New Jersey's Clean Energy Program

LGEA Presentation South Hunterdon Regional School District

September 10, 2021





INTRODUCTIONS

- South Hunterdon Regional School District
 - Andrew Harris Supervisor of STEM & District Projects
 - George Hutton Facility Manager
- NJ Clean Energy Program
 - Sarah Walters Project Manager
 - Moussa Traore –Lead Auditor
 - Amanda Muench Account Manager
 - Michelle Rossi ESIP Coordinator (BPU)
 - Arif Welcher Government/Business Manager (BPU)



Agenda

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- C&I Transition of EE Programs
- Questions regarding the draft audit report
- Next steps for South Hunterdon Regional School District



LGEA PROCESS

Application Approval

Initial Call

Facility Interviews

Audit

Benchmarking & Analysis

Draft Reports

LGEA Presentation

Final Reports



SITE VISIT & UTILITY ANALYSIS

Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Cooking & Refrigeration Equipment

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Oil #2
- Solar Consumption and Costs



Sites Visited/Analyzed

- South Hunterdon Regional Middle/High School
- West Amwell School, including:
 - Main Building
 - Admin. Building
 - Blue Shed and Trailer

UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



Post-Implementation Cost (All Measures)



Benchmarking



LP Signature: _____Date: _____ Licensed Professional ______ (___)_____ ______ Professional Engineer or Registered Architect Stamp (if applicable)

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



Benchmarking



Site Name	Energy Star Score
West Amwell School Main Building	75
South Hunterdon Regional MS/HS	85
Blue Shed	N/A
Trailer	N/A
West Amwell School Admin. Building	58



ALL OPPORTUNITIES

Savings Potential





ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades	174,272	34.7	-58.7	\$18,637	\$58,102	\$11,621	\$46,481	2.5	166,196
ECM 1	Install LED Fixtures	15,417	0.6	-1.3	\$1,639	\$7,761	\$1,200	\$6,561	4.0	15,308
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,491	0.5	-1.0	\$253	\$999	\$106	\$893	3.5	2,338
ECM 3	Retrofit Fixtures with LED Lamps	156,364	33.6	-56.3	\$16,746	\$49,342	\$10,315	\$39,027	2.3	148,550
Lighting	Control Measures	31,125	6.5	-11.0	\$3,379	\$33,059	\$7,845	\$25,214	7.5	29,624
ECM 4	Install Occupancy Sensor Lighting Controls	26,176	5.6	-9.2	\$2,851	\$27,434	\$3,350	\$24,084	8.4	24,927
ECM 5	Install High/Low Lighting Controls	4,949	0.8	-1.8	\$527	\$5,625	\$4,495	\$1,130	2.1	4,698
Motor L	Jpgrades	764	0.2	0.0	\$81	\$800	\$0	\$800	9.9	769
ECM 6	Premium Efficiency Motors	764	0.2	0.0	\$81	\$800	\$0	\$800	9.9	769
Variable	Frequency Drive (VFD) Measures	120,564	32.9	10.4	\$13,049	\$116,109	\$28,550	\$87,559	6.7	123,113
ECM 7	Install VFDs on Constant Volume (CV) Fans	103,008	31.4	0.0	\$10,910	\$103,518	\$23,150	\$80,368	7.4	103,728
ECM 8	Install VFDs on Heating Water Pumps	5,389	1.3	0.0	\$698	\$8,394	\$3,600	\$4,794	6.9	5,426
ECM 9	Install VFDs on Kitchen Hood Fan Motors	12,168	0.1	10.4	\$1,441	\$4,197	\$1,800	\$2,397	1.7	13,959
Electric	Unitary HVAC Measures	8,997	7.5	0.0	\$1,138	\$82,129	\$5,460	\$76,669	67.3	9,060
ECM 10	Install High Efficiency Air Conditioning Units	7,582	5.6	0.0	\$926	\$78,508	\$5,460	\$73,048	78.9	7,635
ECM 11	Install High Efficiency Heat Pumps	1,415	1.8	0.0	\$212	\$3,622	\$0	\$3,622	17.1	1,425
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	7.9	\$107	\$3,881	\$0	\$3,881	36.3	1,289
ECM 12	Install High Efficiency Hot Water Boilers	0	0.0	7.9	\$107	\$3,881	\$0	\$3,881	36.3	1,289
HVAC S	ystem Improvements	0	0.0	41.1	\$578	\$449	\$102	\$347	0.6	6,726
ECM 13	Install Pipe Insulation	0	0.0	41.1	\$578	\$449	\$102	\$347	0.6	6,726
Domest	ic Water Heating Upgrade	180	0.0	69.8	\$999	\$1,195	\$794	\$402	0.4	11,212
ECM 14	Install Low-Flow DHW Devices	180	0.0	69.8	\$999	\$1,195	\$794	\$402	0.4	11,212
Food Se	rvice & Refrigeration Measures	9,671	0.6	0.0	\$1,024	\$7,940	\$1,170	\$6,770	6.6	9,738
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	1,850	0.2	0.0	\$196	\$1,213	\$320	\$893	4.6	1,863
ECM 16	Refrigeration Controls	5,322	0.1	0.0	\$564	\$4,385	\$500	\$3,885	6.9	5,359
ECM 17	Replace Refrigeration Equipment	887	0.1	0.0	\$94	\$2,112	\$250	\$1,862	19.8	893
ECM 18	Vending Machine Control	1,612	0.2	0.0	\$171	\$230	\$100	\$130	0.8	1,623
	TOTALS	345,573	82.3	59.5	\$38,991	\$303,666	\$55,542	\$248,124	6.4	357,727

