New Jersey's Clean Energy Program

LGEA Exit Meeting for: Madison Public School District

September 21, 2020





INTRODUCTIONS

- Madison Public School District
 - Danielle Mancuso Business Administrator
 - John Eschmann Buildings & Grounds Supervisor
- NJ Clean Energy Program
 - Aimee Lalonde TRC Program Manager
 - Moussa Traore TRC Auditor
 - Amanda Muench TRC Account Manager
 - Mike Mandzik TRC Outreach Manager
 - Michelle Rossi BPU ESIP Coordinator



Agenda

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
- Questions regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Madison Public School District



LGEA PROCESS

Application Approval

Scheduling Call

Audit

Benchmarking & Analysis

Draft Report

Exit Meeting Presentation

Final Report



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

Sites Visited/Analyzed

- Madison High School
- Madison Junior School
- Central Avenue School
- Kings Road School
- Torey J. Sabatini School
- Madison BOE Office



UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



Pre-Implementation Cost

Post-Implementation Cost (All Measures)



Benchmarking

program^{*}



Benchmarking



ALL OPPORTUNITIES



- Lighting Upgrades
- Lighting Control Measures
- Motor Upgrades
- Variable Frequency Drive (VFD) Measures
- Electric Unitary HVAC Measures
- Gas Heating (HVAC/Process) Replacement
- HVAC System Improvements
- Domestic Water Heating Upgrade
- Food Service & Refrigeration Measures

Post-Implementation Electric Cost, \$254,084



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)**	CO₂e Emissions Reduction (Ibs)
Lighting	Upgrades	473,727	107.9	-98.6	\$69,898	\$182,005	\$0	\$182,005	2.6	465,498
ECM 1	Install LED Fixtures	1,270	0.0	0.0	\$199	\$1,932	\$0	\$1,932	9.7	1,279
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	26,638	5.4	-5.6	\$3,839	\$8,910	\$0	\$8,910	2.3	26,170
ECM 3	Retrofit Fixtures with LED Lamps	445,761	102.5	-93.0	\$65 <i>,</i> 852	\$171,091	\$0	\$171,091	2.6	437,992
ECM 4	Install LED Exit Signs	58	0.0	0.0	\$8	\$72	\$0	\$72	8.8	57
Lighting	Control Measures	138,217	29.0	-28.9	\$20,170	\$108,589	\$0	\$108,589	5.4	135,797
ECM 5	Install Occupancy Sensor Lighting Controls	116,955	24.6	-24.5	\$17,080	\$88,384	\$0	\$88,384	5.2	114,907
ECM 6	Install Daylight Dimming/Photocell Controls	0	0.0	0.0	\$0	\$200	\$0	\$200	0.0	0
ECM 7	Install High/Low Lighting Controls	21,262	4.4	-4.4	\$3,090	\$20,005	\$0	\$20,005	6.5	20,890
Motor L	Jpgrades	11,669	2.8	0.0	\$1,793	\$33,363	\$0	\$33,363	18.6	11,751
ECM 8	Premium Efficiency Motors	11,669	2.8	0.0	\$1,793	\$33,363	\$0	\$33 <i>,</i> 363	18.6	11,751
Variable	Frequency Drive (VFD) Measures	67,125	14.1	78.2	\$10,599	\$85,507	\$0	\$85,507	8.1	76,751
ECM 9	Install VFDs on Constant Volume (CV) Fans	36,969	10.6	0.0	\$5,455	\$36,234	\$0	\$36,234	6.6	37,227
ECM 10	Install VFDs on Heating Water Pumps	24,156	3.5	0.0	\$3,587	\$46,012	\$0	\$46,012	12.8	24,325
ECM 11	Install VFDs on Kitchen Hood Fan Motors	6,001	0.0	78.2	\$1,558	\$3,261	\$0	\$3,261	2.1	15,199
Electric	Unitary HVAC Measures	27,604	21.1	0.0	\$4,149	\$255,445	\$ 0	\$255,445	61.6	27,797
ECM 12	Install High Efficiency Air Conditioning Units	22,031	20.3	0.0	\$3,276	\$247,619	\$0	\$247,619	75.6	22,185
ECM 13	Install High Efficiency Heat Pumps	5,574	0.8	0.0	\$873	\$7,826	\$0	\$7,826	9.0	5,613
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	630.9	\$5,581	\$113,112	\$17,125	\$95,987	17.2	73,871
ECM 14	Install High Efficiency Hot Water Boilers	0	0.0	6.8	\$61	\$6,458	\$2,000	\$4,458	73.6	800
ECM 15	Install High Efficiency Furnaces	0	0.0	624.1	\$5,521	\$106,654	\$15,125	\$91,529	16.6	73,071





ALL OPPORTUNITIES (CONT.)

