



LGEA Presentation
Tenafly Board of Education

October 7, 2022

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

INTRODUCTIONS

- *Tenafly Board of Education*

- Victor Anaya – Business Administrator
- Mario Cofini – Buildings & Grounds Supervisor
- Greg Burns – DCO Energy/Business Development

- *NJ Clean Energy Program*

- Sarah Walters – LGEA Project Manager
- Moussa Traore – LGEA Lead Auditor
- Nicholas Nocco – LGEA Project Auditor
- Amanda Muench – LGEA Account Manager
- Arif Welcher – Government/Business Manager (BPU)

- *Utility Energy Efficiency Programs*

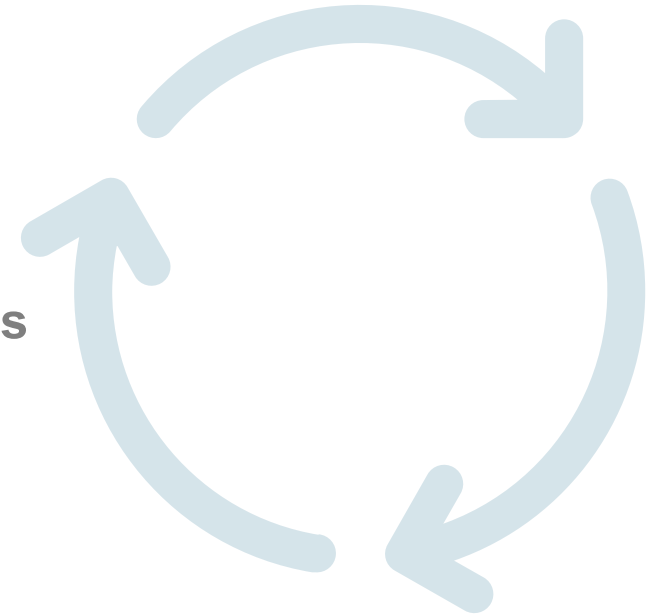
- Dave Kirsch – PSE&G
- Steve Barba – PSE&G

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Tenafly Board of Education

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 and Refrigeration Equipment

Utility Consumption:

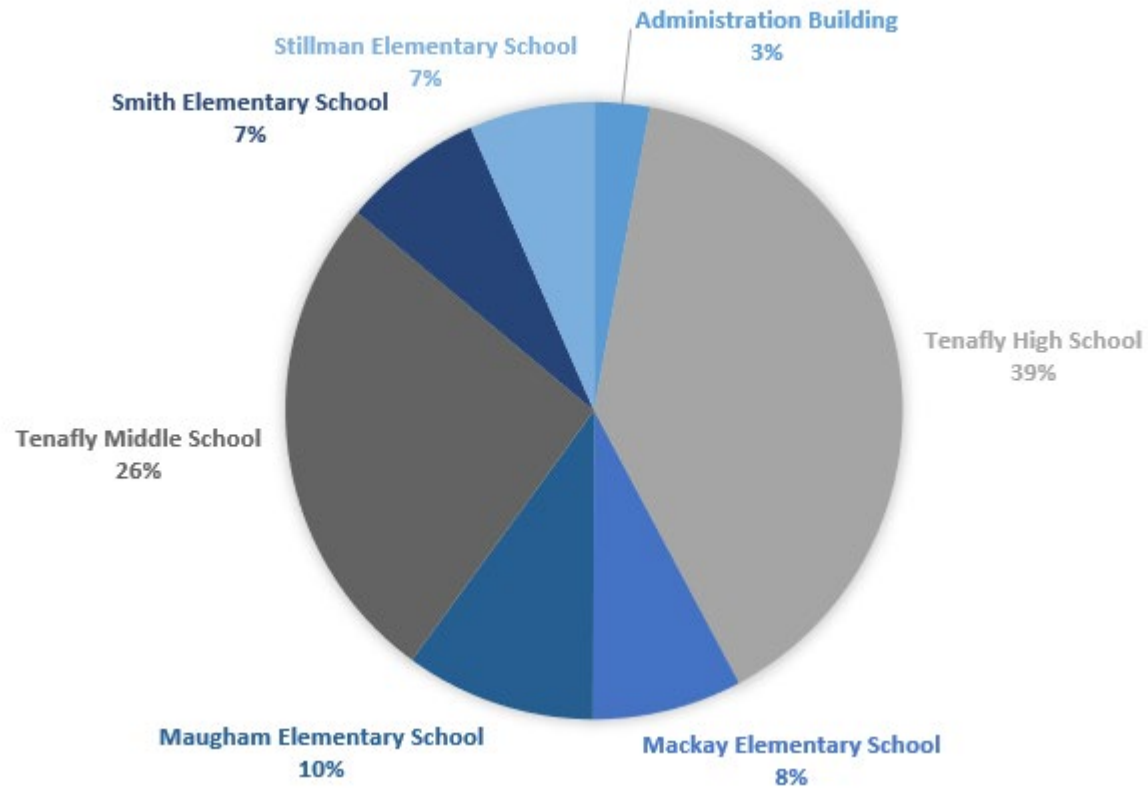
- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Solar Consumption and Costs

