

New Jersey's Clean Energy Program

LGEA Exit Meeting for:

West Windsor-Plainsboro Regional School District

TRC Energy Services

December 20, 2018

Introductions



- West Windsor-Plainsboro Regional SD
 - Dr. David Adherhold – Superintendent
 - Christopher J. Russo, Ed.D. – Assistant Superintendent for Finance
 - James Earle – Assistant Superintendent for Planning
 - Thomas Daly – Director of Facilities
- Schneider Electric
 - Dan Riggle – Account Executive
 - Jason Mikula – Project Associate
- NJ Clean Energy Program
 - Brian DeLuca, CEM – TRC Program Manager
 - Alex Klieverik, CEM – TRC Auditor
 - Sarah Walters – TRC Account Manager
 - Mike Thulen – ESIP Coordinator
 - Upendra Civukula – BPU Commissioner

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 West Windsor-Plainsboro Regional SD

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

Sites Visited/Analyzed

- High School North
- High School South
- Community MS
- Thomas Grover MS
- Dutch Neck ES
- Maurice Hawk ES
- Millstone River ES
- Town Center ES
- Village ES
- Wicoff ES

Benchmarking



ENERGY STAR® Statement of Energy Performance

54
ENERGY STAR® Score¹

Thomas Grover MS
Primary Property Type: K-12 School
Gross Floor Area (ft²): 176,453
Built: 1999

For Year Ending: November 30, 2017
Date Generated: October 12, 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 Thomas Grover MS 10 Southfield Road West Windsor, New Jersey 08550	Property Owner _____	Primary Contact _____
Property ID: 6389195		

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 50.6 kBtu/ft ²	Annual Energy by Fuel		National Median Comparison
	Natural Gas (kBtu) 1,497,870 (17%) Electric - Grid (kBtu) 7,424,284 (83%)	National Median Site EUI (kBtu/ft ²) 53 National Median Source EUI (kBtu/ft ²) 132.8 % Diff from National Median Source EUI -5%	
Source EUI 126.7 kBtu/ft ²		Annual Emissions Greenhouse Gas Emissions (Metric Tons CO2e/year) 832	

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
High School North	19
High School South	21
Community MS	10
Thomas Grover MS	54
Dutch Neck ES	58
Maurice Hawk ES	31
Millstone River ES	19
Town Center ES	56
Village ES	10
Wicoff ES	56

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

All Opportunities

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	3,954,577	642.2	0.0	\$505,712.71	\$1,567,001.60	\$258,516.00	\$1,308,485.60	2.6	3,982,228
Install LED Fixtures	995,299	144.9	0.0	\$123,978.83	\$635,058.14	\$50,415.00	\$584,643.14	4.7	1,002,259
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	221,984	29.5	0.0	\$29,095.97	\$38,386.87	\$125.00	\$38,261.87	1.3	223,536
Retrofit Fixtures with LED Lamps	2,725,783	467.0	0.0	\$351,146.07	\$880,883.87	\$207,976.00	\$672,907.87	1.9	2,744,842
Install LED Exit Signs	11,511	0.7	0.0	\$1,491.84	\$12,672.72	\$0.00	\$12,672.72	8.5	11,591
Lighting Control Measures	675,553	106.4	0.0	\$86,867.01	\$472,197.00	\$58,590.00	\$413,607.00	4.8	680,276
Install Occupancy Sensor Lighting Controls	570,435	93.1	0.0	\$73,868.49	\$401,597.00	\$49,700.00	\$351,897.00	4.8	574,424
Install High/Low Lighting Controls	105,117	13.3	0.0	\$12,998.52	\$70,600.00	\$8,890.00	\$61,710.00	4.7	105,852
Motor Upgrades	32,270	7.2	0.0	\$4,214.85	\$123,056.07	\$0.00	\$123,056.07	29.2	32,496
Premium Efficiency Motors	32,270	7.2	0.0	\$4,214.85	\$123,056.07	\$0.00	\$123,056.07	29.2	32,496
Variable Frequency Drive (VFD) Measures	1,200,955	260.4	0.0	\$153,100.47	\$507,149.96	\$75,615.00	\$431,534.96	2.8	1,209,352
Install VFD on Variable Air Volume (VAV) HVAC	5,316	1.6	0.0	\$621.28	\$9,291.15	\$775.00	\$8,516.15	13.7	5,353
Install VFDs on Constant Volume (CV) HVAC	436,249	177.9	0.0	\$55,213.14	\$274,223.16	\$58,640.00	\$215,583.16	3.9	439,299
Install VFDs on Chilled Water Pumps	478,878	48.7	0.0	\$60,242.62	\$126,877.75	\$16,200.00	\$110,677.75	1.8	482,226
Install VFDs on Hot Water Pumps	275,536	32.1	0.0	\$36,237.54	\$93,482.05	\$0.00	\$93,482.05	2.6	277,462
Install VFDs on Cooling Tower Fans	4,976	0.0	0.0	\$785.89	\$3,275.85	\$0.00	\$3,275.85	4.2	5,011
Electric Unitary HVAC Measures	106,166	75.1	0.0	\$15,489.41	\$882,118.55	\$19,492.92	\$862,625.63	55.7	106,908
Install High Efficiency Electric AC	98,233	69.3	0.0	\$14,271.05	\$810,393.32	\$16,978.67	\$793,414.65	55.6	98,920
Install High Efficiency Heat Pumps	2,370	1.0	0.0	\$360.32	\$11,887.41	\$483.00	\$11,404.41	31.7	2,386
Install High Efficiency Packaged Terminal AC/HP	5,563	4.8	0.0	\$858.04	\$59,837.82	\$2,031.25	\$57,806.57	67.4	5,602
Electric Chiller Replacement	254,511	106.8	0.0	\$32,253.55	\$450,718.07	\$32,998.80	\$417,719.27	13.0	256,291
Install High Efficiency Chillers	254,511	106.8	0.0	\$32,253.55	\$450,718.07	\$32,998.80	\$417,719.27	13.0	256,291
Gas Heating (HVAC/Process) Replacement	0	0.0	1,097.1	\$9,263.36	\$410,158.32	\$11,576.00	\$398,582.32	43.0	128,459
Install High Efficiency Hot Water Boilers	0	0.0	899.0	\$7,413.34	\$307,917.56	\$7,176.00	\$300,741.56	40.6	105,266
Install High Efficiency Furnaces	0	0.0	198.1	\$1,850.02	\$102,240.76	\$4,400.00	\$97,840.76	52.9	23,193
HVAC System Improvements	22,772	0.0	235.6	\$5,287.60	\$35,344.92	\$0.00	\$35,344.92	6.7	50,523
Implement Demand Control Ventilation	22,772	0.0	235.6	\$5,287.60	\$35,344.92	\$0.00	\$35,344.92	6.7	50,523
Domestic Water Heating Upgrade	0	0.0	218.8	\$1,901.53	\$53,327.90	\$1,767.50	\$51,560.40	27.1	25,618
Install High Efficiency Gas Water Heater	0	0.0	33.5	\$261.89	\$50,611.10	\$1,767.50	\$48,843.60	186.5	3,928
Install Low-Flow Domestic Hot Water Devices	0	0.0	185.2	\$1,639.64	\$2,716.80	\$0.00	\$2,716.80	1.7	21,690
Food Service Equipment & Refrigeration Measures	22,070	1.6	0.0	\$2,914.36	\$12,252.52	\$425.00	\$11,827.52	4.1	22,224
Refrigerator/Freezer Case Electrically Commutated Motors	15,269	1.4	0.0	\$1,993.82	\$5,156.10	\$0.00	\$5,156.10	2.6	15,376
Refrigeration Controls	6,800	0.2	0.0	\$920.54	\$7,096.42	\$425.00	\$6,671.42	7.2	6,848
Plug Load Equipment Control - Vending Machine	31,310	0.0	0.0	\$4,095.50	\$4,830.00	\$0.00	\$4,830.00	1.2	31,529
Vending Machine Control	31,310	0.0	0.0	\$4,095.50	\$4,830.00	\$0.00	\$4,830.00	1.2	31,529
TOTALS	6,300,183	1,199.6	1,551.6	\$821,100.35	\$4,518,154.91	\$458,981.22	\$4,059,173.69	4.9	6,525,902