#	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)
HVAC Sy	ystem Improvements	3,824	0.0	188.9	\$2,220	\$19,794	\$240	\$19,554	8.8	25,966
ECM 16	Install Programmable Thermostats	0	0.0	27.7	\$245	\$330	\$0	\$330	1.3	3,239
ECM 17	Implement Demand Control Ventilation (DCV)	3,824	0.0	136.4	\$1,755	\$19,032	\$0	\$19,032	10.8	19,820
ECM 18	Install Pipe Insulation	0	0.0	24.8	\$220	\$432	\$240	\$192	0.9	2,907
Domest	ic Water Heating Upgrade	0	0.0	69.3	\$617	\$1,401	\$1,141	\$260	0.4	8,110
ECM 19	Install Tankless Water Heater	0	0.0	2.0	\$18	\$784	\$600	\$184	10.4	234
ECM 20	Install Low-Flow DHW Devices	0	0.0	67.3	\$599	\$617	\$541	\$76	0.1	7,876
Food Se	rvice & Refrigeration Measures	8,444	1.0	0.0	\$1,214	\$8,242	\$0	\$8,242	6.8	8,503
ECM 21	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0.0	\$141	\$1,517	\$0	\$1,517	10.7	990
ECM 22	Replace Refrigeration Equipment	2,625	0.3	0.0	\$377	\$6,035	\$0	\$6,035	16.0	2,643
ECM 23	Vending Machine Control	4,836	0.6	0.0	\$696	\$690	\$0	\$690	1.0	4,869
	TOTALS	730,609	175.9	839.8	\$116,243	\$807,458	\$18,506	\$788,952	6.8	834,043



COST EFFECTIVE OPPORTUNITIES



Lighting Upgrades

- Lighting Control Measures
- Variable Frequency Drive (VFD) Measures
- Electric Unitary HVAC Measures
- Gas Heating (HVAC/Process) Replacement
- HVAC System Improvements
- Domestic Water Heating Upgrade
- Food Service & Refrigeration Measures

Post-Implementation Electric Cost, \$261,618



COST EFFECTIVE 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)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades	473,727	107.9	-98.6	\$69,898	\$182,005	\$0	\$182,005	2.6	465,498
ECM 1	Install LED Fixtures	1,270	0.0	0.0	\$199	\$1,932	\$0	\$1,932	9.7	1,279
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	26,638	5.4	-5.6	\$3,839	\$8,910	\$0	\$8,910	2.3	26,170
ECM 3	Retrofit Fixtures with LED Lamps	445,761	102.5	-93.0	\$65,852	\$171,091	\$0	\$171,091	2.6	437,992
ECM 4	Install LED Exit Signs	58	0.0	0.0	\$8	\$72	\$0	\$72	8.8	57
Lighting	Control Measures	138,217	29.0	-28.9	\$20,170	\$108,589	\$0	\$108,589	5.4	135,797
ECM 5	Install Occupancy Sensor Lighting Controls	116,955	24.6	-24.5	\$17,080	\$88,384	\$0	\$88,384	5.2	114,907
ECM 6	Install Daylight Dimming/Photocell Controls	0	0.0	0.0	\$0	\$200	\$0	\$200	0.0	0
ECM 7	Install High/Low Lighting Controls	21,262	4.4	-4.4	\$3,090	\$20,005	\$0	\$20,005	6.5	20,890
Motor U	Ipgrades	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 8	Premium Efficiency Motors	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
Variable	Frequency Drive (VFD) Measures	56,221	12.2	78.2	\$8,929	\$48,971	\$ 0	\$48,971	5.5	65,771
ECM 9	Install VFDs on Constant Volume (CV) Fans	36,969	10.6	0.0	\$5,455	\$36,234	\$0	\$36,234	6.6	37,227
ECM 0	Install VFDs on Chilled Water Pumps	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 10	Install VFDs on Heating Water Pumps	13,252	1.5	0.0	\$1,916	\$9,476	\$0	\$9,476	4.9	13,345
ECM 11	Install VFDs on Kitchen Hood Fan Motors	6,001	0.0	78.2	\$1,558	\$3,261	\$0	\$3,261	2.1	15,199
Electric	Unitary HVAC Measures	4,050	0.4	0.0	\$641	\$4,227	\$0	\$4,227	6.6	4,078
ECM 12	Install High Efficiency Air Conditioning Units	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 13	Install High Efficiency Heat Pumps	4,050	0.4	0.0	\$641	\$4,227	\$0	\$4,227	6.6	4,078
C		•		252.0	\$2.214	\$28 EGO	\$E 600	\$22.060	10.4	29 607
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	252.9	ŞZ,Z14	\$28,500	\$5,000	\$22,900	10.4	23,007
ECM 14	ting (HVAC/Process) Replacement Install High Efficiency Hot Water Boilers	0	0.0	0.0	\$2,214	\$0	\$3,800	\$2 2,980	0.0	0



