

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Montclair Board of Education

TRC Energy Services

October 3, 2018

Introductions

- Montclair Board of Education
 - Emidio D'Andrea – Business Administrator & Board Secretary
 - John Eschman – Director of Facilities
 - William Ross – Project Architect
- NJ Clean Energy Program
 - Brian DeLuca, CEM – Program Manager
 - Moussa Traore – Auditor
 - Sarah Walters – Account Manager
 - Arif Welcher – BPU Ombudsman

Agenda

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

LGEA Process



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

Site Visit and Utility Analysis

Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

Utility Consumption:

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

Sites Visited/Analyzed

- Bradford School
- Charles H. Bullock School
- Edgement School
- Glenfield School
- George Inness High School Annex
- Hillside School
- Montclair High School
- Mount Hebron (Buzz Aldrin) School
- Northeast School
- Nishuane School
- Watchung School
- Renaissance at Rand
- Woodman Field-Furlong Field House
- BOE Administration Building
- Montclair Community Pre-K
- Central Heating Plant

Benchmarking

Bradford Elementary School

ENERGY STAR® Statement of Energy Performance

65
ENERGY STAR® Score¹

Bradford Elementary School
Primary Property Type: K-12 School
Gross Floor Area (ft²): 58,129
Built: 1927
For Year Ending: April 30, 2016
Date Generated: December 25, 2017

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 Bradford Elementary School 87 Mt. Hebron Road Montclair, New Jersey 07042	Property Owner Montclair Board of Education 22 Valley Road Montclair, NJ 07042 (973) 509-4050	Primary Contact Steve DiGeronimo 22 Valley Road Montclair, NJ 07042 (973) 509-4050 stedi@montclair.k12.nj.us
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Property ID: 5724465

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 66.8 kBtu/ft²	Annual Energy by Fuel Electric - Grid (kBtu) 1,141,148 (34%) Natural Gas (kBtu) 2,163,240 (66%)	National Median Comparison National Median Site EUI (kBtu/ft²) 65.6 National Median Source EUI (kBtu/ft²) 116.2 % Diff from National Median Source EUI -13%
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Source EUI
100.7 kBtu/ft²

Annual Emissions
Greenhouse Gas Emissions (Metric Tons CO2e/year) 242

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

() _____

Professional Engineer Stamp
(if applicable)



Building Name	ENERGY STAR Score
Bradford Elementary School	65
Charles H. Bullock School	N/A
Edgemont Elementary School	70
Glenfield Middle School	35
George Inness High School Annex	67
Hillside School	74
Montclair High School	93
Mount Hebron (Buzz Aldrin) School	38
Northeast School	76
Nishuane Elementary School	86
Watchung School	52
Renaissance at Rand	65
Woodman Field-Furlong Fieldhouse	N/A
BOE Administration Building	74
Montclair Community Pre-K	74
Central Heating Plant	74

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

All Opportunities



Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	1,765,500	469.7	15.9	\$247,222.40	\$1,324,417.18	\$201,446.18	\$1,122,971.00	4.5	1,756,860
Install LED Fixtures	434,110	123.9	0.8	\$60,793.97	\$437,520.94	\$43,433.00	\$394,087.94	6.5	434,570
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	27,618	6.8	0.3	\$3,489.67	\$26,513.83	\$1,927.73	\$24,586.10	7.0	28,092
Retrofit Fixtures with LED Lamps	1,286,020	337.7	14.8	\$180,334.32	\$847,690.91	\$156,085.45	\$691,605.46	3.8	1,276,320
Install LED Exit Signs	17,753	1.2	0.0	\$2,604.44	\$12,691.50	\$0.00	\$12,691.50	4.9	17,877
Lighting Control Measures	239,067	63.3	2.3	\$33,550.13	\$266,070.00	\$31,925.86	\$234,144.14	7.0	246,648
Install Occupancy Sensor Lighting Controls	216,007	57.4	2.2	\$30,342.67	\$232,870.00	\$31,846.23	\$201,023.77	6.6	222,752
Install High/Low Lighting Controls	23,060	6.0	0.1	\$3,207.46	\$33,200.00	\$79.63	\$33,120.37	10.3	23,896
Motor Upgrades	5,907	4.2	0.0	\$784.97	\$12,464.89	\$0.00	\$12,464.89	15.9	5,948
Premium Efficiency Motors	5,907	4.2	0.0	\$784.97	\$12,464.89	\$0.00	\$12,464.89	15.9	5,948
Variable Frequency Drive (VFD) Measures	21,515	4.7	0.0	\$3,121.66	\$27,873.45	\$0.00	\$27,873.45	8.9	21,666
Install VFDs on Hot Water Pumps	19,936	3.7	0.0	\$2,906.72	\$21,858.15	\$0.00	\$21,858.15	7.5	20,076
Install VFDs on Boiler Feedwater Pumps	1,579	1.1	0.0	\$214.94	\$6,015.30	\$0.00	\$6,015.30	28.0	1,590
Electric Unitary HVAC Measures	39,082	22.5	7.2	\$4,098.61	\$178,359.42	\$9,044.86	\$169,314.56	41.3	108,796
Install High Efficiency Electric AC	39,082	22.5	7.2	\$4,098.61	\$178,359.42	\$9,044.86	\$169,314.56	41.3	108,796
Gas Heating (HVAC/Process) Replacement	0	0.0	1,412.1	\$11,456.23	\$855,076.47	\$46,540.60	\$808,535.87	70.6	165,339
Install High Efficiency Hot Water Boilers	0	0.0	906.9	\$7,072.44	\$202,342.12	\$21,502.60	\$180,839.52	25.6	106,182
Install High Efficiency Steam Boilers	0	0.0	477.3	\$4,130.19	\$622,373.53	\$22,238.00	\$600,135.53	145.3	55,880
Install High Efficiency Furnaces	0	0.0	28.0	\$253.60	\$30,360.82	\$2,800.00	\$27,560.82	108.7	3,277
HVAC System Improvements	18,398	4.1	0.0	\$2,483.57	\$4,700.00	\$1,500.00	\$3,200.00	1.3	18,526
Install Dual Enthalpy Outside Economizer Control	18,398	4.1	0.0	\$2,483.57	\$4,700.00	\$1,500.00	\$3,200.00	1.3	18,526
Domestic Water Heating Upgrade	0	0.0	535.2	\$4,498.04	\$16,100.36	\$320.00	\$15,780.36	3.5	62,661
Install High Efficiency Gas Water Heater	0	0.0	25.5	\$230.98	\$9,361.15	\$320.00	\$9,041.15	39.1	2,985
Install Low-Flow Domestic Hot Water Devices	0	0.0	509.7	\$4,267.06	\$6,739.21	\$0.00	\$6,739.21	1.6	59,676
Plug Load Equipment Control - Vending Machine	28,429	0.0	0.0	\$4,054.69	\$10,666.80	\$0.00	\$10,666.80	2.6	28,628
Vending Machine Control	28,429	0.0	0.0	\$4,054.69	\$10,666.80	\$0.00	\$10,666.80	2.6	28,628
TOTALS	2,117,898	568.7	1,972.7	\$311,270.30	\$2,695,728.57	\$290,777.50	\$2,404,951.07	7.7	2,415,072

