

New Jersey's Clean Energy Program

LGEA Exit Meeting for:

Pequannock Township Board of Education

Alex Klieverik, TRC

July 9, 2018

1

Introductions



- <u>Pequannock Township Board of Education</u>
 - Kathy Bechtel Business Administrator
 - Peter Riffel Facilities Director
 - Dr. Brett Charleston Superintendent
 - Alexis Goldman Architect (Solutions Architecture Corp.)
- <u>NJ Clean Energy Program TRC</u>
 - Brian DeLuca Program Manager
 - Alex Klieverik Auditor
 - Sarah Walters LGEA Account Manager
 - Mike Thulen ESIP Coordinator





- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Pequannock Township Board of Education

Process to Draft Report



- Application submitted to NJCEP
- Site Visit Performed
- Utility Analysis
- Baseline Condition
- Analysis
- Recommendations
- 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

Entities Visited/Analyzed

- Pequannock Township High School
- Pequannock Valley Middle School
- Hillview School
- North Boulevard School
- Stephen J. Gerace School
- District Offices

All Measures



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 (Ibs)
Lighting Upgrades	676,198	147.3	0.0	\$84,106.15	\$479,215.45	\$65,770.00	\$413,445.45	4.9	680,926
Install LED Fixtures	120,373	22.2	0.0	\$15,003.18	\$147,730.51	\$17,400.00	\$130,330.51	8.7	121,214
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	177,122	39.8	0.0	\$21,524.94	\$108,385.33	\$10,450.00	\$97,935.33	4.5	178,360
Retrofit Fixtures with LED Lamps	376,588	85.2	0.0	\$47,320.47	\$221,486.28	\$37,920.00	\$183,566.28	3.9	379,222
Install LED Exit Signs	2,116	0.1	0.0	\$257.56	\$1,613.33	\$0.00	\$1,613.33	6.3	2,130
Lighting Control Measures	99,386	19.7	0.0	\$12,515.03	\$104,038.00	\$10,955.00	\$93,083.00	7.4	100,081
Install Occupancy Sensor Lighting Controls	85,303	16.9	0.0	\$10,754.42	\$92,618.00	\$10,955.00	\$81,663.00	7.6	85,899
Install High/Low Lighitng Controls	14,084	2.8	0.0	\$1,760.61	\$11,420.00	\$0.00	\$11,420.00	6.5	14,182
Motor Upgrades	2,968	0.8	0.0	\$376.74	\$13,235.38	\$0.00	\$13,235.38	35.1	2,988
Premium Efficiency Motors	2,968	0.8	0.0	\$376.74	\$13,235.38	\$0.00	\$13,235.38	35.1	2,988
Variable Frequency Drive (VFD) Measures	56,511	8.9	0.0	\$7,067.07	\$61,931.32	\$800.00	\$61,131.32	8.7	56,906
Install VFD on Variable Air Volume (VAV) HVAC	2,194	0.7	0.0	\$267.59	\$7,993.77	\$0.00	\$7,993.77	29.9	2,209
Install VFDs on Constant Volume (CV) HVAC	4,118	1.4	0.0	\$531.56	\$6,551.70	\$800.00	\$5,751.70	10.8	4,147
Install VFDs on Hot Water Pumps	50,198	6.8	0.0	\$6,267.92	\$47,385.85	\$0.00	\$47,385.85	7.6	50,549
Electric Unitary HVAC Measures	4,072	2.4	0.0	\$500.70	\$15,710.31	\$966.00	\$14,744.31	29.4	4,100
Install High Efficiency Electric AC	4,072	2.4	0.0	\$500.70	\$15,710.31	\$966.00	\$14,744.31	29.4	4,100
Gas Heating (HVAC/Process) Replacement	0	0.0	274.3	\$2,496.39	\$36,554.74	\$4,759.80	\$31,794.94	12.7	32,115
Install High Efficiency Hot Water Boilers	0	0.0	274.3	\$2,496.39	\$36,554.74	\$4,759.80	\$31,794.94	12.7	32,115
HVAC System Improvements	0	0.0	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
Install Pipe Insulation	0	0.0	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
Domestic Water Heating Upgrade	0	0.0	36.4	\$320.12	\$1,193.49	\$0.00	\$1,193.49	3.7	4,267
Install Low-Flow Domestic Hot Water Devices	0	0.0	36.4	\$320.12	\$1,193.49	\$0.00	\$1,193.49	3.7	4,267
Plug Load Equipment Control - Vending Machine	20,148	0.0	0.0	\$2,555.16	\$2,990.00	\$0.00	\$2,990.00	1.2	20,289
Vending Machine Control	20,148	0.0	0.0	\$2,555.16	\$2,990.00	\$0.00	\$2,990.00	1.2	20,289
TOTALS	859,283	179.1	315.4	\$109,979.25	\$714,907.84	\$83,250.80	\$631,657.04	5.7	902,225



