0.00	0.0	0
Lighting Control Measures			35,911	5.8	0.0	\$4,391.04	\$34,892.00	\$3,770.00	\$31,122.00	7.1	36,162
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	31,286	5.0	0.0	\$3,825.57	\$29,692.00	\$3,770.00	\$25,922.00	6.8	31,505
ECM 6	Install High/Low Lighting Controls	Yes	4,624	0.7	0.0	\$565.46	\$5,200.00	\$0.00	\$5,200.00	9.2	4,657
Motor Upgrades			2,666	0.6	0.0	\$326.04	\$24,496.37	\$0.00	\$24,496.37	75.1	2,685
	Premium Efficiency Motors	No	2,666	0.6	0.0	\$326.04	\$24,496.37	\$0.00	\$24,496.37	75.1	2,685
Electric Unitary HVAC Measures			4,082	2.7	0.0	\$499.17	\$10,473.54	\$644.00	\$9,829.54	19.7	4,111
	Install High Efficiency Electric AC	No	4,082	2.7	0.0	\$499.17	\$10,473.54	\$644.00	\$9,829.54	19.7	4,111
Gas Heating (HVAC/Process) Replacement			0	0.0	81.6	\$930.93	\$112,670.28	\$6,062.00	\$106,608.28	114.5	9,557
	Install High Efficiency Steam Boilers	No	0	0.0	81.6	\$930.93	\$112,670.28	\$6,062.00	\$106,608.28	114.5	9,557
Domestic Water Heating Upgrade			0	0.0	20.8	\$237.28	\$19,141.98	\$698.00	\$18,443.98	77.7	2,436
	Install High Efficiency Gas Water Heater	No	0	0.0	0.7	\$8.13	\$11,500.21	\$398.00	\$11,102.21	1366.2	83
	Install Tankless Water Heater	No	0	0.0	2.2	\$24.58	\$7,541.39	\$300.00	\$7,241.39	294.6	252
Food Service Equipment & Refrigeration Measures			4,125	0.3	0.0	\$504.39	\$2,280.60	\$155.00	\$2,125.60	4.2	4,154
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,966	0.2	0.0	\$240.39	\$606.60	\$80.00	\$526.60	2.2	1,980
ECM 9	Refrigeration Controls	Yes	2,159	0.1	0.0	\$263.99	\$1,674.00	\$75.00	\$1,599.00	6.1	2,174
TOTALS FOR HIGH PRIORITY MEASURES			198,393	31.4	17.9	\$24,463.44	\$151,766.24	\$18,410.00	\$133,356.24	5.5	201,880
TOTALS FOR ALL EVALUATED MEASURES			205,141	34.7	102.4	\$26,252.28	\$318,448.02	\$25,814.00	\$292,634.02	11.1	218,568

* - 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).

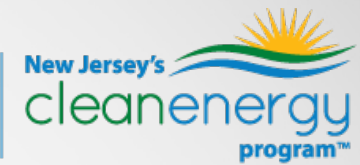
Energy Efficient Best Practices



- 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

PROGRAMS

Equipment Rebates:

- SmartStart Retrofit
- SmartStart New Construction
- Direct Install
- Large Energy Users

Whole Buildings:

- Pay for Performance Existing Buildings
- Pay for Performance New Construction

Energy Generation:

- Combined Heat and Power (CHP)

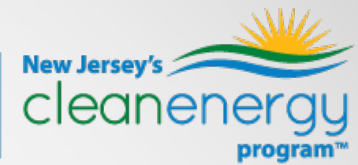
* eligible programs are highlighted in yellow

SmartStart: Overview



- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- Project pre-approval required for certain equipment
- Incentives up to \$500,000 per electric account & \$500,000 per natural gas account
- Specific incentives and individual applications for Lighting, HVAC, VFDs, Refrigeration, Controls and more!

SmartStart: Financing Option



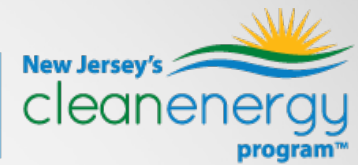
- NJNG provides 0% financing options for SmartStart that will cover up to \$130,000 per year.
- 10 year term-repayments made on regular monthly gas bill
- Need to review project with NJNG to confirm project qualifies.
- The SAVEGREEN program can help with a consultation to discuss your Commercial Energy Efficiency Project.



Direct Install: Overview

- Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.
- Open to Small to Mid-Sized Commercial and Industrial facilities with an average electric demand ≤ 200 kW
- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
 - Customer only pays remaining 30% of installed cost
 - \$125,000 project/building cap
 - \$250,000 per entity cap (up to \$500,000 if using ESIP)
- Participating contractors provide support and process all paperwork
- Fast turnaround time: Average length of time for job completion (4-6 months)

Direct Install:



Participating Contractor

Hutchinson Mechanical Services

Ed Hutchinson

856-429-5828 x215

edhutchinson@hutchbiz.com

Direct Install: Financing Option



- Eligible NJNG customers can finance the remaining 30 percent balance at 0% APR through the “SAVEGREEN Project® On-Bill Repayment Program” (OBRP) for 36 months.
- For measures that may not qualify for Direct Install, NJNG also offers financing options for SmartStart that will cover up to \$130,000 per year.



Direct Install: Financing Option



- Questions? Contact:

Jerry Ryan

Energy Efficiency Operations Manager

New Jersey Natural Gas

732-433-4362 (cell)

732 378 4920 (office)

jryan@njng.com



Recommended NJCEP Incentives per Building



Keyport Board of Education	SmartStart	Direct Install
Keyport Central School	X	X
Keyport High School	X	X

Energy Savings Improvement Program (ESIP)

- Provides alternative financing for energy savings projects at public institutions. Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract. Does not count as debt/require voter approval.
- Requires an audit as 1st step (LGEA satisfies requirement)
- ESIP participation question on LGEA application
- Program administered directly by BPU

ESIP Process

New Jersey's Clean Energy Program Interaction

Initial Energy Audit completed
for entity building(s)

Local Government Energy Audit
(LGEA) may be used to meet
this requirement

Entity issues ESIP RFP (previously
approved by BPU) and selects ESCO
or DIY approach

Investment Grade Energy Audit completed
and Energy Savings Plan (ESP)
developed

P4P Energy Reduction Plan (ERP),
Direct Install, or SmartStart application
recommended submittal time frame

Third party review of ESP

Review and approval of ESP
by Board of Public Utilities (BPU)

Entity adopts ESP,
determines guarantee



FOR MORE INFORMATION

ESIP

Mike Thulen

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov

Questions



?



FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

Jim Friedl

Outreach Manager

732-855-6543

jfriedl@trcsolutions.com