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

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

Cost Effective Opportunities*



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

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		1,765,500	469.7	15.9	\$247,222.40	\$1,324,417.18	\$201,446.18	\$1,122,971.00	4.5	1,756,860
ECM 1	Install LED Fixtures	434,110	123.9	0.8	\$60,793.97	\$437,520.94	\$43,433.00	\$394,087.94	6.5	434,570
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	27,618	6.8	0.3	\$3,489.67	\$26,513.83	\$1,927.73	\$24,586.10	7.0	28,092
ECM 3	Retrofit Fixtures with LED Lamps	1,286,020	337.7	14.8	\$180,334.32	\$847,690.91	\$156,085.45	\$691,605.46	3.8	1,276,320
ECM 4	Install LED Exit Signs	17,753	1.2	0.0	\$2,604.44	\$12,691.50	\$0.00	\$12,691.50	4.9	17,877
Lighting Control Measures		239,067	63.3	2.3	\$33,550.13	\$266,070.00	\$31,925.86	\$234,144.14	7.0	246,648
ECM 5	Install Occupancy Sensor Lighting Controls	216,007	57.4	2.2	\$30,342.67	\$232,870.00	\$31,846.23	\$201,023.77	6.6	222,752
ECM 6	Install High/Low Lighting Controls	23,060	6.0	0.1	\$3,207.46	\$33,200.00	\$79.63	\$33,120.37	10.3	23,896
Motor Upgrades		3,740	2.1	0.0	\$504.08	\$5,839.79	\$0.00	\$5,839.79	11.6	3,766
ECM 7	Premium Efficiency Motors	3,740	2.1	0.0	\$504.08	\$5,839.79	\$0.00	\$5,839.79	11.6	3,766
Variable Frequency Drive (VFD) Measures		17,915	2.6	0.0	\$2,638.51	\$15,842.85	\$0.00	\$15,842.85	6.0	18,040
ECM 8	Install VFDs on Hot Water Pumps	17,915	2.6	0.0	\$2,638.51	\$15,842.85	\$0.00	\$15,842.85	6.0	18,040
Electric Unitary HVAC Measures		1,299	0.8	0.0	\$169.18	\$1,633.14	\$0.00	\$1,633.14	9.7	1,308
ECM 9	Install High Efficiency Electric AC	1,299	0.8	0.0	\$169.18	\$1,633.14	\$0.00	\$1,633.14	9.7	1,308
HVAC System Improvements		18,398	4.1	0.0	\$2,483.57	\$4,700.00	\$1,500.00	\$3,200.00	1.3	18,526
ECM 10	Install Dual Enthalpy Outside Economizer Control	18,398	4.1	0.0	\$2,483.57	\$4,700.00	\$1,500.00	\$3,200.00	1.3	18,526
Domestic Water Heating Upgrade		0	0.0	509.7	\$4,267.06	\$6,739.21	\$0.00	\$6,739.21	1.6	59,676
ECM 11	Install Low-Flow Domestic Hot Water Devices	0	0.0	509.7	\$4,267.06	\$6,739.21	\$0.00	\$6,739.21	1.6	59,676
Plug Load Equipment Control - Vending Machine		28,429	0.0	0.0	\$4,054.69	\$10,666.80	\$0.00	\$10,666.80	2.6	28,628
ECM 12	Vending Machine Control	28,429	0.0	0.0	\$4,054.69	\$10,666.80	\$0.00	\$10,666.80	2.6	28,628
TOTALS		2,074,348	542.8	527.9	\$294,889.62	\$1,635,908.97	\$234,872.04	\$1,401,036.93	4.8	2,133,452

* - 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).

Bradford 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			96,779	29.4	0.0	\$15,871.49	\$104,403.19	\$11,630.00	\$92,773.19	5.8	97,455
ECM 1	Install LED Fixtures	Yes	25,461	4.6	0.0	\$4,175.59	\$55,418.56	\$3,690.00	\$51,728.56	12.4	25,639
ECM 2	Retrofit Fixtures with LED Lamps	Yes	68,305	24.6	0.0	\$11,201.92	\$47,586.42	\$7,940.00	\$39,646.42	3.5	68,783
ECM 3	Install LED Exit Signs	Yes	3,012	0.2	0.0	\$493.98	\$1,398.22	\$0.00	\$1,398.22	2.8	3,033
Lighting Control Measures			12,934	4.0	0.0	\$2,121.22	\$20,834.00	\$2,575.00	\$18,259.00	8.6	13,025
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	12,934	4.0	0.0	\$2,121.22	\$20,834.00	\$2,575.00	\$18,259.00	8.6	13,025
Motor Upgrades			161	0.1	0.0	\$26.35	\$1,752.72	\$0.00	\$1,752.72	66.5	162
ECM 5	Premium Efficiency Motors	Yes	161	0.1	0.0	\$26.35	\$1,752.72	\$0.00	\$1,752.72	66.5	162
Variable Frequency Drive (VFD) Measures			2,986	0.8	0.0	\$489.67	\$6,015.30	\$0.00	\$6,015.30	12.3	3,007
ECM 6	Install VFDs on Hot Water Pumps	Yes	2,986	0.8	0.0	\$489.67	\$6,015.30	\$0.00	\$6,015.30	12.3	3,007
Electric Unitary HVAC Measures			3,502	2.3	0.0	\$574.38	\$15,067.21	\$0.00	\$15,067.21	26.2	3,527
	Install High Efficiency Electric AC	No	3,502	2.3	0.0	\$574.38	\$15,067.21	\$0.00	\$15,067.21	26.2	3,527
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$264.34	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 7	Vending Machine Control	Yes	1,612	0.0	0.0	\$264.34	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS FOR ALL MEASURES			114,471	34.3	0.0	\$18,773.07	\$133,235.21	\$14,205.00	\$119,030.21	6.3	115,272
TOTALS FOR HIGH PRIORITY MEASURES			117,974	36.6	0.0	\$19,347.45	\$148,302.43	\$14,205.00	\$134,097.43	6.9	118,799

* - 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).

