

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Newark Public Schools

TRC Energy Services

June 19, 2019

Introductions

Newark Public Schools

- Chris Smith
- Valerie Wilson
- Jason Ballard
- Paulinus Egu
- Steven Morlino
- William Polk
- Lisa Abdul
- Henry Thompson

NJ Clean Energy Program

- Aimee Lalonde – TRC Auditor
- Sarah Walters – TRC Account Manager
- Mike Mandzik – TRC Regional Outreach Manager
- Mike Thulen – ESIP coordinator
- Michelle Rossi – State Energy Office
- 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 or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Newark Public Schools

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 Systems
- HVAC Controls

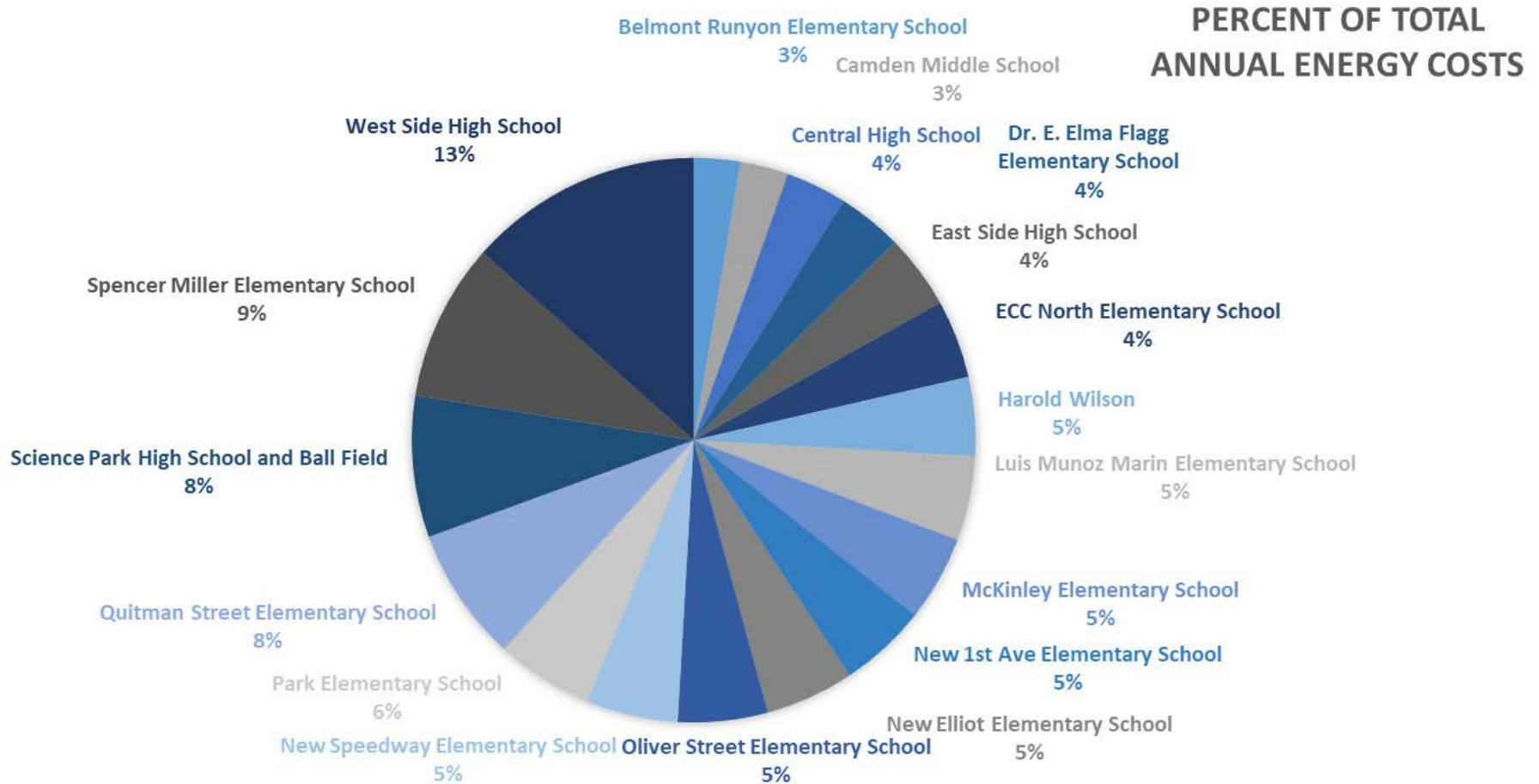
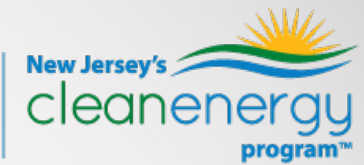
Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

- Belmont Runyon Elementary School
- Camden Middle School
- Central High School
- Dr. E. Elma Flagg Elementary School
- East Side High School
- ECC North Elementary School
- Harold Wilson
- Luis Munoz Marin Elementary School
- McKinley Elementary School
- New 1st Ave Elementary School
- New Elliot Elementary School
- Oliver Street Elementary School
- New Speedway Elementary School
- Park Elementary School
- Quitman Street Elementary School
- Science Park High School and Ball Field
- Spencer Miller Elementary School
- West Side High School

Overview of Buildings



Benchmarking



Belmont Runyon ES

ENERGY STAR® Statement of Energy Performance

16
ENERGY STAR® Score¹

Belmont-Runyon Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 118,936
Built: 2004

For Year Ending: May 31, 2018
Date Generated: December 22, 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 business activity.

Property & Contact Information

Property Address: Belmont-Runyon Elementary School
1 Belmont-Runyon Way
Newark, New Jersey 07106

Property Owner: _____

Primary Contact: _____

Property ID: 3570058

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
74.5 kBtu/ft²	Electric - Grid (kBtu): 5,095,354 (57%)	National Median Site EUI (kBtu/ft²): 51.5
	Natural Gas (kBtu): 3,795,967 (43%)	National Median Source EUI (kBtu/ft²): 105.8
		% Diff from National Median Source EUI: 44%
Source EUI		Annual Emissions
152.8 kBtu/ft²		Greenhouse Gas Emissions (Metric Tons CO2e/year): 715

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

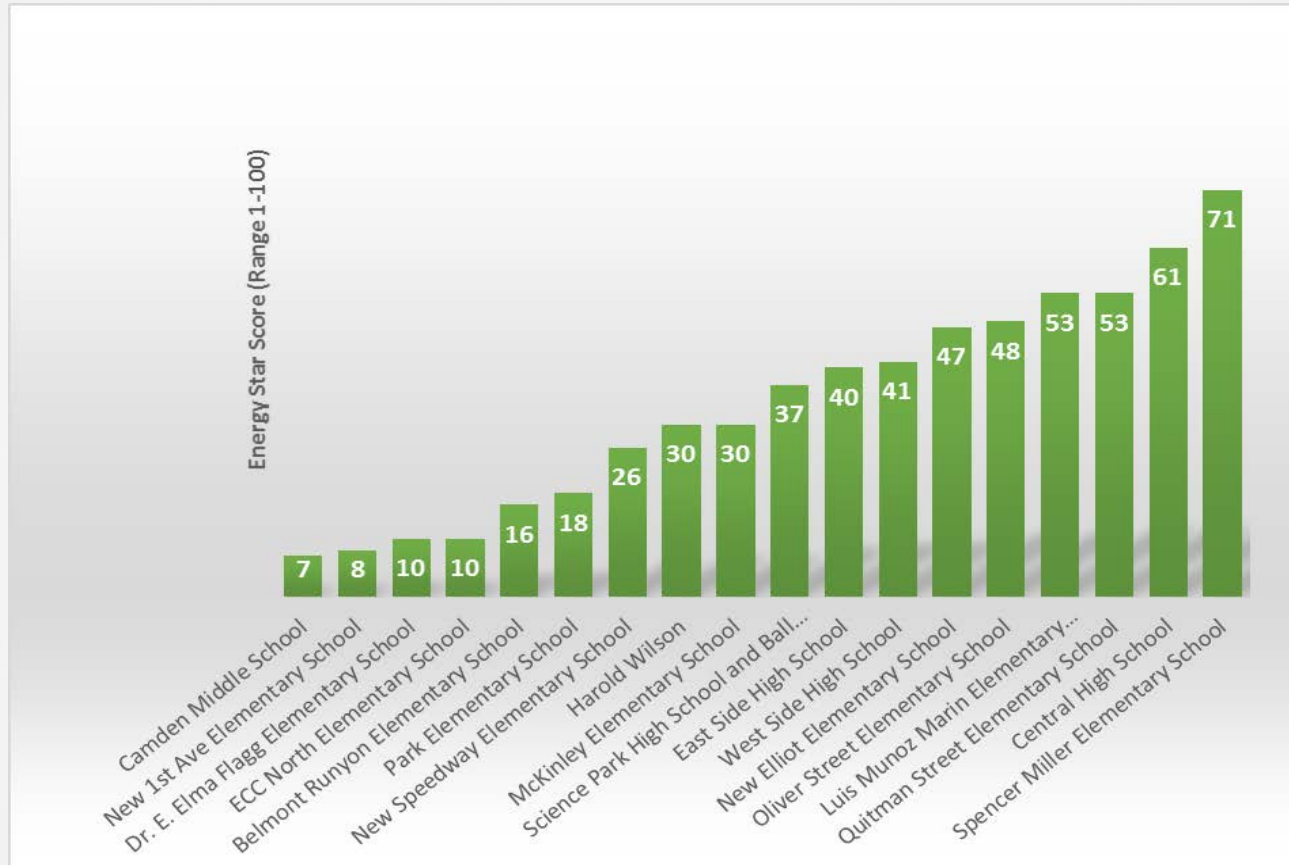
Licensed Professional

Professional Engineer Stamp (If Applicable)

Building	Energy Star Score
Belmont Runyon	16
Camden Middle	7
Central High School	61
Dr. E. Alma Flag	5
East Side High School	40
ECC North	10
Harold Wilson	30
Luis Munoz Marin	53
Mckinley	30
New 1st Ave	8
New Elliot	47
New Speedway	26
New Oliver St	48
Park Elementary	18
Quitman St School	72
Science Park High School &	37
Spencer/Miller	71
West Side High School	41

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



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 (Part 1)



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	3,963,198	770.4	-826.6	\$468,880	\$1,924,411	\$407,140	\$1,517,271	3.2	3,894,118
Install LED Fixtures	633,585	91.1	-72.6	\$73,148	\$595,348	\$90,656	\$504,692	6.9	629,515
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	34,368	6.6	-6.3	\$3,799	\$12,243	\$920	\$11,323	3.0	33,873
Retrofit Fixtures with LED Lamps	3,295,245	672.7	-747.8	\$391,933	\$1,316,820	\$315,564	\$1,001,256	2.6	3,230,730
Lighting Control Measures	672,506	115.3	-153.3	\$77,867	\$656,325	\$62,005	\$594,320	7.6	659,254
Install Occupancy Sensor Lighting Controls	405,671	90.3	-92.0	\$46,920	\$490,085	\$61,420	\$428,665	9.1	397,736
Install Daylight Dimming Controls	4,020	0.2	-0.1	\$476	\$2,700	\$585	\$2,115	4.4	4,031
Install High/Low Lighting Controls	262,816	24.8	-61.2	\$30,470	\$163,540	\$0	\$163,540	5.4	257,486
Motor Upgrades	62,554	14.5	0.0	\$7,357	\$192,831	\$0	\$192,831	26.2	62,991
Premium Efficiency Motors	62,554	14.5	0.0	\$7,357	\$192,831	\$0	\$192,831	26.2	62,991
Variable Frequency Drive (VFD) Measures	936,984	194.4	0.0	\$112,385	\$577,252	\$47,403	\$529,849	4.7	943,535
Install VFDs on Constant Volume (CV) Fans	513,170	130.3	0.0	\$61,327	\$289,595	\$36,053	\$253,541	4.1	516,758
Install VFDs on Chilled Water Pumps	80,755	19.4	0.0	\$9,324	\$45,872	\$3,600	\$42,272	4.5	81,320
Install VFDs on Heating Water Pumps	292,079	35.2	0.0	\$35,519	\$170,510	\$0	\$170,510	4.8	294,121
Install VFDs on Cooling Tower Fans	20,300	-1.8	0.0	\$2,344	\$34,274	\$2,400	\$31,874	13.6	20,442
Install Boiler Draft Fan VFDs	22,349	9.0	0.0	\$2,851	\$26,142	\$3,100	\$23,042	8.1	22,506
Install VFDs on Kitchen Hood Fan Motors	8,330	2.3	0.0	\$1,019	\$10,861	\$2,250	\$8,611	8.4	8,388
Electric Unitary HVAC Measures	118,453	51.7	0.0	\$13,033	\$404,328	\$10,575	\$393,754	30.2	119,281
Install High Efficiency Air Conditioning Units	116,651	51.7	0.0	\$12,784	\$396,719	\$10,161	\$386,559	30.2	117,467
Install High Efficiency Heat Pumps	1,802	0.0	0.0	\$248	\$7,609	\$414	\$7,195	29.0	1,814
Electric Chiller Replacement	393,260	222.9	0.0	\$46,748	\$1,863,861	\$162,734	\$1,701,127	36.4	396,010
Install High Efficiency Chillers	393,260	222.9	0.0	\$46,748	\$1,863,861	\$162,734	\$1,701,127	36.4	396,010
Gas Heating (HVAC/Process) Replacement	0	0.0	11,965.8	\$100,983	\$2,874,063	\$77,164	\$2,796,900	27.7	1,401,041
Install High Efficiency Hot Water Boilers	0	0.0	11,940.1	\$100,778	\$2,866,903	\$76,764	\$2,790,140	27.7	1,398,040
Install High Efficiency Furnaces	0	0.0	25.6	\$205	\$7,160	\$400	\$6,760	32.9	3,002

All Opportunities (Part 2)