Sites Visited/Analyzed

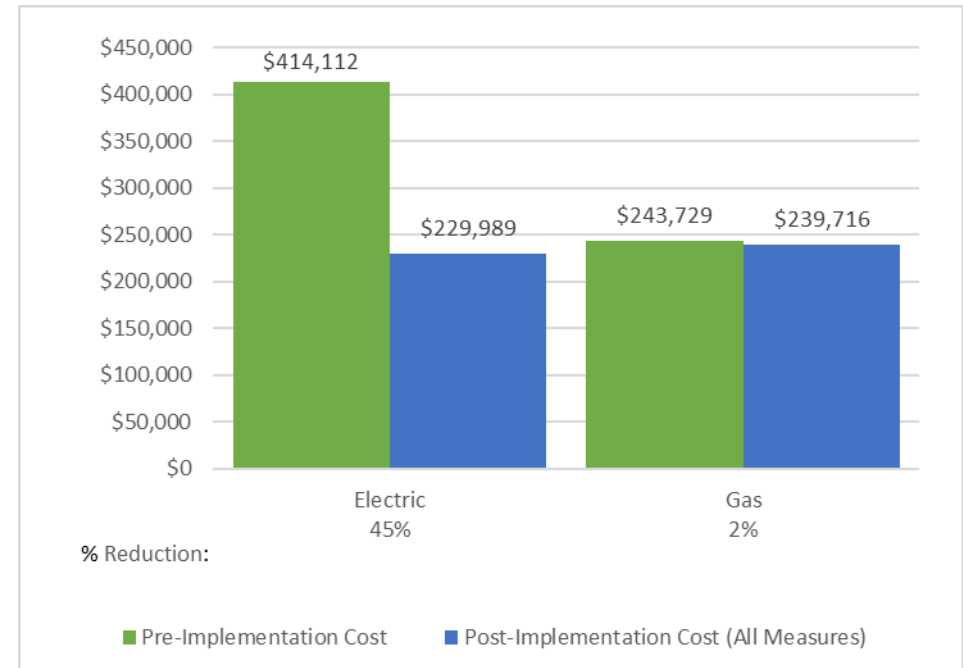
- Mackay Elementary School
- Maugham Elementary School
- Smith Elementary School
- Stillman Elementary School
- Tenafly Middle School
- Tenafly High School
- Administration Building

UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

ENERGY STAR® Statement of Energy Performance

70
ENERGY STAR® Score¹

Tenafly Middle School
Primary Property Type: K-12 School
Gross Floor Area (ft²): 182,258
Built: 1956
For Year Ending: May 31, 2021
Date Generated: August 10, 2022

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	Property Owner	Primary Contact
Tenafly Middle School 10 Sunset Lane Tenafly, New Jersey 07670	Tenafly Public Schools 500 Tenafly Road Tenafly, NJ 07670 201-816-4504	Victor Annaya 500 Tenafly Road Tenafly, NJ 07670 201-816-4504 vanaya@tenafly.k12.nj.us

Property ID: 20965308

Energy Consumption and Energy Use Intensity (EUI)

Site EUI	Annual Energy by Fuel	National Median Comparison
72.8 kBtu/ft²	Natural Gas (kBtu) 10,842,138 (82%) Electric - Solar (kBtu) 497,857 (4%) Electric - Grid (kBtu) 1,924,636 (14%)	National Median Site EUI (kBtu/ft²) 91 National Median Source EUI (kBtu/ft²) 118.4 % Diff from National Median Source EUI -20%
Source EUI	Annual Emissions	
94.8 kBtu/ft²	Greenhouse Gas Emissions (Metric Tons CO2e/year) 801	

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

LP Signature: _____ Date: _____

Licensed Professional

Professional Engineer or Registered Architect Stamp (if applicable)

Site EUI
72.8 kBtu/ft²

Source EUI
94.8 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	91
National Median Source EUI (kBtu/ft²)	118.4
% Diff from National Median Source EUI	-20%