Charles H. Bullock 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			122,972	63.9	0.0	\$18,222.21	\$174,653.75	\$19,125.00	\$155,528.75	8.54	123,832
ECM 1	Install LED Fixtures	Yes	44,072	37.8	0.0	\$6,530.68	\$87,588.98	\$5,720.00	\$81,868.98	12.54	44,380
ECM 2	Retrofit Fixtures with LED Lamps	Yes	78,900	26.0	0.0	\$11,691.53	\$87,064.77	\$13,405.00	\$73,659.77	6.30	79,451
Lighting Control Measures			13,325	4.1	0.0	\$1,974.54	\$21,714.00	\$1,435.00	\$20,279.00	10.27	13,418
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	8,310	2.6	0.0	\$1,231.36	\$11,114.00	\$1,435.00	\$9,679.00	7.86	8,368
ECM 4	Install High/Low Lighting Controls	Yes	5,015	1.5	0.0	\$743.18	\$10,600.00	\$0.00	\$10,600.00	14.26	5,050
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$238.85	\$1,437.60	\$0.00	\$1,437.60	6.02	1,623
ECM 5	Vending Machine Control	Yes	1,612	0.0	0.0	\$238.85	\$1,437.60	\$0.00	\$1,437.60	6.02	1,623
TOTALS			137,909	68.0	0.0	\$20,435.60	\$197,805.35	\$20,560.00	\$177,245.35	8.67	138,873

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Edgemont School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			32,804	14.6	\$4,465.58	\$44,872.25	\$6,060.00	\$38,812.25	8.69	33,033
ECM 1	Install LED Fixtures	Yes	7,516	3.6	\$1,023.13	\$15,687.69	\$1,000.00	\$14,687.69	14.36	7,568
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,558	0.7	\$212.04	\$2,123.50	\$200.00	\$1,923.50	9.07	1,568
ECM 3	Retrofit Fixtures with LED Lamps	Yes	23,730	10.2	\$3,230.42	\$27,061.06	\$4,860.00	\$22,201.06	6.87	23,896
Lighting Control Measures			5,217	2.3	\$710.13	\$9,744.00	\$1,360.00	\$8,384.00	11.81	5,253
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	4,688	2.0	\$638.22	\$8,544.00	\$1,360.00	\$7,184.00	11.26	4,721
ECM 5	Install High/Low Lighting Controls	Yes	528	0.2	\$71.91	\$1,200.00	\$0.00	\$1,200.00	16.69	532
Motor Upgrades			177	0.3	\$24.05	\$1,547.10	\$0.00	\$1,547.10	64.32	178
	Premium Efficiency Motors	No	177	0.3	\$24.05	\$1,547.10	\$0.00	\$1,547.10	64.32	178
Variable Frequency Drive (VFD) Measures			1,579	1.1	\$214.94	\$6,015.30	\$0.00	\$6,015.30	27.99	1,590
	Install VFDs on Boiler Feedwater Pumps	No	1,579	1.1	\$214.94	\$6,015.30	\$0.00	\$6,015.30	27.99	1,590
Electric Unitary HVAC Measures			431	0.4	\$58.66	\$2,536.81	\$0.00	\$2,536.81	43.24	434
	Install High Efficiency Electric AC	No	431	0.4	\$58.66	\$2,536.81	\$0.00	\$2,536.81	43.24	434
TOTALS FOR RECOMMENDED MEASURES			38,020	16.8	\$5,175.71	\$54,616.25	\$7,420.00	\$47,196.25	9.12	38,286
TOTALS FOR EVALUATED MEASURES			40,207	18.6	\$5,473.36	\$64,715.46	\$7,420.00	\$57,295.46	10.47	40,488

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Glenfield 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			235,829	46.0	0.0	\$30,720.41	\$130,406.63	\$24,165.00	\$106,241.63	3.46	237,478
ECM 1	Install LED Fixtures	Yes	78,457	10.3	0.0	\$10,220.20	\$36,662.24	\$8,700.00	\$27,962.24	2.74	79,005
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	15,901	3.4	0.0	\$2,071.41	\$15,458.33	\$840.00	\$14,618.33	7.06	16,013
ECM 3	Retrofit Fixtures with LED Lamps	Yes	141,471	32.3	0.0	\$18,428.80	\$78,286.05	\$14,625.00	\$63,661.05	3.45	142,460
Lighting Control Measures			22,294	4.8	0.0	\$2,904.10	\$18,692.00	\$1,610.00	\$17,082.00	5.88	22,450
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	16,907	3.6	0.0	\$2,202.39	\$13,092.00	\$1,610.00	\$11,482.00	5.21	17,025
ECM 5	Install High/Low Lighting Controls	Yes	5,387	1.2	0.0	\$701.71	\$5,600.00	\$0.00	\$5,600.00	7.98	5,424
Motor Upgrades			1,678	0.4	0.0	\$218.57	\$1,153.79	\$0.00	\$1,153.79	5.28	1,690
ECM 6	Premium Efficiency Motors	Yes	1,678	0.4	0.0	\$218.57	\$1,153.79	\$0.00	\$1,153.79	5.28	1,690
Electric Unitary HVAC Measures			1,299	0.8	0.0	\$169.18	\$1,633.14	\$0.00	\$1,633.14	9.65	1,308
ECM 7	Install High Efficiency Electric AC	Yes	1,299	0.8	0.0	\$169.18	\$1,633.14	\$0.00	\$1,633.14	9.65	1,308
Domestic Water Heating Upgrade			0	0.0	57.5	\$431.17	\$100.38	\$0.00	\$100.38	0.23	6,730
ECM 8	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	57.5	\$431.17	\$100.38	\$0.00	\$100.38	0.23	6,730
Plug Load Equipment Control - Vending Machine			4,836	0.0	0.0	\$629.90	\$2,156.40	\$0.00	\$2,156.40	3.42	4,869
ECM 9	Vending Machine Control	Yes	4,836	0.0	0.0	\$629.90	\$2,156.40	\$0.00	\$2,156.40	3.42	4,869
TOTALS			265,935	52.0	57.5	\$35,073.33	\$154,142.34	\$25,775.00	\$128,367.34	3.66	274,524

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George Inness High School Annex