Recommended Measures

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual Fuel 2 Savings (MMBtu)	Annual Fuel 3 Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting Upgrades	676,198	147.3	0.0	0.0	0.0	0.0	\$84,106.15	\$479,215.45	\$65,770.00	\$413,445.45	4.9	680,926
ECM 1 Install LED Fixtures	120,373	22.2	0.0	0.0	0.0	0.0	\$15,003.18	\$147,730.51	\$17,400.00	\$130,330.51	8.7	121,214
ECM 2 Retrofit Fluorescent Fixtures with LED Lamps and Drivers	177,122	39.8	0.0	0.0	0.0	0.0	\$21,524.94	\$108,385.33	\$10,450.00	\$97,935.33	4.5	178,360
ECM 3 Retrofit Fixtures with LED Lamps	376,588	85.2	0.0	0.0	0.0	0.0	\$47,320.47	\$221,486.28	\$37,920.00	\$183,566.28	3.9	379,222
ECM 4 Install LED Exit Signs	2,116	0.1	0.0	0.0	0.0	0.0	\$257.56	\$1,613.33	\$0.00	\$1,613.33	6.3	2,130
Lighting Control Measures	98,892	19.6	0.0	0.0	0.0	0.0	\$12,454.19	\$102,148.00	\$10,815.00	\$91,333.00	7.3	99,583
ECM 5 Install Occupancy Sensor Lighting Controls	84,808	16.8	0.0	0.0	0.0	0.0	\$10,693.58	\$90,728.00	\$10,815.00	\$79,913.00	7.5	85,401
ECM 6 Install High/Low Lighitng Controls	14,084	2.8	0.0	0.0	0.0	0.0	\$1,760.61	\$11,420.00	\$0.00	\$11,420.00	6.5	14,182
Variable Frequency Drive (VFD) Measures	41,982	5.9	0.0	0.0	0.0	0.0	\$5,282.60	\$35,891.65	\$800.00	\$35,091.65	6.6	42,275
ECM 7 Install VFDs on Constant Volume (CV) HVAC	4,118	1.4	0.0	0.0	0.0	0.0	\$531.56	\$6,551.70	\$800.00	\$5,751.70	10.8	4,147
ECM 8 Install VFDs on Hot Water Pumps	37,863	4.6	0.0	0.0	0.0	0.0	\$4,751.04	\$29,339.95	\$0.00	\$29,339.95	6.2	38,128
Gas Heating (HVAC/Process) Replacement	0	0.0	270.6	0.0	0.0	270.6	\$2,448.35	\$32,640.74	\$3,759.80	\$28,880.94	11.8	31,678
ECM 9 Install High Efficiency Hot Water Boilers	0	0.0	270.6	0.0	0.0	270.6	\$2,448.35	\$32,640.74	\$3,759.80	\$28,880.94	11.8	31,678
HVAC System Improvements	0	0.0	4.7	0.0	0.0	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
ECM 10 Install Pipe Insulation	0	0.0	4.7	0.0	0.0	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
Domestic Water Heating Upgrade	0	0.0	36.4	0.0	0.0	36.4	\$320.12	\$1,193.49	\$0.00	\$1,193.49	3.7	4,267
ECM 11 Install Low-Flow Domestic Hot Water Devices	0	0.0	36.4	0.0	0.0	36.4	\$320.12	\$1,193.49	\$0.00	\$1,193.49	3.7	4,267
Plug Load Equipment Control - Vending Machine	20,148	0.0	0.0	0.0	0.0	0.0	\$2,555.16	\$2,990.00	\$0.00	\$2,990.00	1.2	20,289
ECM 12 Vending Machine Control	20,148	0.0	0.0	0.0	0.0	0.0	\$2,555.16	\$2,990.00	\$0.00	\$2,990.00	1.2	20,289
TOTALS	837,220	172.8	311.7	0.0	0.0	311.7	\$107,208.46	\$654,118.48	\$81,144.80	\$572,973.68	5.3	879,570

* - 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).