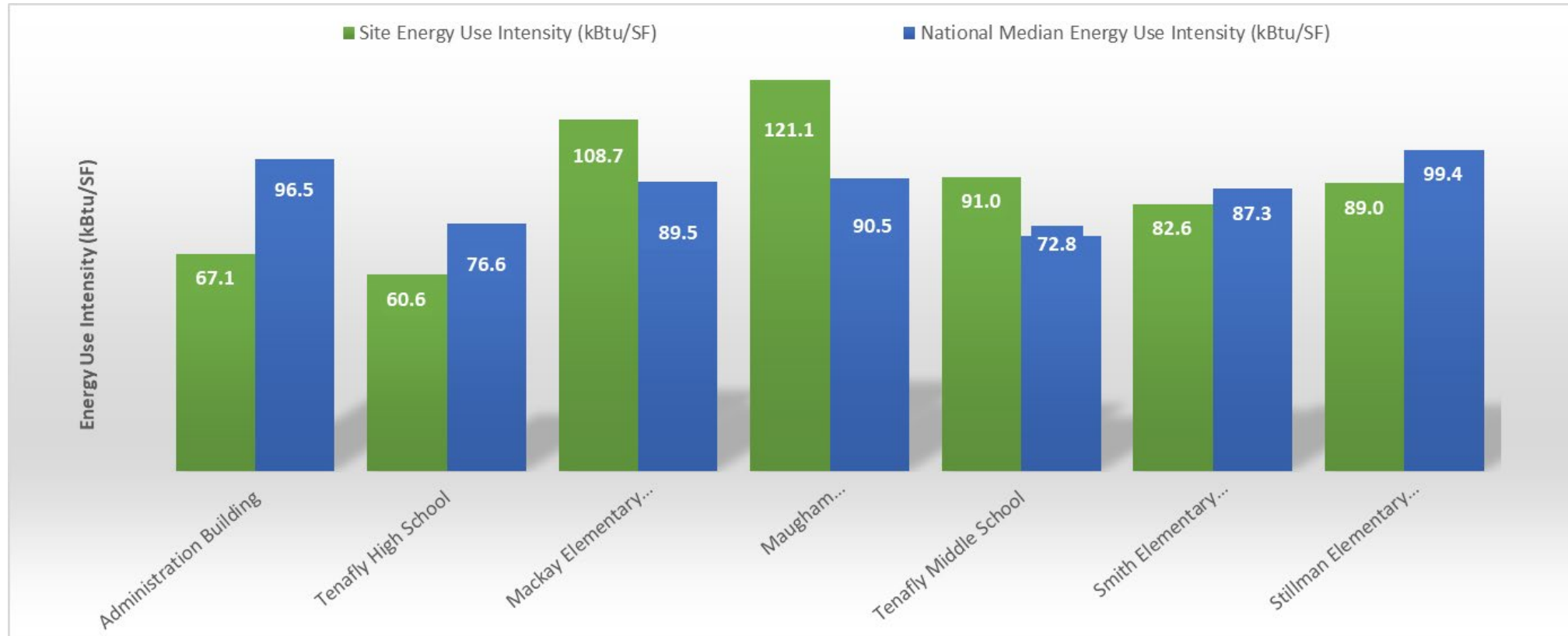
Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	801
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Benchmarking Summary	
Site Name	Energy Star Score
Administration Building	74
Tenafly High School	71
Mackay Elementary School	30
Maugham Elementary School	22
Tenafly Middle School	70
Smith Elementary School	55
Stillman Elementary School	60