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			164,362	56.3	0.0	\$22,561.48	\$118,805.52	\$13,970.00	\$104,835.52	4.65	165,512
ECM 1	Install LED Fixtures	Yes	81,117	30.1	0.0	\$11,134.72	\$54,426.60	\$1,900.00	\$52,526.60	4.72	81,685
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	5,345	1.8	0.0	\$733.72	\$5,499.00	\$450.00	\$5,049.00	6.88	5,383
ECM 3	Retrofit Fixtures with LED Lamps	Yes	77,900	24.4	0.0	\$10,693.04	\$58,879.92	\$11,620.00	\$47,259.92	4.42	78,444
Lighting Control Measures			21,288	6.6	0.0	\$2,922.15	\$18,068.00	\$2,305.00	\$15,763.00	5.39	21,437
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	19,148	6.0	0.0	\$2,628.41	\$15,468.00	\$2,305.00	\$13,163.00	5.01	19,282
ECM 5	Install High/Low Lighting Controls	Yes	2,140	0.6	0.0	\$293.74	\$2,600.00	\$0.00	\$2,600.00	8.85	2,155
Motor Upgrades			550	0.4	0.0	\$75.47	\$1,596.51	\$0.00	\$1,596.51	21.15	554
	Premium Efficiency Motors	No	550	0.4	0.0	\$75.47	\$1,596.51	\$0.00	\$1,596.51	21.15	554
Electric Unitary HVAC Measures			4,957	4.2	0.0	\$680.44	\$44,603.20	\$2,528.00	\$42,075.20	61.84	4,992
	Install High Efficiency Electric AC	No	4,957	4.2	0.0	\$680.44	\$44,603.20	\$2,528.00	\$42,075.20	61.84	4,992
Gas Heating (HVAC/Process) Replacement			0	0.0	72.5	\$656.65	\$158,612.96	\$8,744.00	\$149,868.96	228.23	8,489
	Install High Efficiency Steam Boilers	No	0	0.0	59.2	\$536.32	\$140,215.20	\$7,544.00	\$132,671.20	247.37	6,933
	Install High Efficiency Furnaces	No	0	0.0	13.3	\$120.32	\$18,397.75	\$1,200.00	\$17,197.75	142.93	1,555
HVAC System Improvements			9,233	2.1	0.0	\$1,267.34	\$1,800.00	\$500.00	\$1,300.00	1.03	9,297
ECM 6	Install Dual Enthalpy Outside Economizer Control	Yes	9,233	2.1	0.0	\$1,267.34	\$1,800.00	\$500.00	\$1,300.00	1.03	9,297
Domestic Water Heating Upgrade			0	0.0	69.2	\$627.16	\$5,012.53	\$170.00	\$4,842.53	7.72	8,107
	Install High Efficiency Gas Water Heater	No	0	0.0	9.9	\$89.59	\$4,912.15	\$170.00	\$4,742.15	52.93	1,158
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	59.4	\$537.57	\$100.38	\$0.00	\$100.38	0.19	6,949
Plug Load Equipment Control - Vending Machine			4,836	0.0	0.0	\$663.76	\$2,156.40	\$0.00	\$2,156.40	3.25	4,869
ECM 8	Vending Machine Control	Yes	4,836	0.0	0.0	\$663.76	\$2,156.40	\$0.00	\$2,156.40	3.25	4,869
TOTAL FOR ALL RECOMMENDED MEASURES			199,719	65.0	59.4	\$27,952.30	\$140,930.30	\$16,775.00	\$124,155.30	4.44	208,065
TOTALS			205,226	69.6	141.7	\$29,454.45	\$350,655.12	\$28,217.00	\$322,438.12	10.95	223,257

* - 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).

Hillside 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			209,371	46.9	0.0	\$31,918.71	\$146,006.71	\$21,745.00	\$124,261.71	3.9	210,835
ECM 1	Install LED Fixtures	Yes	18,278	3.8	0.0	\$2,786.45	\$43,765.28	\$4,800.00	\$38,965.28	14.0	18,406
ECM 2	Retrofit Fixtures with LED Lamps	Yes	187,817	42.8	0.0	\$28,632.80	\$101,058.32	\$16,945.00	\$84,113.32	2.9	189,130
ECM 3	Install LED Exit Signs	Yes	3,276	0.2	0.0	\$499.47	\$1,183.11	\$0.00	\$1,183.11	2.4	3,299
Lighting Control Measures			28,655	6.3	0.0	\$4,368.42	\$29,720.00	\$3,150.00	\$26,570.00	6.1	28,855
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	24,564	5.4	0.0	\$3,744.85	\$25,920.00	\$3,150.00	\$22,770.00	6.1	24,736
ECM 5	Install High/Low Lighting Controls	Yes	4,090	0.9	0.0	\$623.57	\$3,800.00	\$0.00	\$3,800.00	6.1	4,119
Electric Unitary HVAC Measures			1,796	1.0	0.0	\$273.85	\$16,149.94	\$0.00	\$16,149.94	59.0	1,809
	Install High Efficiency Electric AC	No	1,796	1.0	0.0	\$273.85	\$16,149.94	\$0.00	\$16,149.94	59.0	1,809
Plug Load Equipment Control - Vending Machine			1,209	0.0	0.0	\$184.29	\$230.00	\$0.00	\$230.00	1.2	1,217
ECM 6	Vending Machine Control	Yes	1,209	0.0	0.0	\$184.29	\$230.00	\$0.00	\$230.00	1.2	1,217
TOTALS (RECOMMENDED MEASURES ONLY)			239,234	53.2	0.0	\$36,471.42	\$175,956.71	\$24,895.00	\$151,061.71	4.1	240,907
TOTALS (ALL EVALUATED MEASURES)			241,031	54.2	0.0	\$36,745.28	\$192,106.65	\$24,895.00	\$167,211.65	4.6	242,716

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Montclair High School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			297,995	62.4	0.0	\$42,891.77	\$206,332.89	\$33,190.00	\$173,142.89	4.0	300,078
ECM 1	Install LED Fixtures	Yes	67,721	10.7	0.0	\$9,747.39	\$60,143.64	\$8,360.00	\$51,783.64	5.3	68,194
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,168	0.3	0.0	\$168.04	\$989.00	\$50.00	\$939.00	5.6	1,176
ECM 3	Retrofit Fixtures with LED Lamps	Yes	222,256	51.0	0.0	\$31,990.33	\$141,543.38	\$24,780.00	\$116,763.38	3.6	223,810
ECM 4	Install LED Exit Signs	Yes	6,850	0.4	0.0	\$986.00	\$3,656.87	\$0.00	\$3,656.87	3.7	6,898
Lighting Control Measures			45,728	10.4	0.0	\$6,581.77	\$59,796.00	\$7,470.00	\$52,326.00	8.0	46,047
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	45,728	10.4	0.0	\$6,581.77	\$59,796.00	\$7,470.00	\$52,326.00	8.0	46,047
Variable Frequency Drive (VFD) Measures			14,929	1.9	0.0	\$2,148.84	\$9,827.55	\$0.00	\$9,827.55	4.6	15,034
ECM 6	Install VFDs on Hot Water Pumps	Yes	14,929	1.9	0.0	\$2,148.84	\$9,827.55	\$0.00	\$9,827.55	4.6	15,034
Gas Heating (HVAC/Process) Replacement			0	0.0	812.9	\$6,677.78	\$186,907.92	\$20,088.00	\$166,819.92	25.0	95,184
	Install High Efficiency Hot Water Boilers	No	0	0.0	812.9	\$6,677.78	\$186,907.92	\$20,088.00	\$166,819.92	25.0	95,184
Domestic Water Heating Upgrade			0	0.0	132.8	\$1,090.55	\$6,072.40	\$0.00	\$6,072.40	5.6	15,544
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	132.8	\$1,090.55	\$6,072.40	\$0.00	\$6,072.40	5.6	15,544
Plug Load Equipment Control - Vending Machine			6,669	0.0	0.0	\$959.90	\$1,610.00	\$0.00	\$1,610.00	1.7	6,716
ECM 8	Vending Machine Control	Yes	6,669	0.0	0.0	\$959.90	\$1,610.00	\$0.00	\$1,610.00	1.7	6,716
TOTALS FOR ALL RECOMMENDED MEASURES			365,320	74.8	132.8	\$53,672.83	\$283,638.84	\$40,660.00	\$242,978.84	4.5	383,419
TOTALS FOR ALL MEASURES			365,320	74.8	945.7	\$60,350.60	\$470,546.76	\$60,748.00	\$409,798.76	6.8	478,603

