

New Jersey's Clean Energy Program

LGEA Presentation
Kearny School District

September 22, 2020

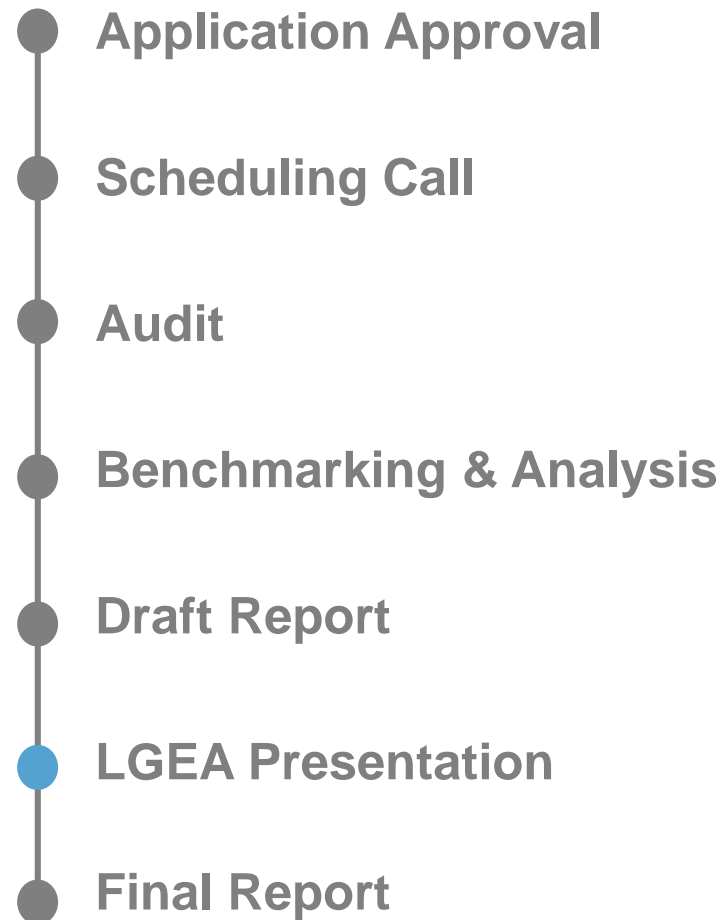
INTRODUCTIONS

- *Kearny School District*
 - Dr. Ed Izbicki Sr. – Business Administrator
 - Mark Bruscino – Director of Plant Operations
 - Greg Burns – Account Executive (Energy Systems Group)
- *NJ Clean Energy Program*
 - Aimee Lalonde – TRC Program Manager
 - Kush Patel – TRC Auditor
 - Sarah Walters – TRC Account Manager
 - Mike Mandzik – TRC Outreach Manager
 - Michelle Rossi – ESIP Coordinator (BPU)
 - Arif Welcher – Government/Business Manager (BPU)

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 Kearny School District

LGEA PROCESS



SITE VISIT & UTILITY ANALYSIS

Overview of Systems, Baseline & Existing Conditions:

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

Utility Consumption:

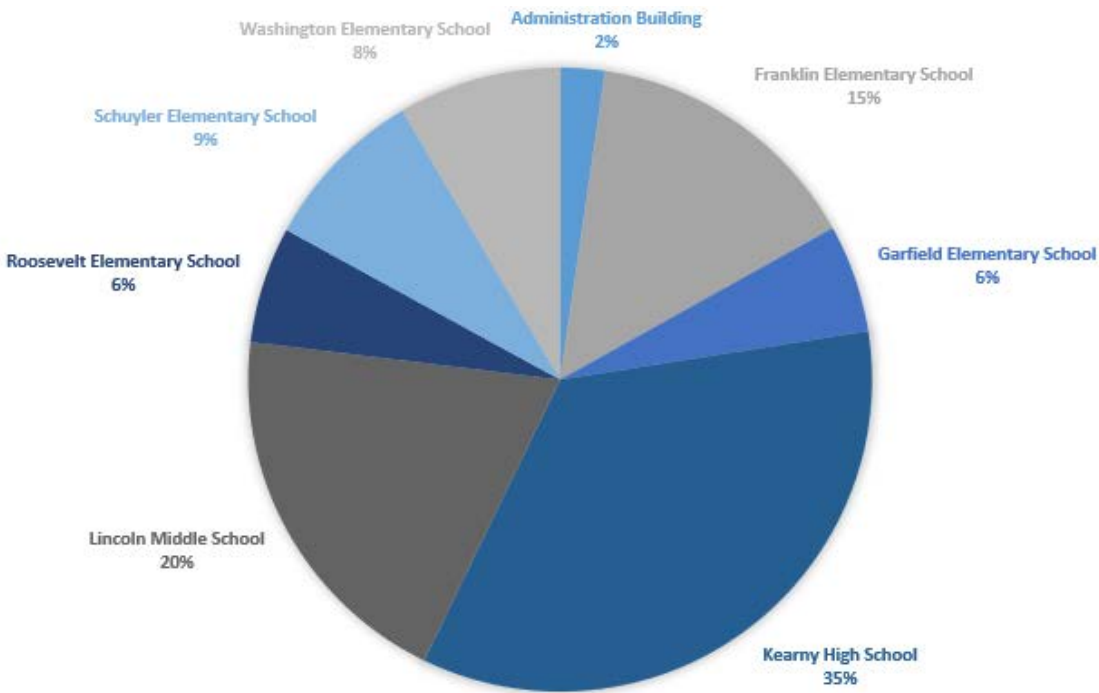
- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Solar Consumption and Costs

Sites Visited/Analyzed

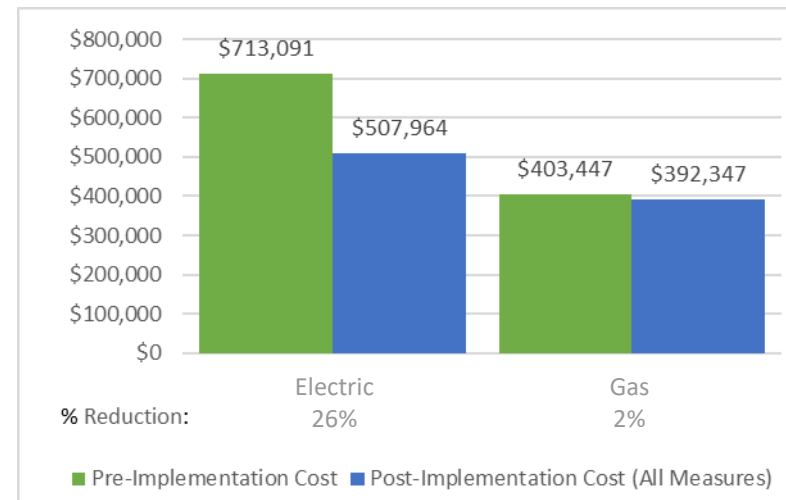
- Franklin Elementary School
- Garfield Elementary School
- Roosevelt Elementary School
- Schuyler Elementary School
- Washington Elementary School
- Lincoln Middle School
- Kearny High School
- Administration Building