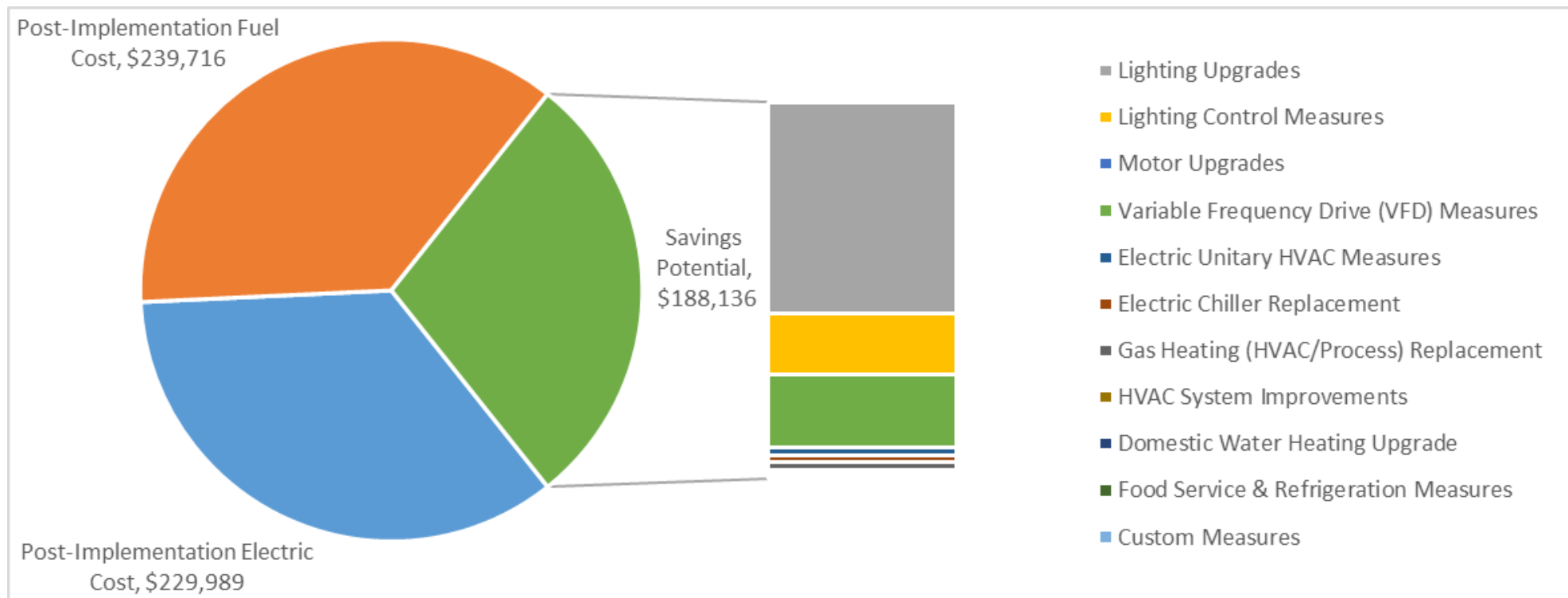
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

BENCHMARKING



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 (lbs)
Lighting Upgrades		882,955	187.8	-179.8	\$105,751	\$325,054	\$69,207	\$255,847	2.4	868,079
ECM 1	Install LED Fixtures	116,833	16.3	-22.1	\$12,880	\$39,102	\$4,400	\$34,702	2.7	115,067
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	35,935	5.2	-7.5	\$3,725	\$11,012	\$1,508	\$9,504	2.6	35,307
ECM 3	Retrofit Fixtures with LED Lamps	730,187	166.3	-150.2	\$89,145	\$274,940	\$63,299	\$211,641	2.4	717,704
Lighting Control Measures		249,714	53.9	-52.2	\$30,252	\$208,847	\$56,855	\$151,992	5.0	245,346
ECM 4	Install Occupancy Sensor Lighting Controls	200,182	44.7	-41.9	\$24,060	\$164,072	\$21,575	\$142,497	5.9	196,681
ECM 5	Install High/Low Lighting Controls	49,532	9.2	-10.4	\$6,192	\$44,775	\$35,280	\$9,495	1.5	48,666
Motor Upgrades		36	0.0	0.0	\$7	\$352	\$0	\$352	53.7	36
ECM 6	Premium Efficiency Motors	36	0.0	0.0	\$7	\$352	\$0	\$352	53.7	36
Variable Frequency Drive (VFD) Measures		313,151	54.5	130.3	\$36,755	\$278,177	\$31,150	\$247,027	6.7	330,601
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	7,501	1.9	0.0	\$786	\$7,768	\$400	\$7,368	9.4	7,553
ECM 8	Install VFDs on Constant Volume (CV) Fans	114,399	34.6	0.0	\$13,784	\$146,747	\$9,375	\$137,372	10.0	115,199
ECM 9	Install VFDs on Chilled Water Pumps	22,777	4.1	0.0	\$2,388	\$11,843	\$1,400	\$10,443	4.4	22,936
ECM 10	Install VFDs on Heating Water Pumps	67,428	8.9	0.0	\$8,166	\$62,093	\$11,800	\$50,293	6.2	67,900
ECM 11	Install VFDs on Kitchen Hood Fan Motors	31,495	0.2	130.3	\$4,339	\$14,854	\$1,375	\$13,479	3.1	46,976
ECM 12	Install VFDs on Water Supply Pump	69,550	4.9	0.0	\$7,292	\$34,872	\$6,800	\$28,072	3.8	70,037
Electric Unitary HVAC Measures		26,743	22.4	3.5	\$3,595	\$227,473	\$9,270	\$218,203	60.7	27,334
ECM 13	Install High Efficiency Air Conditioning Units	23,226	20.6	3.5	\$3,161	\$201,563	\$9,270	\$192,294	60.8	23,792
ECM 14	Install High Efficiency Heat Pumps	3,517	1.8	0.0	\$434	\$25,909	\$0	\$25,909	59.7	3,542