* - All incentives presented in this table are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

COST EFFECTIVE OPPORTUNITIES

Savings Potential





COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
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ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,491	0.5	-1.0	\$253	\$999	\$106	\$893	3.5	2,338
ECM 3	Retrofit Fixtures with LED Lamps	156,364	33.6	-56.3	\$16,746	\$49,342	\$10,315	\$39,027	2.3	148,550
Lighting	Control Measures	30,992	6.4	-11.0	\$3,361	\$32,325	\$7,845	\$24,480	7.3	29,499
ECM 4	Install Occupancy Sensor Lighting Controls	26,043	5.5	-9.1	\$2,834	\$26,700	\$3,350	\$23,350	8.2	24,802
ECM 5	Install High/Low Lighting Controls	4,949	0.8	-1.8	\$527	\$5,625	\$4,495	\$1,130	2.1	4,698
Motor U	pgrades	764	0.2	0.0	\$81	\$800	\$0	\$800	9.9	769
ECM 6	Premium Efficiency Motors	764	0.2	0.0	\$81	\$800	\$0	\$800	9.9	769
Variable	Frequency Drive (VFD) Measures	120,564	32.9	10.4	\$13,049	\$116,109	\$28,550	\$87,559	6.7	123,113
ECM 7	Install VFDs on Constant Volume (CV) Fans	103,008	31.4	0.0	\$10,910	\$103,518	\$23,150	\$80,368	7.4	103,728
ECM 8	Install VFDs on Heating Water Pumps	5,389	1.3	0.0	\$698	\$8,394	\$3,600	\$4,794	6.9	5,426
ECM 9	Install VFDs on Kitchen Hood Fan Motors	12,168	0.1	10.4	\$1,441	\$4,197	\$1,800	\$2,397	1.7	13,959
Electric	Jnitary HVAC Measures	460	0.2	0.0	\$60	\$766	\$0	\$766	12.9	464
ECM 11	Install High Efficiency Heat Pumps	460	0.2	0.0	\$60	\$766	\$0	\$766	12.9	464
HVAC Sy	stem Improvements	0	0.0	41.1	\$578	\$449	\$102	\$347	0.6	6,726
ECM 13	Install Pipe Insulation	0	0.0	41.1	\$578	\$449	\$102	\$347	0.6	6,726
Domesti	ic Water Heating Upgrade	180	0.0	69.8	\$999	\$1,195	\$794	\$402	0.4	11,212
ECM 14	Install Low-Flow DHW Devices	180	0.0	69.8	\$999	\$1,195	\$794	\$402	0.4	11,212
Food Se	rvice & Refrigeration Measures	8,784	0.5	0.0	\$930	\$5,828	\$920	\$4,908	5.3	8,845
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	1,850	0.2	0.0	\$196	\$1,213	\$320	\$893	4.6	1,863
ECM 16	Refrigeration Controls	5,322	0.1	0.0	\$564	\$4,385	\$500	\$3 <i>,</i> 885	6.9	5,359
ECM 18	Vending Machine Control	1,612	0.2	0.0	\$171	\$230	\$100	\$130	0.8	1,623
	TOTALS	336,017	74.9	51.7	\$37,694	\$215,575	\$49,832	\$165,744	4.4	346,825

* - All incentives presented in this table are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