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

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

25
ENERGY STAR® Score¹

Washington Elementary School
Primary Property Type: K-12 School
Gross Floor Area (ft²): 88,220
Built: 1915
For Year Ending: July 31, 2019
Date Generated: August 20, 2020

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 Washington Elementary School 80 Belgrove Drive Kearny, New Jersey 07032	Property Owner Kearny School District 172 Midland Avenue Kearny, NJ 07032 (201) 955-5004	Primary Contact Ed Izbiak Sr. 172 Midland Avenue Kearny, NJ 07032 (201) 955-5004 eizbiak@kearnyschools.com
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Property ID: 11534421

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 94.7 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) 5,821,189 (84%) Electricity (kBtu) 844,876 (10%) Electricity - Solar (kBtu) 502,414 (6%)	National Median Comparison National Median Site EUI (kBtu/ft²) 73.7 National Median Source EUI (kBtu/ft²) 90.5 % Diff from National Median Source EUI 29% Annual Emissions Greenhouse Gas Emissions (Metric Tons CO2e/year) 448
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Source EUI
116.3 kBtu/ft²

Site EUI
94.7 kBtu/ft²

Source EUI
116.3 kBtu/ft²

National Median Comparison
National Median Site EUI (kBtu/ft²) 73.7
National Median Source EUI (kBtu/ft²) 90.5
% Diff from National Median Source EUI 29%

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

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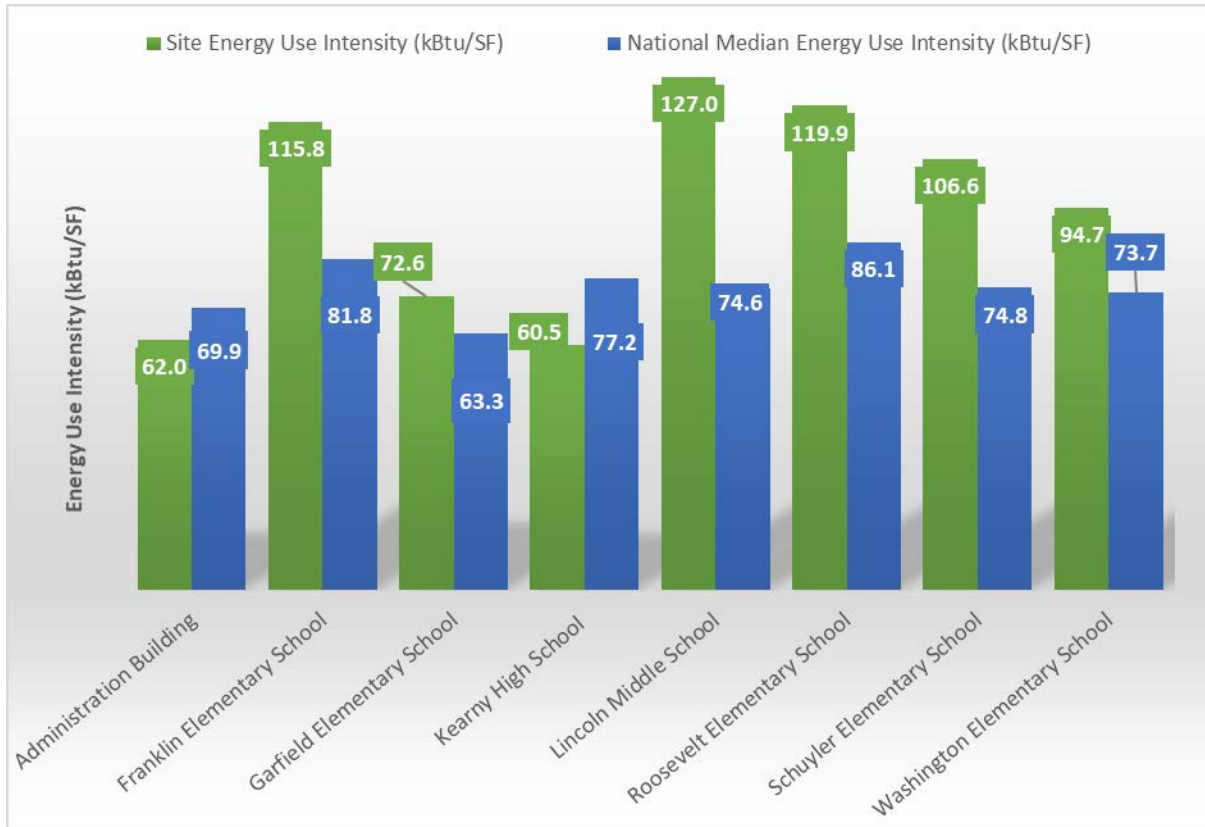


Professional Engineer or Registered
Architect Stamp
(if applicable)

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.



BENCHMARKING



Site Name	ENERGY STAR [®] Score
Administration Building	59
Franklin Elementary School	18
Garfield Elementary School	36
Kearny High School	72
Lincoln Middle School	6
Roosevelt Elementary School	19
Schuyler Elementary School	17
Washington Elementary School	25

ALL OPPORTUNITIES

Savings Potential

Post-Implementation Fuel
Cost, \$392,347

Savings
Potential,
\$216,228

Post-Implementation Electric
Cost, \$507,964

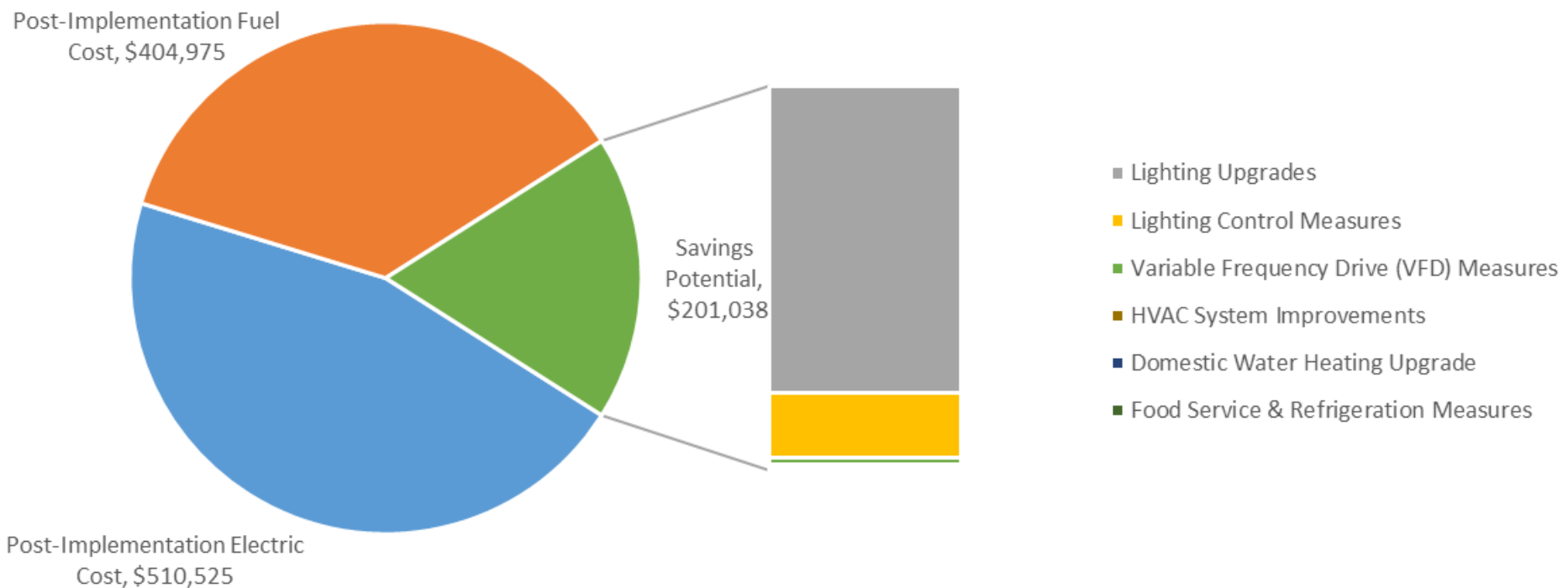
- Lighting Upgrades
- Lighting Control Measures
- Motor Upgrades
- Variable Frequency Drive (VFD) Measures
- Electric Unitary HVAC Measures
- Gas Heating (HVAC/Process) Replacement
- HVAC System Improvements
- Domestic Water Heating Upgrade
- Food Service & Refrigeration Measures
- Custom Measures