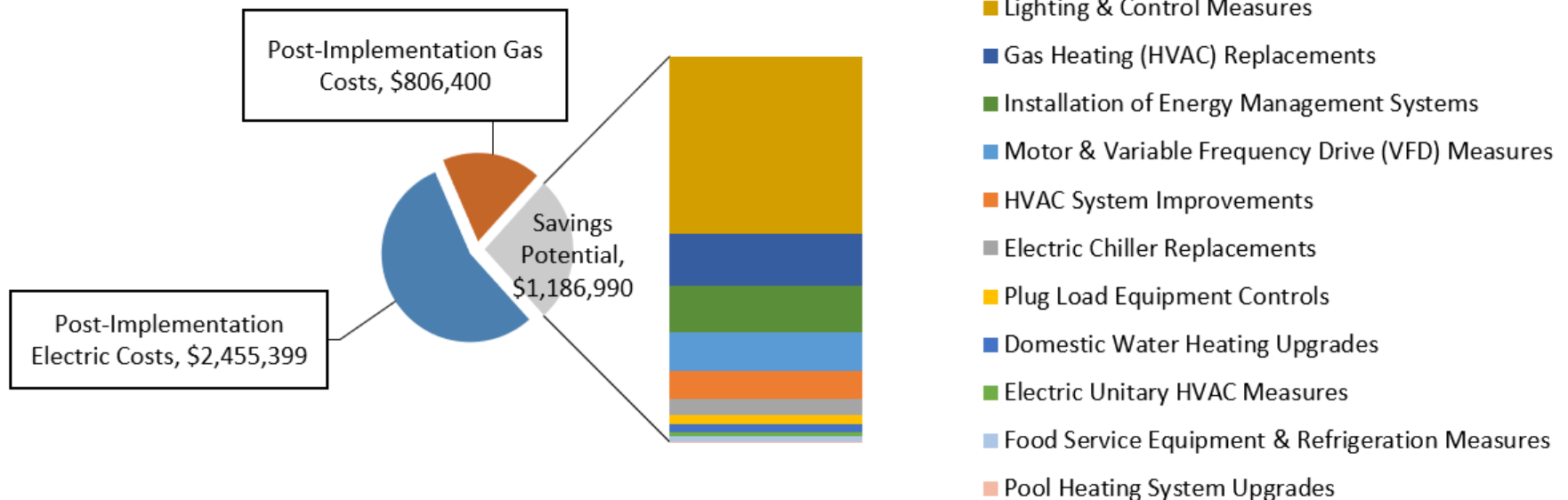
Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
HVAC System Improvements	35,813	0.0	879.1	\$11,785	\$89,575	\$0	\$89,575	7.6	138,995
Implement Demand Control Ventilation (DCV)	25,343	0.0	808.8	\$9,956	\$88,362	\$0	\$88,362	8.9	120,221
Install Pipe Insulation	10,470	0.0	70.3	\$1,829	\$1,213	\$0	\$1,213	0.7	18,774
Domestic Water Heating Upgrade	227,873	132.3	-331.2	\$24,183	\$195,201	\$13,373	\$181,828	7.5	190,691
Install High Efficiency Gas-Fired Water Heater	113,420	108.0	-329.3	\$10,638	\$157,500	\$5,457	\$152,043	14.3	75,661
Install Tankless Water Heater	0	0.0	20.4	\$154	\$5,215	\$300	\$4,915	31.9	2,387
Install Gas-Fired Booster Water Heater	94,500	24.3	-363.9	\$7,949	\$29,740	\$7,615	\$22,124	2.8	52,548
Install Low-Flow DHW Devices	19,953	0.0	341.7	\$5,441	\$2,746	\$0	\$2,746	0.5	60,096
Food Service Equipment & Refrigeration Measures	111,231	16.2	0.0	\$12,892	\$169,023	\$10,345	\$158,678	12.3	112,008
Food Service Equipment Replacement	25,558	8.2	0.0	\$2,940	\$69,994	\$3,900	\$66,094	22.5	25,736
Refrigerator/Freezer Case Electrically Commutated Motors	26,804	3.3	0.0	\$3,089	\$10,616	\$120	\$10,496	3.4	26,992
Refrigeration Controls	25,369	0.9	0.0	\$2,960	\$21,526	\$1,125	\$20,401	6.9	25,546
Replace Refrigeration Equipment	33,500	3.8	0.0	\$3,903	\$66,888	\$5,200	\$61,688	15.8	33,734
Plug Load Equipment Control - Vending Machine	69,168	7.9	0.0	\$7,840	\$11,500	\$2,050	\$9,450	1.2	69,652
Vending Machine Control	69,168	7.9	0.0	\$7,840	\$11,500	\$2,050	\$9,450	1.2	69,652
Custom Measures	2,003,478	265.6	9,355.7	\$303,040	\$3,480,257	\$14,849	\$3,465,408	11.4	3,111,013
Computer Power Management Software	187,491	0.0	0.0	\$22,130	\$94,350	\$0	\$94,350	4.3	188,802
HVAC Duct Insulation	6,371	0.0	233.4	\$2,085	\$2,880	\$0	\$2,880	1.4	33,740
Retro-Commissioning Study & HVAC Improvements	512,536	0.0	1,156.3	\$68,652	\$376,000	\$0	\$376,000	5.5	649,600
Installation of an Energy Management System	611,123	0.0	8,691.5	\$144,274	\$2,123,000	\$0	\$2,123,000	14.7	1,633,059
Pool Heating System Upgrades	65,700	42.0	-249.1	\$4,186	\$24,000	\$287	\$23,713	5.7	36,987
Heating System Upgrades	620,257	223.6	-906.4	\$57,987	\$833,000	\$14,048	\$818,952	14.1	518,461
Steam Trap Replacements	0	0.0	300.4	\$2,568	\$3,000	\$0	\$3,000	1.2	35,179
Domestic Water Heating System Upgrades	0	0.0	129.7	\$1,158	\$24,027	\$515	\$23,513	20.3	15,185
TOTALS	8,594,518	1,791.2	20,889.5	\$1,186,990	\$12,438,629	\$807,638	\$11,630,991	9.8	11,098,590

* - 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.

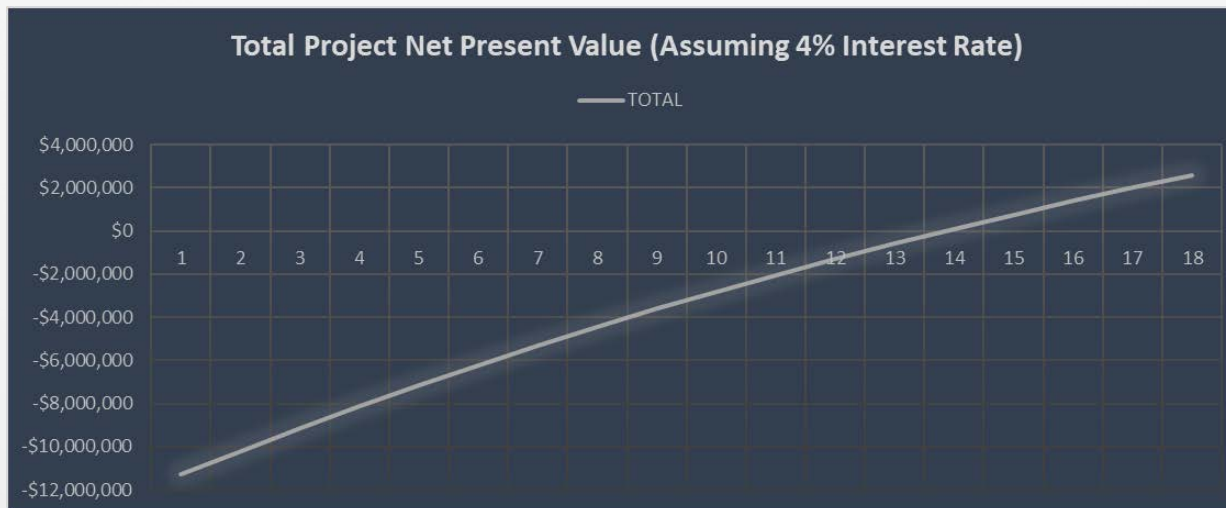
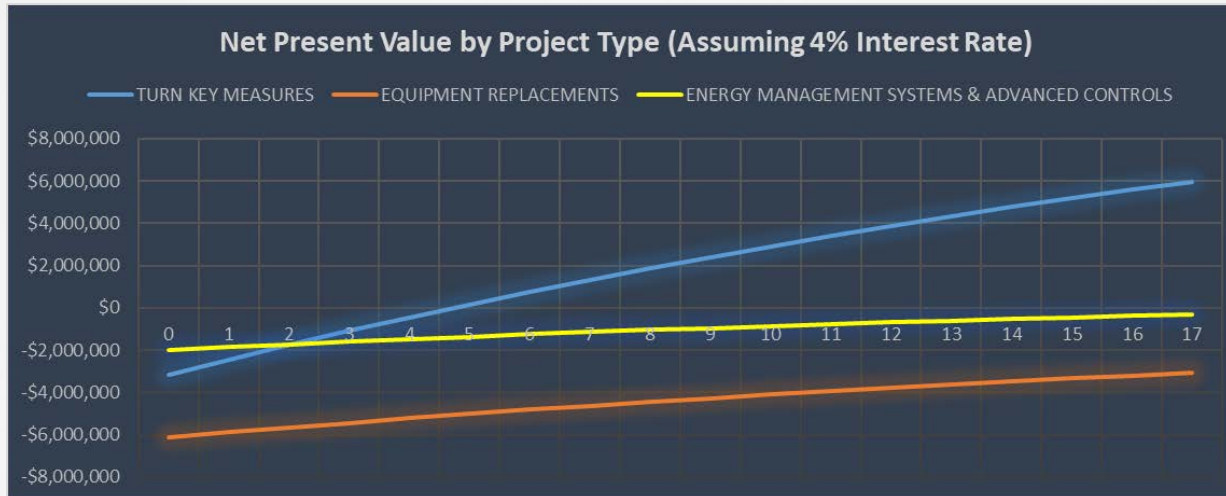
** - Simple Payback Period is based on net measure costs (i.e. after incentives).

All Opportunities

- Newark Public Schools Portfolio Wide Savings Potential



All Opportunities - Potential Project Economics



Cost Effective Opportunities*

** Opportunities considered cost effective have a payback period less than 2/3rds of the useful 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		3,963,198	770.4	-826.6	\$468,880	\$1,924,411	\$407,140	\$1,517,271	3.2	3,894,118
ECM 1	Install LED Fixtures	633,585	91.1	-72.6	\$73,148	\$595,348	\$90,656	\$504,692	6.9	629,515
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	34,368	6.6	-6.3	\$3,799	\$12,243	\$920	\$11,323	3.0	33,873
ECM 3	Retrofit Fixtures with LED Lamps	3,295,245	672.7	-747.8	\$391,933	\$1,316,820	\$315,564	\$1,001,256	2.6	3,230,730
Lighting Control Measures		672,506	115.3	-153.3	\$77,867	\$656,325	\$62,005	\$594,320	7.6	659,254
ECM 4	Install Occupancy Sensor Lighting Controls	405,671	90.3	-92.0	\$46,920	\$490,085	\$61,420	\$428,665	9.1	397,736
ECM 5	Install Daylight Dimming Controls	4,020	0.2	-0.1	\$476	\$2,700	\$585	\$2,115	4.4	4,031
ECM 6	Install High/Low Lighting Controls	262,816	24.8	-61.2	\$30,470	\$163,540	\$0	\$163,540	5.4	257,486
Motor Upgrades		46,974	10.7	0.0	\$5,456	\$127,069	\$0	\$127,069	23.3	47,302
ECM 7	Premium Efficiency Motors	46,974	10.7	0.0	\$5,456	\$127,069	\$0	\$127,069	23.3	47,302
Variable Frequency Drive (VFD) Measures		913,442	185.0	0.0	\$109,926	\$538,391	\$45,803	\$492,587	4.5	919,829
ECM 8	Install VFDs on Constant Volume (CV) Fans	504,041	124.4	0.0	\$60,374	\$272,807	\$34,453	\$238,354	3.9	507,565
ECM 9	Install VFDs on Chilled Water Pumps	80,755	19.4	0.0	\$9,324	\$45,872	\$3,600	\$42,272	4.5	81,320
ECM 10	Install VFDs on Heating Water Pumps	286,533	34.5	0.0	\$34,940	\$159,873	\$0	\$159,873	4.6	288,537
ECM 11	Install VFDs on Cooling Tower Fans	20,300	-1.8	0.0	\$2,344	\$34,274	\$2,400	\$31,874	13.6	20,442
ECM 12	Install Boiler Draft Fan VFDs	13,483	6.1	0.0	\$1,925	\$14,704	\$3,100	\$11,604	6.0	13,577
ECM 13	Install VFDs on Kitchen Hood Fan Motors	8,330	2.3	0.0	\$1,019	\$10,861	\$2,250	\$8,611	8.4	8,388
Gas Heating (HVAC/Process) Replacement		0	0.0	2,973.4	\$25,605	\$405,664	\$25,526	\$380,138	14.8	348,144
ECM 14	Install High Efficiency Hot Water Boilers	0	0.0	2,973.4	\$25,605	\$405,664	\$25,526	\$380,138	14.8	348,144
HVAC System Improvements		31,596	0.0	809.5	\$10,721	\$70,543	\$0	\$70,543	6.6	126,594
ECM 15	Implement Demand Control Ventilation (DCV)	21,126	0.0	739.2	\$8,892	\$69,330	\$0	\$69,330	7.8	107,820
ECM 16	Install Pipe Insulation	10,470	0.0	70.3	\$1,829	\$1,213	\$0	\$1,213	0.7	18,774
Domestic Water Heating Upgrade		191,767	89.1	-253.9	\$21,040	\$86,589	\$9,488	\$77,101	3.7	163,377
ECM 17	Install High Efficiency Gas-Fired Water Heater	77,313	64.8	-231.6	\$7,650	\$54,103	\$1,872	\$52,231	6.8	50,733
ECM 18	Install Gas-Fired Booster Water Heater	94,500	24.3	-363.9	\$7,949	\$29,740	\$7,615	\$22,124	2.8	52,548
ECM 19	Install Low-Flow DHW Devices	19,953	0.0	341.7	\$5,441	\$2,746	\$0	\$2,746	0.5	60,096
Food Service Equipment & Refrigeration Measures		50,582	4.0	0.0	\$5,846	\$27,522	\$1,120	\$26,402	4.5	50,936
ECM 20	Refrigerator/Freezer Case Electrically Commutated Motors	25,821	3.2	0.0	\$2,953	\$8,189	\$120	\$8,069	2.7	26,002
ECM 21	Refrigeration Controls	24,761	0.9	0.0	\$2,893	\$19,333	\$1,000	\$18,333	6.3	24,934
Plug Load Equipment Control - Vending Machine		69,168	7.9	0.0	\$7,840	\$11,500	\$2,050	\$9,450	1.2	69,652
ECM 22	Vending Machine Control	69,168	7.9	0.0	\$7,840	\$11,500	\$2,050	\$9,450	1.2	69,652
Custom Measures		1,939,665	265.6	5,864.5	\$265,765	\$2,400,005	\$4,377	\$2,395,628	9.0	2,637,973
ECM 23	Computer Power Management Software	181,713	0.0	0.0	\$21,487	\$90,125	\$0	\$90,125	4.2	182,983
ECM 24	HVAC Duct Insulation	6,371	0.0	233.4	\$2,085	\$2,880	\$0	\$2,880	1.4	33,740
ECM 25	Retro-Commissioning Study & HVAC Improvements	512,536	0.0	1,156.3	\$68,652	\$376,000	\$0	\$376,000	5.5	649,600
ECM 26	Installation of an Energy Management System	553,088	0.0	6,775.0	\$122,046	\$1,652,000	\$0	\$1,652,000	13.5	1,350,217
ECM 27	Pool Heating System Upgrades	65,700	42.0	-249.1	\$4,186	\$24,000	\$287	\$23,713	5.7	36,987
ECM 28	Heating System Upgrades	620,257	223.6	-2,351.5	\$44,741	\$252,000	\$4,090	\$247,910	5.5	349,267
ECM 29	Steam Trap Replacements	0	0.0	300.4	\$2,568	\$3,000	\$0	\$3,000	1.2	35,179
TOTALS		7,878,897	1,448.0	8,413.4	\$998,945	\$6,248,020	\$557,509	\$5,690,511	5.7	8,917,179