WEST AMWELL - MAIN

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		34,933	9.5	-6	\$4,463	\$16,735	\$4,004	\$12,731	2.9	34,417
ECM 1	Install LED Fixtures	Yes	900	0.0	0	\$116	\$766	\$150	\$616	5.3	906
ECM 2	Retrofit Fixtures with LED Lamps	Yes	34,033	9.5	-6	\$4,347	\$15,969	\$3 <i>,</i> 854	\$12,115	2.8	33,511
Lighting	Control Measures		8,619	2.6	-2	\$1,099	\$9 <i>,</i> 568	\$2,205	\$7,363	6.7	8,469
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	7,418	2.3	-2	\$946	\$8,218	\$1,050	\$7,168	7.6	7,288
ECM 4	Install High/Low Lighting Controls	Yes	1,202	0.2	0	\$153	\$1,350	\$1,155	\$195	1.3	1,181
Variable	Frequency Drive (VFD) Measures		5,389	1.3	0	\$698	\$8,394	\$3,600	\$4,794	6.9	5,426
ECM 5	Install VFDs on Heating Water Pumps	Yes	5,389	1.3	0	\$698	\$8,394	\$3,600	\$4,794	6.9	5,426
Unitary	HVAC Measures		5,070	4.4	0	\$656	\$55,264	\$4,095	\$51,169	78.0	5,105
ECM 6	Install High Efficiency Air Conditioning Units	No	4,609	4.2	0	\$597	\$54,498	\$4,095	\$50,403	84.5	4,642
ECM 7	Install High Efficiency Heat Pumps	Yes	460	0.2	0	\$60	\$766	\$0	\$766	12.9	464
Domest	ic Water Heating Upgrade		0	0.0	8	\$76	\$122	\$112	\$10	0.1	974
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	8	\$76	\$122	\$112	\$10	0.1	974
	TOTALS (COST EFFECTIVE MEASURES)		49,402	13.6	0	\$6,396	\$35,585	\$9,921	\$25,664	4.0	49,749
	TOTALS (ALL MEASURES)		54,011	17.8	0	\$6,992	\$90,083	\$14,016	\$76,067	10.9	54,391



West Amwell – Admin

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		2,195	1.3	-1	\$293	\$1,041	\$0	\$1,041	3.6	2,082
ECM 1	Install LED Fixtures	Yes	127	0.0	0	\$18	\$263	\$0	\$263	14.9	128
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	129	0.1	0	\$17	\$138	\$0	\$138	8.1	121
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,940	1.2	-1	\$258	\$641	\$0	\$641	2.5	1,833
Lighting	Control Measures		133	0.1	0	\$18	\$734	\$0	\$734	41.6	125
ECM 4	Install Occupancy Sensor Lighting Controls	No	133	0.1	0	\$18	\$734	\$0	\$734	41.6	125
Unitary	HVAC Measures		450	0.3	0	\$62	\$6,124	\$0	\$6,124	98.4	453
ECM 5	Install High Efficiency Air Conditioning Units	No	450	0.3	0	\$62	\$6,124	\$0	\$6,124	98.4	453
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	8	\$107	\$3,881	\$0	\$3,881	36.3	1,289
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	8	\$107	\$3,881	\$0	\$3,881	36.3	1,289
HVAC Sy	stem Improvements		0	0.0	23	\$308	\$265	\$0	\$265	0.9	3,709
ECM 7	Install Pipe Insulation	Yes	0	0.0	23	\$308	\$265	\$0	\$265	0.9	3,709
Domest	ic Water Heating Upgrade		180	0.0	0	\$25	\$14	\$0	\$14	0.6	181
ECM 8	Install Low-Flow DHW Devices	Yes	180	0.0	0	\$25	\$14	\$0	\$14	0.6	181
	TOTALS (COST EFFECTIVE MEASURES)		2,375	1.3	22	\$626	\$1,321	\$0	\$1,321	2.1	5,972
	TOTALS (ALL MEASURES)		2,959	1.7	30	\$813	\$12,061	\$0	\$12,061	14.8	7,839



BLUE SHED & TRAILER

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		1,970	0.6	0	\$315	\$1,383	\$364	\$1,019	3.2	1,984
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,970	0.6	0	\$315	\$1,383	\$364	\$1,019	3.2	1,984
Lighting	Control Measures		475	0.2	0	\$76	\$810	\$105	\$705	9.3	478
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	475	0.2	0	\$76	\$810	\$105	\$705	9.3	478
Unitary	HVAC Measures		954	1.7	0	\$153	\$2,855	\$0	\$2,855	18.7	961
ECM 3	Install High Efficiency Heat Pumps	No	954	1.7	0	\$153	\$2,855	\$0	\$2,855	18.7	961
	TOTALS (COST EFFECTIVE MEASURES)		2,445	0.8	0	\$391	\$2,193	\$469	\$1,724	4.4	2,462
	TOTALS (ALL MEASURES)		3,399	2.4	0	\$544	\$5,049	\$469	\$4,580	8.4	3,423