ALL OPPORTUNITIES

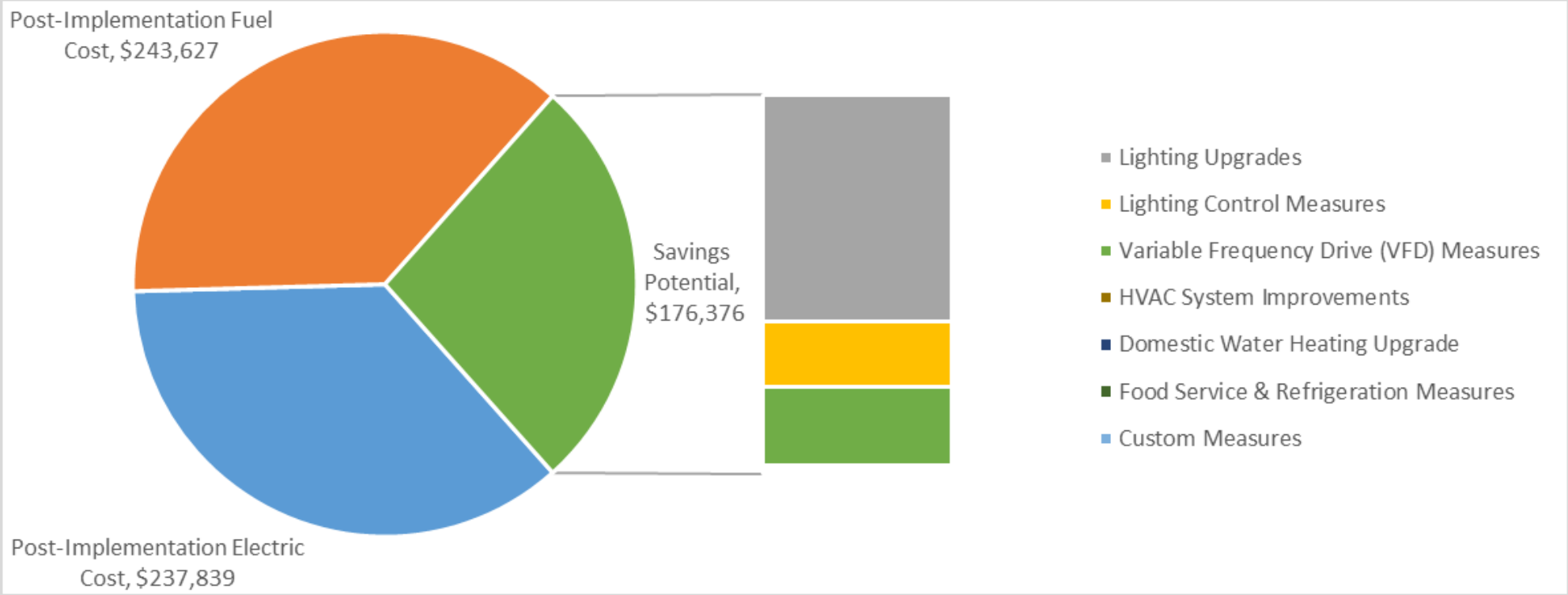
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Electric Chiller Replacement		31,360	14.7	0.0	\$3,288	\$202,039	\$14,800	\$187,239	56.9	31,579
ECM 15	Install High Efficiency Chillers	31,360	14.7	0.0	\$3,288	\$202,039	\$14,800	\$187,239	56.9	31,579
Gas Heating (HVAC/Process) Replacement		0	0.0	506.9	\$3,906	\$319,399	\$19,267	\$300,132	76.8	59,352
ECM 16	Install High Efficiency Hot Water Boilers	0	0.0	145.4	\$1,149	\$88,419	\$7,141	\$81,278	70.7	17,021
ECM 17	Install High Efficiency Steam Boilers	0	0.0	319.5	\$2,468	\$206,487	\$10,126	\$196,361	79.6	37,406
ECM 18	Install High Efficiency Furnaces	0	0.0	42.1	\$289	\$24,493	\$2,000	\$22,493	78.0	4,925
HVAC System Improvements		0	0.0	28.5	\$216	\$373	\$68	\$305	1.4	3,334
ECM 19	Install Pipe Insulation	0	0.0	28.5	\$216	\$373	\$68	\$305	1.4	3,334
Domestic Water Heating Upgrade		3,927	0.0	112.6	\$1,414	\$31,815	\$780	\$31,035	22.0	17,134
ECM 20	Install High Efficiency Gas-Fired Water Heater	0	0.0	25.4	\$184	\$30,185	\$0	\$30,185	164.4	2,972
ECM 21	Install Low-Flow DHW Devices	3,927	0.0	87.2	\$1,230	\$1,630	\$780	\$850	0.7	14,162
Food Service & Refrigeration Measures		14,778	1.4	0.0	\$1,866	\$9,127	\$825	\$8,302	4.4	14,882
ECM 22	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0.0	\$122	\$1,517	\$200	\$1,317	10.8	990
ECM 23	Refrigeration Controls	2,633	0.0	0.0	\$342	\$5,541	\$275	\$5,266	15.4	2,652
ECM 24	Vending Machine Control	11,162	1.3	0.0	\$1,401	\$2,070	\$350	\$1,720	1.2	11,240
Custom Measures		6,781	0.0	0.0	\$1,089	\$4,675	\$0	\$4,675	4.3	6,828
ECM 25	Install Heat Pump Water Heater	6,781	0.0	0.0	\$1,089	\$4,675	\$0	\$4,675	4.3	6,828
TOTALS		1,529,444	334.8	549.7	\$188,136	\$1,607,331	\$202,222	\$1,405,110	7.5	1,604,507