ECM Table Notes:

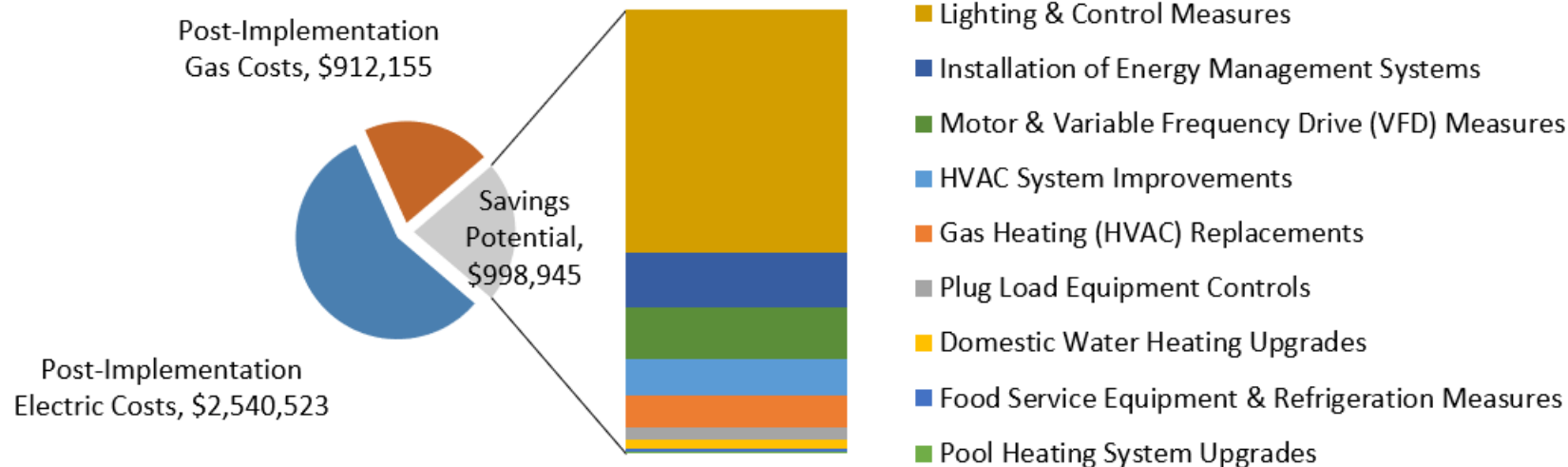
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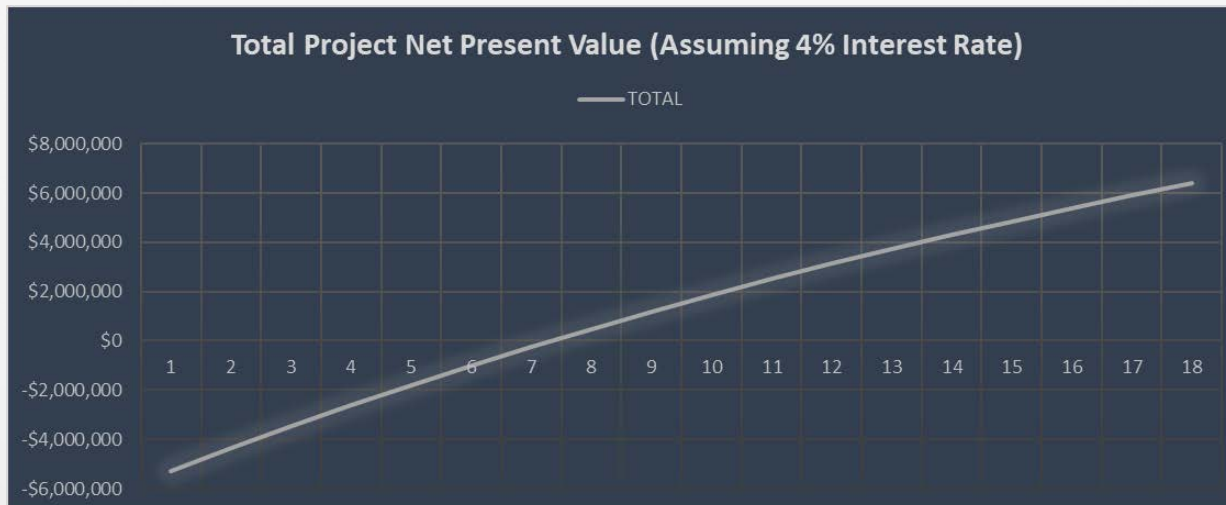
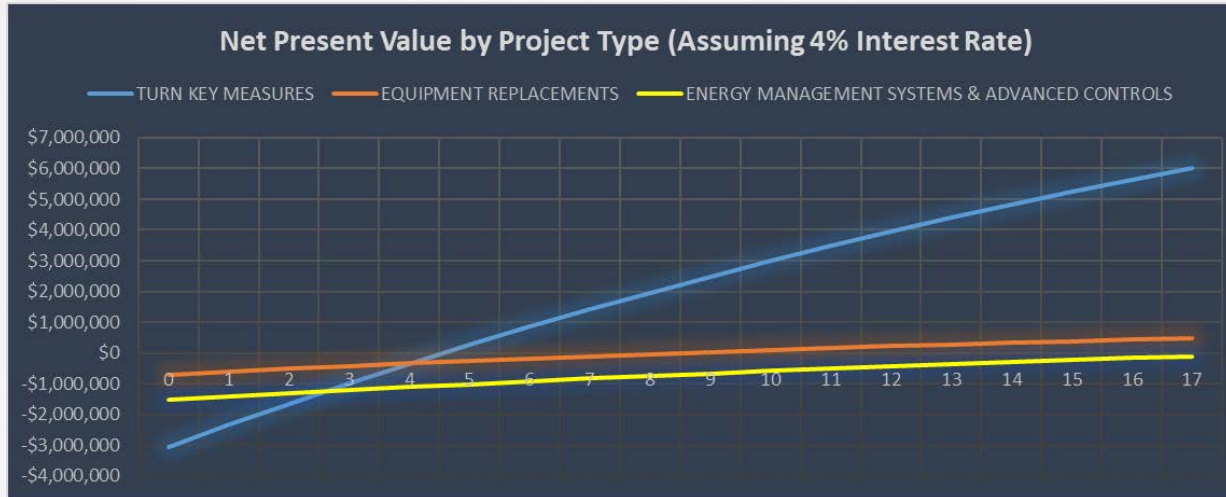
Cost Effective Opportunities



- Newark Public Schools Portfolio Wide Savings Potential



Cost Effective Opportunities - Potential Project Economics



Overview of All ECMs for NPS



Savings Summary							
Site Name	kWh Savings	kW Savings	Energy Cost Savings	Installation Cost	Incentive	Building Payback	Lbs CO2e Reduction
Belmont Runyon Elementary School	515,348	124	\$76,442	\$1,478,094	\$85,929	18.2	696,789
Camden Middle School	404,813	72	\$68,452	\$778,246	\$55,929	10.6	723,600
Central High School	681,634	133	\$68,921	\$482,952	\$52,633	6.2	659,176
Dr. E. Elma Flagg Elementary School	867,999	262	\$76,962	\$671,567	\$42,761	8.2	671,036
East Side High School	499,941	101	\$114,507	\$1,847,998	\$58,036	15.6	1,283,888
ECC North Elementary School	428,885	83	\$74,706	\$704,115	\$48,833	8.8	604,666
Harold Wilson	603,820	152	\$59,209	\$623,330	\$20,522	10.2	523,214
Luis Munoz Marin Elementary School	375,715	80	\$54,198	\$708,319	\$38,802	12.4	609,689
McKinley Elementary School	375,062	108	\$75,022	\$972,414	\$61,486	12.1	675,554
New 1st Ave Elementary School	719,047	155	\$86,459	\$547,006	\$51,506	5.7	713,635
New Elliot Elementary School	265,999	50	\$41,242	\$135,421	\$19,752	2.8	286,966
Oliver Street Elementary School	254,622	48	\$38,293	\$125,987	\$19,981	2.8	278,763
New Speedway Elementary School	445,133	66	\$55,644	\$230,371	\$26,459	3.7	450,302
Park Elementary School	477,670	74	\$59,504	\$226,874	\$28,777	3.3	490,970
Quitman Street Elementary School	265,907	36	\$40,042	\$530,436	\$40,812	12.2	411,378
Science Park High School and Ball Field	550,766	72	\$62,098	\$486,303	\$46,661	7.1	567,943
Spencer Miller Elementary School	479,537	103	\$79,978	\$1,112,505	\$50,357	13.3	869,477
West Side High School	382,621	73	\$55,311	\$776,688	\$58,402	13.0	581,544
TOTALS	8,594,518	1,791	\$1,186,990	\$12,438,629	\$807,638	9.8	11,098,590

The slides that follow present the ECM Summary Report Table for each building

Belmont Runyon 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			135,001	26.9	-31	\$16,094	\$118,816	\$21,035	\$97,781	6.1	132,319
ECM 1	Install LED Fixtures	Yes	49,098	5.5	-3	\$5,928	\$67,128	\$9,600	\$57,528	9.7	49,074
ECM 2	Retrofit Fixtures with LED Lamps	Yes	85,903	21.4	-28	\$10,166	\$51,688	\$11,435	\$40,253	4.0	83,245
Lighting Control Measures			20,546	4.9	-6	\$2,442	\$29,134	\$3,485	\$25,649	10.5	20,040
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	15,667	4.6	-5	\$1,854	\$26,534	\$3,485	\$23,049	12.4	15,183
ECM 4	Install Daylight Dimming Controls	Yes	3,416	0.2	0	\$414	\$1,200	\$0	\$1,200	2.9	3,440
ECM 5	Install High/Low Lighting Controls	Yes	1,463	0.2	0	\$173	\$1,400	\$0	\$1,400	8.1	1,418
Motor Upgrades			2,600	0.8	0	\$315	\$24,278	\$0	\$24,278	77.0	2,618
ECM 6	Premium Efficiency Motors	Yes	2,600	0.8	0	\$315	\$24,278	\$0	\$24,278	77.0	2,618
Variable Frequency Drive (VFD) Measures			147,978	39.3	0	\$17,952	\$79,682	\$10,320	\$69,362	3.9	149,013
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	85,431	24.3	0	\$10,364	\$48,010	\$6,720	\$41,290	4.0	86,028
ECM 8	Install VFDs on Chilled Water Pumps	Yes	41,698	11.1	0	\$5,059	\$19,003	\$3,600	\$15,403	3.0	41,990
ECM 9	Install VFDs on Heating Water Pumps	Yes	20,849	3.8	0	\$2,529	\$12,669	\$0	\$12,669	5.0	20,995
Electric Unitary HVAC Measures			15,334	6.7	0	\$1,860	\$92,356	\$5,952	\$86,404	46.4	15,441
ECM 10	Install High Efficiency Air Conditioning Units	No	15,334	6.7	0	\$1,860	\$92,356	\$5,952	\$86,404	46.4	15,441
Electric Chiller Replacement			55,729	31.0	0	\$6,761	\$331,351	\$31,464	\$299,887	44.4	56,118
ECM 11	Install High Efficiency Chillers	No	55,729	31.0	0	\$6,761	\$331,351	\$31,464	\$299,887	44.4	56,118
HVAC System Improvements			4,479	0.0	83	\$1,304	\$12,235	\$0	\$12,235	9.4	14,227
ECM 12	Implement Demand Control Ventilation (DCV)	Yes	4,479	0.0	83	\$1,304	\$12,235	\$0	\$12,235	9.4	14,227
Domestic Water Heating Upgrade			45,000	13.5	-194	\$3,681	\$20,654	\$3,315	\$17,339	4.7	22,605
ECM 13	Install Gas-Fired Booster Water Heater	Yes	45,000	13.5	-195	\$3,672	\$20,611	\$3,315	\$17,296	4.7	22,483
ECM 14	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$10	\$43	\$0	\$43	4.5	123
Food Service & Refrigeration Measures			10,341	0.9	0	\$1,255	\$6,288	\$400	\$5,888	4.7	10,413
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,966	0.2	0	\$239	\$1,213	\$0	\$1,213	5.1	1,980
ECM 16	Refrigeration Controls	Yes	3,540	0.1	0	\$429	\$4,385	\$250	\$4,135	9.6	3,564
ECM 17	Vending Machine Control	Yes	4,836	0.6	0	\$587	\$690	\$150	\$540	0.9	4,869
Custom Measures			78,340	0.0	1,666	\$24,778	\$763,300	\$9,958	\$753,342	30.4	273,993
ECM 18	Computer Power Management Software	Yes	5,964	0.0	0	\$723	\$4,300	\$0	\$4,300	5.9	6,005
ECM 19	Installation of an Energy Management System	Yes	72,376	0.0	221	\$10,809	\$178,000	\$0	\$178,000	16.5	98,794
ECM 20	Heating System Upgrades	No	0	0.0	1,445	\$13,246	\$581,000	\$9,958	\$571,042	43.1	169,194
TOTALS (COST EFFECTIVE MEASURES)			444,285	86.3	74	\$54,575	\$473,387	\$38,555	\$434,832	8.0	456,036
TOTALS (ALL MEASURES)			515,348	124.0	1,519	\$76,442	\$1,478,094	\$85,929	\$1,392,165	18.2	696,789