COST EFFECTIVE OPPORTUNITIES (CONT.)

#	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)
HVAC Sy	stem Improvements	2,543	0.0	171.8	\$1,884	\$14,356	\$240	\$14,116	7.5	22,671
ECM 16	Install Programmable Thermostats	0	0.0	27.7	\$245	\$330	\$0	\$330	1.3	3,239
ECM 17	Implement Demand Control Ventilation (DCV)	2,543	0.0	119.3	\$1,419	\$13,594	\$0	\$13,594	9.6	16,525
ECM 18	Install Pipe Insulation	0	0.0	24.8	\$220	\$432	\$240	\$192	0.9	2,907
Domest	ic Water Heating Upgrade	0	0.0	69.3	\$617	\$1,401	\$1,141	\$260	0.4	8,110
ECM 19	Install Tankless Water Heater	0	0.0	2.0	\$18	\$784	\$600	\$184	10.4	234
ECM 20	Install Low-Flow DHW Devices	0	0.0	67.3	\$599	\$617	\$541	\$76	0.1	7,876
Food Se	rvice & Refrigeration Measures	5,819	0.7	0.0	\$837	\$2,207	\$0	\$2,207	2.6	5,859
ECM 21	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0.0	\$141	\$1,517	\$0	\$1,517	10.7	990
ECM 0	Refrigeration Display Case Doors or Covers	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 0	Refrigeration Controls	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 22	Replace Refrigeration Equipment	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 23	Vending Machine Control	4,836	0.6	0.0	\$696	\$690	\$0	\$690	1.0	4,869
	TOTALS	680,576	150.2	444.6	\$105,191	\$390,316	\$6,981	\$383,335	3.6	737,391