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Mount Hebron (Buzz Aldrin) 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			207,198	51.0	0.0	\$34,068.52	\$120,707.89	\$22,415.00	\$98,292.89	2.9	208,647
ECM 1	Install LED Fixtures	Yes	15,380	3.3	0.0	\$2,528.88	\$7,211.34	\$1,200.00	\$6,011.34	2.4	15,488
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	417	0.1	0.0	\$68.50	\$392.00	\$20.00	\$372.00	5.4	420
ECM 3	Retrofit Fixtures with LED Lamps	Yes	190,978	47.5	0.0	\$31,401.55	\$112,244.11	\$21,195.00	\$91,049.11	2.9	192,313
ECM 4	Install LED Exit Signs	Yes	423	0.1	0.0	\$69.58	\$860.44	\$0.00	\$860.44	12.4	426
Lighting Control Measures			32,074	8.6	0.0	\$5,273.74	\$35,926.00	\$4,245.00	\$31,681.00	6.0	32,298
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	30,452	8.5	0.0	\$5,007.14	\$32,326.00	\$4,245.00	\$28,081.00	5.6	30,665
ECM 6	Install High/Low Lighting Controls	Yes	1,621	0.1	0.0	\$266.60	\$3,600.00	\$0.00	\$3,600.00	13.5	1,633
Gas Heating (HVAC/Process) Replacement			0	0.0	234.4	\$2,009.23	\$209,050.93	\$0.00	\$209,050.93	104.0	27,442
	Install High Efficiency Steam Boilers	No	0	0.0	234.4	\$2,009.23	\$209,050.93	\$0.00	\$209,050.93	104.0	27,442
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$265.03	\$460.00	\$0.00	\$460.00	1.7	1,623
ECM 7	Vending Machine Control	Yes	1,612	0.0	0.0	\$265.03	\$460.00	\$0.00	\$460.00	1.7	1,623
TOTAL FOR PROPOSED MEASURES			240,884	59.7	0.0	\$39,607.29	\$157,093.89	\$26,660.00	\$130,433.89	3.3	242,568
TOTAL FOR ALL MEASURES			240,884	59.7	234.4	\$41,616.52	\$366,144.82	\$26,660.00	\$339,484.82	8.2	270,010

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

Northeast 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			81,330	23.4	0.0	\$10,792.69	\$64,690.58	\$9,450.00	\$55,240.58	5.12	81,899
ECM 1	Install LED Fixtures	Yes	14,553	3.5	0.0	\$1,931.16	\$14,906.34	\$800.00	\$14,106.34	7.30	14,654
ECM 2	Retrofit Fixtures with LED Lamps	Yes	65,649	19.9	0.0	\$8,711.80	\$48,278.47	\$8,650.00	\$39,628.47	4.55	66,108
ECM 3	Install LED Exit Signs	Yes	1,128	0.1	0.0	\$149.73	\$1,505.77	\$0.00	\$1,505.77	10.06	1,136
Lighting Control Measures			14,651	4.4	0.0	\$1,944.29	\$11,334.00	\$1,585.00	\$9,749.00	5.01	14,754
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	13,200	3.9	0.0	\$1,751.66	\$9,734.00	\$1,585.00	\$8,149.00	4.65	13,292
ECM 5	Install High/Low Lighting Controls	Yes	1,452	0.4	0.0	\$192.63	\$1,600.00	\$0.00	\$1,600.00	8.31	1,462
Variable Frequency Drive (VFD) Measures			2,021	1.0	0.0	\$268.21	\$6,015.30	\$0.00	\$6,015.30	22.43	2,035
	Install VFDs on Hot Water Pumps	No	2,021	1.0	0.0	\$268.21	\$6,015.30	\$0.00	\$6,015.30	22.43	2,035
Electric Unitary HVAC Measures			17,182	13.5	0.0	\$2,280.11	\$97,008.17	\$5,080.50	\$91,927.67	40.32	17,302
	Install High Efficiency Electric AC	No	17,182	13.5	0.0	\$2,280.11	\$97,008.17	\$5,080.50	\$91,927.67	40.32	17,302
Gas Heating (HVAC/Process) Replacement			0	0.0	117.2	\$1,062.45	\$109,206.70	\$6,832.00	\$102,374.70	96.36	13,725
	Install High Efficiency Steam Boilers	No	0	0.0	102.5	\$929.18	\$97,243.63	\$5,232.00	\$92,011.63	99.02	12,003
	Install High Efficiency Furnaces	No	0	0.0	14.7	\$133.28	\$11,963.07	\$1,600.00	\$10,363.07	77.76	1,722
HVAC System Improvements			9,165	2.1	0.0	\$1,216.23	\$2,900.00	\$1,000.00	\$1,900.00	1.56	9,229
ECM 6	Install Dual Enthalpy Outside Economizer Control	Yes	9,165	2.1	0.0	\$1,216.23	\$2,900.00	\$1,000.00	\$1,900.00	1.56	9,229
Domestic Water Heating Upgrade			0	0.0	113.3	\$1,027.01	\$4,613.91	\$150.00	\$4,463.91	4.35	13,267
	Install High Efficiency Gas Water Heater	No	0	0.0	15.6	\$141.39	\$4,449.00	\$150.00	\$4,299.00	30.40	1,827
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	97.7	\$885.62	\$164.91	\$0.00	\$164.91	0.19	11,441
Plug Load Equipment Control - Vending Machine			2,821	0.0	0.0	\$374.32	\$1,437.60	\$0.00	\$1,437.60	3.84	2,840
ECM 8	Vending Machine Control	Yes	2,821	0.0	0.0	\$374.32	\$1,437.60	\$0.00	\$1,437.60	3.84	2,840
TOTALS FOR PROPOSED MEASURES			107,967	29.9	97.7	\$15,213.15	\$80,527.09	\$12,035.00	\$68,492.09	4.50	120,163
TOTALS FOR ALL MEASURES			127,170	44.4	230.5	\$18,965.32	\$297,206.26	\$24,097.50	\$273,108.76	14.40	155,052

