

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Hillside Board of Education

Alex Klieverik, TRC

June 8, 2018

Introductions



- *Hillside Board of Education*
 - Antoine Gayles – Superintendent
 - David Defluri – Facilities Manager
 - Darice Gonzalez – Business Administrator
- *NJ Clean Energy Program – TRC & BPU*
 - Alex Klieverik – Auditor
 - Sarah Walters – LGEA Account Manager
 - Brian DeLuca – Program Manager
 - Mary-Anna Holden – BPU Commissioner
 - Maria Zazzera – Aide to BPU Commissioner Holden
 - Arif Welcher – BPU Ombudsman

Agenda



- Overview of LGEA process (application to deliverable)
- 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 Hillside 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

Sites Visited/Analyzed:

- Calvin Coolidge Elementary School
- Hurden Looker Elementary School
- Abram P. Morris Early Childhood Center
- George Washington Elementary School
- Walter O. Krumbiegel Middle School
- Hillside High School
- Administration Building & Saybrook Annex

ECM Summary (All Sites) - All 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)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades	390,051	137.7	0.0	0.0	0.0	0.0	\$57,591.89	\$409,478.96	\$67,330.00	\$342,148.96	5.9	392,779
Install LED Fixtures	11,295	2.1	0.0	0.0	0.0	0.0	\$1,582.28	\$6,992.93	\$1,050.00	\$5,942.93	3.8	11,374
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	612	0.2	0.0	0.0	0.0	0.0	\$81.07	\$819.00	\$70.00	\$749.00	9.2	616
Retrofit Fixtures with LED Lamps	375,464	135.2	0.0	0.0	0.0	0.0	\$55,610.28	\$400,483.92	\$66,210.00	\$334,273.92	6.0	378,089
Install LED Exit Signs	2,681	0.2	0.0	0.0	0.0	0.0	\$318.26	\$1,183.11	\$0.00	\$1,183.11	3.7	2,699
Lighting Control Measures	69,605	24.8	0.0	0.0	0.0	0.0	\$10,371.35	\$138,520.00	\$15,085.00	\$123,435.00	11.9	70,092
Install Occupancy Sensor Lighting Controls	60,430	21.6	0.0	0.0	0.0	0.0	\$9,085.00	\$118,262.00	\$15,085.00	\$103,177.00	11.4	60,852
Install High/Low Lighting Controls	9,175	3.3	0.0	0.0	0.0	0.0	\$1,286.35	\$20,258.00	\$0.00	\$20,258.00	15.7	9,239
Electric Unitary HVAC Measures	21,905	22.6	0.0	0.0	0.0	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Install High Efficiency Electric AC	21,905	22.6	0.0	0.0	0.0	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Gas Heating (HVAC/Process) Replacement	0	0.0	262.7	0.0	0.0	262.7	\$2,438.08	\$280,814.91	\$6,000.00	\$274,814.91	112.7	30,760
Install High Efficiency Steam Boilers	0	0.0	262.7	0.0	0.0	262.7	\$2,438.08	\$280,814.91	\$6,000.00	\$274,814.91	112.7	30,760
Plug Load Equipment Control - Vending Machine	7,475	0.0	0.0	0.0	0.0	0.0	\$942.78	\$1,610.00	\$0.00	\$1,610.00	1.7	7,527
Vending Machine Control	7,475	0.0	0.0	0.0	0.0	0.0	\$942.78	\$1,610.00	\$0.00	\$1,610.00	1.7	7,527
TOTALS	489,036	185.1	262.7	0.0	0.0	262.7	\$74,305.51	\$1,030,500.00	\$96,792.00	\$933,708.00	12.6	523,215

* - 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).

Calvin Coolidge 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			16,635	6.5	0.0	\$2,447.78	\$16,940.98	\$2,635.00	\$14,305.98	5.8	16,751
ECM 1	Retrofit Fixtures with LED Lamps	Yes	16,635	6.5	0.0	\$2,447.78	\$16,940.98	\$2,635.00	\$14,305.98	5.8	16,751
Lighting Control Measures			2,833	1.1	0.0	\$416.85	\$10,800.00	\$945.00	\$9,855.00	23.6	2,853
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	2,447	1.0	0.0	\$360.12	\$8,910.00	\$945.00	\$7,965.00	22.1	2,464
ECM 3	Install High/Low Lighting Controls	Yes	386	0.1	0.0	\$56.73	\$1,890.00	\$0.00	\$1,890.00	33.3	388
TOTALS			19,467	7.6	0.0	\$2,864.63	\$27,740.98	\$3,580.00	\$24,160.98	8.4	19,603