* - 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 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		3,954,577	642.2	0.0	\$505,712.71	\$1,567,001.60	\$258,516.00	\$1,308,485.60	2.6	3,982,228
ECM 1	Install LED Fixtures	995,299	144.9	0.0	\$123,978.83	\$635,058.14	\$50,415.00	\$584,643.14	4.7	1,002,259
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	221,984	29.5	0.0	\$29,095.97	\$38,386.87	\$125.00	\$38,261.87	1.3	223,536
ECM 3	Retrofit Fixtures with LED Lamps	2,725,783	467.0	0.0	\$351,146.07	\$880,883.87	\$207,976.00	\$672,907.87	1.9	2,744,842
ECM 4	Install LED Exit Signs	11,511	0.7	0.0	\$1,491.84	\$12,672.72	\$0.00	\$12,672.72	8.5	11,591
Lighting Control Measures		668,156	105.2	0.0	\$85,876.53	\$447,597.00	\$58,590.00	\$389,007.00	4.5	672,827
ECM 5	Install Occupancy Sensor Lighting Controls	570,435	93.1	0.0	\$73,868.49	\$401,597.00	\$49,700.00	\$351,897.00	4.8	574,424
ECM 6	Install High/Low Lighting Controls	97,720	12.1	0.0	\$12,008.04	\$46,000.00	\$8,890.00	\$37,110.00	3.1	98,403
Motor Upgrades		26,374	5.6	0.0	\$3,441.95	\$94,227.74	\$0.00	\$94,227.74	27.4	26,558
ECM 7	Premium Efficiency Motors	26,374	5.6	0.0	\$3,441.95	\$94,227.74	\$0.00	\$94,227.74	27.4	26,558
Variable Frequency Drive (VFD) Measures		1,198,815	258.6	0.0	\$152,760.25	\$497,590.61	\$74,575.00	\$423,015.61	2.8	1,207,197
ECM 8	Install VFD on Variable Air Volume (VAV) HVAC	5,316	1.6	0.0	\$621.28	\$9,291.15	\$775.00	\$8,516.15	13.7	5,353
ECM 9	Install VFDs on Constant Volume (CV) HVAC	434,109	176.2	0.0	\$54,872.92	\$264,663.81	\$57,600.00	\$207,063.81	3.8	437,144
ECM 10	Install VFDs on Chilled Water Pumps	478,878	48.7	0.0	\$60,242.62	\$126,877.75	\$16,200.00	\$110,677.75	1.8	482,226
ECM 11	Install VFDs on Hot Water Pumps	275,536	32.1	0.0	\$36,237.54	\$93,482.05	\$0.00	\$93,482.05	2.6	277,462
ECM 12	Install VFDs on Cooling Tower Fans	4,976	0.0	0.0	\$785.89	\$3,275.85	\$0.00	\$3,275.85	4.2	5,011
Electric Unitary HVAC Measures		568	0.2	0.0	\$92.27	\$1,690.89	\$92.00	\$1,598.89	17.3	572
ECM 13	Install High Efficiency Heat Pumps	568	0.2	0.0	\$92.27	\$1,690.89	\$92.00	\$1,598.89	17.3	572
Electric Chiller Replacement		206,931	82.2	0.0	\$24,688.36	\$229,039.18	\$21,748.80	\$207,290.38	8.4	208,378
ECM 14	Install High Efficiency Chillers	206,931	82.2	0.0	\$24,688.36	\$229,039.18	\$21,748.80	\$207,290.38	8.4	208,378
HVAC System Improvements		22,772	0.0	235.6	\$5,287.60	\$35,344.92	\$0.00	\$35,344.92	6.7	50,523
ECM 15	Implement Demand Control Ventilation	22,772	0.0	235.6	\$5,287.60	\$35,344.92	\$0.00	\$35,344.92	6.7	50,523
Domestic Water Heating Upgrade		0	0.0	185.2	\$1,639.64	\$2,716.80	\$0.00	\$2,716.80	1.7	21,690
ECM 16	Install Low-Flow Domestic Hot Water Devices	0	0.0	185.2	\$1,639.64	\$2,716.80	\$0.00	\$2,716.80	1.7	21,690
Food Service Equipment & Refrigeration Measures		20,980	1.4	0.0	\$2,782.43	\$9,698.81	\$325.00	\$9,373.81	3.4	21,127
ECM 17	Refrigerator/Freezer Case Electrically Commutated Motors	14,286	1.3	0.0	\$1,874.61	\$3,639.60	\$0.00	\$3,639.60	1.9	14,386
ECM 18	Refrigeration Controls	6,694	0.2	0.0	\$907.82	\$6,059.21	\$325.00	\$5,734.21	6.3	6,740
Plug Load Equipment Control - Vending Machine		31,310	0.0	0.0	\$4,095.50	\$4,830.00	\$0.00	\$4,830.00	1.2	31,529
ECM 19	Vending Machine Control	31,310	0.0	0.0	\$4,095.50	\$4,830.00	\$0.00	\$4,830.00	1.2	31,529
TOTALS		6,130,483	1,095.5	420.9	\$786,377.24	\$2,889,737.55	\$413,846.80	\$2,475,890.75	3.1	6,222,628

* - 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).