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Nishuane School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	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			74,741	29.4	0.0	0.0	\$10,187.54	\$88,999.19	\$12,230.00	\$76,769.19	7.54	75,264
ECM 1	Install LED Fixtures	Yes	18,852	5.5	0.0	0.0	\$2,569.58	\$22,808.47	\$1,340.00	\$21,468.47	8.35	18,984
ECM 2	Retrofit Fixtures with LED Lamps	Yes	53,955	23.8	0.0	0.0	\$7,354.32	\$63,609.40	\$10,890.00	\$52,719.40	7.17	54,332
ECM 3	Install LED Exit Signs	Yes	1,934	0.1	0.0	0.0	\$263.64	\$2,581.32	\$0.00	\$2,581.32	9.79	1,948
Lighting Control Measures			12,879	5.6	0.0	0.0	\$1,755.52	\$14,110.00	\$1,535.00	\$12,575.00	7.16	12,969
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	10,575	4.6	0.0	0.0	\$1,441.40	\$9,910.00	\$1,535.00	\$8,375.00	5.81	10,649
ECM 5	Install High/Low Lighting Controls	Yes	2,305	1.0	0.0	0.0	\$314.12	\$4,200.00	\$0.00	\$4,200.00	13.37	2,321
Motor Upgrades			1,901	1.6	0.0	0.0	\$259.16	\$2,933.28	\$0.00	\$2,933.28	11.32	1,915
ECM 6	Premium Efficiency Motors	Yes	1,901	1.6	0.0	0.0	\$259.16	\$2,933.28	\$0.00	\$2,933.28	11.32	1,915
Gas Heating (HVAC/Process) Replacement			0	0.0	44.9	44.9	\$369.56	\$122,929.93	\$6,614.00	\$116,315.93	314.74	5,257
	Install High Efficiency Steam Boilers	No	0	0.0	44.9	44.9	\$369.56	\$122,929.93	\$6,614.00	\$116,315.93	314.74	5,257
Domestic Water Heating Upgrade			0	0.0	120.7	120.7	\$993.49	\$207.93	\$0.00	\$207.93	0.21	14,133
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	120.7	120.7	\$993.49	\$207.93	\$0.00	\$207.93	0.21	14,133
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	0.0	\$219.70	\$718.80	\$0.00	\$718.80	3.27	1,623
ECM 8	Vending Machine Control	Yes	1,612	0.0	0.0	0.0	\$219.70	\$718.80	\$0.00	\$718.80	3.27	1,623
TOTALS FOR ALL RECOMMENDED MEASURES			91,134	36.7	120.7	120.7	\$13,415.41	\$106,969.20	\$13,765.00	\$93,204.20	6.95	105,904
TOTALS FOR ALL MEASURES			91,134	36.7	165.6	165.6	\$13,784.97	\$229,899.13	\$20,379.00	\$209,520.13	15.20	111,161

* - 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).

Watchung 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			87,875	21.3	0.0	\$11,062.52	\$54,625.36	\$8,020.00	\$46,605.36	4.21	88,489
ECM 1	Install LED Fixtures	Yes	23,287	4.7	0.0	\$2,931.59	\$16,761.33	\$2,310.00	\$14,451.33	4.93	23,450
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,305	0.3	0.0	\$164.33	\$1,350.00	\$85.00	\$1,265.00	7.70	1,315
ECM 3	Retrofit Fixtures with LED Lamps	Yes	62,154	16.2	0.0	\$7,824.55	\$35,008.26	\$5,625.00	\$29,383.26	3.76	62,589
ECM 4	Install LED Exit Signs	Yes	1,128	0.1	0.0	\$142.04	\$1,505.77	\$0.00	\$1,505.77	10.60	1,136
Lighting Control Measures			9,932	2.6	0.0	\$1,250.38	\$5,760.00	\$770.00	\$4,990.00	3.99	10,002
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	9,932	2.6	0.0	\$1,250.38	\$5,760.00	\$770.00	\$4,990.00	3.99	10,002
Motor Upgrades			1,441	1.4	0.0	\$181.37	\$3,481.49	\$0.00	\$3,481.49	19.20	1,451
	Premium Efficiency Motors	No	1,441	1.4	0.0	\$181.37	\$3,481.49	\$0.00	\$3,481.49	19.20	1,451
Electric Unitary HVAC Measures			492	0.3	0.0	\$61.99	\$1,360.95	\$0.00	\$1,360.95	21.95	496
	Install High Efficiency Electric AC	No	492	0.3	0.0	\$61.99	\$1,360.95	\$0.00	\$1,360.95	21.95	496
Gas Heating (HVAC/Process) Replacement			0	0.0	36.2	\$285.90	\$52,933.84	\$2,848.00	\$50,085.84	175.19	4,244
	Install High Efficiency Steam Boilers	No	0	0.0	36.2	\$285.90	\$52,933.84	\$2,848.00	\$50,085.84	175.19	4,244
Domestic Water Heating Upgrade			0	0.0	41.7	\$328.66	\$93.21	\$0.00	\$93.21	0.28	4,879
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	41.7	\$328.66	\$93.21	\$0.00	\$93.21	0.28	4,879
TOTALS FOR ALL RECOMMENDED MEASURES			97,807	23.92	41.7	\$12,641.56	\$60,478.57	\$8,790.00	\$51,688.57	4.09	103,370
TOTALS FOR ALL MEASURES			99,740	25.6	77.9	\$13,170.82	\$118,254.85	\$11,638.00	\$106,616.85	8.09	109,561

* - 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).

Renaissance at Rand



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			64,637	17.0	0.0	\$10,209.81	\$50,995.44	\$8,305.00	\$42,690.44	4.2	65,089
ECM 1	Install LED Fixtures	Yes	27,030	4.7	0.0	\$4,269.52	\$18,883.42	\$2,095.00	\$16,788.42	3.9	27,219
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	308	0.2	0.0	\$48.65	\$585.00	\$50.00	\$535.00	11.0	310
ECM 3	Retrofit Fixtures with LED Lamps	Yes	37,299	12.2	0.0	\$5,891.64	\$31,527.01	\$6,160.00	\$25,367.01	4.3	37,560
Lighting Control Measures			8,599	2.8	0.0	\$1,358.33	\$14,622.00	\$1,835.00	\$12,787.00	9.4	8,660
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	8,599	2.8	0.0	\$1,358.33	\$14,622.00	\$1,835.00	\$12,787.00	9.4	8,660
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$254.60	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 5	Vending Machine Control	Yes	1,612	0.0	0.0	\$254.60	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS			74,848	19.8	0.0	\$11,822.74	\$65,847.44	\$10,140.00	\$55,707.44	4.7	75,372

* - 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).