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Hurden Looker 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			37,017	18.9	0.0	\$6,919.92	\$49,878.24	\$8,545.00	\$41,333.24	6.0	37,275
ECM 1	Retrofit Fixtures with LED Lamps	Yes	37,017	18.9	0.0	\$6,919.92	\$49,878.24	\$8,545.00	\$41,333.24	6.0	37,275
Lighting Control Measures			8,110	4.1	0.0	\$1,516.11	\$18,594.00	\$2,315.00	\$16,279.00	10.7	8,167
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	7,462	3.8	0.0	\$1,395.00	\$16,818.00	\$2,195.00	\$14,623.00	10.5	7,514
ECM 3	Install High/Low Lighting Controls	Yes	648	0.4	0.0	\$121.11	\$1,080.00	\$0.00	\$1,080.00	8.9	652
TOTALS			45,127	23.0	0.0	\$8,436.04	\$68,472.24	\$10,860.00	\$57,612.24	6.8	45,442

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Abram P. Morris Early Childhood Center



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			100,297	26.3	0.0	\$13,559.70	\$85,977.89	\$13,725.00	\$72,252.89	5.3	100,998
ECM 1	Install LED Fixtures	Yes	4,795	1.2	0.0	\$648.29	\$2,133.75	\$260.00	\$1,873.75	2.9	4,829
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	405	0.1	0.0	\$54.80	\$468.00	\$40.00	\$428.00	7.8	408
ECM 3	Retrofit Fixtures with LED Lamps	Yes	94,956	25.0	0.0	\$12,837.66	\$83,268.58	\$13,425.00	\$69,843.58	5.4	95,620
ECM 4	Install LED Exit Signs	Yes	140	0.0	0.0	\$18.95	\$107.56	\$0.00	\$107.56	5.7	141
Lighting Control Measures			12,426	3.2	0.0	\$1,679.91	\$17,550.00	\$1,890.00	\$15,660.00	9.3	12,513
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	10,450	2.7	0.0	\$1,412.77	\$14,580.00	\$1,890.00	\$12,690.00	9.0	10,523
ECM 6	Install High/Low Lighting Controls	Yes	1,976	0.5	0.0	\$267.15	\$2,970.00	\$0.00	\$2,970.00	11.1	1,990
Electric Unitary HVAC Measures			21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
	Install High Efficiency Electric AC	No	21,905	22.6	0.0	\$2,961.41	\$200,076.13	\$8,377.00	\$191,699.13	64.7	22,058
Gas Heating (HVAC/Process) Replacement			0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
	Install High Efficiency Steam Boilers	No	0	0.0	8.7	\$90.68	\$169,296.98	\$0.00	\$169,296.98	1866.9	1,023
EVALUATED PROJECTS TOTALS			134,627	52.2	8.7	\$18,291.71	\$472,901.00	\$23,992.00	\$448,909.00	24.5	136,592
RECOMMENDED PROJECTS TOTALS			112,723	29.6	0.0	\$15,239.62	\$103,527.89	\$15,615.00	\$87,912.89	5.8	113,511

George Washington 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			30,238	14.0	0.0	\$4,995.18	\$44,152.12	\$7,635.00	\$36,517.12	7.3	30,449
ECM 1	Install LED Fixtures	Yes	1,248	0.2	0.0	\$206.22	\$781.35	\$200.00	\$581.35	2.8	1,257
ECM 2	Retrofit Fixtures with LED Lamps	Yes	28,989	13.8	0.0	\$4,788.96	\$43,370.77	\$7,435.00	\$35,935.77	7.5	29,192
Lighting Control Measures			3,526	1.4	0.0	\$582.47	\$11,434.00	\$1,165.00	\$10,269.00	17.6	3,551
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,673	1.0	0.0	\$441.57	\$8,834.00	\$1,165.00	\$7,669.00	17.4	2,692
ECM 4	Install High/Low Lighting Controls	Yes	853	0.3	0.0	\$140.90	\$2,600.00	\$0.00	\$2,600.00	18.5	859
TOTALS			33,764	15.4	0.0	\$5,577.65	\$55,586.12	\$8,800.00	\$46,786.12	8.4	34,000