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

#	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			206,990	35.3	-60	\$23,323	\$98,101	\$18,221	\$79,880	3.4	201,420
ECM 1	Install LED Fixtures	Yes	21,982	2.7	0	\$2,528	\$28,991	\$1,425	\$27,566	10.9	22,135
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	11,009	0.9	-4	\$1,237	\$1,775	\$300	\$1,475	1.2	10,668
ECM 3	Retrofit Fixtures with LED Lamps	Yes	174,000	31.7	-56	\$19,557	\$67,335	\$16,496	\$50,839	2.6	168,617
Lighting Control Measures			47,370	7.5	-15	\$5,324	\$49,116	\$5,030	\$44,086	8.3	45,904
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	22,201	5.5	-7	\$2,495	\$41,116	\$5,030	\$36,086	14.5	21,514
ECM 5	Install High/Low Lighting Controls	Yes	25,169	2.0	-8	\$2,829	\$8,000	\$0	\$8,000	2.8	24,391
Motor Upgrades			2,117	0.6	0	\$243	\$9,341	\$0	\$9,341	38.4	2,131
ECM 6	Premium Efficiency Motors	Yes	2,117	0.6	0	\$243	\$9,341	\$0	\$9,341	38.4	2,131
Variable Frequency Drive (VFD) Measures			58,138	11.5	0	\$6,687	\$24,560	\$1,600	\$22,960	3.4	58,545
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	21,198	5.7	0	\$2,438	\$7,616	\$1,600	\$6,016	2.5	21,347
ECM 8	Install VFDs on Heating Water Pumps	Yes	36,940	5.8	0	\$4,249	\$16,944	\$0	\$16,944	4.0	37,198
Electric Unitary HVAC Measures			6,241	7.9	0	\$718	\$49,347	\$1,104	\$48,243	67.2	6,285
ECM 9	Install High Efficiency Air Conditioning Units	No	6,241	7.9	0	\$718	\$49,347	\$1,104	\$48,243	67.2	6,285
Gas Heating (HVAC/Process) Replacement			0	0.0	1,550	\$12,571	\$221,600	\$25,526	\$196,074	15.6	181,471
ECM 10	Install High Efficiency Hot Water Boilers	Yes	0	0.0	1,550	\$12,571	\$221,600	\$25,526	\$196,074	15.6	181,471
HVAC System Improvements			0	0.0	82	\$669	\$5,455	\$0	\$5,455	8.2	9,660
ECM 11	Implement Demand Control Ventilation (DCV)	Yes	0	0.0	81	\$653	\$5,438	\$0	\$5,438	8.3	9,428
ECM 12	Install Pipe Insulation	Yes	0	0.0	2	\$16	\$18	\$0	\$18	1.1	232
Domestic Water Heating Upgrade			0	0.0	33	\$270	\$11,543	\$398	\$11,145	41.3	3,899
ECM 13	Install High Efficiency Gas-Fired Water Heater	Yes	0	0.0	32	\$261	\$11,500	\$398	\$11,102	42.6	3,766
ECM 14	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$9	\$43	\$0	\$43	4.7	133
Food Service & Refrigeration Measures			33,119	9.0	0	\$3,810	\$74,252	\$4,050	\$70,202	18.4	33,350
ECM 15	Food Service Equipment Replacement	No	25,558	8.2	0	\$2,940	\$69,994	\$3,900	\$66,094	22.5	25,736
ECM 16	Replace Refrigeration Equipment	No	2,040	0.2	0	\$235	\$3,108	\$0	\$3,108	13.2	2,055
ECM 17	Vending Machine Control	Yes	5,521	0.6	0	\$635	\$1,150	\$150	\$1,000	1.6	5,559
Custom Measures			50,838	0.0	1,108	\$14,835	\$234,930	\$0	\$234,930	15.8	180,934
ECM 18	Computer Power Management Software	Yes	11,860	0.0	0	\$1,364	\$4,930	\$0	\$4,930	3.6	11,943
ECM 19	Installation of an Energy Management System	Yes	38,978	0.0	1,108	\$13,471	\$230,000	\$0	\$230,000	17.1	168,991
TOTALS (COST EFFECTIVE MEASURES)			370,974	55.6	2,698	\$64,559	\$655,797	\$50,925	\$604,872	9.4	689,524
TOTALS (ALL MEASURES)			404,813	71.9	2,698	\$68,452	\$778,246	\$55,929	\$722,318	10.6	723,600

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

#	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			392,425	79.0	0	\$41,143	\$283,992	\$45,411	\$238,581	5.8	395,169
ECM 1	Install LED Fixtures	Yes	154,458	22.9	0	\$16,194	\$154,104	\$15,385	\$138,719	8.6	155,538
ECM 2	Retrofit Fixtures with LED Lamps	Yes	237,967	56.1	0	\$24,949	\$129,888	\$30,026	\$99,862	4.0	239,631
Lighting Control Measures			58,473	9.9	0	\$6,131	\$63,931	\$6,435	\$57,496	9.4	58,882
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	32,599	6.9	0	\$3,418	\$45,931	\$6,435	\$39,496	11.6	32,827
ECM 4	Install High/Low Lighting Controls	Yes	25,874	3.1	0	\$2,713	\$18,000	\$0	\$18,000	6.6	26,055
Motor Upgrades			505	0.2	0	\$53	\$3,256	\$0	\$3,256	61.5	508
ECM 5	Premium Efficiency Motors	No	505	0.2	0	\$53	\$3,256	\$0	\$3,256	61.5	508
HVAC System Improvements			4,217	0.0	0	\$442	\$10,875	\$0	\$10,875	24.6	4,247
ECM 6	Implement Demand Control Ventilation (DCV)	No	4,217	0.0	0	\$442	\$10,875	\$0	\$10,875	24.6	4,247
Domestic Water Heating Upgrade			0	0.0	28	\$309	\$430	\$0	\$430	1.4	3,333
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	28	\$309	\$430	\$0	\$430	1.4	3,333
Food Service & Refrigeration Measures			20,552	1.9	0	\$2,155	\$8,992	\$500	\$8,492	3.9	20,696
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	4,587	0.6	0	\$481	\$1,213	\$0	\$1,213	2.5	4,619
ECM 9	Refrigeration Controls	Yes	5,858	0.2	0	\$614	\$4,385	\$250	\$4,135	6.7	5,899
ECM 10	Replace Refrigeration Equipment	No	1,020	0.1	0	\$107	\$1,554	\$0	\$1,554	14.5	1,027
ECM 11	Vending Machine Control	Yes	9,087	1.0	0	\$953	\$1,840	\$250	\$1,590	1.7	9,150
Custom Measures			203,562	42.0	-245	\$18,688	\$111,475	\$287	\$111,188	5.9	176,341
ECM 12	Computer Power Management Software	Yes	23,110	0.0	0	\$2,423	\$9,475	\$0	\$9,475	3.9	23,271
ECM 13	Retro-Commissioning Study & HVAC Improvements	Yes	114,753	0.0	5	\$12,080	\$78,000	\$0	\$78,000	6.5	116,083
ECM 14	Pool Heating System Upgrades	Yes	65,700	42.0	-249	\$4,185	\$24,000	\$287	\$23,713	5.7	36,987
TOTALS (COST EFFECTIVE MEASURES)			673,992	132.7	-216	\$68,319	\$467,267	\$52,633	\$414,634	6.1	653,394
TOTALS (ALL MEASURES)			679,735	133.1	-216	\$68,921	\$482,952	\$52,633	\$430,319	6.2	659,176

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Dr. E. Elma Flagg 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			88,417	27.2	0	\$9,518	\$51,593	\$12,879	\$38,714	4.1	89,035
ECM 1	Install LED Fixtures	Yes	1,796	0.2	0	\$193	\$3,938	\$1,500	\$2,438	12.6	1,808
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	10,728	3.9	0	\$1,155	\$5,894	\$150	\$5,744	5.0	10,803
ECM 3	Retrofit Fixtures with LED Lamps	Yes	75,893	23.1	0	\$8,170	\$41,761	\$11,229	\$30,532	3.7	76,424
Lighting Control Measures			22,340	7.1	0	\$2,405	\$23,110	\$2,715	\$20,395	8.5	22,496
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	18,545	6.7	0	\$1,996	\$21,110	\$2,715	\$18,395	9.2	18,674
ECM 5	Install High/Low Lighting Controls	Yes	3,795	0.4	0	\$409	\$2,000	\$0	\$2,000	4.9	3,822
Motor Upgrades			7,865	1.6	0	\$847	\$18,834	\$0	\$18,834	22.2	7,920
ECM 6	Premium Efficiency Motors	Yes	7,865	1.6	0	\$847	\$18,834	\$0	\$18,834	22.2	7,920
Variable Frequency Drive (VFD) Measures			84,543	14.9	0	\$9,101	\$54,915	\$4,440	\$50,475	5.5	85,134
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	52,488	11.7	0	\$5,650	\$30,920	\$3,240	\$27,680	4.9	52,855
ECM 8	Install VFDs on Chilled Water Pumps	Yes	15,221	2.8	0	\$1,638	\$9,828	\$0	\$9,828	6.0	15,327
ECM 9	Install VFDs on Heating Water Pumps	Yes	11,035	1.0	0	\$1,188	\$6,552	\$0	\$6,552	5.5	11,112
ECM 10	Install VFDs on Cooling Tower Fans	Yes	5,800	-0.5	0	\$624	\$7,616	\$1,200	\$6,416	10.3	5,841
Electric Chiller Replacement			57,364	15.6	0	\$6,175	\$170,637	\$18,000	\$152,637	24.7	57,765
ECM 11	Install High Efficiency Chillers	No	57,364	15.6	0	\$6,175	\$170,637	\$18,000	\$152,637	24.7	57,765
HVAC System Improvements			7,293	0.0	16	\$939	\$10,875	\$0	\$10,875	11.6	9,236
ECM 12	Implement Demand Control Ventilation (DCV)	Yes	7,293	0.0	16	\$939	\$10,875	\$0	\$10,875	11.6	9,236
Domestic Water Heating Upgrade			16,108	24.3	-53	\$1,232	\$49,468	\$1,710	\$47,758	38.7	10,040
ECM 13	Install High Efficiency Gas-Fired Water Heater	No	15,470	24.3	-53	\$1,164	\$49,410	\$1,710	\$47,700	41.0	9,398
ECM 14	Install Low-Flow DHW Devices	Yes	638	0.0	0	\$69	\$57	\$0	\$57	0.8	642
Food Service & Refrigeration Measures			6,801	0.8	0	\$732	\$1,600	\$150	\$1,450	2.0	6,849
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	1,966	0.2	0	\$212	\$910	\$0	\$910	4.3	1,980
ECM 16	Vending Machine Control	Yes	4,836	0.6	0	\$521	\$690	\$150	\$540	1.0	4,869
Custom Measures			577,267	170.5	-1,697	\$46,015	\$290,535	\$2,867	\$287,668	6.3	382,560
ECM 17	Computer Power Management Software	Yes	3,982	0.0	0	\$429	\$3,535	\$0	\$3,535	8.2	4,010
ECM 18	Installation of an Energy Management System	Yes	125,556	0.0	0	\$13,515	\$113,000	\$0	\$113,000	8.4	126,434
ECM 19	Heating System Upgrades	Yes	447,729	170.5	-1,697	\$32,071	\$174,000	\$2,867	\$171,133	5.3	252,117
TOTALS (COST EFFECTIVE MEASURES)			795,164	222.1	-1,681	\$69,624	\$451,520	\$23,051	\$428,469	6.2	603,873
TOTALS (ALL MEASURES)			867,999	262.0	-1,734	\$76,962	\$671,567	\$42,761	\$628,806	8.2	671,036

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

#	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			278,653	67.5	-90	\$31,293	\$171,031	\$47,616	\$123,415	3.9	270,047
ECM 1	Install LED Fixtures	Yes	12,142	2.2	-4	\$1,365	\$29,676	\$9,050	\$20,626	15.1	11,781
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	126	0.2	0	\$14	\$413	\$60	\$353	25.0	122
ECM 3	Retrofit Fixtures with LED Lamps	Yes	266,385	65.1	-86	\$29,915	\$140,943	\$38,506	\$102,437	3.4	258,144
Lighting Control Measures			46,828	9.3	-15	\$5,259	\$68,706	\$5,090	\$63,616	12.1	45,379
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	24,280	6.5	-8	\$2,727	\$43,506	\$5,090	\$38,416	14.1	23,528
ECM 5	Install High/Low Lighting Controls	Yes	22,548	2.8	-7	\$2,532	\$25,200	\$0	\$25,200	10.0	21,851
Motor Upgrades			8,860	2.0	0	\$1,019	\$14,051	\$0	\$14,051	13.8	8,922
ECM 6	Premium Efficiency Motors	Yes	8,860	2.0	0	\$1,019	\$14,051	\$0	\$14,051	13.8	8,922
Variable Frequency Drive (VFD) Measures			57,916	7.9	0	\$6,664	\$25,248	\$1,200	\$24,048	3.6	58,321
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	16,643	4.3	0	\$1,915	\$7,214	\$1,200	\$6,014	3.1	16,759
ECM 8	Install VFDs on Heating Water Pumps	Yes	41,274	3.6	0	\$4,749	\$18,034	\$0	\$18,034	3.8	41,562
Electric Unitary HVAC Measures			11,488	4.9	0	\$1,322	\$37,018	\$0	\$37,018	28.0	11,568
ECM 9	Install High Efficiency Air Conditioning Units	No	11,488	4.9	0	\$1,322	\$37,018	\$0	\$37,018	28.0	11,568
Gas Heating (HVAC/Process) Replacement			0	0.0	4,046	\$34,586	\$1,196,892	\$0	\$1,196,892	34.6	473,730
ECM 10	Install High Efficiency Hot Water Boilers	No	0	0.0	4,046	\$34,586	\$1,196,892	\$0	\$1,196,892	34.6	473,730
HVAC System Improvements			0	0.0	13	\$114	\$176	\$0	\$176	1.5	1,567
ECM 11	Install Pipe Insulation	Yes	0	0.0	13	\$114	\$176	\$0	\$176	1.5	1,567
Domestic Water Heating Upgrade			27,000	8.1	7	\$3,171	\$7,098	\$3,225	\$3,872	1.2	28,065
ECM 12	Install Gas-Fired Booster Water Heater	Yes	27,000	8.1	-92	\$2,319	\$6,847	\$3,225	\$3,622	1.6	16,399
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	100	\$852	\$251	\$0	\$251	0.3	11,666
Food Service & Refrigeration Measures			15,181	1.6	0	\$1,747	\$15,224	\$905	\$14,319	8.2	15,287
ECM 14	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	5,243	0.6	0	\$603	\$1,213	\$80	\$1,133	1.9	5,279
ECM 15	Refrigeration Controls	Yes	1,884	0.1	0	\$217	\$2,193	\$125	\$2,068	9.5	1,898
ECM 16	Replace Refrigeration Equipment	No	4,830	0.6	0	\$556	\$11,358	\$600	\$10,758	19.4	4,864
ECM 17	Vending Machine Control	Yes	3,224	0.4	0	\$371	\$460	\$100	\$360	1.0	3,246
Custom Measures			54,015	0.0	2,704	\$29,331	\$312,555	\$0	\$312,555	10.7	371,002
ECM 18	Computer Power Management Software	Yes	16,748	0.0	0	\$1,927	\$7,555	\$0	\$7,555	3.9	16,865
ECM 19	Installation of an Energy Management System	Yes	37,267	0.0	2,404	\$24,835	\$302,000	\$0	\$302,000	12.2	318,958
ECM 20	Steam Trap Replacements	Yes	0	0.0	300	\$2,568	\$3,000	\$0	\$3,000	1.2	35,179
TOTALS (COST EFFECTIVE MEASURES)			483,623	95.9	2,620	\$78,043	\$602,730	\$57,436	\$545,294	7.0	793,726
TOTALS (ALL MEASURES)			499,941	101.3	6,666	\$114,507	\$1,847,998	\$58,036	\$1,789,961	15.6	1,283,888