* - All incentives presented in this table are included as placeholders and 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 (lbs)
Lighting Upgrades		882,955	187.8	-179.8	\$105,751	\$325,054	\$69,207	\$255,847	2.4	868,079
ECM 1	Install LED Fixtures	116,833	16.3	-22.1	\$12,880	\$39,102	\$4,400	\$34,702	2.7	115,067
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	35,935	5.2	-7.5	\$3,725	\$11,012	\$1,508	\$9,504	2.6	35,307
ECM 3	Retrofit Fixtures with LED Lamps	730,187	166.3	-150.2	\$89,145	\$274,940	\$63,299	\$211,641	2.4	717,704
Lighting Control Measures		249,714	53.9	-52.2	\$30,252	\$208,847	\$56,855	\$151,992	5.0	245,346
ECM 4	Install Occupancy Sensor Lighting Controls	200,182	44.7	-41.9	\$24,060	\$164,072	\$21,575	\$142,497	5.9	196,681
ECM 5	Install High/Low Lighting Controls	49,532	9.2	-10.4	\$6,192	\$44,775	\$35,280	\$9,495	1.5	48,666
Variable Frequency Drive (VFD) Measures		309,256	53.2	130.3	\$36,315	\$268,005	\$30,925	\$237,080	6.5	326,679
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	7,501	1.9	0.0	\$786	\$7,768	\$400	\$7,368	9.4	7,553
ECM 8	Install VFDs on Constant Volume (CV) Fans	110,504	33.3	0.0	\$13,345	\$136,575	\$9,150	\$127,425	9.5	111,277
ECM 9	Install VFDs on Chilled Water Pumps	22,777	4.1	0.0	\$2,388	\$11,843	\$1,400	\$10,443	4.4	22,936
ECM 10	Install VFDs on Heating Water Pumps	67,428	8.9	0.0	\$8,166	\$62,093	\$11,800	\$50,293	6.2	67,900
ECM 11	Install VFDs on Kitchen Hood Fan Motors	31,495	0.2	130.3	\$4,339	\$14,854	\$1,375	\$13,479	3.1	46,976
ECM 12	Install VFDs on Water Supply Pump	69,550	4.9	0.0	\$7,292	\$34,872	\$6,800	\$28,072	3.8	70,037
HVAC System Improvements		0	0.0	28.5	\$216	\$373	\$68	\$305	1.4	3,334
ECM 19	Install Pipe Insulation	0	0.0	28.5	\$216	\$373	\$68	\$305	1.4	3,334
Domestic Water Heating Upgrade		3,927	0.0	87.2	\$1,230	\$1,630	\$780	\$850	0.7	14,162
ECM 21	Install Low-Flow DHW Devices	3,927	0.0	87.2	\$1,230	\$1,630	\$780	\$850	0.7	14,162
Food Service & Refrigeration Measures		12,145	1.4	0.0	\$1,524	\$3,587	\$550	\$3,037	2.0	12,230
ECM 22	Refrigerator/Freezer Case Electrically Commutated Motors	983	0.1	0.0	\$122	\$1,517	\$200	\$1,317	10.8	990
ECM 24	Vending Machine Control	11,162	1.3	0.0	\$1,401	\$2,070	\$350	\$1,720	1.2	11,240
Custom Measures		6,781	0.0	0.0	\$1,089	\$4,675	\$0	\$4,675	4.3	6,828
ECM 25	Install Heat Pump Water Heater	6,781	0.0	0.0	\$1,089	\$4,675	\$0	\$4,675	4.3	6,828
TOTALS		1,464,777	296.3	14.0	\$176,376	\$812,170	\$158,385	\$653,785	3.7	1,476,658

* - All incentives presented in this table are included as placeholders and 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).