High School North



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			884,591	117.7	0.0	\$107,275.85	\$344,337.87	\$41,835.00	\$302,502.87	2.8	890,776
ECM 1	Install LED Fixtures	Yes	176,119	36.2	0.0	\$21,358.29	\$141,053.81	\$10,460.00	\$130,593.81	6.1	177,351
ECM 2	Retrofit Fixtures with LED Lamps	Yes	708,472	81.4	0.0	\$85,917.56	\$203,284.07	\$31,375.00	\$171,909.07	2.0	713,425
Lighting Control Measures			188,856	21.2	0.0	\$22,902.87	\$89,860.00	\$10,255.00	\$79,605.00	3.5	190,176
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	160,712	18.4	0.0	\$19,489.79	\$80,460.00	\$10,255.00	\$70,205.00	3.6	161,835
ECM 4	Install High/Low Lighting Controls	Yes	28,144	2.8	0.0	\$3,413.08	\$9,400.00	\$0.00	\$9,400.00	2.8	28,341
Motor Upgrades			3,662	0.8	0.0	\$444.07	\$10,748.40	\$0.00	\$10,748.40	24.2	3,687
ECM 5	Premium Efficiency Motors	Yes	3,662	0.8	0.0	\$444.07	\$10,748.40	\$0.00	\$10,748.40	24.2	3,687
Variable Frequency Drive (VFD) Measures			420,619	86.2	0.0	\$51,009.14	\$158,861.10	\$26,600.00	\$132,261.10	2.6	423,560
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	206,358	57.0	0.0	\$25,025.36	\$91,084.70	\$19,400.00	\$71,684.70	2.9	207,801
ECM 7	Install VFDs on Chilled Water Pumps	Yes	107,130	14.6	0.0	\$12,991.89	\$33,888.20	\$7,200.00	\$26,688.20	2.1	107,880
ECM 8	Install VFDs on Hot Water Pumps	Yes	107,130	14.6	0.0	\$12,991.89	\$33,888.20	\$0.00	\$33,888.20	2.6	107,880
Gas Heating (HVAC/Process) Replacement			0	0.0	426.4	\$3,537.53	\$80,467.47	\$0.00	\$80,467.47	22.7	49,925
	Install High Efficiency Hot Water Boilers	No	0	0.0	426.4	\$3,537.53	\$80,467.47	\$0.00	\$80,467.47	22.7	49,925
HVAC System Improvements			2,915	0.0	158.6	\$1,669.59	\$8,156.52	\$0.00	\$8,156.52	4.9	21,510
ECM 9	Implement Demand Control Ventilation	Yes	2,915	0.0	158.6	\$1,669.59	\$8,156.52	\$0.00	\$8,156.52	4.9	21,510
Domestic Water Heating Upgrade			0	0.0	88.7	\$735.80	\$1,757.97	\$0.00	\$1,757.97	2.4	10,384
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	88.7	\$735.80	\$1,757.97	\$0.00	\$1,757.97	2.4	10,384
Food Service Equipment & Refrigeration Measures			4,179	0.2	0.0	\$506.84	\$5,901.71	\$250.00	\$5,651.71	11.2	4,209
	Refrigerator/Freezer Case Electrically Commutated Motors	No	983	0.1	0.0	\$119.21	\$1,516.50	\$0.00	\$1,516.50	12.7	990
ECM 11	Refrigeration Controls	Yes	3,196	0.0	0.0	\$387.63	\$4,385.21	\$250.00	\$4,135.21	10.7	3,219
Plug Load Equipment Control - Vending Machine			6,790	0.0	0.0	\$823.42	\$1,150.00	\$0.00	\$1,150.00	1.4	6,837
ECM 12	Vending Machine Control	Yes	6,790	0.0	0.0	\$823.42	\$1,150.00	\$0.00	\$1,150.00	1.4	6,837
TOTALS FOR HIGH PRIORITY MEASURES			1,510,628	225.9	247.3	\$185,248.37	\$619,257.07	\$78,940.00	\$540,317.07	2.9	1,550,150
TOTALS FOR ALL EVALUATED MEASURES			1,511,611	226.1	673.7	\$188,905.11	\$701,241.04	\$78,940.00	\$622,301.04	3.3	1,601,065

* - 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).