MIDDLE SCHOOL/HIGH SCHOOL

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO₂e Emissions Reduction (Ibs)
Lighting	Upgrades	135,174	23.3	-51	\$13,566	\$38,942	\$7,253	\$31,689	2.3	127,714
ECM 1	Install LED Fixtures	14,390	0.6	-1	\$1,505	\$6,733	\$1,050	\$5,683	3.8	14,273
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,363	0.4	-1	\$236	\$861	\$106	\$755	3.2	2,218
ECM 3	Retrofit Fixtures with LED Lamps	118,421	22.3	-49	\$11,825	\$31,348	\$6,097	\$25,251	2.1	111,222
Lighting	Control Measures	21,898	3.7	-9	\$2,185	\$21,947	\$5,535	\$16,412	7.5	20,553
ECM 4	Install Occupancy Sensor Lighting Controls	18,151	3.1	-8	\$1,811	\$17,672	\$2,195	\$15,477	8.5	17,036
ECM 5	Install High/Low Lighting Controls	3,747	0.6	-2	\$374	\$4,275	\$3,340	\$935	2.5	3,517
Motor L	Ipgrades	764	0.2	0	\$81	\$800	\$0	\$800	9.9	769
ECM 6	Premium Efficiency Motors	764	0.2	0	\$81	\$800	\$0	\$800	9.9	769
Variable	Frequency Drive (VFD) Measures	115,176	31.5	10	\$12,351	\$107,715	\$24,950	\$82,765	6.7	117,687
ECM 7	Install VFDs on Constant Volume (CV) Fans	103,008	31.4	0	\$10,910	\$103,518	\$23,150	\$80,368	7.4	103,728
ECM 8	Install VFDs on Kitchen Hood Fan Motors	12,168	0.1	10	\$1,441	\$4,197	\$1,800	\$2,397	1.7	13,959
HVAC Sy	stem Improvements	0	0.0	18	\$269	\$184	\$102	\$82	0.3	3,017
ECM 10	Install Pipe Insulation	0	0.0	18	\$269	\$184	\$102	\$82	0.3	3,017
Domest	ic Water Heating Upgrade	0	0.0	61	\$898	\$1,059	\$681	\$378	0.4	10,057
ECM 11	Install Low-Flow DHW Devices	0	0.0	61	\$898	\$1,059	\$681	\$378	0.4	10,057
Food Se	rvice & Refrigeration Measures	8,784	0.5	0	\$930	\$5,828	\$920	\$4,908	5.3	8,845
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	1,850	0.2	0	\$196	\$1,213	\$320	\$893	4.6	1,863
ECM 13	Refrigeration Controls	5,322	0.1	0	\$564	\$4,385	\$500	\$3,885	6.9	5,359
ECM 14	Replace Refrigeration Equipment	0	0.0	0	\$0	\$0	\$0	\$0	0.0	0
ECM 15	Vending Machine Control	1,612	0.2	0	\$171	\$230	\$100	\$130	0.8	1,623
	TOTALS	281,795	59.2	30	\$30,281	\$176,476	\$39,441	\$137,035	4.5	288,641

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



MEASURES FOR FUTURE CONSIDERATION

Retro-Commissioning Study
 South Hunterdon Regional HS/MS



SOLAR ENERGY GENERATION POTENTIAL

	West Amwell – Main	MS/HS
Potential:	MEDIUM	HIGH
System Potential: (kW)	57	256
Electric Generation: (kWh per year)	42,889	304,991
Displaced Cost: (per year)	\$5,550	\$32,300

Transition Incentive (TI) Program:

https://www.njcleanenergy.com/renewableenergy/programs/transition-incentive-program



http://www.NJCleanEnergy.com/ CommunitySolar



FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the NJBPU
- Project is paid for with the value of its own energy savings
- 15 or 20-year repayment term
- NJCEP incentives/rebates are layered within an ESIP
- No upfront capital expenses
- Doesn't require voter approval



FINANCING MECHANISM: ESIP





Program

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

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COMMERCIAL & INDUSTRIAL PROGRAMS

https://www.njcleanenergy.com/transition







Prescriptive and Custom Energy Efficiency Program

for commercial and industrial projects program launch: July 1, 2021

Costs of these programs may be recovered through customer rates in accordance with New Jersey law. For a complete list of commercial, industrial, residential and low-income energy efficiency programs, please visit energysaveNJ.com.

Prescriptive vs. Custom

Prescriptive

Install high-efficiency eligible electric equipment across a variety of technologies fixed incentive including:

based on the equipment list

- Refrigeration Doors, Covers, Freezer • **Motors**
- Electric HVAC
- Controls
- Lighting and Lighting Controls •
- **Food Service Equipment**
- Variable Frequency Drives
- Ground Source Heat Pumps
- More!



Custom

Implement non-standard, more complex electric energy efficiency measures that are not defined as a prescriptive measure



incentive based on energy

Online Applications



energysaveNJ.com



FOR MORE INFORMATION

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QUESTIONS