7



Pequannock High School

	Energy Conservation Measure	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 (Ibs)
	Lighting Upgrades	231,754	42.3	0.0	0.0	\$29,912.25	\$149,651.12	\$20,705.00	\$128,946.12	4.3	233,375
ECM 1	Install LED Fixtures	46,345	8.3	0.0	0.0	\$5,981.73	\$55,074.19	\$5,500.00	\$49,574.19	8.3	46,669
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,864	0.3	0.0	0.0	\$240.59	\$819.00	\$70.00	\$749.00	3.1	1,877
ECM 3	Retrofit Fixtures with LED Lamps	183,545	33.6	0.0	0.0	\$23,689.93	\$93,757.94	\$15,135.00	\$78,622.94	3.3	184,828
	Lighting Control Measures	55,221	9.9	0.0	0.0	\$7,127.30	\$43,228.00	\$3,955.00	\$39,273.00	5.5	55,607
ECM 4	Install Occupancy Sensor Lighting Controls	49,055	8.8	0.0	0.0	\$6,331.45	\$39,628.00	\$3,955.00	\$35,673.00	5.6	49,398
ECM 5	Install High/Low Lighitng Controls	6,166	1.1	0.0	0.0	\$795.85	\$3,600.00	\$0.00	\$3,600.00	4.5	6,209
	Motor Upgrades	1,986	0.5	0.0	0.0	\$256.36	\$5, 991.82	\$0.00	\$5,991.82	23.4	2,000
	Premium Efficiency Motors	1,986	0.5	0.0	0.0	\$256.36	\$5,991.82	\$0.00	\$5,991.82	23.4	2,000
	Variable Frequency Drive (VFD) Measures	23,071	3.5	0.0	0.0	\$2,977.79	\$20,317.00	\$800.00	\$19,517.00	6.6	23,233
ECM 6	Install VFDs on Constant Volume (CV) HVAC	4,118	1.4	0.0	0.0	\$531.56	\$6,551.70	\$800.00	\$5,751.70	10.8	4,147
ECM 7	Install VFDs on Hot Water Pumps	18,953	2.2	0.0	0.0	\$2,446.23	\$13,765.30	\$0.00	\$13,765.30	5.6	19,085
	Domestic Water Heating Upgrade	0	0.0	14.1	14.1	\$121.46	\$1,085.94	\$0.00	\$1,085.94	8.9	1,651
ECM 8	Install Low-Flow Domestic Hot Water Devices	0	0.0	14.1	14.1	\$121.46	\$1,085.94	\$0.00	\$1,085.94	8.9	1,651
	Plug Load Equipment Control - Vending Machine	13,701	0.0	0.0	0.0	\$1,768.32	\$2,070.00	\$0.00	\$2,070.00	1.2	13,796
ECM 9	Vending Machine Control	13,701	0.0	0.0	0.0	\$1,768.32	\$2,070.00	\$0.00	\$2,070.00	1.2	13,796
	TOTAL FOR RECOMMENDED MEASURES	323,747	55.7	14.1	14.1	\$41,907.12	\$216,352.06	\$25,460.00	\$190,892.06	4.6	327,662
	TOTAL FOR ALL MEASURES	325,734	56.2	14.1	14.1	\$42,163.48	\$222,343.88	\$25,460.00	\$196,883.88	4.7	329,662

* - 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.