MADISON HIGH SCHOOL

*	Energy Conservation Measure	Cost Effective?	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)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		179,908	34.2	-37	\$25,498	\$54,366	\$0	\$54,366	2.1	176,788
ECM1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	25,078	4.8	-5	\$3,554	\$7,800	\$0	\$7,800	2.2	24,639
ECM 2	Retrofit Fixtures with LED Lamps	Yes	154,772	29.5	-32	\$21,936	\$46,494	\$0	\$46,494	2.1	152,092
ECM 3	Install LED Exit Signs	Yes	58	0.0	0	\$8	\$72	\$0	\$72	8.8	57
Lighting	Control Measures		62,610	11.8	-13	\$8,873	\$46,745	\$0	\$46,745	5.3	61,515
ECM4	Install Occupancy Sensor Lighting Controls	Yes	53,634	10.2	-11	\$7,601	\$38,420	\$0	\$38,420	5.1	52,696
ECM 5	Install High/Low Lighting Controls	Yes	8,976	1.7	-2	\$1,272	\$8,325	\$0	\$8,325	6.5	8,819
Variable	Frequency Drive (VFD) Measures		34,289	8.2	78	\$5,619	\$38,277	\$0	\$38,277	6.8	43,686
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	26,957	7.9	0	\$3,870	\$28,235	\$0	\$28,235	7.3	27,145
ECM 7	Install VFDs on Heating Water Pumps	No	1,332	0.3	0	\$191	\$6,781	\$0	\$6,781	35.5	1,341
ECM 8	Install VFDs on Kitchen Hood Fan Motors	Yes	6,001	0.0	78	\$1,558	\$3,261	\$0	\$3,261	2.1	15,199
Electric	Unitary HVAC Measures		11,714	12.6	0	\$1,682	\$145,381	\$0	\$145,381	86.4	11,796
ECM 9	Install High Efficiency Air Conditioning Units	No	11,714	12.6	0	\$1,682	\$145,381	\$0	\$145,381	86.4	11,796
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	78	\$694	\$19,100	\$2,400	\$16,700	24.1	9,131
ECM 10	Install High Efficiency Furnaces	No	0	0.0	78	\$694	\$19,100	\$2,400	\$16,700	24.1	9,131
HVAC Sy	rstem Improvements		2,543	0.0	54	\$843	\$11,055	\$100	\$10,955	13.0	8,843
ECM 11	Implement Demand Control Ventilation (DCV)	Yes	2,543	0.0	49	\$800	\$10,875	\$0	\$10,875	13.6	8,283
ECM 12	Install Pipe Insulation	Yes	0	0.0	5	\$43	\$180	\$100	\$80	1.9	560
Domest	ic Water Heating Upgrade		0	0.0	9	\$83	\$172	\$96	\$76	0.9	1,098
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	9	\$83	\$172	\$96	\$76	0.9	1,098
Food Se	rvice & Refrigeration Measures		6,832	0.8	0	\$981	\$8,012	\$0	\$8,012	8.2	6,880
ECM 14	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	983	0.1	0	\$141	\$1,517	\$0	\$1,517	10.7	990
ECM 15	Replace Refrigeration Equipment	No	2,625	0.3	0	\$377	\$6,035	\$0	\$6,035	16.0	2,643
ECM 16	Vending Machine Control	Yes	3,224	0.4	0	\$463	\$460	\$0	\$460	1.0	3,246
	TOTALS (COST EFFECTIVE MEASURES)		282,225	54.5	91	\$41,329	\$145,811	\$196	\$145,615	3.5	294,825
	TOTALS (ALL MEASURES)		297,896	67.6	169	\$44,273	\$323,108	\$2,596	\$320,512	7.2	319,736

MADISON JUNIOR SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (KWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (S)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		94,653	21.5	-20	\$13,514	\$37,563	\$0	\$37,563	2.8	92,997
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	380	0.2	0	\$54	\$275	\$0	\$275	5.1	373
ECM 2	Retrofit Fixtures with LED Lamps	Yes	94,273	21.4	-20	\$13,460	\$37,288	\$0	\$37,288	2.8	92,624
Lighting	Control Measures		31,097	7.0	-7	\$4,440	\$22,966	\$0	\$22,966	5.2	30,553
EC M 3	Instal I Occupancy Sensor Lighting Controls	Yes	24,110	5.5	-5	\$3,442	\$18,016	\$0	\$18,016	5.2	23,689
ECM 4	Instal High/Low Lighting Controls	Yes	6,987	1.5	-1	\$998	\$4,950	\$0	\$4,950	5.0	6,865
Motor U	pgrades		1,920	0.3	0	\$278	\$3,640	\$0	\$3,640	13.1	1,933
ECM 5	Premium Efficiency Motors	No	1,920	0.3	0	\$278	\$3,640	\$0	\$3,640	13.1	1,933
Variable	Frequency Drive (VFD) Measures		13,252	1.5	0	\$1,916	\$9,476	\$0	\$9,476	4.9	13,345
ECM 6	Instal I VFDs on Heating Water Pumps	Yes	13,252	1.5	0	\$1,916	\$9,476	\$0	\$9,476	4.9	13,345
Electric (Jnitary HVAC Measures		1,960	1.4	0	\$283	\$14,175	\$0	\$14,175	50.0	1,974
ECM 7	Install High Efficiency Air Conditioning Units	No	1,960	1.4	0	\$283	\$14,175	\$0	\$14,175	50.0	1,974
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	253	\$2,214	\$28,560	\$5,600	\$22,960	10.4	29,607
ECM 8	Install High Efficiency Furnaces	Yes	0	0.0	253	\$2,214	\$28,560	\$5,600	\$22,960	10.4	29,607
HVAC Sy	stem Improvements		1,280	0.0	17	\$335	\$5, 438	\$0	\$5,438	16.2	3,295
ECM 9	Implement Demand Control Ventilation (DCV)	No	1,280	0.0	17	\$335	\$5,438	\$0	\$5,438	16.2	3,295
Domesti	c Water Heating Upgrade		0	0.0	23	\$199	\$172	\$172	\$ 0	0.0	2,667
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	23	\$199	\$172	\$172	\$0	0.0	2,667
Food Sei	rvice & Refrigeration Measures		1,612	0.2	0	\$233	\$230	\$0	\$230	1.0	1,623
ECM 11	Vending Machine Control	Yes	1,612	0.2	0	\$233	\$230	\$0	\$230	1.0	1,623
	TOTALS (COST EFFECTIVE MEASURES)		140,614	30.2	249	\$22,517	\$98,967	\$5,772	\$93,195	4.1	170,792
	TOTALS (ALL MEASURES)		145,774	32.0	266	\$23,414	\$122,220	\$5,772	\$116,448	5.0	177,994