Woodman Field-Furlong Field House



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			26,381	7.6	0.0	\$3,916.67	\$17,937.84	\$1,670.00	\$16,267.84	4.2	26,565
ECM 1	Install LED Fixtures	Yes	6,366	1.2	0.0	\$945.08	\$3,257.05	\$600.00	\$2,657.05	2.8	6,410
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	155	0.0	0.0	\$22.98	\$117.00	\$10.00	\$107.00	4.7	156
ECM 3	Retrofit Fixtures with LED Lamps	Yes	19,860	6.3	0.0	\$2,948.61	\$14,563.79	\$1,060.00	\$13,503.79	4.6	19,999
Lighting Control Measures			2,597	0.9	0.0	\$385.54	\$5,750.00	\$695.00	\$5,055.00	13.1	2,615
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,597	0.9	0.0	\$385.54	\$5,750.00	\$695.00	\$5,055.00	13.1	2,615
Gas Heating (HVAC/Process) Replacement			0	0.0	93.9	\$394.66	\$15,434.20	\$1,414.60	\$14,019.60	35.5	10,998
	Install High Efficiency Hot Water Boilers	No	0	0.0	93.9	\$394.66	\$15,434.20	\$1,414.60	\$14,019.60	35.5	10,998
TOTAL FOR PROPOSED MEASURES			28,977	8.4	0.0	\$4,302.20	\$23,687.84	\$2,365.00	\$21,322.84	5.0	29,180
TOTAL FOR ALL MEASURES			28,977	8.4	93.9	\$4,696.86	\$39,122.04	\$3,779.60	\$35,342.44	7.5	40,178

* - 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).

BOE Administration Building



Energy Conservation Measure		High Priority?	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			19,051	4.8	0.0	\$2,904.34	\$15,256.16	\$2,565.00	\$12,691.16	4.4	19,184
ECM 1	Install LED Fixtures	Yes	2,165	0.3	0.0	\$329.99	\$1,562.71	\$400.00	\$1,162.71	3.5	2,180
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,461	0.3	0.0	\$222.73	\$1,758.00	\$5.00	\$1,753.00	7.9	1,471
ECM 3	Retrofit Fixtures with LED Lamps	Yes	15,425	4.2	0.0	\$2,351.62	\$11,935.45	\$2,160.00	\$9,775.45	4.2	15,533
Lighting Control Measures			2,061	0.5	0.0	\$314.21	\$3,030.00	\$280.00	\$2,750.00	8.8	2,076
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,846	0.4	0.0	\$281.45	\$2,430.00	\$280.00	\$2,150.00	7.6	1,859
ECM 5	Install High/Low Lighting Controls	Yes	215	0.0	0.0	\$32.76	\$600.00	\$0.00	\$600.00	18.3	216
Electric Unitary HVAC Measures			5,213	4.1	0.0	\$794.78	\$33,388.64	\$0.00	\$33,388.64	42.0	5,250
	Install High Efficiency Electric AC	No	5,213	4.1	0.0	\$794.78	\$33,388.64	\$0.00	\$33,388.64	42.0	5,250
TOTALS FOR HIGH PRIORITY MEASURES			21,112	5.3	0.0	\$3,218.56	\$18,286.16	\$2,845.00	\$15,441.16	4.8	21,260
TOTALS FOR ALL EVALUATED MEASURES			26,325	9.4	0.0	\$4,013.33	\$51,674.80	\$2,845.00	\$48,829.80	12.2	26,510

* - 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).

Montclair Community Pre-K



Energy Conservation Measure		High Priority?	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			41,993	11.1	0.0	\$6,401.83	\$33,919.29	\$6,125.00	\$27,794.29	4.3	42,286
ECM 1	Install LED Fixtures	Yes	3,857	0.5	0.0	\$588.01	\$3,125.42	\$800.00	\$2,325.42	4.0	3,884
ECM 2	Retrofit Fixtures with LED Lamps	Yes	38,136	10.6	0.0	\$5,813.83	\$30,793.88	\$5,325.00	\$25,468.88	4.4	38,402
Lighting Control Measures			6,833	1.9	0.0	\$1,041.64	\$13,830.00	\$1,715.00	\$12,115.00	11.6	6,880
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	6,525	1.8	0.0	\$994.77	\$13,230.00	\$1,715.00	\$11,515.00	11.6	6,571
ECM 4	Install High/Low Lighting Controls	Yes	307	0.1	0.0	\$46.87	\$600.00	\$0.00	\$600.00	12.8	310
Electric Unitary HVAC Measures			4,208	3.1	0.0	\$641.58	\$46,537.06	\$996.67	\$45,540.39	71.0	4,238
	Install High Efficiency Electric AC	No	4,208	3.1	0.0	\$641.58	\$46,537.06	\$996.67	\$45,540.39	71.0	4,238
TOTALS FOR HIGH PRIORITY MEASURES			48,825	12.9	0.0	\$7,443.48	\$47,749.29	\$7,840.00	\$39,909.29	5.4	49,167
TOTALS FOR ALL EVALUATED MEASURES			53,034	16.1	0.0	\$8,085.06	\$94,286.35	\$8,836.67	\$85,449.69	10.6	53,405

* - 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).

Central Heating Plant



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			2,184	0.3	0.0	\$333.01	\$979.95	\$165.00	\$814.95	2.4	2,200
ECM 1	Retrofit Fixtures with LED Lamps	Yes	2,184	0.3	0.0	\$333.01	\$979.95	\$165.00	\$814.95	2.4	2,200
TOTALS			2,184	0.3	0.0	\$333.01	\$979.95	\$165.00	\$814.95	2.4	2,200

* - 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).

Solar Energy Generation Potential

	Bradford School	Glenfield School	Hillside School	Montclair High School
<i>Potential:</i>	HIGH	HIGH	HIGH	HIGH
<i>System Potential:</i>	90 kW	200 kW	135 kW	342 kW
<i>Electric Generation:</i>	107,224 kWh per year	238,274 kWh per year	160,835 kWh per year	407,448 kWh per year
<i>Displaced Cost:</i>	\$9,330 per year	\$20,730 per year	\$13,990 per year	\$58,650 per year

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>

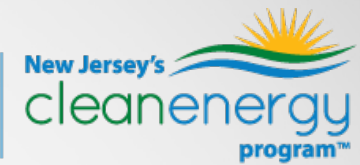
Solar Energy Generation Potential

	Mt. Hebron / Buzz Aldrin School	Northeast School	Nishuane School	Renaissance at Rand
<i>Potential:</i>	HIGH	HIGH	HIGH	HIGH
<i>System Potential:</i>	94 kW	90 kW	77 kW	54 kW
<i>Electric Generation:</i>	111,989 kWh per year	107,224 kWh per year	91,736 kWh per year	64,334 kWh per year
<i>Displaced Cost:</i>	\$9,740 per year	\$9,330 per year	\$7,980 per year	\$10,160 per year

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

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

Energy Efficient Best Practices



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

See individual reports for specific EE practices by building

Clean Energy Program Portfolio



ELIGIBLE SECTORS

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

INCENTIVE PROGRAMS

Equipment Rebates:

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

Whole Buildings:

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

Energy Generation:

- Combined Heat and Power (CHP)

OTHER PROGRAMS

Renewable Energy Generation:

- SREC Registration Program (SRP)

* eligible programs are highlighted in yellow

SmartStart: Overview



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

Direct Install: Overview

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

Direct Install:



Participating Contractor

Willdan Energy Solutions

Robert Vidaurre

908-337-8477

rvidaurre@willdan.com

P4P Existing Buildings: Overview



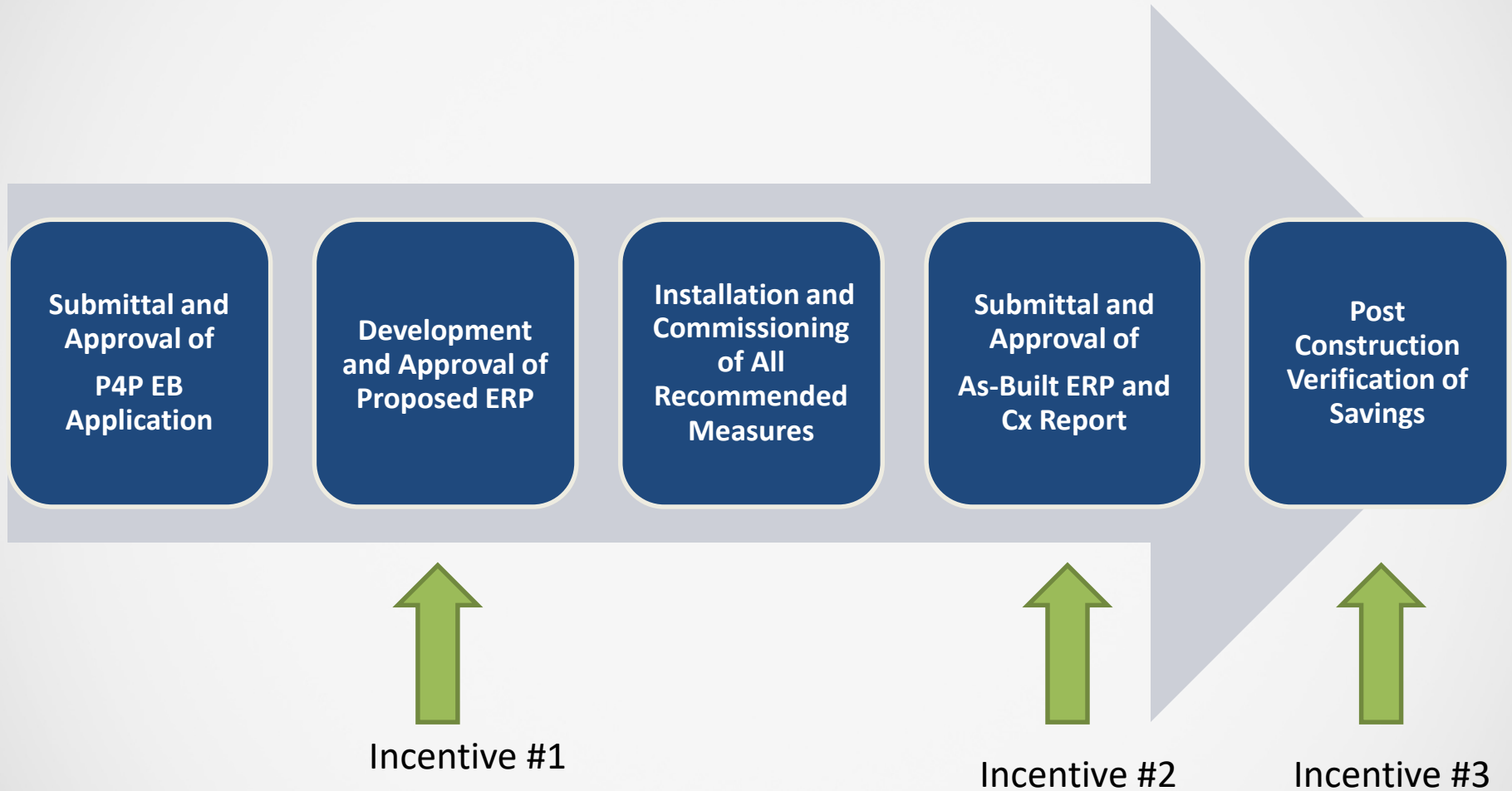
- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Customer chooses from network of pre-approved participating Partners
- Incentives up to \$2 million per project
 - \$1 million for electric measures
 - \$1 million for gas measures
- \$4 million annual entity cap per fiscal year
- Incentives up to 50% of total project cost
- Incentives paid in three installments at milestones

P4P Existing Buildings: Overview



- Open to Commercial and Industrial facilities with annual peak demand of at least 200 kW in previous year
- Minimum savings 15% from existing energy use
- Must have at least two unique measures per project
- No more than 50% of total savings may come from lighting measures
 - Lighting savings up to 70% may be considered with minimum savings target increasing up to 35%

P4P EB: Process



P4P EB: Incentives



Incentive #1: Energy Reduction Plan			
Incentive Amount:		\$0.15	per sq ft
Minimum Incentive:		\$7,500	
Maximum Incentive:		\$50,000	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

Recommended NJCEP Incentives per Building



Montclair Board of Education	SmartStart	Direct Install	Pay For Performance	SREC Registration Program (SRP) for potential Solar Projects*
Bradford Elementary School	X	X		X
Charles H. Bullock School	X			
Edgemont School	X	X		
Glenfield School	X			X
George Inness High School Annex	X		X	
Hillside School	X			X
Montclair High School	X		X	X
Mount Hebron (Buzz Aldrin) School	X			X
Northeast School	X	X		X
Nishuane School	X	X		X
Watchung School	X	X		

** Site is eligible as of July 1, 2018 for Direct Install due to FY 19 updates. Draft Report does not indicate this eligibility because delivered prior in FY18.

* These sites have a *high potential* for the implementation of a PV system. The SREC registration program is provided to register produced SRECs and is not an incentive or rebate program.

Recommended NJCEP Incentives per Building (Cont.)

Montclair Board of Education	SmartStart	Direct Install	SREC Registration Program (SRP) for potential Solar Projects*
Renaissance at Rand	X	X	X
Woodman Field-Furlong Field House	X	X	
BOE Administration Building	X		
Montclair Community Pre-K	X		X
Central Heating Plant	X		

** Site is eligible as of July 1, 2018 for Direct Install due to FY 19 updates. Draft Report does not indicate this eligibility because delivered prior in FY18.

* These sites have a *high potential* for the implementation of a PV system. The SREC registration program is provided to register produced SRECs and is not an incentive or rebate program.

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

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Questions



?



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