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		1,336,313	233.3	-269.7	\$160,591	\$563,511	\$216,666	\$346,845	2.2	1,314,080
ECM 1	Install LED Fixtures	299,769	41.8	-54.9	\$34,484	\$255,705	\$67,260	\$188,445	5.5	295,443
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,142	1.9	-2.5	\$1,402	\$4,066	\$1,000	\$3,066	2.2	11,930
ECM 3	Retrofit Fixtures with LED Lamps	1,024,401	189.6	-212.3	\$124,706	\$303,740	\$148,406	\$155,334	1.2	1,006,707
Lighting Control Measures		278,317	50.1	-58.1	\$33,849	\$241,514	\$101,060	\$140,454	4.1	273,464
ECM 4	Install Occupancy Sensor Lighting Controls	234,289	42.4	-49.0	\$28,478	\$186,014	\$48,020	\$137,994	4.8	230,195
ECM 5	Install Daylight Dimming/Photocell Controls	433	0.0	0.0	\$51	\$600	\$0	\$600	11.9	436
ECM 6	Install High/Low Lighting Controls	43,594	7.7	-9.1	\$5,321	\$54,900	\$53,040	\$1,860	0.3	42,832
Motor Upgrades		676	0.1	0.0	\$96	\$1,559	\$0	\$1,559	16.2	681
ECM 7	Premium Efficiency Motors	676	0.1	0.0	\$96	\$1,559	\$0	\$1,559	16.2	681
Variable Frequency Drive (VFD) Measures		30,007	8.1	0.0	\$3,595	\$19,020	\$6,400	\$12,620	3.5	30,217
ECM 8	Install VFDs on Constant Volume (CV) Fans	30,007	8.1	0.0	\$3,595	\$19,020	\$6,400	\$12,620	3.5	30,217
Electric Unitary HVAC Measures		20,977	13.0	0.0	\$2,893	\$287,419	\$14,429	\$272,990	94.4	21,124
ECM 9	Install High Efficiency Air Conditioning Units	20,977	13.0	0.0	\$2,893	\$287,419	\$14,429	\$272,990	94.4	21,124
Gas Heating (HVAC/Process) Replacement		0	0.0	1,268.6	\$11,145	\$764,903	\$4,000	\$760,903	68.3	148,541
ECM 10	Install High Efficiency Steam Boilers	0	0.0	1,180.9	\$10,349	\$742,268	\$0	\$742,268	71.7	138,267
ECM 11	Install High Efficiency Furnaces	0	0.0	87.8	\$796	\$22,635	\$4,000	\$18,635	23.4	10,275
HVAC System Improvements		0	0.0	55.0	\$488	\$782	\$408	\$374	0.8	6,441
ECM 12	Install Pipe Insulation	0	0.0	55.0	\$488	\$782	\$408	\$374	0.8	6,441
Domestic Water Heating Upgrade		0	0.0	114.6	\$1,010	\$1,384	\$1,384	\$0	0.0	13,418
ECM 13	Install Low-Flow DHW Devices	0	0.0	114.6	\$1,010	\$1,384	\$1,384	\$0	0.0	13,418
Food Service & Refrigeration Measures		18,284	2.1	0.0	\$2,185	\$8,073	\$800	\$7,273	3.3	18,412
ECM 14	Replace Refrigeration Equipment	5,390	0.6	0.0	\$630	\$6,233	\$0	\$6,233	9.9	5,427
ECM 15	Vending Machine Control	12,895	1.5	0.0	\$1,555	\$1,840	\$800	\$1,040	0.7	12,985
Custom Measures		0	0.0	42.5	\$376	\$6,940	\$0	\$6,940	18.5	4,976
ECM 16	Insulate Feedwater Tank	0	0.0	42.5	\$376	\$6,940	\$0	\$6,940	18.5	4,976
TOTALS		1,684,575	306.7	1,153.0	\$216,228	\$1,895,103	\$345,147	\$1,549,956	7.2	1,831,354

COST EFFECTIVE OPPORTUNITIES

Savings Potential



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades		1,336,313	233.3	-269.7	\$160,591	\$563,511	\$216,666	\$346,845	2.2	1,314,080
ECM 1	Install LED Fixtures	299,769	41.8	-54.9	\$34,484	\$255,705	\$67,260	\$188,445	5.5	295,443
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	12,142	1.9	-2.5	\$1,402	\$4,066	\$1,000	\$3,066	2.2	11,930
ECM 3	Retrofit Fixtures with LED Lamps	1,024,401	189.6	-212.3	\$124,706	\$303,740	\$148,406	\$155,334	1.2	1,006,707
Lighting Control Measures		277,884	50.1	-58.1	\$33,799	\$240,914	\$101,060	\$139,854	4.1	273,027
ECM 4	Install Occupancy Sensor Lighting Controls	234,289	42.4	-49.0	\$28,478	\$186,014	\$48,020	\$137,994	4.8	230,195
ECM 6	Install High/Low Lighting Controls	43,594	7.7	-9.1	\$5,321	\$54,900	\$53,040	\$1,860	0.3	42,832
Variable Frequency Drive (VFD) Measures		30,007	8.1	0.0	\$3,595	\$19,020	\$6,400	\$12,620	3.5	30,217
ECM 8	Install VFDs on Constant Volume (CV) Fans	30,007	8.1	0.0	\$3,595	\$19,020	\$6,400	\$12,620	3.5	30,217
HVAC System Improvements		0	0.0	55.0	\$488	\$782	\$408	\$374	0.8	6,441
ECM 12	Install Pipe Insulation	0	0.0	55.0	\$488	\$782	\$408	\$374	0.8	6,441
Domestic Water Heating Upgrade		0	0.0	114.6	\$1,010	\$1,384	\$1,384	\$0	0.0	13,418
ECM 13	Install Low-Flow DHW Devices	0	0.0	114.6	\$1,010	\$1,384	\$1,384	\$0	0.0	13,418
Food Service & Refrigeration Measures		12,895	1.5	0.0	\$1,555	\$1,840	\$800	\$1,040	0.7	12,985
ECM 15	Vending Machine Control	12,895	1.5	0.0	\$1,555	\$1,840	\$800	\$1,040	0.7	12,985
TOTALS		1,657,099	293.0	-158.1	\$201,038	\$827,450	\$326,718	\$500,732	2.5	1,650,168

* - 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).