High School South



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			1,108,797	163.3	0.0	\$132,287.25	\$359,431.30	\$54,575.00	\$304,856.30	2.3	1,116,550
ECM 1	Install LED Fixtures	Yes	566,544	73.5	0.0	\$67,592.66	\$202,069.80	\$16,290.00	\$185,779.80	2.7	570,505
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	129	0.1	0.0	\$15.37	\$206.32	\$30.00	\$176.32	11.5	130
ECM 3	Retrofit Fixtures with LED Lamps	Yes	542,124	89.7	0.0	\$64,679.22	\$157,155.18	\$38,255.00	\$118,900.18	1.8	545,915
Lighting Control Measures			134,095	19.6	0.0	\$15,998.48	\$79,955.00	\$15,915.00	\$64,040.00	4.0	135,033
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	85,118	13.9	0.0	\$10,155.21	\$62,155.00	\$7,025.00	\$55,130.00	5.4	85,713
ECM 5	Install High/Low Lighting Controls	Yes	48,977	5.7	0.0	\$5,843.27	\$17,800.00	\$8,890.00	\$8,910.00	1.5	49,319
Motor Upgrades			915	0.2	0.0	\$109.22	\$8,808.36	\$0.00	\$8,808.36	80.6	922
ECM 6	Premium Efficiency Motors	Yes	915	0.2	0.0	\$109.22	\$8,808.36	\$0.00	\$8,808.36	80.6	922
Variable Frequency Drive (VFD) Measures			77,592	7.9	0.0	\$9,257.25	\$23,199.25	\$0.00	\$23,199.25	2.5	78,134
ECM 7	Install VFDs on Chilled Water Pumps	Yes	53,592	5.5	0.0	\$6,393.85	\$15,583.35	\$0.00	\$15,583.35	2.4	53,966
ECM 8	Install VFDs on Hot Water Pumps	Yes	24,000	2.5	0.0	\$2,863.40	\$7,615.90	\$0.00	\$7,615.90	2.7	24,168
Electric Chiller Replacement			206,931	82.2	0.0	\$24,688.36	\$229,039.18	\$21,748.80	\$207,290.38	8.4	208,378
ECM 9	Install High Efficiency Chillers	Yes	206,931	82.2	0.0	\$24,688.36	\$229,039.18	\$21,748.80	\$207,290.38	8.4	208,378
Gas Heating (HVAC/Process) Replacement			0	0.0	84.2	\$700.86	\$49,427.82	\$2,153.00	\$47,274.82	67.5	9,857
	Install High Efficiency Hot Water Boilers	No	0	0.0	38.2	\$317.67	\$14,762.10	\$1,353.00	\$13,409.10	42.2	4,468
	Install High Efficiency Furnaces	No	0	0.0	46.0	\$383.19	\$34,665.72	\$800.00	\$33,865.72	88.4	5,389
Food Service Equipment & Refrigeration Measures			107	0.0	0.0	\$12.72	\$1,037.21	\$100.00	\$937.21	73.7	107
	Refrigeration Controls	No	107	0.0	0.0	\$12.72	\$1,037.21	\$100.00	\$937.21	73.7	107
Plug Load Equipment Control - Vending Machine			3,224	0.0	0.0	\$384.61	\$460.00	\$0.00	\$460.00	1.2	3,246
ECM 10	Vending Machine Control	Yes	3,224	0.0	0.0	\$384.61	\$460.00	\$0.00	\$460.00	1.2	3,246
TOTALS FOR HIGH PRIORITY MEASURES			1,531,554	273.2	0.0	\$182,725.17	\$700,893.09	\$92,238.80	\$608,654.29	3.3	1,542,263
TOTALS FOR ALL EVALUATED MEASURES			1,531,661	273.2	84.2	\$183,438.75	\$751,358.12	\$94,491.80	\$656,866.32	3.6	1,552,227

* - 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).

Community Middle School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			346,434	54.3	0.0	\$46,388.57	\$120,596.68	\$26,500.00	\$94,096.68	2.0	348,856
ECM 1	Install LED Fixtures	Yes	31,448	4.1	0.0	\$4,210.92	\$34,855.69	\$3,700.00	\$31,155.69	7.4	31,667
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	265	0.0	0.0	\$35.53	\$115.29	\$15.00	\$100.29	2.8	267
ECM 3	Retrofit Fixtures with LED Lamps	Yes	314,721	50.1	0.0	\$42,142.12	\$83,525.65	\$22,785.00	\$60,740.65	1.4	316,921
ECM 4	Install LED Exit Signs	Yes	0	0.0	0.0	\$0.00	\$2,100.05	\$0.00	\$2,100.05	0.0	0
Lighting Control Measures			78,475	12.5	0.0	\$10,508.02	\$64,792.00	\$4,715.00	\$60,077.00	5.7	79,023
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	71,078	11.3	0.0	\$9,517.54	\$40,192.00	\$4,715.00	\$35,477.00	3.7	71,575
	Install High/Low Lighting Controls	No	7,397	1.2	0.0	\$990.48	\$24,600.00	\$0.00	\$24,600.00	24.8	7,449
Variable Frequency Drive (VFD) Measures			192,107	101.4	0.0	\$25,723.76	\$141,129.91	\$29,360.00	\$111,769.91	4.3	193,450
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	149,700	97.0	0.0	\$20,045.32	\$123,695.06	\$29,360.00	\$94,335.06	4.7	150,747
ECM 7	Install VFDs on Hot Water Pumps	Yes	42,407	4.4	0.0	\$5,678.44	\$17,434.85	\$0.00	\$17,434.85	3.1	42,704
Electric Unitary HVAC Measures			8,437	5.0	0.0	\$1,129.79	\$137,434.64	\$1,730.00	\$135,704.64	120.1	8,496
	Install High Efficiency Electric AC	No	8,437	5.0	0.0	\$1,129.79	\$137,434.64	\$1,730.00	\$135,704.64	120.1	8,496
Plug Load Equipment Control - Vending Machine			4,836	0.0	0.0	\$647.49	\$690.00	\$0.00	\$690.00	1.1	4,869
ECM 8	Vending Machine Control	Yes	4,836	0.0	0.0	\$647.49	\$690.00	\$0.00	\$690.00	1.1	4,869
TOTALS FOR HIGH PRIORITY MEASURES			614,454	167.0	0.0	\$82,277.36	\$302,608.59	\$60,575.00	\$242,033.59	2.9	618,750
TOTALS FOR ALL EVALUATED MEASURES			630,288	173.2	0.0	\$84,397.63	\$464,643.22	\$62,305.00	\$402,338.22	4.8	634,695

* - 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).