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

ECC North 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			159,434	28.1	-48	\$22,750	\$91,057	\$19,758	\$71,299	3.1	154,882
ECM 1	Install LED Fixtures	Yes	48,159	6.6	-12	\$6,892	\$42,465	\$6,510	\$35,955	5.2	47,050
ECM 2	Retrofit Fixtures with LED Lamps	Yes	111,275	21.5	-36	\$15,858	\$48,593	\$13,248	\$35,345	2.2	107,832
Lighting Control Measures			31,431	5.4	-10	\$4,479	\$24,422	\$2,625	\$21,797	4.9	30,458
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	19,018	4.4	-6	\$2,710	\$20,422	\$2,625	\$17,797	6.6	18,429
ECM 4	Install High/Low Lighting Controls	Yes	12,413	1.0	-4	\$1,769	\$4,000	\$0	\$4,000	2.3	12,029
Motor Upgrades			5,970	0.7	0	\$868	\$12,934	\$0	\$12,934	14.9	6,012
ECM 5	Premium Efficiency Motors	Yes	5,970	0.7	0	\$868	\$12,934	\$0	\$12,934	14.9	6,012
Variable Frequency Drive (VFD) Measures			131,686	15.4	0	\$19,149	\$30,644	\$3,950	\$26,694	1.4	132,607
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	60,990	8.6	0	\$8,869	\$11,424	\$2,400	\$9,024	1.0	61,416
ECM 7	Install VFDs on Heating Water Pumps	Yes	61,920	3.8	0	\$9,004	\$12,669	\$0	\$12,669	1.4	62,353
ECM 8	Install Boiler Draft Fan VFDs	Yes	8,776	3.0	0	\$1,276	\$6,552	\$1,550	\$5,002	3.9	8,838
Electric Chiller Replacement			38,731	33.6	0	\$5,632	\$246,181	\$22,500	\$223,681	39.7	39,001
ECM 9	Install High Efficiency Chillers	No	38,731	33.6	0	\$5,632	\$246,181	\$22,500	\$223,681	39.7	39,001
Gas Heating (HVAC/Process) Replacement			0	0.0	952	\$8,527	\$151,798	\$0	\$151,798	17.8	111,479
ECM 10	Install High Efficiency Hot Water Boilers	No	0	0.0	952	\$8,527	\$151,798	\$0	\$151,798	17.8	111,479
HVAC System Improvements			3,582	0.0	170	\$2,046	\$8,297	\$0	\$8,297	4.1	23,543
ECM 11	Implement Demand Control Ventilation (DCV)	Yes	3,582	0.0	158	\$1,937	\$8,157	\$0	\$8,157	4.2	22,122
ECM 12	Install Pipe Insulation	Yes	0	0.0	12	\$109	\$141	\$0	\$141	1.3	1,421
Domestic Water Heating Upgrade			0	0.0	18	\$161	\$136	\$0	\$136	0.8	2,111
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	18	\$161	\$136	\$0	\$136	0.8	2,111
Custom Measures			58,051	0.0	394	\$11,094	\$138,645	\$0	\$138,645	12.5	104,572
ECM 14	Computer Power Management Software	Yes	5,800	0.0	0	\$843	\$3,925	\$0	\$3,925	4.7	5,840
ECM 15	HVAC Duct Insulation	Yes	6,371	0.0	99	\$935	\$720	\$0	\$720	0.8	17,973
ECM 16	Installation of an Energy Management System	Yes	45,880	0.0	295	\$9,315	\$134,000	\$0	\$134,000	14.4	80,759
TOTALS (COST EFFECTIVE MEASURES)			390,154	49.6	524	\$60,547	\$306,136	\$26,333	\$279,803	4.6	454,185
TOTALS (ALL MEASURES)			428,885	83.2	1,476	\$74,706	\$704,115	\$48,833	\$655,282	8.8	604,666

* - 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).

#	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			83,068	24.0	0	\$9,092	\$41,832	\$10,919	\$30,913	3.4	83,648
ECM 1	Install LED Fixtures	Yes	7,062	1.1	0	\$773	\$4,990	\$1,836	\$3,154	4.1	7,112
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	4,259	0.9	0	\$466	\$2,067	\$190	\$1,877	4.0	4,289
ECM 3	Retrofit Fixtures with LED Lamps	Yes	71,746	21.9	0	\$7,853	\$34,776	\$8,893	\$25,883	3.3	72,248
Lighting Control Measures			10,775	2.0	0	\$1,179	\$10,074	\$500	\$9,574	8.1	10,851
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	6,242	1.5	0	\$683	\$7,274	\$500	\$6,774	9.9	6,285
ECM 5	Install High/Low Lighting Controls	Yes	4,534	0.5	0	\$496	\$2,800	\$0	\$2,800	5.6	4,565
Motor Upgrades			8,747	1.8	0	\$957	\$18,503	\$0	\$18,503	19.3	8,808
ECM 6	Premium Efficiency Motors	Yes	8,747	1.8	0	\$957	\$18,503	\$0	\$18,503	19.3	8,808
Variable Frequency Drive (VFD) Measures			80,982	14.2	0	\$8,864	\$54,584	\$4,240	\$50,344	5.7	81,549
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	49,085	11.0	0	\$5,373	\$30,589	\$3,040	\$27,549	5.1	49,428
ECM 8	Install VFDs on Chilled Water Pumps	Yes	15,525	2.8	0	\$1,699	\$9,828	\$0	\$9,828	5.8	15,634
ECM 9	Install VFDs on Heating Water Pumps	Yes	10,572	1.0	0	\$1,157	\$6,552	\$0	\$6,552	5.7	10,646
ECM 10	Install VFDs on Cooling Tower Fans	Yes	5,800	-0.5	0	\$635	\$7,616	\$1,200	\$6,416	10.1	5,841
Electric Chiller Replacement			109,746	37.5	0	\$12,012	\$272,390	\$2,400	\$269,990	22.5	110,513
ECM 11	Install High Efficiency Chillers	No	109,746	37.5	0	\$12,012	\$272,390	\$2,400	\$269,990	22.5	110,513
HVAC System Improvements			2,968	0.0	0	\$325	\$132	\$0	\$132	0.4	2,989
ECM 12	Install Pipe Insulation	Yes	2,968	0.0	0	\$325	\$132	\$0	\$132	0.4	2,989
Domestic Water Heating Upgrade			21,602	18.9	-70	\$1,696	\$33,077	\$1,140	\$31,937	18.8	13,508
ECM 13	Install High Efficiency Gas-Fired Water Heater	No	20,637	18.9	-70	\$1,590	\$32,940	\$1,140	\$31,800	20.0	12,537
ECM 14	Install Low-Flow DHW Devices	Yes	965	0.0	0	\$106	\$136	\$0	\$136	1.3	972
Food Service & Refrigeration Measures			4,549	0.5	0	\$498	\$993	\$100	\$893	1.8	4,581
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	983	0.1	0	\$108	\$303	\$0	\$303	2.8	990
ECM 16	Vending Machine Control	Yes	3,566	0.4	0	\$390	\$690	\$100	\$590	1.5	3,591
Custom Measures			281,382	53.1	-654	\$24,585	\$191,745	\$1,223	\$190,522	7.7	206,766
ECM 17	Computer Power Management Software	Yes	6,025	0.0	0	\$659	\$3,745	\$0	\$3,745	5.7	6,067
ECM 18	Installation of an Energy Management System	Yes	102,830	0.0	0	\$11,255	\$110,000	\$0	\$110,000	9.8	103,549
ECM 19	Heating System Upgrades	Yes	172,527	53.1	-654	\$12,670	\$78,000	\$1,223	\$76,777	6.1	97,150
TOTALS (COST EFFECTIVE MEASURES)			473,437	95.6	-654	\$45,606	\$318,000	\$16,982	\$301,018	6.6	400,164
TOTALS (ALL MEASURES)			603,820	152.0	-724	\$59,209	\$623,330	\$20,522	\$602,808	10.2	523,214

* - 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).

Luis M. Marin 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			232,201	48.3	-53	\$23,852	\$118,317	\$28,560	\$89,757	3.8	227,653
ECM 1	Install LED Fixtures	Yes	31,000	5.5	-7	\$3,187	\$30,146	\$6,000	\$24,146	7.6	30,429
ECM 2	Retrofit Fixtures with LED Lamps	Yes	201,202	42.8	-46	\$20,666	\$88,171	\$22,560	\$65,611	3.2	197,224
Lighting Control Measures			47,676	9.1	-11	\$4,896	\$49,162	\$5,165	\$43,997	9.0	46,726
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	37,825	7.9	-9	\$3,885	\$39,112	\$4,580	\$34,532	8.9	37,070
ECM 4	Install Daylight Dimming Controls	Yes	603	0.1	0	\$62	\$1,500	\$585	\$915	14.8	591
ECM 5	Install High/Low Lighting Controls	Yes	9,248	1.2	-2	\$950	\$8,550	\$0	\$8,550	9.0	9,064
Motor Upgrades			890	0.2	0	\$93	\$2,721	\$0	\$2,721	29.3	896
ECM 6	Premium Efficiency Motors	No	890	0.2	0	\$93	\$2,721	\$0	\$2,721	29.3	896
Variable Frequency Drive (VFD) Measures			23,541	9.4	0	\$2,459	\$38,862	\$1,600	\$37,262	15.2	23,706
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	9,129	5.9	0	\$953	\$16,788	\$1,600	\$15,188	15.9	9,193
ECM 8	Install VFDs on Heating Water Pumps	No	5,546	0.6	0	\$579	\$10,637	\$0	\$10,637	18.4	5,584
ECM 9	Install Boiler Draft Fan VFDs	No	8,867	2.9	0	\$926	\$11,437	\$0	\$11,437	12.4	8,929
Electric Unitary HVAC Measures			15,719	11.8	0	\$1,642	\$90,008	\$2,427	\$87,581	53.3	15,829
ECM 10	Install High Efficiency Air Conditioning Units	No	15,719	11.8	0	\$1,642	\$90,008	\$2,427	\$87,581	53.3	15,829
Gas Heating (HVAC/Process) Replacement			0	0.0	978	\$7,405	\$238,146	\$0	\$238,146	32.2	114,536
ECM 11	Install High Efficiency Hot Water Boilers	No	0	0.0	978	\$7,405	\$238,146	\$0	\$238,146	32.2	114,536
HVAC System Improvements			2,660	0.0	116	\$1,156	\$5,613	\$0	\$5,613	4.9	16,262
ECM 12	Implement Demand Control Ventilation (DCV)	Yes	2,660	0.0	100	\$1,032	\$5,438	\$0	\$5,438	5.3	14,345
ECM 13	Install Pipe Insulation	Yes	0	0.0	16	\$124	\$176	\$0	\$176	1.4	1,918
Domestic Water Heating Upgrade			0	0.0	36	\$269	\$5,330	\$300	\$5,030	18.7	4,164
ECM 14	Install Tankless Water Heater	No	0	0.0	20	\$154	\$5,215	\$300	\$4,915	31.9	2,387
ECM 15	Install Low-Flow DHW Devices	Yes	0	0.0	15	\$115	\$115	\$0	\$115	1.0	1,778
Food Service & Refrigeration Measures			13,955	1.6	0	\$1,458	\$11,350	\$750	\$10,600	7.3	14,053
ECM 16	Replace Refrigeration Equipment	No	4,284	0.5	0	\$447	\$9,970	\$450	\$9,520	21.3	4,314
ECM 17	Vending Machine Control	Yes	9,671	1.1	0	\$1,010	\$1,380	\$300	\$1,080	1.1	9,739
Custom Measures			39,072	0.0	910	\$10,968	\$148,810	\$0	\$148,810	13.6	145,863
ECM 18	Computer Power Management Software	Yes	7,737	0.0	0	\$808	\$4,810	\$0	\$4,810	6.0	7,791
ECM 19	Installation of an Energy Management System	Yes	31,334	0.0	910	\$10,160	\$144,000	\$0	\$144,000	14.2	138,072
TOTALS (COST EFFECTIVE MEASURES)			331,279	58.5	977	\$41,997	\$323,397	\$34,025	\$289,372	6.9	448,020
TOTALS (ALL MEASURES)			375,715	80.4	1,976	\$54,198	\$708,319	\$38,802	\$669,517	12.4	609,689

* - 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).