FRANKLIN ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			311,023	58.3	-64	\$42,954	\$107,184	\$48,594	\$58,590	1.4	305,689
ECM 1	Install LED Fixtures	Yes	15,676	2.1	-2	\$2,172	\$23,262	\$7,380	\$15,882	7.3	15,508
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,639	0.3	0	\$226	\$643	\$200	\$443	2.0	1,610
ECM 3	Retrofit Fixtures with LED Lamps	Yes	293,708	55.9	-61	\$40,555	\$83,278	\$41,014	\$42,264	1.0	288,571
Lighting Control Measures			75,563	14.2	-16	\$10,434	\$70,342	\$32,610	\$37,732	3.6	74,241
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	64,299	12.2	-13	\$8,878	\$49,642	\$12,180	\$37,462	4.2	63,174
ECM 5	Install High/Low Lighting Controls	Yes	11,264	2.1	-2	\$1,555	\$20,700	\$20,430	\$270	0.2	11,067
Variable Frequency Drive (VFD) Measures			6,599	1.6	0	\$923	\$4,076	\$1,800	\$2,276	2.5	6,646
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	6,599	1.6	0	\$923	\$4,076	\$1,800	\$2,276	2.5	6,646
Electric Unitary HVAC Measures			8,719	5.8	0	\$1,220	\$127,519	\$7,150	\$120,369	98.7	8,780
ECM 7	Install High Efficiency Air Conditioning Units	No	8,719	5.8	0	\$1,220	\$127,519	\$7,150	\$120,369	98.7	8,780
Gas Heating (HVAC/Process) Replacement			0	0.0	629	\$5,452	\$286,570	\$1,600	\$284,970	52.3	73,603
ECM 8	Install High Efficiency Steam Boilers	No	0	0.0	576	\$4,996	\$275,536	\$0	\$275,536	55.2	67,443
ECM 9	Install High Efficiency Furnaces	No	0	0.0	53	\$456	\$11,034	\$1,600	\$9,434	20.7	6,160
HVAC System Improvements			0	0.0	26	\$225	\$384	\$200	\$184	0.8	3,040
ECM 10	Install Pipe Insulation	Yes	0	0.0	26	\$225	\$384	\$200	\$184	0.8	3,040
Domestic Water Heating Upgrade			0	0.0	26	\$222	\$387	\$387	\$0	0.0	3,000
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	26	\$222	\$387	\$387	\$0	0.0	3,000
Food Service & Refrigeration Measures			1,612	0.2	0	\$225	\$230	\$100	\$130	0.6	1,623
ECM 12	Vending Machine Control	Yes	1,612	0.2	0	\$225	\$230	\$100	\$130	0.6	1,623
Custom Measures			0	0.0	25	\$215	\$3,660	\$0	\$3,660	17.0	2,904
ECM 13	Insulate Feedwater Tank	No	0	0.0	25	\$215	\$3,660	\$0	\$3,660	17.0	2,904
TOTALS (COST EFFECTIVE MEASURES)			394,797	74.3	-28	\$54,983	\$182,603	\$83,691	\$98,912	1.8	394,238
TOTALS (ALL MEASURES)			403,516	80.1	625	\$61,871	\$600,352	\$92,441	\$507,910	8.2	479,526

GARFIELD ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			77,901	15.5	-16	\$7,948	\$26,619	\$13,870	\$12,749	1.6	76,539
ECM 1	Retrofit Fixtures with LED Lamps	Yes	77,901	15.5	-16	\$7,948	\$26,619	\$13,870	\$12,749	1.6	76,539
Lighting Control Measures			22,899	4.5	-5	\$2,336	\$17,171	\$6,975	\$10,196	4.4	22,498
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	19,165	3.8	-4	\$1,955	\$13,346	\$3,150	\$10,196	5.2	18,830
ECM 3	Install High/Low Lighting Controls	Yes	3,733	0.6	-1	\$381	\$3,825	\$3,825	\$0	0.0	3,668
Gas Heating (HVAC/Process) Replacement			0	0.0	208	\$1,889	\$286,811	\$0	\$286,811	151.8	24,337
ECM 4	Install High Efficiency Steam Boilers	No	0	0.0	208	\$1,889	\$286,811	\$0	\$286,811	151.8	24,337
HVAC System Improvements			0	0.0	21	\$194	\$248	\$104	\$144	0.7	2,495
ECM 5	Install Pipe Insulation	Yes	0	0.0	21	\$194	\$248	\$104	\$144	0.7	2,495
Domestic Water Heating Upgrade			0	0.0	7	\$60	\$50	\$50	\$0	0.0	778
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	7	\$60	\$50	\$50	\$0	0.0	778
Food Service & Refrigeration Measures			1,612	0.2	0	\$168	\$230	\$100	\$130	0.8	1,623
ECM 7	Vending Machine Control	Yes	1,612	0.2	0	\$168	\$230	\$100	\$130	0.8	1,623
Custom Measures			0	0.0	18	\$161	\$3,280	\$0	\$3,280	20.4	2,072
ECM 8	Insulate Feedwater Tank	No	0	0.0	18	\$161	\$3,280	\$0	\$3,280	20.4	2,072
TOTALS (COST EFFECTIVE MEASURES)			102,412	20.1	7	\$10,706	\$44,318	\$21,099	\$23,218	2.2	103,932
TOTALS (ALL MEASURES)			102,412	20.1	232	\$12,756	\$334,409	\$21,099	\$313,309	24.6	130,342

* - 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).