Thomas Grover Middle School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			440,454	79.1	0.0	\$54,382.37	\$183,236.43	\$30,535.00	\$152,701.43	2.8	443,533
ECM 1	Install LED Fixtures	Yes	56,630	7.5	0.0	\$6,992.06	\$72,541.81	\$3,800.00	\$68,741.81	9.8	57,026
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	328	0.0	0.0	\$40.45	\$209.44	\$0.00	\$209.44	5.2	330
ECM 3	Retrofit Fixtures with LED Lamps	Yes	374,666	71.0	0.0	\$46,259.62	\$102,374.65	\$26,735.00	\$75,639.65	1.6	377,286
ECM 4	Install LED Exit Signs	Yes	8,830	0.6	0.0	\$1,090.24	\$8,110.54	\$0.00	\$8,110.54	7.4	8,892
Lighting Control Measures			93,928	13.8	0.0	\$11,597.22	\$64,700.00	\$7,315.00	\$57,385.00	4.9	94,585
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	84,619	12.5	0.0	\$10,447.79	\$56,700.00	\$7,315.00	\$49,385.00	4.7	85,210
ECM 6	Install High/Low Lighting Controls	Yes	9,310	1.3	0.0	\$1,149.44	\$8,000.00	\$0.00	\$8,000.00	7.0	9,375
Motor Upgrades			1,364	0.3	0.0	\$168.37	\$5,842.06	\$0.00	\$5,842.06	34.7	1,373
ECM 7	Premium Efficiency Motors	Yes	1,364	0.3	0.0	\$168.37	\$5,842.06	\$0.00	\$5,842.06	34.7	1,373
Variable Frequency Drive (VFD) Measures			17,362	4.6	0.0	\$2,143.62	\$13,547.90	\$2,800.00	\$10,747.90	5.0	17,483
ECM 8	Install VFDs on Constant Volume (CV) HVAC	Yes	17,362	4.6	0.0	\$2,143.62	\$13,547.90	\$2,800.00	\$10,747.90	5.0	17,483
Electric Unitary HVAC Measures			22,075	19.7	0.0	\$2,725.54	\$223,990.99	\$5,530.00	\$218,460.99	80.2	22,229
	Install High Efficiency Electric AC	No	22,075	19.7	0.0	\$2,725.54	\$223,990.99	\$5,530.00	\$218,460.99	80.2	22,229
Gas Heating (HVAC/Process) Replacement			0	0.0	152.1	\$1,466.83	\$67,575.04	\$3,600.00	\$63,975.04	43.6	17,804
	Install High Efficiency Furnaces	No	0	0.0	152.1	\$1,466.83	\$67,575.04	\$3,600.00	\$63,975.04	43.6	17,804
HVAC System Improvements			6,334	0.0	43.4	\$1,201.19	\$13,594.20	\$0.00	\$13,594.20	11.3	11,466
ECM 9	Implement Demand Control Ventilation	Yes	6,334	0.0	43.4	\$1,201.19	\$13,594.20	\$0.00	\$13,594.20	11.3	11,466
Domestic Water Heating Upgrade			0	0.0	45.0	\$434.20	\$772.41	\$0.00	\$772.41	1.8	5,270
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	45.0	\$434.20	\$772.41	\$0.00	\$772.41	1.8	5,270
Food Service Equipment & Refrigeration Measures			9,894	0.8	0.0	\$1,221.59	\$1,819.80	\$0.00	\$1,819.80	1.5	9,963
ECM 11	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	9,894	0.8	0.0	\$1,221.59	\$1,819.80	\$0.00	\$1,819.80	1.5	9,963
Plug Load Equipment Control - Vending Machine			5,178	0.0	0.0	\$639.33	\$920.00	\$0.00	\$920.00	1.4	5,214
ECM 12	Vending Machine Control	Yes	5,178	0.0	0.0	\$639.33	\$920.00	\$0.00	\$920.00	1.4	5,214
TOTALS FOR HIGH PRIORITY MEASURES			574,514	98.6	88.5	\$71,787.89	\$284,432.80	\$40,650.00	\$243,782.80	3.4	588,888
TOTALS FOR ALL EVALUATED MEASURES			596,588	118.3	240.5	\$75,980.26	\$575,998.84	\$49,780.00	\$526,218.84	6.9	628,921

* - 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).

Dutch Neck 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			170,298	33.8	0.0	\$26,893.85	\$95,808.70	\$18,360.00	\$77,448.70	2.9	171,488
ECM 1	Install LED Fixtures	Yes	52,065	7.8	0.0	\$8,222.31	\$41,120.62	\$4,025.00	\$37,095.62	4.5	52,429
ECM 2	Retrofit Fixtures with LED Lamps	Yes	117,917	26.0	0.0	\$18,621.74	\$54,398.41	\$14,335.00	\$40,063.41	2.2	118,741
ECM 3	Install LED Exit Signs	Yes	315	0.0	0.0	\$49.80	\$289.66	\$0.00	\$289.66	5.8	318
Lighting Control Measures			32,282	7.0	0.0	\$5,098.04	\$27,240.00	\$3,220.00	\$24,020.00	4.7	32,508
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	32,282	7.0	0.0	\$5,098.04	\$27,240.00	\$3,220.00	\$24,020.00	4.7	32,508
Motor Upgrades			1,079	0.2	0.0	\$170.32	\$4,995.06	\$0.00	\$4,995.06	29.3	1,086
ECM 5	Premium Efficiency Motors	Yes	1,079	0.2	0.0	\$170.32	\$4,995.06	\$0.00	\$4,995.06	29.3	1,086
Variable Frequency Drive (VFD) Measures			28,927	3.5	0.0	\$4,568.25	\$17,372.10	\$1,000.00	\$16,372.10	3.6	29,129
ECM 6	Install VFDs on Constant Volume (CV) HVAC	Yes	5,812	1.7	0.0	\$917.85	\$6,882.65	\$1,000.00	\$5,882.65	6.4	5,853
ECM 7	Install VFDs on Hot Water Pumps	Yes	18,139	1.9	0.0	\$2,864.51	\$7,213.60	\$0.00	\$7,213.60	2.5	18,266
ECM 8	Install VFDs on Cooling Tower Fans	Yes	4,976	0.0	0.0	\$785.89	\$3,275.85	\$0.00	\$3,275.85	4.2	5,011
Electric Unitary HVAC Measures			16,976	17.5	0.0	\$2,680.96	\$199,196.45	\$7,444.42	\$191,752.03	71.5	17,095
	Install High Efficiency Electric AC	No	13,646	14.1	0.0	\$2,154.94	\$153,719.71	\$5,900.67	\$147,819.05	68.6	13,741
	Install High Efficiency Packaged Terminal AC/HP	No	3,331	3.4	0.0	\$526.02	\$45,476.74	\$1,543.75	\$43,932.99	83.5	3,354
Domestic Water Heating Upgrade			0	0.0	14.4	\$142.74	\$100.38	\$0.00	\$100.38	0.7	1,690
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	14.4	\$142.74	\$100.38	\$0.00	\$100.38	0.7	1,690
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$254.55	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 10	Vending Machine Control	Yes	1,612	0.0	0.0	\$254.55	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS FOR HIGH PRIORITY MEASURES			234,197	44.6	14.4	\$37,127.75	\$145,746.24	\$22,580.00	\$123,166.24	3.3	237,524
TOTALS FOR ALL EVALUATED MEASURES			251,173	62.1	14.4	\$39,808.70	\$344,942.69	\$30,024.42	\$314,918.27	7.9	254,619

* - 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).