Pequannock Valley Middle School



	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
	Lighting Upgrades	236,846	52.5	0.0	\$28,759.02	\$188,200.49	\$18,150.00	\$170,050.49	5.9	238,502
ECM 1	Install LED Fixtures	45,140	9.3	0.0	\$5,481.10	\$70,778.40	\$6,300.00	\$64,478.40	11.8	45,455
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	174,971	39.4	0.0	\$21,245.82	\$107,332.33	\$10,360.00	\$96,972.33	4.6	176,194
ECM 3	Retrofit Fixtures with LED Lamps	15,889	3.8	0.0	\$1,929.35	\$9,444.43	\$1,490.00	\$7,954.43	4.1	16,000
ECM 4	Install LED Exit Signs	846	0.1	0.0	\$102.75	\$645.33	\$0.00	\$645.33	6.3	852
	Lighting Control Measures	32,086	7.0	0.0	\$3,896.04	\$31,480.00	\$3,710.00	\$27,770.00	7.1	32,310
ECM 5	Install Occupancy Sensor Lighting Controls	27,855	6.2	0.0	\$3,382.28	\$27,660.00	\$3,710.00	\$23,950.00	7.1	28,050
ECM 6	Install High/Low Lighitng Controls	4,231	0.9	0.0	\$513.77	\$3,820.00	\$0.00	\$3,820.00	7.4	4,261
	Plug Load Equipment Control - Vending Machine	1,612	0.0	0.0	\$195.72	\$230.00	\$0.00	\$230.00	1.2	1,623
ECM 7	Vending Machine Control	1,612	0.0	0.0	\$195.72	\$230.00	\$0.00	\$230.00	1.2	1,623
	TOTAL FOR ALL MEASURES	225,404	50.3	0.0	\$27,369.68	\$149,132.09	\$15,560.00	\$133,572.09	4.9	226,980

* - 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.

Hillview School



Energy Conservation Measure	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	67,310	17.6	0.0	0.0	\$8,277.36	\$46,367.99	\$8,975.00	\$37,392.99	4.5	67,781
ECM 1 Install LED Fixtures	18,048	2.3	0.0	0.0	\$2,219.37	\$8,204.22	\$2,100.00	\$6,104.22	2.8	18,174
ECM 2 Retrofit Fixtures with LED Lamps	49,263	15.3	0.0	0.0	\$6,057.99	\$38,163.78	\$6,875.00	\$31,288.78	5.2	49,607
Lighting Control Measures	2,176	0.5	0.0	0.0	\$267.54	\$3,490.00	\$140.00	\$3,350.00	12.5	2,191
Install Occupancy Sensor Lighting Controls	495	0.1	0.0	0.0	\$60.84	\$1,890.00	\$140.00	\$1,750.00	28.8	498
ECM 3 Install High/Low Lighting Controls	1,681	0.4	0.0	0.0	\$206.70	\$1,600.00	\$0.00	\$1,600.00	7.7	1,693
Motor Upgrades	664	0.3	0.0	0.0	\$81.63	\$4,829.04	\$0.00	\$4,829.04	59.2	668
Premium Efficiency Motors	664	0.3	0.0	0.0	\$81.63	\$4,829.04	\$0.00	\$4,829.04	59.2	668
Variable Frequency Drive (VFD) Measures	12,335	2.3	0.0	0.0	\$1,516.88	\$18,045.90	\$0.00	\$18,045.90	11.9	12,421
Install VFDs on Hot Water Pumps	12,335	2.3	0.0	0.0	\$1,516.88	\$18,045.90	\$0.00	\$18,045.90	11.9	12,421
Electric Unitary HVAC Measures	4,072	2.4	0.0	0.0	\$500.70	\$15,710.31	\$966.00	\$14,744.31	29.4	4,100
Install High Efficiency Electric AC	4,072	2.4	0.0	0.0	\$500.70	\$15,710.31	\$966.00	\$14,744.31	29.4	4,100
Gas Heating (HVAC/Process) Replacement	0	0.0	270.6	270.6	\$2,448.35	\$32,640.74	\$3,759.80	\$28,880.94	11.8	31,678
ECM 4 Install High Efficiency Hot Water Boilers	0	0.0	270.6	270.6	\$2,448.35	\$32,640.74	\$3,759.80	\$28,880.94	11.8	31,678
ECM 5 Install Low-Flow Domestic Hot Water Devices	0	0.0	0.9	0.9	\$8.14	\$7.17	\$0.00	\$7.17	0.9	105
Plug Load Equipment Control - Vending Machine	1,612	0.0	0.0	0.0	\$198.21	\$230.00	\$0.00	\$230.00	1.2	1,623
ECM 6 Vending Machine Control	1,612	0.0	0.0	0.0	\$198.21	\$230.00	\$0.00	\$230.00	1.2	1,623
TOTAL FOR RECOMMENDED MEASURES	82,938	20.3	271.4	271.4	\$12,655.64	\$98,891.81	\$12,734.80	\$86,157.01	6.8	115,301
TOTAL FOR ALL MEASURES	88,168	23.1	271.4	271.4	\$13,298.81	\$121,321.16	\$13,840.80	\$107,480.36	8.1	120,568