CENTRAL AVE. SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (KWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (S)	Estimated Incentive (S)*	Estimated Net Cost (S)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		62,101	17.8	-13	\$9,607	\$33,114	\$0	\$33,114	3.4	61,056
ECM 1	InstallLEDFixtures	Yes	1,270	0.0	0	\$199	\$1,932	\$0	\$1,932	9.7	1,279
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	94	0.1	0	\$14	\$129	\$0	\$129	8.9	92
EC M 3	Retrofit Fixtures with LED Lamps	Yes	60,737	17.7	-13	\$9,394	\$31,054	\$0	\$31,054	3.3	59,685
Lighting	Control Measures		12,245	3.2	-3	\$1,894	\$12,560	\$0	\$12,560	6.6	12,031
ECM 4	Instal Occupancy Sensor Lighting Controls	Yes	10,913	2.9	-2	\$1,688	\$10,340	\$0	\$10,340	6.1	10,722
ECM 5	Instal I Photocell Controls	Yes	0	0.0	0	\$0	\$200	\$0	\$200	0.0	0
ECM 6	Instal High/Low Lighting Controls	Yes	1,333	0.3	0	\$206	\$2,020	\$0	\$2,020	9.8	1,309
Motor U	Ipgrades		3,493	0.9	0	\$547	\$13,042	\$0	\$13,042	23.9	3,517
ECM 7	Premium Efficiency Motors	No	3,493	0.9	0	\$547	\$13,042	\$0	\$13,042	23.9	3,517
Electric	Unitary HVAC Measures		2,447	3.3	0	\$383	\$41,946	\$ 0	\$41,946	109.5	2,464
ECM 8	Install High Efficiency Air Conditioning Units	No	2,447	3.3	0	\$383	\$41,946	\$0	\$41,946	109.5	2,464
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	191	\$1,683	\$31,957	\$3,200	\$28,757	17.1	22,410
ECM 9	Install High Efficiency Furnaces	No	0	0.0	191	\$1,683	\$31,957	\$3,200	\$28,757	17.1	22,410
HVAC Sy	rstem Improvements		0	0.0	70	\$619	\$2,719	\$0	\$2,719	4.4	8,242
ECM 10	Implement Demand Control Ventilation (DCV)	Yes	0	0.0	70	\$619	\$2,719	\$0	\$2,719	4.4	8,242
Domest	ic Water Heating Upgrade		0	0.0	10	\$92	\$79	\$79	\$0	0.0	1,222
ECM 11	Instal Low-Flow DHW Devices	Yes	0	0.0	10	\$92	\$79	\$79	\$0	0.0	1,222
	TOTALS (COST EFFECTIVE MEASURES)		74,346	21.0	66	\$12,212	\$48,472	\$79	\$48,393	4.0	82,551
	TOTALS (ALL MEASURES)		80,286	25.2	257	\$14,825	\$135,417	\$3,279	\$132,139	8.9	110,943