ROOSEVELT ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			72,188	12.1	-15	\$7,959	\$25,112	\$11,502	\$13,610	1.7	70,972
ECM 1	Install LED Fixtures	Yes	1,073	0.0	0	\$120	\$4,830	\$1,000	\$3,830	31.8	1,081
ECM 2	Retrofit Fixtures with LED Lamps	Yes	71,115	12.1	-15	\$7,839	\$20,282	\$10,502	\$9,780	1.2	69,891
Lighting Control Measures			18,884	3.3	-4	\$2,081	\$14,085	\$5,175	\$8,910	4.3	18,554
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	16,017	2.8	-3	\$1,765	\$11,610	\$2,870	\$8,740	5.0	15,737
ECM 4	Install High/Low Lighting Controls	Yes	2,867	0.5	-1	\$316	\$2,475	\$2,305	\$170	0.5	2,817
Electric Unitary HVAC Measures			325	0.2	0	\$36	\$1,496	\$184	\$1,312	36.1	327
ECM 5	Install High Efficiency Air Conditioning Units	No	325	0.2	0	\$36	\$1,496	\$184	\$1,312	36.1	327
Domestic Water Heating Upgrade			0	0.0	17	\$151	\$129	\$129	\$0	0.0	1,993
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	17	\$151	\$129	\$129	\$0	0.0	1,993
Food Service & Refrigeration Measures			1,612	0.2	0	\$181	\$230	\$100	\$130	0.7	1,623
ECM 7	Vending Machine Control	Yes	1,612	0.2	0	\$181	\$230	\$100	\$130	0.7	1,623
TOTALS (COST EFFECTIVE MEASURES)			92,684	15.6	-2	\$10,372	\$39,556	\$16,906	\$22,650	2.2	93,143
TOTALS (ALL MEASURES)			93,009	15.8	-2	\$10,408	\$41,052	\$17,090	\$23,962	2.3	93,470

* - 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).

SCHUYLER ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			167,070	22.1	-31	\$17,263	\$87,720	\$27,790	\$59,930	3.5	164,584
ECM 1	Install LED Fixtures	Yes	38,905	3.2	-4	\$4,045	\$56,992	\$11,800	\$45,192	11.2	38,655
ECM 2	Retrofit Fixtures with LED Lamps	Yes	128,165	18.9	-27	\$13,217	\$30,728	\$15,990	\$14,738	1.1	125,929
Lighting Control Measures			35,165	5.2	-7	\$3,626	\$20,223	\$6,690	\$13,533	3.7	34,550
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	31,169	4.6	-7	\$3,214	\$17,298	\$4,020	\$13,278	4.1	30,624
ECM 4	Install High/Low Lighting Controls	Yes	3,995	0.6	-1	\$412	\$2,925	\$2,670	\$255	0.6	3,925
Variable Frequency Drive (VFD) Measures			5,314	1.4	0	\$558	\$4,076	\$1,800	\$2,276	4.1	5,351
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	5,314	1.4	0	\$558	\$4,076	\$1,800	\$2,276	4.1	5,351
Electric Unitary HVAC Measures			3,294	2.1	0	\$346	\$117,450	\$2,360	\$115,089	332.7	3,317
ECM 6	Install High Efficiency Air Conditioning Units	No	3,294	2.1	0	\$346	\$117,450	\$2,360	\$115,089	332.7	3,317
Gas Heating (HVAC/Process) Replacement			0	0.0	19	\$172	\$7,250	\$1,600	\$5,650	32.8	2,218
ECM 7	Install High Efficiency Furnaces	No	0	0.0	19	\$172	\$7,250	\$1,600	\$5,650	32.8	2,218
Domestic Water Heating Upgrade			0	0.0	23	\$206	\$172	\$172	\$0	0.0	2,647
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	23	\$206	\$172	\$172	\$0	0.0	2,647
Food Service & Refrigeration Measures			1,612	0.2	0	\$169	\$230	\$100	\$130	0.8	1,623
ECM 9	Vending Machine Control	Yes	1,612	0.2	0	\$169	\$230	\$100	\$130	0.8	1,623
TOTALS (COST EFFECTIVE MEASURES)			209,160	28.9	-16	\$21,822	\$112,421	\$36,552	\$75,869	3.5	208,754
TOTALS (ALL MEASURES)			212,454	31.0	3	\$22,340	\$237,121	\$40,512	\$196,609	8.8	214,290

WASHINGTON ELEMENTARY SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			129,846	25.2	-27	\$17,768	\$68,106	\$29,386	\$38,720	2.2	127,645
ECM 1	Install LED Fixtures	Yes	28,169	5.4	-6	\$3,856	\$32,339	\$10,890	\$21,449	5.6	27,705
ECM 2	Retrofit Fixtures with LED Lamps	Yes	101,678	19.8	-21	\$13,912	\$35,767	\$18,496	\$17,271	1.2	99,940
Lighting Control Measures			33,973	6.6	-7	\$4,648	\$24,210	\$9,325	\$14,885	3.2	33,383
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	29,687	5.9	-6	\$4,061	\$19,710	\$5,110	\$14,600	3.6	29,171
ECM 4	Install High/Low Lighting Controls	Yes	4,287	0.8	-1	\$586	\$4,500	\$4,215	\$285	0.5	4,212
Electric Unitary HVAC Measures			5,400	2.6	0	\$749	\$22,443	\$2,760	\$19,683	26.3	5,438
ECM 5	Install High Efficiency Air Conditioning Units	No	5,400	2.6	0	\$749	\$22,443	\$2,760	\$19,683	26.3	5,438
Gas Heating (HVAC/Process) Replacement			0	0.0	397	\$3,463	\$179,921	\$0	\$179,921	52.0	46,486
ECM 6	Install High Efficiency Steam Boilers	No	0	0.0	397	\$3,463	\$179,921	\$0	\$179,921	52.0	46,486
HVAC System Improvements			0	0.0	3	\$23	\$35	\$24	\$11	0.5	308
ECM 7	Install Pipe Insulation	Yes	0	0.0	3	\$23	\$35	\$24	\$11	0.5	308
Domestic Water Heating Upgrade			0	0.0	18	\$157	\$272	\$272	\$0	0.0	2,111
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	18	\$157	\$272	\$272	\$0	0.0	2,111
Food Service & Refrigeration Measures			3,224	0.4	0	\$447	\$460	\$200	\$260	0.6	3,246
ECM 9	Vending Machine Control	Yes	3,224	0.4	0	\$447	\$460	\$200	\$260	0.6	3,246
TOTALS (COST EFFECTIVE MEASURES)			167,043	32.2	-13	\$23,043	\$93,084	\$39,207	\$53,876	2.3	166,694
TOTALS (ALL MEASURES)			172,443	34.7	384	\$27,255	\$295,448	\$41,967	\$253,480	9.3	218,618