McKinley Elementary School



#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		191,693	42.7	-40	\$26,076	\$391,139	\$72,533	\$15,977	\$56,556	2.2	188,404
ECM 1	Install LED Fixtures	10,976	3.0	-2	\$1,493	\$22,391	\$15,600	\$1,950	\$13,650	9.1	10,784
ECM 2	Retrofit Fixtures with LED Lamps	180,717	39.7	-37	\$24,583	\$368,748	\$56,933	\$14,027	\$42,906	1.7	177,620
Lighting Control Measures		38,306	9.0	-8	\$5,210	\$41,678	\$46,285	\$4,760	\$41,525	8.0	37,636
ECM 3	Install Occupancy Sensor Lighting Controls	27,939	7.6	-6	\$3,800	\$30,399	\$36,610	\$4,760	\$31,850	8.4	27,451
ECM 4	Install High/Low Lighting Controls	10,367	1.4	-2	\$1,410	\$11,279	\$9,675	\$0	\$9,675	6.9	10,185
Motor Upgrades		2,188	0.7	0	\$302	\$4,526	\$6,417	\$0	\$6,417	21.3	2,203
ECM 5	Premium Efficiency Motors	2,188	0.7	0	\$302	\$4,526	\$6,417	\$0	\$6,417	21.3	2,203
Variable Frequency Drive (VFD) Measures		36,053	8.1	0	\$4,972	\$74,585	\$41,054	\$1,950	\$39,104	7.9	36,305
ECM 6	Install VFDs on Constant Volume (CV) Fans	4,707	1.5	0	\$649	\$9,737	\$4,076	\$400	\$3,676	5.7	4,740
ECM 7	Install VFDs on Heating Water Pumps	26,639	3.5	0	\$3,674	\$55,111	\$28,825	\$0	\$28,825	7.8	26,826
ECM 8	Install Boiler Draft Fan VFDs	4,707	3.1	0	\$649	\$9,737	\$8,152	\$1,550	\$6,602	10.2	4,740
Electric Unitary HVAC Measures		1,802	0.0	0	\$248	\$3,727	\$7,609	\$414	\$7,195	29.0	1,814
ECM 9	Install High Efficiency Heat Pumps	1,802	0.0	0	\$248	\$3,727	\$7,609	\$414	\$7,195	29.0	1,814
Electric Chiller Replacement		35,894	45.9	0	\$4,950	\$99,009	\$341,274	\$36,800	\$304,474	61.5	36,145
ECM 10	Install High Efficiency Chillers	35,894	45.9	0	\$4,950	\$99,009	\$341,274	\$36,800	\$304,474	61.5	36,145
Gas Heating (HVAC/Process) Replacement		0	0.0	1,423	\$13,034	\$260,685	\$184,064	\$0	\$184,064	14.1	166,673
ECM 11	Install High Efficiency Hot Water Boilers	0	0.0	1,423	\$13,034	\$260,685	\$184,064	\$0	\$184,064	14.1	166,673
HVAC System Improvements		1,888	0.0	142	\$1,559	\$23,386	\$10,875	\$0	\$10,875	7.0	18,508
ECM 12	Implement Demand Control Ventilation (DCV)	1,888	0.0	142	\$1,559	\$23,386	\$10,875	\$0	\$10,875	7.0	18,508
Domestic Water Heating Upgrade		0	0.0	81	\$738	\$8,550	\$21,462	\$735	\$20,727	28.1	9,437
ECM 13	Install High Efficiency Gas-Fired Water Heater	0	0.0	26	\$234	\$3,511	\$21,046	\$735	\$20,311	86.8	2,993
ECM 14	Install Low-Flow DHW Devices	0	0.0	55	\$504	\$5,040	\$416	\$0	\$416	0.8	6,444
Food Service & Refrigeration Measures		11,098	1.1	0	\$1,531	\$16,722	\$13,676	\$850	\$12,826	8.4	11,176
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0	\$136	\$2,034	\$2,426	\$0	\$2,426	17.9	990
ECM 16	Refrigeration Controls	1,920	0.0	0	\$265	\$4,237	\$1,674	\$75	\$1,599	6.0	1,934
ECM 17	Replace Refrigeration Equipment	4,971	0.6	0	\$686	\$8,228	\$9,116	\$675	\$8,441	12.3	5,006
ECM 18	Vending Machine Control	3,224	0.4	0	\$445	\$2,223	\$460	\$100	\$360	0.8	3,246
Custom Measures		56,141	0.0	946	\$16,401	\$238,329	\$227,165	\$0	\$227,165	13.9	167,252
ECM 19	Computer Power Management Software	5,577	0.0	0	\$769	\$3,846	\$4,165	\$0	\$4,165	5.4	5,616
ECM 20	Installation of an Energy Management System	50,564	0.0	946	\$15,632	\$234,483	\$223,000	\$0	\$223,000	14.3	161,636
TOTALS (COST EFFECTIVE MEASURES)		329,224	60.2	2,518	\$68,466	\$1,041,302	\$584,526	\$22,862	\$561,664	8.2	626,403
TOTALS (ALL MEASURES)		375,062	107.6	2,544	\$75,022	\$1,162,336	\$972,414	\$61,486	\$910,928	12.1	675,554

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

New 1st Ave Elementary School

#	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			353,742	56.7	-70	\$42,338	\$635,072	\$122,672	\$22,932	\$99,740	2.4	348,014
ECM 1	Install LED Fixtures	Yes	55,873	8.1	-10	\$6,695	\$100,432	\$37,398	\$4,830	\$32,568	4.9	55,097
ECM 2	Retrofit Fixtures with LED Lamps	Yes	297,870	48.6	-60	\$35,643	\$534,639	\$85,274	\$18,102	\$67,172	1.9	292,916
Lighting Control Measures			75,044	10.6	-15	\$8,981	\$71,848	\$50,487	\$4,850	\$45,637	5.1	73,817
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	51,268	8.9	-11	\$6,132	\$49,054	\$36,762	\$4,850	\$31,912	5.2	50,371
ECM 4	Install High/Low Lighting Controls	Yes	23,776	1.7	-4	\$2,849	\$22,793	\$13,725	\$0	\$13,725	4.8	23,446
Motor Upgrades			11,997	2.7	0	\$1,454	\$21,806	\$53,369	\$0	\$53,369	36.7	12,081
ECM 5	Premium Efficiency Motors	No	11,997	2.7	0	\$1,454	\$21,806	\$53,369	\$0	\$53,369	36.7	12,081
Variable Frequency Drive (VFD) Measures			2,682	0.4	0	\$325	\$4,875	\$3,236	\$450	\$2,786	8.6	2,701
ECM 6	Install VFDs on Kitchen Hood Fan Motors	Yes	2,682	0.4	0	\$325	\$4,875	\$3,236	\$450	\$2,786	8.6	2,701
Electric Chiller Replacement			46,874	18.6	0	\$5,680	\$113,596	\$204,764	\$21,600	\$183,164	32.2	47,202
ECM 7	Install High Efficiency Chillers	No	46,874	18.6	0	\$5,680	\$113,596	\$204,764	\$21,600	\$183,164	32.2	47,202
HVAC System Improvements			7,502	0.0	0	\$909	\$9,999	\$264	\$0	\$264	0.3	7,554
ECM 8	Install Pipe Insulation	Yes	7,502	0.0	0	\$909	\$9,999	\$264	\$0	\$264	0.3	7,554
Domestic Water Heating Upgrade			95,664	64.8	-264	\$9,613	\$133,076	\$42,761	\$1,474	\$41,287	4.3	65,446
ECM 9	Install High Efficiency Gas-Fired Water Heater	Yes	77,313	64.8	-264	\$7,389	\$110,840	\$42,603	\$1,474	\$41,129	5.6	46,967
ECM 10	Install Low-Flow DHW Devices	Yes	18,350	0.0	0	\$2,224	\$22,235	\$158	\$0	\$158	0.1	18,479
Food Service & Refrigeration Measures			13,321	1.2	0	\$1,614	\$22,963	\$5,095	\$200	\$4,895	3.0	13,414
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	5,898	0.7	0	\$715	\$10,720	\$1,517	\$0	\$1,517	2.1	5,939
ECM 12	Refrigeration Controls	Yes	5,811	0.3	0	\$704	\$11,267	\$3,348	\$150	\$3,198	4.5	5,852
ECM 13	Vending Machine Control	Yes	1,612	0.2	0	\$195	\$977	\$230	\$50	\$180	0.9	1,623
Custom Measures			112,221	0.0	260	\$15,546	\$77,729	\$64,360	\$0	\$64,360	4.1	143,407
ECM 14	Computer Power Management Software	Yes	16,279	0.0	0	\$1,973	\$9,863	\$7,360	\$0	\$7,360	3.7	16,392
ECM 15	Retro-Commissioning Study & HVAC Improvements	Yes	95,942	0.0	260	\$13,573	\$67,866	\$57,000	\$0	\$57,000	4.2	127,014
TOTALS (COST EFFECTIVE MEASURES)			660,175	133.7	-89	\$79,326	\$955,561	\$288,874	\$29,906	\$258,967	3.3	654,352
TOTALS (ALL MEASURES)			719,047	155.0	-89	\$86,459	\$1,090,963	\$547,006	\$51,506	\$495,500	5.7	713,635

* - 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).

New Elliot Elementary School



#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		213,387	48.3	-44	\$31,565	\$473,475	\$82,871	\$19,562	\$63,309	2.0	209,681
ECM 1	Retrofit Fixtures with LED Lamps	213,387	48.3	-44	\$31,565	\$473,475	\$82,871	\$19,562	\$63,309	2.0	209,681
Lighting Control Measures		13,799	1.5	-3	\$2,041	\$16,329	\$7,020	\$140	\$6,880	3.4	13,558
ECM 2	Install Occupancy Sensor Lighting Controls	6,229	0.8	-1	\$921	\$7,370	\$1,620	\$140	\$1,480	1.6	6,120
ECM 3	Install High/Low Lighting Controls	7,571	0.7	-2	\$1,120	\$8,959	\$5,400	\$0	\$5,400	4.8	7,438
Food Service & Refrigeration Measures		1,612	0.2	0	\$241	\$1,207	\$230	\$50	\$180	0.7	1,623
ECM 4	Vending Machine Control	1,612	0.2	0	\$241	\$1,207	\$230	\$50	\$180	0.7	1,623
Custom Measures		37,200	0.0	210	\$7,394	\$36,971	\$45,300	\$0	\$45,300	6.1	62,104
ECM 5	Computer Power Management Software	6,029	0.0	0	\$903	\$4,514	\$4,300	\$0	\$4,300	4.8	6,071
ECM 6	Retro-Commissioning Study & HVAC Improvements	31,171	0.0	210	\$6,491	\$32,456.92	\$41,000	\$0	\$41,000	6.3	56,033
TOTALS (COST EFFECTIVE MEASURES)		265,999	50.0	163	\$41,242	\$527,981	\$135,421	\$19,752	\$115,669	2.8	286,966
TOTALS (ALL MEASURES)		265,999	50.0	163	\$41,242	\$527,981	\$135,421	\$19,752	\$115,669	2.8	286,966

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

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

New Oliver Elementary School



#	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		201,387	46.6	-42	\$28,599	\$78,140	\$19,841	\$58,299	2.0	197,865
ECM 1	Retrofit Fixtures with LED Lamps	201,387	46.6	-42	\$28,599	\$78,140	\$19,841	\$58,299	2.0	197,865
Lighting Control Measures		5,289	0.9	-1	\$751	\$1,987	\$140	\$1,847	2.5	5,197
ECM 2	Install Occupancy Sensor Lighting Controls	4,262	0.7	-1	\$605	\$1,312	\$140	\$1,172	1.9	4,187
ECM 3	Install High/Low Lighting Controls	1,027	0.2	0	\$146	\$675	\$0	\$675	4.6	1,009
Domestic Water Heating Upgrade		0	0.0	44	\$381	\$330	\$0	\$330	0.9	5,111
ECM 4	Install Low-Flow DHW Devices	0	0.0	44	\$381	\$330	\$0	\$330	0.9	5,111
Food Service & Refrigeration Measures		343	0.0	0	\$49	\$230	\$0	\$230	4.7	345
ECM 5	Vending Machine Control	343	0.0	0	\$49	\$230	\$0	\$230	4.7	345
Custom Measures		47,604	0.0	191	\$8,512	\$45,300	\$0	\$45,300	5.3	70,245
ECM 6	Computer Power Management Software	6,029	0.0	0	\$867	\$4,300	\$0	\$4,300	5.0	6,071
ECM 7	Retro-Commissioning Study & HVAC Improvements	41,574	0.0	191	\$7,645	\$41,000	\$0	\$41,000	5.4	64,174
TOTALS (COST EFFECTIVE MEASURES)		254,622	47.6	191	\$38,293	\$125,987	\$19,981	\$106,006	2.8	278,763
TOTALS (ALL MEASURES)		254,622	47.6	191	\$38,293	\$125,987	\$19,981	\$106,006	2.8	278,763

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

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

New Speedway Elementary School



#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		278,652	48.1	-57	\$34,259	\$513,885	\$96,398	\$20,484	\$75,914	2.2	273,959
ECM 1	Install LED Fixtures	62,343	7.7	-11	\$7,675	\$115,125	\$28,024	\$5,130	\$22,894	3.0	61,433
ECM 2	Retrofit Fixtures with LED Lamps	216,309	40.4	-45	\$26,584	\$398,761	\$68,374	\$15,354	\$53,020	2.0	212,526
Lighting Control Measures		28,930	3.0	-6	\$3,555	\$28,444	\$23,746	\$1,645	\$22,101	6.2	28,424
ECM 3	Install Occupancy Sensor Lighting Controls	15,016	2.0	-3	\$1,845	\$14,764	\$14,656	\$1,645	\$13,011	7.1	14,753
ECM 4	Install High/Low Lighting Controls	13,914	1.0	-3	\$1,710	\$13,680	\$9,090	\$0	\$9,090	5.3	13,671
Variable Frequency Drive (VFD) Measures		69,471	14.6	0	\$8,661	\$129,915	\$66,093	\$4,280	\$61,813	7.1	69,957
ECM 5	Install VFDs on Constant Volume (CV) Fans	60,771	15.3	0	\$7,576	\$113,646	\$47,051	\$4,280	\$42,771	5.6	61,196
ECM 6	Install VFDs on Cooling Tower Fans	8,700	-0.8	0	\$1,085	\$16,270	\$19,042	\$0	\$19,042	17.6	8,761
Domestic Water Heating Upgrade		0	0.0	5	\$45	\$454	\$14	\$0	\$14	0.3	627
ECM 7	Install Low-Flow DHW Devices	0	0.0	5	\$45	\$454	\$14	\$0	\$14	0.3	627
Food Service & Refrigeration Measures		1,612	0.2	0	\$201	\$1,005	\$230	\$50	\$180	0.9	1,623
ECM 8	Vending Machine Control	1,612	0.2	0	\$201	\$1,005	\$230	\$50	\$180	0.9	1,623
Custom Measures		66,468	0.0	75	\$8,922	\$44,611	\$43,890	\$0	\$43,890	4.9	75,712
ECM 9	Computer Power Management Software	14,571	0.0	0	\$1,817	\$9,083	\$5,890	\$0	\$5,890	3.2	14,673
ECM 10	Retro-Commissioning Study & HVAC Improvements	51,897	0.0	75	\$7,106	\$35,528.33	\$38,000	\$0	\$38,000	5.3	61,039
TOTALS (COST EFFECTIVE MEASURES)		445,133	65.9	18	\$55,644	\$718,315	\$230,371	\$26,459	\$203,912	3.7	450,302
TOTALS (ALL MEASURES)		445,133	65.9	18	\$55,644	\$718,315	\$230,371	\$26,459	\$203,912	3.7	450,302