MACKAY ELEMENTARY SCHOOL

#	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 (lbs)
Lighting Upgrades			47,598	12.7	-10	\$6,433	\$23,578	\$5,450	\$18,128	2.8	46,777
ECM 1	Install LED Fixtures	Yes	324	0.0	0	\$44	\$206	\$50	\$156	3.5	326
ECM 2	Retrofit Fixtures with LED Lamps	Yes	47,274	12.7	-10	\$6,388	\$23,372	\$5,400	\$17,972	2.8	46,450
Lighting Control Measures			13,203	3.4	-3	\$1,784	\$15,044	\$4,490	\$10,554	5.9	12,972
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,153	2.7	-2	\$1,372	\$10,994	\$1,445	\$9,549	7.0	9,976
ECM 4	Install High/Low Lighting Controls	Yes	3,050	0.7	-1	\$412	\$4,050	\$3,045	\$1,005	2.4	2,996
Variable Frequency Drive (VFD) Measures			10,524	2.8	0	\$1,439	\$15,920	\$2,200	\$13,720	9.5	10,598
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	4,518	1.8	0	\$618	\$7,768	\$400	\$7,368	11.9	4,550
ECM 6	Install VFDs on Heating Water Pumps	Yes	6,006	1.0	0	\$821	\$8,152	\$1,800	\$6,352	7.7	6,048
Unitary HVAC Measures			1,337	1.5	0	\$183	\$7,293	\$593	\$6,701	36.6	1,346
ECM 7	Install High Efficiency Air Conditioning Units	No	1,337	1.5	0	\$183	\$7,293	\$593	\$6,701	36.6	1,346
Gas Heating (HVAC/Process) Replacement			0	0.0	164	\$1,256	\$103,036	\$4,560	\$98,476	78.4	19,148
ECM 8	Install High Efficiency Steam Boilers	No	0	0.0	164	\$1,256	\$103,036	\$4,560	\$98,476	78.4	19,148
HVAC System Improvements			0	0.0	10	\$79	\$150	\$24	\$126	1.6	1,203
ECM 9	Install Pipe Insulation	Yes	0	0.0	10	\$79	\$150	\$24	\$126	1.6	1,203
Domestic Water Heating Upgrade			1,807	0.0	12	\$339	\$275	\$137	\$137	0.4	3,227
ECM 10	Install Low-Flow DHW Devices	Yes	1,807	0.0	12	\$339	\$275	\$137	\$137	0.4	3,227
Food Service & Refrigeration Measures			1,612	0.2	0	\$220	\$230	\$50	\$180	0.8	1,623
ECM 11	Vending Machine Control	Yes	1,612	0.2	0	\$220	\$230	\$50	\$180	0.8	1,623
TOTALS (COST EFFECTIVE MEASURES)			74,745	19.0	10	\$10,295	\$55,198	\$12,351	\$42,846	4.2	76,400
TOTALS (ALL MEASURES)			76,082	20.5	173	\$11,734	\$165,527	\$17,504	\$148,023	12.6	96,895