KINGS ROAD SCHOOL

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (KWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (S)	Estimated Install Cost (\$)	Estimated Incentive (S)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (Ibs)
Lighting	Upgrades		41,821	15.6	-9	\$6,538	\$25,825	\$0	\$25,825	3.9	41,090
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	146	0.1	0	\$23	\$202	\$0	\$202	8.9	143
ECM 2	Retrofit Fixtures with LED Lamps	Yes	41,675	15.4	-9	\$6,515	\$25,622	\$0	\$25,622	3.9	40,946
Lighting	Control Measures		6,231	2.0	-1	\$974	\$7,299	\$0	\$7,299	7.5	6,122
EC M 3	Install Occupancy Sensor Lighting Controls	Yes	4,257	1.4	-1	\$665	\$4,824	\$0	\$4,824	7.2	4,183
ECM 4	Install High/Low Lighting Controls	Yes	1,974	0.6	0	\$309	\$2,475	\$0	\$2,475	8.0	1,939
Motor U	Ipgrades		2,513	0.8	0	\$398	\$8,492	\$0	\$8,492	21.4	2,531
ECM 5	Premium Efficiency Motors	No	2,513	0.8	0	\$398	\$8,492	\$0	\$8,492	21.4	2,531
Variable	Frequency Drive (VFD) Measures		13,260	3.5	0	\$2,098	\$21,562	\$0	\$21,562	10.3	13,352
ECM 6	Instal I VFDs on Constant Volume (CV) Fans	Yes	10,012	2.7	0	\$1,584	\$7,999	\$0	\$7,999	5.0	10,082
ECM 7	Instal I VFDs on Heating Water Pumps	No	3,248	0.8	0	\$514	\$13,562	\$0	\$13,562	26.4	3,271
Electric	Unitary HVAC Measures		5,849	1.2	0	\$926	\$18,323	\$0	\$18,323	19.8	5,890
ECM 8	Install High Efficiency Air Conditioning Units	No	1,800	0.7	0	\$285	\$14,096	\$0	\$14,096	49.5	1,813
ECM 9	Instal High Efficiency Heat Pumps	Yes	4,050	0.4	0	\$641	\$4,227	\$0	\$4,227	6.6	4,078
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	3	\$31	\$2,900	\$1,525	\$1,375	44.6	396
ECM 10	Install High Efficiency Furnaces	No	0	0.0	3	\$31	\$2,900	\$1,525	\$1,375	44.6	396
Domest	ic Water Heating Upgrade		0	0.0	8	\$ 69	\$57	\$57	\$0	0.0	889
ECM 11	Instal Low-Flow DHW Devices	Yes	0	0.0	8	\$69	\$57	\$57	\$0	0.0	889
	TOTALS (COST EFFECTIVE MEASURES)		62,113	20.7	-2	\$9,806	\$45,408	\$57	\$45,350	4.6	62,260
	TOTALS (ALL MEASURES)		69,674	23.1	1	\$11,033	\$84,459	\$1,582	\$82,876	7.5	70,270

TOREY SABATINI SCHOOL

#	Energy Conservation Measure	Cost Effective?	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)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		89,089	16.8	-19	\$13,428	\$27,864	\$0	\$27,864	2.1	87,534
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	114	0.0	0	\$17	\$69	\$0	\$69	4.0	112
ECM 2	Retrofit Fixtures with LED Lamps	Yes	88,975	16.8	-19	\$13,411	\$27,795	\$0	\$27,795	2.1	87,422
Lighting	Control Measures		24,981	4.7	-5	\$3,765	\$16,826	\$0	\$16,826	4.5	24,544
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	23,076	4.3	-5	\$3,478	\$14,816	\$0	\$14,816	4.3	22,672
ECM 4	Install High/Low Lighting Controls	Yes	1,905	0.3	0	\$287	\$2,010	\$0	\$2,010	7.0	1,872
Motor U	lpgrades		3,744	0.8	0	\$571	\$8,189	\$0	\$8,189	14.3	3,770
ECM 5	Premium Efficiency Motors	No	₹ 3,744	0.8	0	\$571	\$8,189	\$0	\$8,189	14.3	3,770
Variable	Frequency Drive (VFD) Measures		6,325	0.9	0	\$965	\$16,192	\$0	\$16,192	16.8	6,369
ECM 6	Install VFDs on Heating Water Pumps	No	6,325	0.9	0	\$965	\$16,192	\$0	\$16,192	16.8	6,369
Electric	Unitary HVAC Measures		5,386	2.4	0	\$822	\$33,350	\$0	\$33,350	40.6	5,424
ECM 7	Install High Efficiency Air Conditioning Units	No	3,862	2.0	0	\$589	\$29,752	\$0	\$29,752	50.5	3,889
ECM 8	Install High Efficiency Heat Pumps	No	1,524	0.4	0	\$233	\$3,599	\$0	\$3,599	15.5	1,535
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	98	\$898	\$24,137	\$2,400	\$21,737	24.2	11,526
ECM 9	Install High Efficiency Furnaces	No	0	0.0	98	\$898	\$24,137	\$2,400	\$21,737	24.2	11,526
Domest	ic Water Heating Upgrade		0	0.0	16	\$147	\$122	\$122	\$ 0	0.0	1,889
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	16	\$147	\$122	\$122	\$0	0.0	1,889
	TOTALS (COST EFFECTIVE MEASURES)		114,070	21.5	-8	\$17,341	\$44,812	\$122	\$44,690	2.6	113,967
	TOTALS (ALL MEASURES)		129,524	25.5	91	\$20, 598	\$126,681	\$2,522	\$124,159	6.0	141,055