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

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

Park Elementary School



#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$) *	Estimated Net Cost (\$)	Simple Payback Period (yrs) **	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		302,600	49.0	-58	\$36,650	\$549,750	\$98,422	\$19,994	\$78,428	2.1	297,921
ECM 1	Install LED Fixtures	25,277	3.4	-1	\$3,102	\$46,525	\$30,993	\$4,545	\$26,448	8.5	25,390
ECM 2	Retrofit Fixtures with LED Lamps	277,323	45.6	-57	\$33,548	\$503,225	\$67,428	\$15,449	\$51,979	1.5	272,531
Lighting Control Measures		54,680	7.9	-11	\$6,614	\$52,911	\$37,141	\$2,800	\$34,341	5.2	53,724
ECM 3	Install Occupancy Sensor Lighting Controls	27,591	5.8	-6	\$3,337	\$26,698	\$23,416	\$2,800	\$20,616	6.2	27,109
ECM 4	Install High/Low Lighting Controls	27,089	2.1	-6	\$3,277	\$26,213	\$13,725	\$0	\$13,725	4.2	26,615
Motor Upgrades		1,124	0.3	0	\$138	\$2,071	\$1,842	\$0	\$1,842	13.3	1,131
ECM 5	Premium Efficiency Motors	1,124	0.3	0	\$138	\$2,071	\$1,842	\$0	\$1,842	13.3	1,131
Variable Frequency Drive (VFD) Measures		59,079	16.7	0	\$7,261	\$108,919	\$48,496	\$5,933	\$42,563	5.9	59,492
ECM 6	Install VFDs on Constant Volume (CV) Fans	53,431	14.8	0	\$6,567	\$98,507	\$40,871	\$4,133	\$36,738	5.6	53,805
ECM 7	Install VFDs on Kitchen Hood Fan Motors	5,648	1.9	0	\$694	\$10,413	\$7,625	\$1,800	\$5,825	8.4	5,687
Domestic Water Heating Upgrade		0	0.0	30	\$281	\$2,814	\$258	\$0	\$258	0.9	3,529
ECM 8	Install Low-Flow DHW Devices	0	0.0	30	\$281	\$2,814	\$258	\$0	\$258	0.9	3,529
Food Service & Refrigeration Measures		1,612	0.2	0	\$198	\$991	\$230	\$50	\$180	0.9	1,623
ECM 9	Vending Machine Control	1,612	0.2	0	\$198	\$991	\$230	\$50	\$180	0.9	1,623
Custom Measures		58,575	0.0	124	\$8,361	\$109,642	\$40,485	\$0	\$40,485	4.8	73,549
ECM 10	Computer Power Management Software	12,830	0.0	0	\$1,577	\$7,885	\$5,485	\$0	\$5,485	3.5	12,920
ECM 11	Retro-Commissioning Study & HVAC Improvements	45,745	0.0	124	\$6,784	\$101,757	\$35,000	\$0	\$35,000	5.2	60,629
TOTALS (COST EFFECTIVE MEASURES)		477,670	74.0	85	\$59,504	\$827,098	\$226,874	\$28,777	\$198,097	3.3	490,970
TOTALS (ALL MEASURES)		477,670	74.0	85	\$59,504	\$827,098	\$226,874	\$28,777	\$198,097	3.3	490,970

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

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

Quitman Elementary School



#	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			163,806	21.5	-38	\$17,896	\$268,447	\$60,764	\$14,709	\$46,055	2.6	160,540
ECM 1	Install LED Fixtures	Yes	27,149	3.9	-6	\$2,966	\$44,492	\$22,472	\$4,350	\$18,122	6.1	26,608
ECM 2	Retrofit Fixtures with LED Lamps	Yes	136,657	17.6	-31	\$14,930	\$223,955	\$38,293	\$10,359	\$27,934	1.9	133,932
Lighting Control Measures			34,499	4.4	-8	\$3,769	\$30,153	\$36,282	\$3,835	\$32,447	8.6	33,811
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	22,168	3.7	-5	\$2,422	\$19,375	\$29,982	\$3,835	\$26,147	10.8	21,726
ECM 4	Install High/Low Lighting Controls	Yes	12,332	0.7	-3	\$1,347	\$10,778	\$6,300	\$0	\$6,300	4.7	12,086
Variable Frequency Drive (VFD) Measures			32,337	5.7	0	\$3,596	\$53,946	\$28,668	\$800	\$27,868	7.7	32,563
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	10,368	3.2	0	\$1,153	\$17,297	\$8,394	\$800	\$7,594	6.6	10,441
ECM 6	Install VFDs on Heating Water Pumps	Yes	21,969	2.5	0	\$2,443	\$36,650	\$20,274	\$0	\$20,274	8.3	22,122
Electric Unitary HVAC Measures			9,960	3.6	0	\$1,108	\$16,616	\$21,049	\$0	\$21,049	19.0	10,030
ECM 7	Install High Efficiency Air Conditioning Units	No	9,960	3.6	0	\$1,108	\$16,616	\$21,049	\$0	\$21,049	19.0	10,030
Gas Heating (HVAC/Process) Replacement			0	0.0	231	\$1,968	\$39,357	\$185,072	\$21,318	\$163,754	83.2	26,996
ECM 8	Install High Efficiency Hot Water Boilers	No	0	0.0	231	\$1,968	\$39,357	\$185,072	\$21,318	\$163,754	83.2	26,996
HVAC System Improvements			0	0.0	106	\$907	\$13,257	\$8,288	\$0	\$8,288	9.1	12,437
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	0	0.0	96	\$821	\$12,314	\$8,157	\$0	\$8,157	9.9	11,262
ECM 10	Install Pipe Insulation	Yes	0	0.0	10	\$86	\$942	\$132	\$0	\$132	1.5	1,175
Domestic Water Heating Upgrade			0	0.0	31	\$266	\$2,663	\$237	\$0	\$237	0.9	3,653
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	31	\$266	\$2,663	\$237	\$0	\$237	0.9	3,653
Food Service & Refrigeration Measures			4,836	0.6	0	\$538	\$2,689	\$690	\$150	\$540	1.0	4,869
ECM 12	Vending Machine Control	Yes	4,836	0.6	0	\$538	\$2,689	\$690	\$150	\$540	1.0	4,869
Custom Measures			20,469	0.0	904	\$9,994	\$137,730	\$189,385	\$0	\$189,385	19.0	126,478
ECM 13	Computer Power Management Software	No	5,778	0.0	0	\$643	\$3,213	\$4,225	\$0	\$4,225	6.6	5,818
ECM 14	HVAC Duct Insulation	Yes	0	0.0	135	\$1,149	\$11,493	\$2,160	\$0	\$2,160	1.9	15,767
ECM 15	Installation of an Energy Management System	No	14,691	0.0	770	\$8,202	\$123,024	\$183,000	\$0	\$183,000	22.3	104,892
TOTALS (COST EFFECTIVE MEASURES)			235,478	32.2	226	\$28,122	\$382,649	\$137,089	\$19,494	\$117,595	4.2	263,642
TOTALS (ALL MEASURES)			265,907	35.8	1,227	\$40,042	\$564,859	\$530,436	\$40,812	\$489,624	12.2	411,378

* - 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).

Science Park High School



#	Energy Conservation Measure Static	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			272,214	45.6	-84	\$30,712	\$125,266	\$19,176	\$106,090	3.5	264,272
ECM 1	Install LED Fixtures	Yes	57,716	9.8	-15	\$6,539	\$35,326	\$6,320	\$29,006	4.4	56,409
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	7,949	0.6	-3	\$896	\$1,819	\$180	\$1,639	1.8	7,703
ECM 3	Retrofit Fixtures with LED Lamps	Yes	206,549	35.1	-67	\$23,278	\$88,122	\$12,676	\$75,446	3.2	200,159
Lighting Control Measures			54,319	6.6	-17	\$6,126	\$39,512	\$2,315	\$37,197	6.1	52,693
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	19,951	3.1	-6	\$2,248	\$19,312	\$2,315	\$16,997	7.6	19,334
ECM 5	Install High/Low Lighting Controls	Yes	34,368	3.6	-11	\$3,877	\$20,200	\$0	\$20,200	5.2	33,360
Electric Chiller Replacement			20,445	13.9	0	\$2,359	\$198,792	\$20,970	\$177,822	75.4	20,588
ECM 6	Install High Efficiency Chillers	No	20,445	13.9	0	\$2,359	\$198,792	\$20,970	\$177,822	75.4	20,588
Domestic Water Heating Upgrade			22,500	2.7	-77	\$1,958	\$2,282	\$1,075	\$1,207	0.6	13,666
ECM 7	Install Gas-Fired Booster Water Heater	Yes	22,500	2.7	-77	\$1,958	\$2,282	\$1,075	\$1,207	0.6	13,666
Food Service & Refrigeration Measures			29,478	3.0	0	\$3,401	\$27,391	\$3,125	\$24,266	7.1	29,684
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	4,915	0.6	0	\$567	\$1,517	\$0	\$1,517	2.7	4,949
ECM 9	Refrigeration Controls	Yes	5,748	0.2	0	\$663	\$3,348	\$150	\$3,198	4.8	5,788
ECM 10	Replace Refrigeration Equipment	No	12,368	1.4	0	\$1,427	\$21,606	\$2,775	\$18,831	13.2	12,455
ECM 11	Vending Machine Control	Yes	6,447	0.7	0	\$744	\$920	\$200	\$720	1.0	6,492
Custom Measures			151,810	0.0	292	\$17,542	\$93,060	\$0	\$93,060	5.3	187,041
ECM 12	Computer Power Management Software	Yes	22,256	0.0	0	\$2,568	\$7,060	\$0	\$7,060	2.7	22,412
ECM 13	Retro-Commissioning Study & HVAC Improvements	Yes	129,554	0.0	292	\$14,973	\$86,000	\$0	\$86,000	5.7	164,629
TOTALS (COST EFFECTIVE MEASURES)			517,953	56.5	114	\$58,312	\$265,905	\$22,916	\$242,989	4.2	534,901
TOTALS (ALL MEASURES)			550,766	71.8	114	\$62,098	\$486,303	\$46,661	\$439,642	7.1	567,943

* - 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).

Spencer Miller Elementary School



#	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			239,483	36.6	-58	\$26,269	\$394,041	\$123,445	\$28,219	\$95,226	3.6	234,369
ECM 1	Install LED Fixtures	Yes	64,928	8.0	-1	\$7,237	\$108,548	\$58,098	\$10,825	\$47,273	6.5	65,215
ECM 2	Retrofit Fixtures with LED Lamps	Yes	174,555	28.6	-57	\$19,033	\$285,493	\$65,347	\$17,394	\$47,953	2.5	169,155
Lighting Control Measures			42,362	6.9	-14	\$4,619	\$36,952	\$48,424	\$5,835	\$42,589	9.2	41,051
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	32,962	6.1	-11	\$3,594	\$28,752	\$43,224	\$5,835	\$37,389	10.4	31,942
ECM 4	Install High/Low Lighting Controls	Yes	9,400	0.8	-3	\$1,025	\$8,200	\$5,200	\$0	\$5,200	5.1	9,109
Motor Upgrades			7,298	2.1	0	\$815	\$12,220	\$18,126	\$0	\$18,126	22.2	7,349
ECM 5	Premium Efficiency Motors	Yes	7,298	2.1	0	\$815	\$12,220	\$18,126	\$0	\$18,126	22.2	7,349
Variable Frequency Drive (VFD) Measures			97,729	26.7	0	\$10,910	\$163,645	\$51,501	\$5,440	\$46,061	4.2	98,413
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	71,471	19.6	0	\$7,978	\$119,677	\$26,815	\$5,440	\$21,375	2.7	71,971
ECM 7	Install VFDs on Chilled Water Pumps	Yes	8,311	2.8	0	\$928	\$13,916	\$7,214	\$0	\$7,214	7.8	8,369
ECM 8	Install VFDs on Heating Water Pumps	Yes	17,947	4.3	0	\$2,003	\$30,052	\$17,473	\$0	\$17,473	8.7	18,073
Electric Unitary HVAC Measures			4,624	3.2	0	\$516	\$7,743	\$22,439	\$548	\$21,891	42.4	4,656
ECM 9	Install High Efficiency Air Conditioning Units	No	4,624	3.2	0	\$516	\$7,743	\$22,439	\$548	\$21,891	42.4	4,656
Electric Chiller Replacement			28,478	26.7	0	\$3,179	\$63,581	\$98,473	\$9,000	\$89,473	28.1	28,677
ECM 10	Install High Efficiency Chillers	No	28,478	26.7	0	\$3,179	\$63,581	\$98,473	\$9,000	\$89,473	28.1	28,677
Gas Heating (HVAC/Process) Replacement			0	0.0	2,157	\$17,278	\$345,552	\$436,740	\$400	\$436,340	25.3	252,554
ECM 11	Install High Efficiency Hot Water Boilers	No	0	0.0	2,131	\$17,072	\$341,445	\$429,580	\$0	\$429,580	25.2	249,552
ECM 12	Install High Efficiency Furnaces	No	0	0.0	26	\$205	\$4,107	\$7,160	\$400	\$6,760	32.9	3,002
HVAC System Improvements			1,225	0.0	64	\$647	\$9,705	\$8,157	\$0	\$8,157	12.6	8,692
ECM 13	Implement Demand Control Ventilation (DCV)	Yes	1,225	0.0	64	\$647	\$9,705	\$8,157	\$0	\$8,157	12.6	8,692
Domestic Water Heating Upgrade			0	0.0	6	\$46	\$456	\$14	\$0	\$14	0.3	667
ECM 14	Install Low-Flow DHW Devices	Yes	0	0.0	6	\$46	\$456	\$14	\$0	\$14	0.3	667
Food Service & Refrigeration Measures			6,469	0.7	0	\$722	\$7,766	\$12,902	\$915	\$11,987	16.6	6,514
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	264	0.0	0	\$29	\$441	\$303	\$40	\$263	9.0	265
ECM 16	Refrigeration Controls	No	608	0.0	0	\$68	\$1,086	\$2,193	\$125	\$2,068	30.5	612
ECM 17	Replace Refrigeration Equipment	No	3,985	0.5	0	\$445	\$5,339	\$10,176	\$700	\$9,476	21.3	4,013
ECM 18	Vending Machine Control	Yes	1,612	0.2	0	\$180	\$900	\$230	\$50	\$180	1.0	1,623
Custom Measures			51,869	0.0	1,147	\$14,978	\$145,023	\$292,285	\$0	\$292,285	19.5	186,535
ECM 19	Computer Power Management Software	Yes	8,526	0.0	0	\$952	\$4,758.57	\$4,285	\$0	\$4,285	4.5	8,585
ECM 20	Installation of an Energy Management System	No	43,344	0.0	1,147	\$14,026	\$140,264.32	\$288,000	\$0	\$288,000	20.5	177,950
TOTALS (COST EFFECTIVE MEASURES)			398,498	72.6	-2	\$44,466	\$623,118	\$254,485	\$39,584	\$214,901	4.8	401,014
TOTALS (ALL MEASURES)			479,537	103.0	3,302	\$79,978	\$1,186,683	\$1,112,505	\$50,357	\$1,062,148	13.3	869,477

* - 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).