Maurice Hawk 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			144,773	25.4	0.0	\$21,533.56	\$73,917.52	\$14,105.00	\$59,812.52	2.8	145,785
ECM 1	Install LED Fixtures	Yes	21,940	2.9	0.0	\$3,263.34	\$25,691.65	\$2,150.00	\$23,541.65	7.2	22,093
ECM 2	Retrofit Fixtures with LED Lamps	Yes	120,468	22.3	0.0	\$17,918.42	\$46,053.40	\$11,955.00	\$34,098.40	1.9	121,310
ECM 3	Install LED Exit Signs	Yes	2,365	0.2	0.0	\$351.80	\$2,172.47	\$0.00	\$2,172.47	6.2	2,382
Lighting Control Measures			27,588	4.8	0.0	\$4,103.43	\$23,200.00	\$2,765.00	\$20,435.00	5.0	27,781
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	25,980	4.5	0.0	\$3,864.29	\$21,600.00	\$2,765.00	\$18,835.00	4.9	26,162
ECM 5	Install High/Low Lighting Controls	Yes	1,608	0.3	0.0	\$239.14	\$1,600.00	\$0.00	\$1,600.00	6.7	1,619
Motor Upgrades			605	0.1	0.0	\$90.03	\$1,846.72	\$0.00	\$1,846.72	20.5	610
ECM 6	Premium Efficiency Motors	Yes	605	0.1	0.0	\$90.03	\$1,846.72	\$0.00	\$1,846.72	20.5	610
Variable Frequency Drive (VFD) Measures			7,344	1.9	0.0	\$1,092.38	\$5,194.45	\$1,200.00	\$3,994.45	3.7	7,396
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	7,344	1.9	0.0	\$1,092.38	\$5,194.45	\$1,200.00	\$3,994.45	3.7	7,396
Electric Unitary HVAC Measures			42,341	24.9	0.0	\$6,297.73	\$252,703.35	\$3,086.50	\$249,616.85	39.6	42,637
	Install High Efficiency Electric AC	No	38,306	22.7	0.0	\$5,697.66	\$228,145.76	\$2,208.00	\$225,937.76	39.7	38,574
	Install High Efficiency Heat Pumps	No	1,802	0.9	0.0	\$268.05	\$10,196.52	\$391.00	\$9,805.52	36.6	1,815
	Install High Efficiency Packaged Terminal AC/HP	No	2,232	1.3	0.0	\$332.02	\$14,361.08	\$487.50	\$13,873.58	41.8	2,248
HVAC System Improvements			3,799	0.0	14.3	\$691.20	\$5,437.68	\$0.00	\$5,437.68	7.9	5,502
ECM 8	Implement Demand Control Ventilation	Yes	3,799	0.0	14.3	\$691.20	\$5,437.68	\$0.00	\$5,437.68	7.9	5,502
Domestic Water Heating Upgrade			0	0.0	37.1	\$326.90	\$86.04	\$0.00	\$86.04	0.3	4,345
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	37.1	\$326.90	\$86.04	\$0.00	\$86.04	0.3	4,345
Food Service Equipment & Refrigeration Measures			6,660	0.5	0.0	\$990.57	\$2,280.60	\$75.00	\$2,205.60	2.2	6,706
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	3,162	0.4	0.0	\$470.38	\$606.60	\$0.00	\$606.60	1.3	3,185
ECM 11	Refrigeration Controls	Yes	3,497	0.1	0.0	\$520.19	\$1,674.00	\$75.00	\$1,599.00	3.1	3,522
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$239.75	\$230.00	\$0.00	\$230.00	1.0	1,623
ECM 12	Vending Machine Control	Yes	1,612	0.0	0.0	\$239.75	\$230.00	\$0.00	\$230.00	1.0	1,623
TOTALS FOR HIGH PRIORITY MEASURES			192,382	32.8	51.4	\$29,067.83	\$112,193.01	\$18,145.00	\$94,048.01	3.2	199,748
TOTALS FOR ALL EVALUATED MEASURES			234,722	57.7	51.4	\$35,365.56	\$364,896.36	\$21,231.50	\$343,664.86	9.7	242,384

* - 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).

Millstone River 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			453,374	78.7	0.0	\$59,431.45	\$192,231.40	\$30,151.00	\$162,080.40	2.7	456,544
ECM 1	Install LED Fixtures	Yes	50,988	6.6	0.0	\$6,683.82	\$68,583.55	\$7,100.00	\$61,483.55	9.2	51,344
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	221,262	29.3	0.0	\$29,004.62	\$37,855.82	\$80.00	\$37,775.82	1.3	222,809
ECM 3	Retrofit Fixtures with LED Lamps	Yes	181,124	42.7	0.0	\$23,743.02	\$85,792.03	\$22,971.00	\$62,821.03	2.6	182,390
Lighting Control Measures			33,482	8.7	0.0	\$4,389.09	\$45,480.00	\$5,970.00	\$39,510.00	9.0	33,716
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	33,482	8.7	0.0	\$4,389.09	\$45,480.00	\$5,970.00	\$39,510.00	9.0	33,716
Motor Upgrades			5,896	1.6	0.0	\$772.90	\$28,828.33	\$0.00	\$28,828.33	37.3	5,937
	Premium Efficiency Motors	No	5,896	1.6	0.0	\$772.90	\$28,828.33	\$0.00	\$28,828.33	37.3	5,937
Variable Frequency Drive (VFD) Measures			143,117	15.1	0.0	\$18,760.84	\$43,444.05	\$4,240.00	\$39,204.05	2.1	144,118
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	6,521	2.2	0.0	\$854.80	\$6,283.50	\$640.00	\$5,643.50	6.6	6,566
ECM 6	Install VFDs on Chilled Water Pumps	Yes	99,081	9.1	0.0	\$12,988.27	\$26,771.65	\$3,600.00	\$23,171.65	1.8	99,774
ECM 7	Install VFDs on Hot Water Pumps	Yes	37,515	3.8	0.0	\$4,917.77	\$10,388.90	\$0.00	\$10,388.90	2.1	37,778
Gas Heating (HVAC/Process) Replacement			0	0.0	324.9	\$2,536.04	\$143,388.37	\$0.00	\$143,388.37	56.5	38,039
	Install High Efficiency Hot Water Boilers	No	0	0.0	324.9	\$2,536.04	\$143,388.37	\$0.00	\$143,388.37	56.5	38,039
Domestic Water Heating Upgrade			0	0.0	33.5	\$261.89	\$50,611.10	\$1,767.50	\$48,843.60	186.5	3,928
	Install High Efficiency Gas Water Heater	No	0	0.0	33.5	\$261.89	\$50,611.10	\$1,767.50	\$48,843.60	186.5	3,928
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$211.29	\$230.00	\$0.00	\$230.00	1.1	1,623
ECM 8	Vending Machine Control	Yes	1,612	0.0	0.0	\$211.29	\$230.00	\$0.00	\$230.00	1.1	1,623
TOTALS FOR HIGH PRIORITY MEASURES			631,585	102.5	0.0	\$82,792.68	\$281,385.45	\$40,361.00	\$241,024.45	2.9	636,001
TOTALS FOR ALL EVALUATED MEASURES			637,481	104.1	358.4	\$86,363.50	\$504,213.25	\$42,128.50	\$462,084.75	5.4	683,905

* - 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).