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



North Boulevard School

Energy Conservation Measure	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 (Ibs)
Lighting Upgrades	73,761	16.4	0.0	0.0	\$8,995.98	\$45,245.31	\$8,700.00	\$36,545.31	4.1	74,276
ECM 1 Install LED Fixtures	3,772	0.7	0.0	0.0	\$460.07	\$7,032.19	\$1,800.00	\$5,232.19	11.4	3,799
ECM 2 Retrofit Fixtures with LED Lamps	68,719	15.7	0.0	0.0	\$8,381.11	\$37,245.12	\$6,900.00	\$30,345.12	3.6	69,199
ECM 3 Install LED Exit Signs	1,269	0.1	0.0	0.0	\$154.81	\$968.00	\$0.00	\$968.00	6.3	1,278
Lighting Control Measures	3,328	0.6	0.0	0.0	\$405.90	\$7,790.00	\$980.00	\$6,810.00	16.8	3,351
ECM 4 Install Occupancy Sensor Lighting Controls	3,328	0.6	0.0	0.0	\$405.90	\$7,790.00	\$980.00	\$6,810.00	16.8	3,351
Motor Upgrades	318	0.1	0.0	0.0	\$38.75	\$2,414.52	\$0.00	\$2,414.52	62.3	320
Premium Efficiency Motors	318	0.1	0.0	0.0	\$38.75	\$2,414.52	\$0.00	\$2,414.52	62.3	320
Variable Frequency Drive (VFD) Measures	11,152	1.9	0.0	0.0	\$1,360.07	\$17,016.72	\$0.00	\$17,016.72	12.5	11,230
Install VFD on Variable Air Volume (VAV) HVAC	2,194	0.7	0.0	0.0	\$267.59	\$7,993.77	\$0.00	\$7,993.77	29.9	2,209
ECM 5 Install VFDs on Hot Water Pumps	8,958	1.1	0.0	0.0	\$1,092.48	\$9,022.95	\$0.00	\$9,022.95	8.3	9,020
HVAC System Improvements	0	0.0	4.7	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
ECM 6 Install Pipe Insulation	0	0.0	4.7	4.7	\$41.89	\$39.15	\$0.00	\$39.15	0.9	552
Domestic Water Heating Upgrade	0	0.0	21.4	21.4	\$190.52	\$100.38	\$0.00	\$100.38	0.5	2,511
ECM 7 Install Low-Flow Domestic Hot Water Devices	0	0.0	21.4	21.4	\$190.52	\$100.38	\$0.00	\$100.38	0.5	2,511
ECM 8 Vending Machine Control	1,612	0.0	0.0	0.0	\$196.58	\$230.00	\$0.00	\$230.00	1.2	1,623
TOTAL FOR RECOMMENDED MEASURES	87,658	18.2	26.2	26.2	\$10,923.36	\$62,427.79	\$9,680.00	\$52,747.79	4.8	91,333
TOTAL FOR ALL MEASURES	90,170	18.3	26.2	26.2	\$10,962.11	\$64,842.31	\$9,680.00	\$55,162.31	5.0	93,863

* - 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.