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Walter O. Krumbiegel 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			63,526	23.8	0.0	\$9,502.63	\$70,750.44	\$12,435.00	\$58,315.44	6.1	63,970
ECM 1	Retrofit Fixtures with LED Lamps	Yes	63,526	23.8	0.0	\$9,502.63	\$70,750.44	\$12,435.00	\$58,315.44	6.1	63,970
Lighting Control Measures			15,677	5.8	0.0	\$2,345.00	\$34,668.00	\$3,640.00	\$31,028.00	13.2	15,786
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	13,331	5.0	0.0	\$1,994.14	\$28,080.00	\$3,640.00	\$24,440.00	12.3	13,424
ECM 3	Install High/Low Lighting Controls	Yes	2,346	0.8	0.0	\$350.86	\$6,588.00	\$0.00	\$6,588.00	18.8	2,362
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$292.35	\$460.00	\$0.00	\$460.00	1.6	1,968
ECM 4	Vending Machine Control	Yes	1,954	0.0	0.0	\$292.35	\$460.00	\$0.00	\$460.00	1.6	1,968
TOTALS			81,157	29.7	0.0	\$12,139.98	\$105,878.44	\$16,075.00	\$89,803.44	7.4	81,724

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Hillside High School



Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Reduction (lbs)
Lighting Upgrades			111,377	39.2	0.0	\$13,122.49	\$118,145.22	\$18,505.00	\$99,640.22	7.6	112,156
ECM 1	Install LED Fixtures	Yes	4,257	0.6	0.0	\$501.60	\$2,709.31	\$410.00	\$2,299.31	4.6	4,287
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	189	0.1	0.0	\$22.24	\$234.00	\$20.00	\$214.00	9.6	190
ECM 3	Retrofit Fixtures with LED Lamps	Yes	104,391	38.4	0.0	\$12,299.34	\$114,126.36	\$18,075.00	\$96,051.36	7.8	105,121
ECM 4	Install LED Exit Signs	Yes	2,540	0.2	0.0	\$299.31	\$1,075.55	\$0.00	\$1,075.55	3.6	2,558
Lighting Control Measures			21,145	7.5	0.0	\$2,491.35	\$35,910.00	\$3,920.00	\$31,990.00	12.8	21,293
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	18,178	6.4	0.0	\$2,141.75	\$30,780.00	\$3,920.00	\$26,860.00	12.5	18,305
ECM 6	Install High/Low Lighting Controls	Yes	2,967	1.0	0.0	\$349.60	\$5,130.00	\$0.00	\$5,130.00	14.7	2,988
Gas Heating (HVAC/Process) Replacement			0	0.0	254.0	\$2,347.40	\$111,517.93	\$6,000.00	\$105,517.93	45.0	29,736
	Install High Efficiency Steam Boilers	No	0	0.0	254.0	\$2,347.40	\$111,517.93	\$6,000.00	\$105,517.93	45.0	29,736
Plug Load Equipment Control - Vending Machine			5,521	0.0	0.0	\$650.43	\$1,150.00	\$0.00	\$1,150.00	1.8	5,559
ECM 7	Vending Machine Control	Yes	5,521	0.0	0.0	\$650.43	\$1,150.00	\$0.00	\$1,150.00	1.8	5,559
EVALUATED PROJECT TOTALS			138,043	46.6	254.0	\$18,611.68	\$266,723.14	\$28,425.00	\$238,298.14	12.8	168,745
RECOMMENDED PROJECT TOTALS			138,043	46.6	0.0	\$16,264.28	\$155,205.22	\$22,425.00	\$132,780.22	8.2	139,008

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Administration Building & Saybrook 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			30,962	9.1	0.0	\$7,044.19	\$23,634.07	\$3,850.00	\$19,784.07	2.8	31,179
ECM 1	Install LED Fixtures	Yes	994	0.2	0.0	\$226.17	\$1,368.52	\$180.00	\$1,188.52	5.3	1,001
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	18	0.0	0.0	\$4.03	\$117.00	\$10.00	\$107.00	26.6	18
ECM 3	Retrofit Fixtures with LED Lamps	Yes	29,951	8.8	0.0	\$6,813.99	\$22,148.55	\$3,660.00	\$18,488.55	2.7	30,160
Lighting Control Measures			5,888	1.7	0.0	\$1,339.65	\$10,260.00	\$1,330.00	\$8,930.00	6.7	5,930
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	5,888	1.7	0.0	\$1,339.65	\$10,260.00	\$1,330.00	\$8,930.00	6.7	5,930
TOTALS			36,851	10.8	0.0	\$8,383.84	\$33,894.07	\$5,180.00	\$28,714.07	3.4	37,108

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Some 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

PROGRAM PORTFOLIO



ELIGIBLE SECTORS

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

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)

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 (up to \$500,000 if pursuing ESIP)
 - \$250,000 per entity cap (up to \$500,000 if pursuing ESIP)
- Participating contractors provide support and process all paperwork
- Fast turnaround time: Average length of time for job completion is 4-6 months

Direct Install: Regional Contractor



Willdan Energy Solutions

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SmartStart Prescriptive: 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!

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

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Questions



?



FOR MORE INFORMATION

Visit NJCleanEnergy.com

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