Town Center 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			154,572	38.3	0.0	\$24,576.79	\$80,067.80	\$16,450.00	\$63,617.80	2.6	155,652
ECM 1	Install LED Fixtures	Yes	15,329	2.4	0.0	\$2,437.32	\$21,544.58	\$1,350.00	\$20,194.58	8.3	15,436
ECM 2	Retrofit Fixtures with LED Lamps	Yes	139,242	35.9	0.0	\$22,139.47	\$58,523.22	\$15,100.00	\$43,423.22	2.0	140,216
Lighting Control Measures			34,229	8.1	0.0	\$5,442.38	\$31,000.00	\$3,500.00	\$27,500.00	5.1	34,468
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	29,775	7.1	0.0	\$4,734.16	\$27,000.00	\$3,500.00	\$23,500.00	5.0	29,983
ECM 4	Install High/Low Lighting Controls	Yes	4,454	1.1	0.0	\$708.22	\$4,000.00	\$0.00	\$4,000.00	5.6	4,485
Motor Upgrades			6,304	1.4	0.0	\$1,002.33	\$35,402.25	\$0.00	\$35,402.25	35.3	6,348
ECM 5	Premium Efficiency Motors	Yes	6,304	1.4	0.0	\$1,002.33	\$35,402.25	\$0.00	\$35,402.25	35.3	6,348
Variable Frequency Drive (VFD) Measures			91,597	10.9	0.0	\$14,563.90	\$37,550.75	\$1,040.00	\$36,510.75	2.5	92,238
	Install VFDs on Constant Volume (CV) HVAC	No	2,142	1.8	0.0	\$340.51	\$9,559.35	\$1,040.00	\$8,519.35	25.0	2,157
ECM 6	Install VFDs on Chilled Water Pumps	Yes	53,728	5.5	0.0	\$8,542.71	\$17,602.50	\$0.00	\$17,602.50	2.1	54,104
ECM 7	Install VFDs on Hot Water Pumps	Yes	35,728	3.7	0.0	\$5,680.68	\$10,388.90	\$0.00	\$10,388.90	1.8	35,978
Electric Chiller Replacement			47,580	24.5	0.0	\$7,565.19	\$221,678.89	\$11,250.00	\$210,428.89	27.8	47,913
	Install High Efficiency Chillers	No	47,580	24.5	0.0	\$7,565.19	\$221,678.89	\$11,250.00	\$210,428.89	27.8	47,913
Gas Heating (HVAC/Process) Replacement			0	0.0	109.6	\$1,022.10	\$69,299.62	\$5,823.00	\$63,476.62	62.1	12,834
	Install High Efficiency Hot Water Boilers	No	0	0.0	109.6	\$1,022.10	\$69,299.62	\$5,823.00	\$63,476.62	62.1	12,834
HVAC System Improvements			9,724	0.0	19.3	\$1,725.61	\$8,156.52	\$0.00	\$8,156.52	4.7	12,046
ECM 8	Implement Demand Control Ventilation	Yes	9,724	0.0	19.3	\$1,725.61	\$8,156.52	\$0.00	\$8,156.52	4.7	12,046
Food Service Equipment & Refrigeration Measures			923	0.1	0.0	\$146.69	\$909.90	\$0.00	\$909.90	6.2	929
ECM 9	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	923	0.1	0.0	\$146.69	\$909.90	\$0.00	\$909.90	6.2	929
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$256.28	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 10	Vending Machine Control	Yes	1,612	0.0	0.0	\$256.28	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS FOR HIGH PRIORITY MEASURES			296,819	57.1	19.3	\$47,373.49	\$183,757.87	\$19,950.00	\$163,807.87	3.5	301,148
TOTALS FOR ALL EVALUATED MEASURES			346,540	83.3	128.9	\$56,301.29	\$484,295.73	\$38,063.00	\$446,232.73	7.9	364,051

* - 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).

Village 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			173,044	32.7	0.0	\$20,225.57	\$80,695.73	\$16,710.00	\$63,985.73	3.2	174,254
ECM 1	Install LED Fixtures	Yes	15,798	2.5	0.0	\$1,846.44	\$23,600.60	\$1,210.00	\$22,390.60	12.1	15,908
ECM 2	Retrofit Fixtures with LED Lamps	Yes	157,247	30.2	0.0	\$18,379.13	\$57,095.12	\$15,500.00	\$41,595.12	2.3	158,346
Lighting Control Measures			37,780	7.2	0.0	\$4,415.77	\$31,610.00	\$3,395.00	\$28,215.00	6.4	38,044
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	33,513	6.4	0.0	\$3,917.00	\$27,810.00	\$3,395.00	\$24,415.00	6.2	33,747
ECM 4	Install High/Low Lighting Controls	Yes	4,267	0.8	0.0	\$498.77	\$3,800.00	\$0.00	\$3,800.00	7.6	4,297
Motor Upgrades			12,374	2.6	0.0	\$1,446.24	\$26,584.89	\$0.00	\$26,584.89	18.4	12,460
ECM 5	Premium Efficiency Motors	Yes	12,374	2.6	0.0	\$1,446.24	\$26,584.89	\$0.00	\$26,584.89	18.4	12,460
Variable Frequency Drive (VFD) Measures			222,291	28.7	0.0	\$25,981.62	\$66,850.45	\$9,375.00	\$57,475.45	2.2	223,845
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	Yes	5,316	1.6	0.0	\$621.28	\$9,291.15	\$775.00	\$8,516.15	13.7	5,353
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	41,013	11.7	0.0	\$4,793.59	\$17,975.55	\$3,200.00	\$14,775.55	3.1	41,299
ECM 8	Install VFDs on Chilled Water Pumps	Yes	165,347	14.1	0.0	\$19,325.90	\$33,032.05	\$5,400.00	\$27,632.05	1.4	166,503
ECM 9	Install VFDs on Hot Water Pumps	Yes	10,616	1.3	0.0	\$1,240.85	\$6,551.70	\$0.00	\$6,551.70	5.3	10,691
Food Service Equipment & Refrigeration Measures			308	0.0	0.0	\$35.95	\$303.30	\$0.00	\$303.30	8.4	310
ECM 10	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	308	0.0	0.0	\$35.95	\$303.30	\$0.00	\$303.30	8.4	310
Plug Load Equipment Control - Vending Machine			3,224	0.0	0.0	\$376.79	\$460.00	\$0.00	\$460.00	1.2	3,246
ECM 11	Vending Machine Control	Yes	3,224	0.0	0.0	\$376.79	\$460.00	\$0.00	\$460.00	1.2	3,246
TOTALS FOR HIGH PRIORITY MEASURES			449,020	71.3	0.0	\$52,481.93	\$206,504.37	\$29,480.00	\$177,024.37	3.4	452,160
TOTALS FOR ALL EVALUATED MEASURES			449,020	71.3	0.0	\$52,481.93	\$206,504.37	\$29,480.00	\$177,024.37	3.4	452,160

* - 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).