Stephen J. Gerace School



	Energy Conservation Measure	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	61,831	16.9	0.0	0.0	\$7,531.41	\$46,428.52	\$8,580.00	\$37,848.52	5.0	62,263
ECM 1	Install LED Fixtures	7,068	1.5	0.0	0.0	\$860.91	\$6,641.51	\$1,700.00	\$4,941.51	5.7	7,117
ECM 2	Retrofit Fixtures with LED Lamps	54,763	15.4	0.0	0.0	\$6,670.50	\$39,787.01	\$6,880.00	\$32,907.01	4.9	55,146
	Lighting Control Measures	5,178	1.1	0.0	0.0	\$630.77	\$15,350.00	\$1,890.00	\$13,460.00	21.3	5,215
ECM 3	Install Occupancy Sensor Lighting Controls	3,173	0.7	0.0	0.0	\$386.48	\$12,950.00	\$1,890.00	\$11,060.00	28.6	3,195
ECM 4	Install High/Low Lighitng Controls	2,006	0.4	0.0	0.0	\$244.29	\$2,400.00	\$0.00	\$2,400.00	9.8	2,020
	Variable Frequency Drive (VFD) Measures	9,953	1.3	0.0	0.0	\$1,212.33	\$6,551.70	\$0.00	\$6,551.70	5.4	10,022
ECM 5	Install VFDs on Hot Water Pumps	9,953	1.3	0.0	0.0	\$1,212.33	\$6,551.70	\$0.00	\$6,551.70	5.4	10,022
	Plug Load Equipment Control - Vending Machine	1,612	0.0	0.0	0.0	\$196.33	\$230.00	\$0.00	\$230.00	1.2	1,623
ECM 6	Vending Machine Control	1,612	0.0	0.0	0.0	\$196.33	\$230.00	\$0.00	\$230.00	1.2	1,623
	TOTALS	78,574	19.3	0.0	0.0	\$9,570.84	\$68,560.22	\$10,470.00	\$58,090.22	6.1	79,123

* - 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.

District Offices



	Energy Conservation Measure	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 (Ibs)
	Lighting Upgrades	4,697	1.5	0.0	0.0	\$630.12	\$3,322.00	\$660.00	\$2,662.00	4.2	4,730
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	287	0.1	0.0	0.0	\$38.53	\$234.00	\$20.00	\$214.00	5.6	289
ECM 2	Retrofit Fixtures with LED Lamps	4,410	1.4	0.0	0.0	\$591.59	\$3,088.00	\$640.00	\$2,448.00	4.1	4,441
	Lighting Control Measures	1,397	0.5	0.0	0.0	\$187.47	\$2,700.00	\$280.00	\$2,420.00	12.9	1,407
ECM 3	Install Occupancy Sensor Lighting Controls	1,397	0.5	0.0	0.0	\$187.47	\$2,700.00	\$280.00	\$2,420.00	12.9	1,407
	Gas Heating (HVAC/Process) Replacement	0	0.0	3.7	3.7	\$48.04	\$3,914.00	\$1,000.00	\$2,914.00	60.7	437
	Install High Efficiency Hot Water Boilers	0	0.0	3.7	3.7	\$48.04	\$3,914.00	\$1,000.00	\$2,914.00	60.7	437
	TOTAL FOR ALL MEASURES	6,094	2.0	3.7	3.7	\$865.62	\$9,936.00	\$1,940.00	\$7,996.00	9.2	6,574
	TOTAL FOR RECOMMENDED MEASURES	6,094	2.0	0.0	0.0	\$817.58	\$6,022.00	\$940.00	\$5,082.00	6.2	6,137

* - 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.

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







SmartStart: Overview

- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Includes New Construction, Rehab and Retrofit projects
- Project pre-approval required for certain equipment
- Incentives up to \$500,000 per electric account & \$500,000 per natural gas account
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- 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 a peak 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 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

Donnelly Energy

Justin Avallone 845-401-6253

javallone@donnellyenergy.com



Building Name	SmartStart	Direct Install
Pequannock High School	X	
Pequannock Valley Middle School	X	X
Hillview School	X	Х
North Boulevard School	X	X
Stephen J. Gerace School	X	Х
District Offices	X	Х



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





FOR MORE INFORMATION

ESIP

Mike Thulen ESIP Coordinator Office: 609-777-3338 Cell: 732-330-2419 ESIP@bpu.nj.gov

Questions



NJCleanEnergy.com



FOR MORE INFORMATION

Visit NJCleanEnergy.com Call (866) NJSMART

Jim Friedl Outreach Manager 732-855-6543 jfriedl@trcsolutions.com