MADISON BOE OFFICE

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (KWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (S)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		6,155	1.9	-1	\$1,313	\$3, 273	\$0	\$3,273	2.5	6,032
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	827	0.2	0	\$176	\$435	\$0	\$435	2.5	810
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,329	1.7	-1	\$1,136	\$2,838	\$0	\$2,838	2.5	5,222
Lighting	Control Measures		1,053	0.3	0	\$225	\$2, 193	\$0	\$2,193	9.8	1,032
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	966	0.3	0	\$206	\$1,968	\$0	\$1,968	9.6	946
ECM 4	Instal High/Low Lighting Controls	Yes	87	0.0	0	\$19	\$225	\$0	\$225	12.1	86
Electric	Unitary HVAC Measures		248	0.3	0	\$53	\$2,269	\$0	\$2,269	42.5	249
ECM 5	Install High Efficiency Air Conditioning Units	No	248	0.3	0	\$53	\$2, 269	\$0	\$2,269	42.5	249
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	7	\$61	\$6,458	\$2,000	\$4,458	73.6	800
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	7	\$61	\$6,458	\$2,000	\$4,458	73.6	800
HVAC Sy	stem Improvements		0	0.0	48	\$422	\$582	\$140	\$442	1.0	5,586
ECM 7	InstallProgrammableThermostats	Yes	0	0.0	28	\$245	\$330	\$0	\$330	1.3	3,239
ECM 8	InstallPipe Insulation	Yes	0	0.0	20	\$178	\$252	\$140	\$112	0.6	2,347
Domest	ic Water Heating Upgrade		0	0.0	3	\$26	\$799	\$614	\$184	7.1	345
ECM 9	Instal I Tankless Water Heater	Yes	0	0.0	2	\$18	\$784	\$600	\$184	10.4	234
ECM 10	Instal Low-Flow DHW Devices	Yes	0	0.0	1	\$8	\$14	\$14	\$0	0.0	111
	TOTALS (COST EFFECTIVE MEASURES)		7,208	2.2	49	\$1,986	\$6, 846	\$754	\$6,092	3.1	12,996
	TOTALS (ALL MEASURES)		7,456	2.6	56	\$2,100	\$15,574	\$2,754	\$12,819	6.1	14,045

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

INCENTIVE PROGRAMS

OTHER PROGRAMS



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

Equipment Rebates:

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

Whole Buildings:

Pay for Performance

Energy Generation:

Combined Heat and Power – Fuel Cells

Renewable Energy Generation:

- Transition Incentive (TI) Program
- Community Solar

SOLAR ENERGY GENERATION POTENTIAL

	High School	Junior School	Central Ave. School	Sabatini School
Potential:	HIGH	HIGH	HIGH	HIGH
System Potential: (kW)	200	100	55	75
Electric Generation: (kWh per year)	238,274	119,137	65,525	89,353
Displaced Cost: (per year)	\$34,210	\$17,230	\$10,250	\$13,640

Transition Incentive (TI) Program:

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



Community Solar Energy Pilot Program:

http://www.NJCleanEnergy.com/CommunitySolar

RECOMMENDED NJCEP INCENTIVES PER BUILDING

Madison Public Schools	Pay For Performance	Direct Install	SmartStart	CTEEP
Madison High School	Х		х	x
Madison Junior School		x	х	х
Central Avenue School		x	х	x
Kings Road School		x	Х	x
Torey J. Sabatini School			X	x
Madison BOE Office		x	X	х



PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P

What is P4P: Comprehensive, whole-building approach to saving energy in existing or new facilities.