Wicoff 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			78,242	18.9	0.0	\$12,717.44	\$36,678.17	\$9,295.00	\$27,383.17	2.2	78,789
ECM 1	Install LED Fixtures	Yes	8,439	1.3	0.0	\$1,371.67	\$3,996.03	\$330.00	\$3,666.03	2.7	8,498
ECM 2	Retrofit Fixtures with LED Lamps	Yes	69,803	17.6	0.0	\$11,345.77	\$32,682.14	\$8,965.00	\$23,717.14	2.1	70,291
Lighting Control Measures			14,838	3.5	0.0	\$2,411.70	\$14,360.00	\$1,540.00	\$12,820.00	5.3	14,941
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	13,877	3.3	0.0	\$2,255.58	\$12,960.00	\$1,540.00	\$11,420.00	5.1	13,974
ECM 4	Install High/Low Lighting Controls	Yes	960	0.2	0.0	\$156.12	\$1,400.00	\$0.00	\$1,400.00	9.0	967
Electric Unitary HVAC Measures			16,337	8.0	0.0	\$2,655.39	\$68,793.11	\$1,702.00	\$67,091.11	25.3	16,451
	Install High Efficiency Electric AC	No	15,769	7.8	0.0	\$2,563.12	\$67,102.22	\$1,610.00	\$65,492.22	25.6	15,879
ECM 5	Install High Efficiency Heat Pumps	Yes	568	0.2	0.0	\$92.27	\$1,690.89	\$92.00	\$1,598.89	17.3	572
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$261.99	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 6	Vending Machine Control	Yes	1,612	0.0	0.0	\$261.99	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS FOR HIGH PRIORITY MEASURES			95,259	22.6	0.0	\$15,483.40	\$52,959.06	\$10,927.00	\$42,032.06	2.7	95,925
TOTALS FOR ALL EVALUATED MEASURES			111,028	30.4	0.0	\$18,046.52	\$120,061.28	\$12,537.00	\$107,524.28	6.0	111,804

* - 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



	HS North	HS South	Community MS	Thomas Grover MS	Dutch Neck ES
<i>Potential:</i>	HIGH	MEDIUM	HIGH	HIGH	HIGH
<i>System Potential: (kW)</i>	726	788	537	560	250
<i>Electric Generation: (kWh per year)</i>	864,935	592,926	639,766	667,167	297,843
<i>Displaced Cost: (per year)</i>	\$75,250	\$3,278,100 \$51,580	\$55,660	\$1,456,000 \$58,040	\$650,000

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



	Maurice Hawk ES	Millstone River ES	Towne Center ES	Village ES	Wicoff ES
<i>Potential:</i>	HIGH	HIGH	HIGH	HIGH	Medium
<i>System Potential: (kW)</i>	200	315	170	360	150
<i>Electric Generation: (kWh per year)</i>	238,274	375,281	202,533	428,894	112,867
<i>Displaced Cost: (per year)</i>	\$20,730	\$32,650	\$17,620	\$37,310	\$9,820

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

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

Energy Efficient Best Practices



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

See individual reports for specific EE practices by building

Clean Energy Program Portfolio



ELIGIBLE SECTORS

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

INCENTIVE PROGRAMS

Equipment Rebates:

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

Whole Buildings:

- Pay for Performance

Energy Generation:

- Combined Heat and Power (CHP)

OTHER PROGRAMS

Renewable Energy Generation:

- SREC Registration Program (SRP)

* eligible programs are highlighted in yellow

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

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)

Direct Install:



Participating Contractor

Tri-State Light & Energy, Inc.

Alan Rhode

610-789-1900 x226

asr@tsle.com

SmartStart: Overview



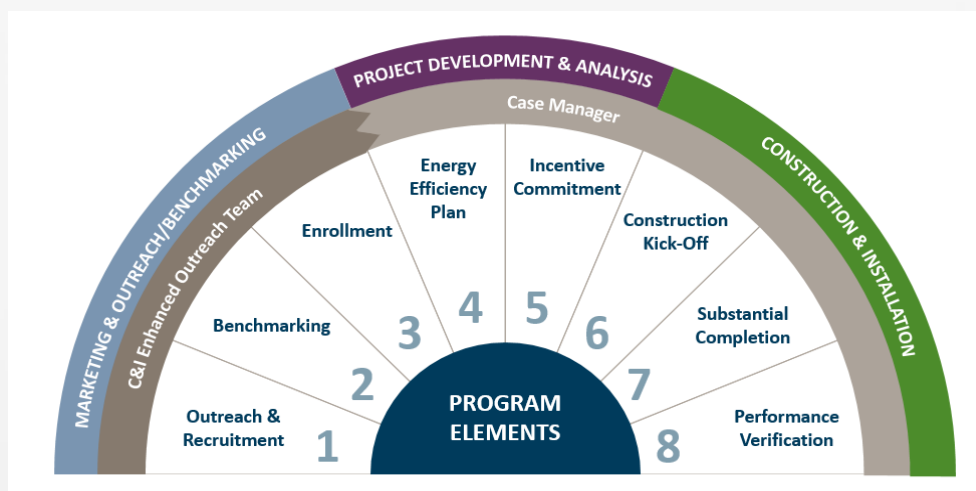
- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- Project pre-approval required for lighting and custom measures
- Incentives up to \$500,000 per electric account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

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.



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

Recommended NJCEP Incentives per Building



West Windsor-Plainsboro RSD	SmartStart	CTEEP	Direct Install	Pay For Performance	Combined Heat & Power
High School North	X	X		X	X
High School South	X	X		X	
Community MS	X	X		X	
Thomas Grover MS	X	X		X	
Dutch Neck ES	X	X		X	
Maurice Hawk ES	X	X			
Millstone River ES	X	X		X	
Town Center ES	X	X		X	
Village ES	X	X			
Wicoff ES	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



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FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

Jim Friedl

Outreach Manager

732-855-6543

jfriedl@trcsolutions.com