LINCOLN MIDDLE SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			245,226	46.8	-50	\$28,275	\$103,156	\$41,302	\$61,854	2.2	241,105
ECM 1	Install LED Fixtures	Yes	30,864	5.0	-5	\$3,565	\$33,490	\$11,400	\$22,090	6.2	30,443
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,246	0.2	0	\$144	\$552	\$120	\$432	3.0	1,224
ECM 3	Retrofit Fixtures with LED Lamps	Yes	213,117	41.6	-44	\$24,567	\$69,114	\$29,782	\$39,332	1.6	209,438
Lighting Control Measures			50,678	9.6	-11	\$5,842	\$57,980	\$24,690	\$33,290	5.7	49,802
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	39,834	7.6	-8	\$4,591	\$43,880	\$11,940	\$31,940	7.0	39,138
ECM 5	Install Photocell Controls	No	433	0.0	0	\$51	\$600	\$0	\$600	11.9	436
ECM 6	Install High/Low Lighting Controls	Yes	10,410	2.0	-2	\$1,200	\$13,500	\$12,750	\$750	0.6	10,228
Motor Upgrades			355	0.1	0	\$41	\$758	\$0	\$758	18.3	357
ECM 7	Premium Efficiency Motors	No	355	0.1	0	\$41	\$758	\$0	\$758	18.3	357
Variable Frequency Drive (VFD) Measures			18,094	5.1	0	\$2,113	\$10,867	\$2,800	\$8,067	3.8	18,221
ECM 8	Install VFDs on Constant Volume (CV) Fans	Yes	18,094	5.1	0	\$2,113	\$10,867	\$2,800	\$8,067	3.8	18,221
Electric Unitary HVAC Measures			197	0.1	0	\$23	\$1,089	\$0	\$1,089	47.2	199
ECM 9	Install High Efficiency Air Conditioning Units	No	197	0.1	0	\$23	\$1,089	\$0	\$1,089	47.2	199
Domestic Water Heating Upgrade			0	0.0	8	\$59	\$122	\$122	\$0	0.0	944
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	8	\$59	\$122	\$122	\$0	0.0	944
Food Service & Refrigeration Measures			5,390	0.6	0	\$630	\$6,233	\$0	\$6,233	9.9	5,427
ECM 11	Replace Refrigeration Equipment	No	5,390	0.6	0	\$630	\$6,233	\$0	\$6,233	9.9	5,427
TOTALS (COST EFFECTIVE MEASURES)			313,565	61.6	-52	\$36,240	\$171,525	\$68,914	\$102,611	2.8	309,636
TOTALS (ALL MEASURES)			319,940	62.4	-52	\$36,984	\$180,204	\$68,914	\$111,291	3.0	316,056

KEARNY HIGH SCHOOL

#	Energy Conservation Measure	Cost Effective?	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			310,861	47.1	-63	\$34,680	\$136,740	\$39,606	\$97,134	2.8	305,694
ECM 1	Install LED Fixtures	Yes	183,800	26.2	-37	\$20,506	\$103,966	\$24,300	\$79,666	3.9	180,759
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	9,257	1.4	-2	\$1,032	\$2,871	\$680	\$2,191	2.1	9,095
ECM 3	Retrofit Fixtures with LED Lamps	Yes	117,803	19.5	-24	\$13,142	\$29,903	\$14,626	\$15,277	1.2	115,840
Lighting Control Measures			36,004	5.3	-8	\$4,014	\$32,281	\$12,620	\$19,661	4.9	35,375
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	30,468	4.5	-6	\$3,397	\$27,556	\$7,910	\$19,646	5.8	29,935
ECM 5	Install High/Low Lighting Controls	Yes	5,537	0.8	-1	\$617	\$4,725	\$4,710	\$15	0.0	5,440
HVAC System Improvements			0	0.0	4	\$39	\$58	\$40	\$18	0.5	514
ECM 6	Install Pipe Insulation	Yes	0	0.0	4	\$39	\$58	\$40	\$18	0.5	514
Domestic Water Heating Upgrade			0	0.0	13	\$114	\$194	\$194	\$0	0.0	1,500
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	13	\$114	\$194	\$194	\$0	0.0	1,500
Food Service & Refrigeration Measures			3,224	0.4	0	\$365	\$460	\$200	\$260	0.7	3,246
ECM 8	Vending Machine Control	Yes	3,224	0.4	0	\$365	\$460	\$200	\$260	0.7	3,246
TOTALS (COST EFFECTIVE MEASURES)			350,089	52.8	-53	\$39,213	\$169,733	\$52,660	\$117,073	3.0	346,329
TOTALS (ALL MEASURES)			350,089	52.8	-53	\$39,213	\$169,733	\$52,660	\$117,073	3.0	346,329

* - 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).

ADMINISTRATION BUILDING

#	Energy Conservation Measure	Cost Effective?	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			22,198	6.2	-4	\$3,744	\$8,874	\$4,616	\$4,258	1.1	21,851
ECM 1	Install LED Fixtures	Yes	1,283	0.0	0	\$219	\$825	\$490	\$335	1.5	1,292
ECM 2	Retrofit Fixtures with LED Lamps	Yes	20,915	6.2	-4	\$3,525	\$8,049	\$4,126	\$3,923	1.1	20,559
Lighting Control Measures			5,151	1.4	-1	\$868	\$5,222	\$2,975	\$2,247	2.6	5,061
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	3,650	1.0	-1	\$615	\$2,972	\$840	\$2,132	3.5	3,586
ECM 4	Install High/Low Lighting Controls	Yes	1,501	0.3	0	\$253	\$2,250	\$2,135	\$115	0.5	1,475
Motor Upgrades			322	0.1	0	\$55	\$800	\$0	\$800	14.6	324
ECM 5	Premium Efficiency Motors	No	322	0.1	0	\$55	\$800	\$0	\$800	14.6	324
Electric Unitary HVAC Measures			3,042	2.2	0	\$519	\$17,423	\$1,975	\$15,448	29.8	3,063
ECM 6	Install High Efficiency Air Conditioning Units	No	3,042	2.2	0	\$519	\$17,423	\$1,975	\$15,448	29.8	3,063
Gas Heating (HVAC/Process) Replacement			0	0.0	16	\$167	\$4,350	\$800	\$3,550	21.2	1,896
ECM 7	Install High Efficiency Furnaces	No	0	0.0	16	\$167	\$4,350	\$800	\$3,550	21.2	1,896
HVAC System Improvements			0	0.0	1	\$7	\$58	\$40	\$18	2.4	84
ECM 8	Install Pipe Insulation	Yes	0	0.0	1	\$7	\$58	\$40	\$18	2.4	84
Domestic Water Heating Upgrade			0	0.0	4	\$39	\$57	\$57	\$0	0.0	444
ECM 9	Install Low-Flow DHW Devices	Yes	0	0.0	4	\$39	\$57	\$57	\$0	0.0	444
TOTALS (COST EFFECTIVE MEASURES)			27,349	7.6	-1	\$4,659	\$14,211	\$7,688	\$6,523	1.4	27,441
TOTALS (ALL MEASURES)			30,712	9.8	15	\$5,400	\$36,785	\$10,463	\$26,321	4.9	32,724

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

MEASURES FOR FUTURE CONSIDERATION

- **Retro-Commissioning Study**
- **Replace Smooth V-Belts with Notched or Synchronous Belts**
- **Installation of an Energy Management System**
- Electric Submeter
- Ozone Laundry System
- Pool Heating System Upgrades
- Eliminate Oversized Domestic Hot Water Heating Systems
- **Heating System Conversion from Steam to Hot Water**
- Upgrade to a Heat Pump System
- Vestibule Revolving Doors
- **Window Replacements**
- **Disaggregate Boiler System**

COMBINED HEAT & POWER POTENTIAL

Lincoln Middle School	
<i>Potential:</i>	HIGH
<i>System Type:</i>	Microturbine
<i>System Potential: (kW)</i>	120
<i>Electric Generation: (kWh per year)</i>	856,922
<i>Thermal Generation: (MBtu per year)</i>	4,780,350
<i>Displaced Cost: (per year)</i>	\$66,442

CLEAN ENERGY PROGRAM PORTFOLIO

ELIGIBLE SECTORS

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

Equipment Rebates:

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

Whole Buildings:

- *Pay for Performance*

Energy Generation:

- **Combined Heat and Power – Fuel Cells**

OTHER PROGRAMS

Renewable Energy Generation:

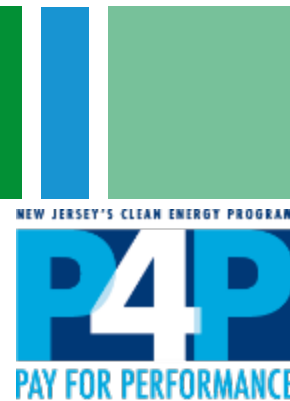
- Transition Incentive (TI) Program
- Community Solar

RECOMMENDED NJCEP INCENTIVES PER BUILDING

Kearny School District	Pay For Performance	Direct Install	SmartStart	CTEEP	Combined Heat & Power
Franklin Elementary School		X	X	X	
Garfield Elementary School		X	X	X	
Roosevelt Elementary School		X	X	X	
Schuyler Elementary School		X	X	X	
Washington Elementary School		X	X	X	
Lincoln Middle School	X		X	X	X
Kearny High School	X		X	X	
Administration Building		X	X	X	

PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



What is P4P: Comprehensive, whole-building approach to saving energy in existing or new facilities.

Qualifications: Annual peak demand 200 kW+ in the previous year for existing buildings

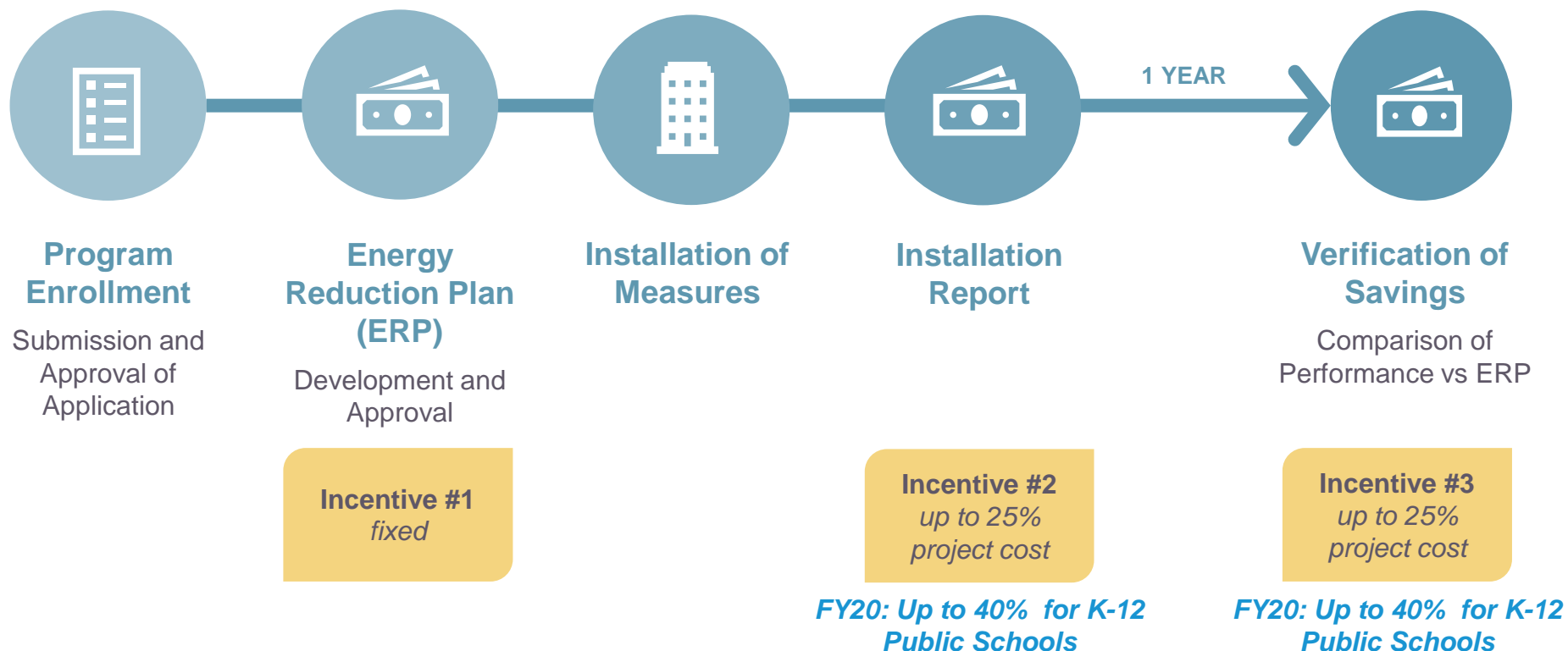
About: Customer choose from a network of pre-approved ***Participating Partners***

Incentives:

- Incentives paid in three installments
 - Up to \$2MM per project((\$4MM entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
 - Up to 50% of project cost (80% for UEZ/OZ/Local Govt./ K-12 Public Schools) up to \$2MM per project / \$4MM per entity annually

PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



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/Local Govt./[K-12 Public Schools](#)), or
- \$250,000 entity cap ([\\$4MM](#) UEZ/OZ/Local Govt./[K-12 Public Schools](#))



DIRECT INSTALL

NJCleanEnergy.com/DI

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

INCENTIVE FUNDING

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

CUSTOMER

20% of installed cost

All other eligible facilities:

INCENTIVE FUNDING

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

CUSTOMER

30% of installed cost



DIRECT INSTALL

NJCleanEnergy.com/DI

Participating Contractor

Lime Energy

Chris Fornicola

732-427-7278

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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

FY20 Prescriptive Only:

**DOUBLE INCENTIVES
FOR OZ/UEZ/ LOCAL
GOVT./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**

COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP

What is CHP: Combined Heat & Power (CHP) units generates electricity and recycle waste heat to provide heating and/or cooling

About:

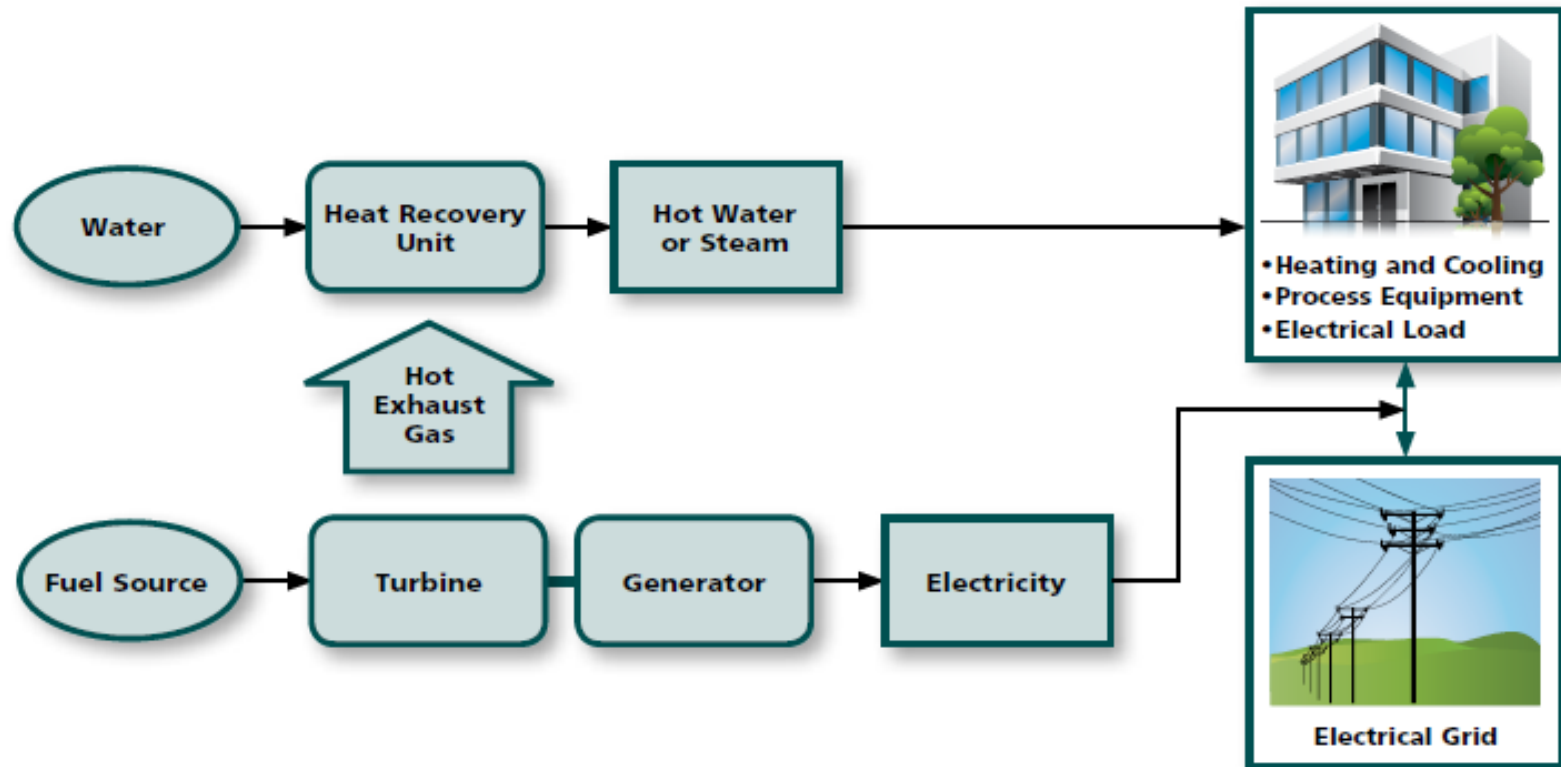
- Fuel Cells (FC) with or without heat recovery (HR)
- Resiliency with Return on Investment
- Technology-neutral incentives

Incentives:

- 30/50/20 Incentive payment
 - 30% when equipment purchased
 - 50% when system installed
 - 20% upon confirmation that the project is achieving the required performance

COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP



COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP

Eligible Technology	Size (Installed Rated Capacity)	Incentive (\$/Watt) ⁽⁵⁾	% of Total Cost Cap per project	\$ Cap per project
CHP powered by non-renewable or renewable fuel source, or a combination ⁽⁴⁾ : <ul style="list-style-type: none"> • Gas Internal Combustion Engine • Gas Combustion Turbine • Microturbine 	≤500 kW ⁽¹⁾	\$2.00	30-40% ⁽²⁾	\$2 million
	>500 kW – 1 MW ⁽¹⁾	\$1.00		
	>1 MW – 3 MW ⁽¹⁾	\$0.55	30%	\$3 million
	Fuel Cell with Heat Recovery (FCHR)	>3 MW ⁽¹⁾		
Fuel Cell without Heat Recovery (FCwoHR)	Same as above ⁽¹⁾	Applicable amount above	30%	\$1 million
Waste Heat to Power (WHP) ⁽³⁾ Powered by non-renewable fuel source. Heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine)	≤1 MW ⁽¹⁾	\$1.00	30%	\$2 million
	>1 MW ⁽¹⁾	\$0.50	30%	\$3 million

Critical Facility/Blackstart bonus of 25%



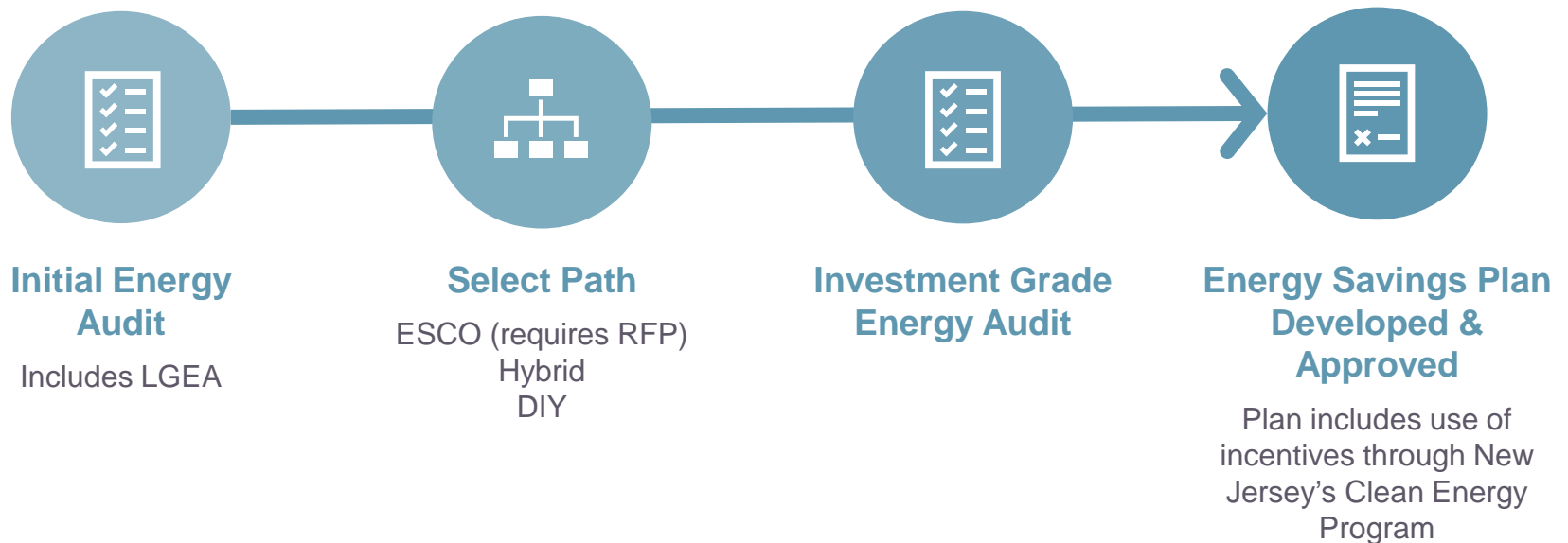
FINANCING MECHANISM: ESIP

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

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QUESTIONS