- Qualifications: Annual peak demand 200 kW+ in the previous year for existing buildings
- About: Customer choose from a network of pre-approved *Participating Partners*

Incentives: Incentives paid in <u>three</u> installments

- Up to \$2MM per project((\$4MM entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
- Up to 50% of project cost (or 80% for UEZ/OZ/Local Govt./ K-12 Public Schools) up to \$2MM per project / \$4MM per entity annually



PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P





DIRECT INSTALL

NJCleanEnergy.com/DI

What is DI: Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.



Qualifications: Average electric peak demand <200 kW in the previous 12 months

About:

- Pre-approved participating contractors provide support and process paperwork
 - Incentives paid directly to the contractor
 - Fast project turnaround time (4-6 months)

Incentives:

- \$125,000 incentive funding per project/building (\$250K UEZ/OZ/ Local Govt.I/K-12 Public Schools), or
 - \$250,000 entity cap (\$4MM UEZ/OZ/Local Govt./K-12 Public Schools)



DIRECT INSTALL

NJCleanEnergy.com/DI

Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), Local Governments, and K-12 public schools:

INCENTIVE FUNDING	CUSTOMER
Up to 80% of installed cost is paid directly to the contractor	20% of installed cost
All other eligible facilities:	
INCENTIVE FUNDING	CUSTOMER
Up to 70% of installed cost is paid directly to the contractor	30% of installed cost





Participating Contractor

Donnelly Energy Justin Avallone 845-401-6253 javallone@donnellyenergy.com



SMARTSTART

NJCleanEnergy.com/SSB

What is SSB: Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement



Qualifications: • All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- Prescriptive and custom designed measures
- Pre-approval required only for lighting projects with incentives >\$100,000 and <u>all</u> custom projects
- For measures not requiring pre-approval, applications must be submitted to the program within one year of purchase.

Incentives:

- Prescriptive: \$500,000 cap for each electric or gas account
- Custom, lesser of the following:
 - \$0.16/kWh and/or \$1.60/Therm saved annually
 - 50% of incremental installed cost
 - Buy-down to 1 year payback based on incremental cost and savings



SMARTSTART NJCleanEnergy.com/SSB

Prescriptive Incentives

- Lighting & Lighting
 Controls
- Packaged HVAC
- Boilers & Water Heaters
- Chillers
- VFD's
- Food Service
- Refrigeration

Prescriptive Only:

DOUBLE INCENTIVES FOR OZ/UEZ/ LOCAL GOVT./K-12 PUBLIC SCHOOLS

Custom Incentives

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms
- Project pre and post inspection required



CUSTOMER TAILORED ENERGY EFFICIENCY PILOT NJCleanEnergy.com/CTEEP

What is CTEEP: A streamlined/single application process for participants submitting multiple different technology types.

Qualifications: • All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- On site assistance available
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

Incentives:

- \$250,000 fiscal year entity cap
 - Technical assistance incentives for custom project evaluation (up to \$10K)

SAME INCENTIVE VALUES AS SMARTSTART



FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the BPU
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract
- Requires NO new bonding and is outside of capital budget
- Does not count as debt or require voter approval



FINANCING MECHANISM: ESIP





Program

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

Michelle Rossi ESIP Coordinator Office: 609-633-9641 ESIP@bpu.nj.gov



FOR MORE INFORMATION

NJ Clean Energy Program

Aimee Lalonde – LGEA Program Manager

<u>ALalonde@trccompanies.com</u>

(347) 913-2422

Moussa Traore – LGEA Auditor

MTraore@trccompanies.com

(732) 902-1797

Amanda Muench– LGEA Account Manager

AMuench@trccompanies.com (732) 612-9381

Mike Mandzik – Outreach Account Manager

MMandzik@trccompanies.com

(732) 570-7534



NJCleanEnergy.com (732) 855-0033

QUESTIONS