#	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			170,044	39.1	-54	\$17,449	\$89,158	\$21,847	\$67,311	3.9	164,921
ECM 1	Install LED Fixtures	Yes	3,627	0.4	0	\$382	\$6,000	\$1,400	\$4,600	12.0	3,652
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	299	0.1	0	\$31	\$275	\$40	\$235	7.7	289
ECM 3	Retrofit Fixtures with LED Lamps	Yes	166,119	38.6	-54	\$17,036	\$82,883	\$20,407	\$62,476	3.7	160,980
Lighting Control Measures			39,839	9.2	-13	\$4,085	\$47,786	\$4,640	\$43,146	10.6	38,606
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	21,911	7.7	-7	\$2,247	\$38,186	\$4,640	\$33,546	14.9	21,233
ECM 5	Install High/Low Lighting Controls	Yes	17,928	1.5	-6	\$1,838	\$9,600	\$0	\$9,600	5.2	17,373
Motor Upgrades			2,393	0.7	0	\$252	\$9,159	\$0	\$9,159	36.3	2,409
ECM 6	Premium Efficiency Motors	Yes	2,393	0.7	0	\$252	\$9,159	\$0	\$9,159	36.3	2,409
Variable Frequency Drive (VFD) Measures			54,846	9.6	0	\$5,783	\$29,710	\$1,200	\$28,510	4.9	55,230
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	17,458	4.3	0	\$1,841	\$9,828	\$1,200	\$8,628	4.7	17,580
ECM 8	Install VFDs on Heating Water Pumps	Yes	37,389	5.3	0	\$3,942	\$19,882	\$0	\$19,882	5.0	37,650
Electric Unitary HVAC Measures			53,285	13.6	0	\$5,619	\$84,502	\$130	\$84,372	15.0	53,657
ECM 9	Install High Efficiency Air Conditioning Units	No	53,285	13.6	0	\$5,619	\$84,502	\$130	\$84,372	15.0	53,657
Gas Heating (HVAC/Process) Replacement			0	0.0	629	\$5,613	\$259,751	\$29,920	\$229,831	40.9	73,603
ECM 10	Install High Efficiency Hot Water Boilers	No	0	0.0	629	\$5,613	\$259,751	\$29,920	\$229,831	40.9	73,603
HVAC System Improvements			0	0.0	86	\$768	\$8,332	\$0	\$8,332	10.8	10,073
ECM 11	Implement Demand Control Ventilation (DCV)	No	0	0.0	70	\$622	\$8,157	\$0	\$8,157	13.1	8,155
ECM 12	Install Pipe Insulation	Yes	0	0.0	16	\$146	\$176	\$0	\$176	1.2	1,918
Domestic Water Heating Upgrade			0	0.0	7	\$63	\$108	\$0	\$108	1.7	827
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	7	\$63	\$108	\$0	\$108	1.7	827
Food Service & Refrigeration Measures			5,521	0.6	0	\$582	\$1,150	\$150	\$1,000	1.7	5,559
ECM 14	Vending Machine Control	Yes	5,521	0.6	0	\$582	\$1,150	\$150	\$1,000	1.7	5,559
Custom Measures			56,693	0.0	1,021	\$15,097	\$247,032	\$515	\$246,518	16.3	176,658
ECM 15	Computer Power Management Software	Yes	8,390	0.0	0	\$885	\$5,005	\$0	\$5,005	5.7	8,449
ECM 16	Installation of an Energy Management System	Yes	48,303	0.0	891	\$13,054	\$218,000	\$0	\$218,000	16.7	153,024
ECM 17	Domestic Water Heating System Upgrades	No	0	0.0	130	\$1,158	\$24,027	\$515	\$23,513	20.3	15,185
TOTALS (COST EFFECTIVE MEASURES)			329,336	59.2	848	\$42,300	\$400,251	\$27,837	\$372,414	8.8	430,943
TOTALS (ALL MEASURES)			382,621	72.8	1,676	\$55,311	\$776,688	\$58,402	\$718,286	13.0	581,544

* - 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



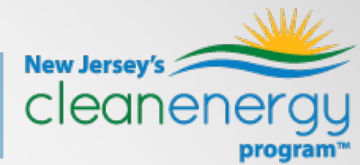
	Belmont Runyon	Central HS	Dr. E. Alma Flagg	East Side HS	ECC North	Harold Wilson	Science Park HS	West Side HS
<i>Potential:</i>	High	Medium	High	High	High	High	High	High
<i>System Potential (kW):</i>	296	295	246	356	222	170	654	198
<i>Electric Generation: (kWh/yr)</i>	352,646	221,971	293,077	267,870	264,484	202,533	779,156	235,892
<i>Displaced Cost: (\$/yr)</i>	\$42,780	\$23,270	\$31,550	\$30,820	\$38,460	\$22,170	\$89,910	\$24,870

	McKinley	New 1st	New Elliot	Oliver Street	New Speedway	Quitman Street	Spencer Miller	Luis Munoz Marin
<i>Potential:</i>	High	High	High	High	High	High	High	High
<i>System Potential (kW):</i>	211	500	300	300	310	100	205	200
<i>Electric Generation: (kWh/yr)</i>	158,766	376,222	357,411	357,411	369,325	119,137	244,231	150,489
<i>Displaced Cost: (\$/yr)</i>	\$21,900	\$45,590	\$53,510	\$51,410	\$46,040	\$13,250	\$27,260	\$15,720

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>

Combined Heat & Power Potential

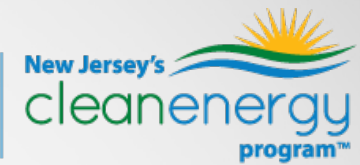


	Science Park HS	
<i>Potential</i>	High	
<i>System Type</i>	Microturbine	
<i>System Potential</i>	100	kW
<i>Electric Generation</i>	686,954	kWh/yr
<i>Thermal Generation</i>	3,964,150	MBtu/yr
<i>Displaced Cost</i>	\$ 49,465	/yr
<i>Installed Cost</i>	\$ 357,000	

Find a qualified firm that specializes in commercial CHP cost assessment and installation:

http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

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)

* eligible programs are highlighted in yellow

Recommended NJCEP Incentives per Building



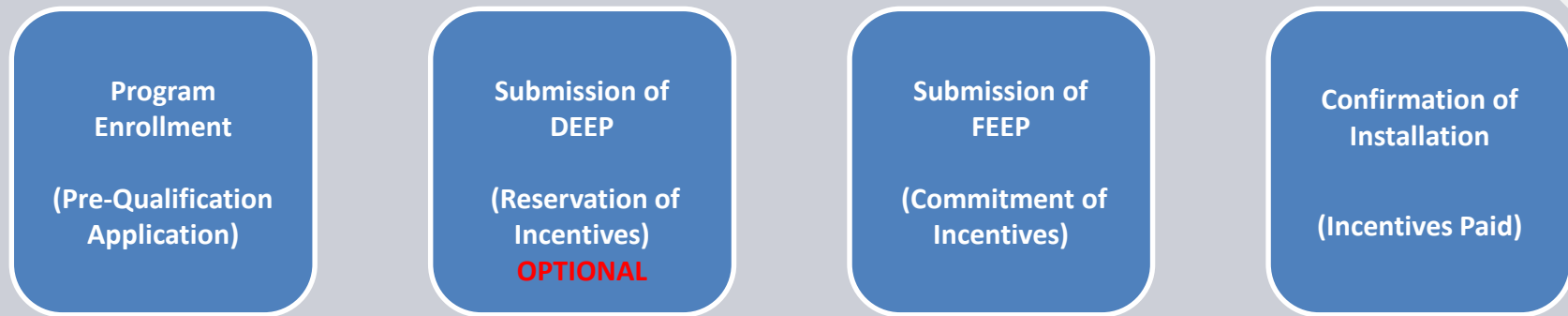
Entity Name	Pay For Performance	Direct Install	SmartStart	CTEEP	Combined Heat & Power	LEUP*
Belmont Runyon	X		X	X		X
Camden Middle School	X		X	X		
Central High School	X		X	X		
Dr. E. Alma Flagg	X		X	X		
East Side High School	X		X	X		
ECC North	X		X	X		
Luis Munoz Marin	X		X	X		
Mckinley	X		X	X		
New 1st Ave School	X		X	X		
New Elliot			X	X		
New Speedway	X		X	X		
New Oliver St. School			X	X		
Park Elementary	X		X	X		
Quitman St. School		X	X	X		
Science Park High School & Field	X		X	X	X	
Spencer/Miller	X		X	X		
West Side Highschool	X	X	X	X		

Large Energy Users: Overview

- The Large Energy Users Program (LEUP) encourages large C&I utility customers to self-invest in energy efficiency and combined heat & power projects
- Qualifications:
 - Applicants must have paid a minimum of \$200,000 NJCEP funds (via the SBC) in the previous 12 months of utility bills
 - Ability to “bank” funds for up to two fiscal years
 - The average peak demand of all facilities submitted must meet or exceed 400kW and/or 4,000 DTh
- Maximum incentive per entity is \$4 million or 75% of total project cost, 90% of NJCEP contribution or annual energy saving caps (\$0.33/kWh and \$3.75/Therm), whichever is less

www.NJCleanEnergy/LEUP

Large Energy Users: Process



Customers may submit up to three Draft Energy Efficiency Plans (DEEPs) or Final Energy Efficiency Plans (FEEDs) within the fiscal year enrolled

Pay for Performance: Overview



- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Qualification based on energy consumption, energy savings and measure types
- Customer chooses from network of pre-approved ***Participating Partners***
- Incentives paid in three installments at milestones
 - Incentives up to \$2MM per project (\$4MM entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
 - Incentives up to 50% of total project cost

www.NJCleanEnergy/P4P

Pay for Performance: Process



Submittal and
Approval of
Application

Development
and Approval of
Energy
Reduction Plan
(ERP)

Installation of
Recommended
Measures

Submittal and
Approval of
As-Built ERP and
Cx Report

Post
Construction
Verification of
Savings

Incentive #1
*fixed between
\$3,750-\$25,000*

Incentive #2
*up to 25%
project cost*

Incentive #3
*up to 25%
project cost*

1 year

Pay for Performance: Details



Incentive #1: Energy Reduction Plan			
Incentive Amount:		\$0.15	per sq ft
Minimum Incentive:		\$3,750	
Maximum Incentive:		\$25,000	or 50% of facility annual energy cost
Incentive #2: Installation of Recommended Measures			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15 % savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost
Incentive #3: Post-Construction Benchmarking Report			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15% savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost

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)

www.NJCleanEnergy/DI

Direct Install:



Participating Contractor

Willdan Energy Solutions

David Torres

1-732-662-4228 x6120

david.torres@willdan.com

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 lighting and custom measures
- 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!

www.NJCleanEnergy/SSB

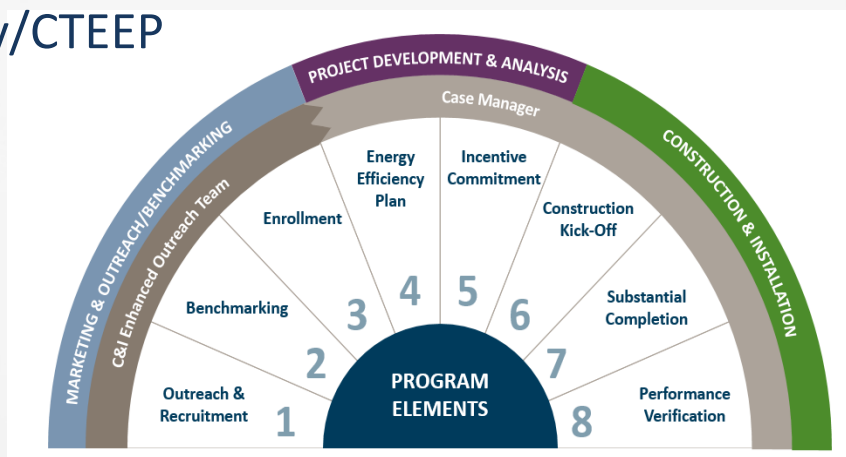
CTEEP: Overview



Customer Tailored Energy Efficiency Pilot (CTEEP)

- Provide customers with **on-site assistance** to discuss project opportunities and program incentives.
- A **single application** submission streamlines multiple prescriptive and custom measures.
- Provide **technical assistance incentives** to help offset soft costs associated with developing and planning an energy efficiency project.
- Incentives up to \$250,000 entity cap.

www.NJCleanEnergy/CTEEP



CHP: OVERVIEW

Combined Heat and Power (CHP)

- Enhanced alternative to emergency generators
- On-site power generation with recovery and productive use of waste heat
- System provides building heating and cooling
- Resiliency with Return on Investment
- Technology-neutral incentives
- 30/50/20 Incentive payment
 - 30% when equipment purchased
 - 50% when system installed
 - 20% upon acceptance and confirmation that the project is achieving the required performance

CHP: OVERVIEW



Eligible Technologies	Size (Installed Rated Capacity) ¹	Incentive (\$/kW)	% of Total Cost Cap per Project ³	\$ Cap per Project ³
Powered by non-renewable or renewable fuel source ⁴	≤500 kW	\$2,000	30-40% ²	\$2 million
Gas Internal Combustion Engine	>500 kW - 1 MW	\$1,000		
Gas Combustion Turbine	> 1 MW - 3 MW	\$550	30%	\$3 million
Microturbine	>3 MW	\$350		
Fuel Cells with Heat Recovery				
Waste Heat to Power*	<1 MW	\$1,000	30%	\$2 million
	> 1MW	\$500		\$3 million

*Waste Heat to Power: Powered by non-renewable fuel source, heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine).

Recommended NJCEP Incentives per Building



Entity Name	Pay For Performance	Direct Install	SmartStart	CTEP	Combined Heat & Power	LEUP*
Belmont Runyon	X		X	X		X
Camden Middle School	X		X	X		
Central High School	X		X	X		
Dr. E. Alma Flagg	X		X	X		
East Side High School	X		X	X		
ECC North	X		X	X		
Luis Munoz Marin	X		X	X		
Mckinley	X		X	X		
New 1st Ave School	X		X	X		
New Elliot			X	X		
New Speedway	X		X	X		
New Oliver St. School			X	X		
Park Elementary	X		X	X		
Quitman St. School		X	X	X		
Science Park High School & Field	X		X	X	X	
Spencer/Miller	X		X	X		
West Side Highschool	X	X	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

Mike Mandzik

Regional Outreach Manager

732.570.7534

mmandzik@trccompanies.com