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

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MAUGHAM ELEMENTARY SCHOOL

#	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 (lbs)
Lighting Upgrades			51,991	15.1	-11	\$8,106	\$27,658	\$6,323	\$21,335	2.6	51,082
ECM 1	Install LED Fixtures	Yes	7,362	2.2	-2	\$1,148	\$4,432	\$450	\$3,982	3.5	7,233
ECM 2	Retrofit Fixtures with LED Lamps	Yes	44,629	12.9	-9	\$6,958	\$23,226	\$5,873	\$17,353	2.5	43,849
Lighting Control Measures			14,034	4.0	-3	\$2,188	\$17,071	\$4,490	\$12,581	5.8	13,789
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,654	3.2	-2	\$1,661	\$13,246	\$1,830	\$11,416	6.9	10,468
ECM 4	Install High/Low Lighting Controls	Yes	3,380	0.8	-1	\$527	\$3,825	\$2,660	\$1,165	2.2	3,321
Variable Frequency Drive (VFD) Measures			19,447	6.6	0	\$3,063	\$21,716	\$3,200	\$18,516	6.0	19,583
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	12,382	5.6	0	\$1,951	\$13,563	\$1,400	\$12,163	6.2	12,469
ECM 6	Install VFDs on Heating Water Pumps	Yes	7,064	1.0	0	\$1,113	\$8,152	\$1,800	\$6,352	5.7	7,114
Unitary HVAC Measures			1,817	2.6	0	\$286	\$23,826	\$948	\$22,879	80.0	1,829
ECM 7	Install High Efficiency Air Conditioning Units	No	1,817	2.6	0	\$286	\$23,826	\$948	\$22,879	80.0	1,829
Gas Heating (HVAC/Process) Replacement			0	0.0	156	\$1,212	\$103,451	\$5,566	\$97,885	80.8	18,258
ECM 8	Install High Efficiency Steam Boilers	No	0	0.0	156	\$1,212	\$103,451	\$5,566	\$97,885	80.8	18,258
HVAC System Improvements			0	0.0	10	\$80	\$150	\$24	\$126	1.6	1,203
ECM 9	Install Pipe Insulation	Yes	0	0.0	10	\$80	\$150	\$24	\$126	1.6	1,203
Domestic Water Heating Upgrade			1,390	0.0	9	\$289	\$208	\$104	\$104	0.4	2,455
ECM 10	Install Low-Flow DHW Devices	Yes	1,390	0.0	9	\$289	\$208	\$104	\$104	0.4	2,455
Custom Measures			2,462	0.0	0	\$388	\$1,945	\$0	\$1,945	5.0	2,479
ECM 11	Install Heat Pump Water Heater	Yes	2,462	0.0	0	\$388	\$1,945	\$0	\$1,945	5.0	2,479
TOTALS (COST EFFECTIVE MEASURES)			89,324	25.7	5	\$14,114	\$68,748	\$14,141	\$54,607	3.9	90,591
TOTALS (ALL MEASURES)			91,140	28.3	161	\$15,612	\$196,026	\$20,654	\$175,372	11.2	110,678

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

SMITH ELEMENTARY SCHOOL

#	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 (lbs)
Lighting Upgrades			50,487	14.2	-10	\$7,281	\$28,009	\$6,136	\$21,873	3.0	49,624
ECM 1	Install LED Fixtures	Yes	648	0.0	0	\$95	\$412	\$100	\$312	3.3	653
ECM 2	Retrofit Fixtures with LED Lamps	Yes	49,839	14.2	-10	\$7,186	\$27,597	\$6,036	\$21,561	3.0	48,972
Lighting Control Measures			14,235	4.0	-3	\$2,053	\$13,502	\$3,780	\$9,722	4.7	13,986
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	11,980	3.5	-3	\$1,727	\$10,802	\$1,435	\$9,367	5.4	11,770
ECM 4	Install High/Low Lighting Controls	Yes	2,256	0.5	0	\$325	\$2,700	\$2,345	\$355	1.1	2,216
Variable Frequency Drive (VFD) Measures			8,757	2.0	0	\$1,277	\$14,482	\$1,300	\$13,182	10.3	8,818
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	2,824	0.9	0	\$412	\$3,884	\$200	\$3,684	8.9	2,844
ECM 6	Install VFDs on Heating Water Pumps	Yes	5,933	1.1	0	\$865	\$10,598	\$1,100	\$9,498	11.0	5,974
Unitary HVAC Measures			1,940	1.9	0	\$283	\$23,199	\$735	\$22,464	79.4	1,954
ECM 7	Install High Efficiency Air Conditioning Units	No	1,940	1.9	0	\$283	\$23,199	\$735	\$22,464	79.4	1,954
Gas Heating (HVAC/Process) Replacement			0	0.0	139	\$1,091	\$80,225	\$6,741	\$73,484	67.4	16,250
ECM 8	Install High Efficiency Hot Water Boilers	No	0	0.0	139	\$1,091	\$80,225	\$6,741	\$73,484	67.4	16,250
Domestic Water Heating Upgrade			229	0.0	4	\$61	\$158	\$44	\$114	1.9	642
ECM 9	Install Low-Flow DHW Devices	Yes	229	0.0	4	\$61	\$158	\$44	\$114	1.9	642
Custom Measures			2,462	0.0	0	\$359	\$1,287	\$0	\$1,287	3.6	2,479
ECM 10	Install Heat Pump Water Heater	Yes	2,462	0.0	0	\$359	\$1,287	\$0	\$1,287	3.6	2,479
TOTALS (COST EFFECTIVE MEASURES)			76,170	20.1	-10	\$11,030	\$57,438	\$11,260	\$46,178	4.2	75,550
TOTALS (ALL MEASURES)			78,111	22.1	129	\$12,404	\$160,861	\$18,736	\$142,125	11.5	93,754

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

STILLMAN ELEMENTARY SCHOOL

#	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 (lbs)
Lighting Upgrades			51,324	14.6	-11	\$5,709	\$23,521	\$5,477	\$18,044	3.2	50,434
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	176	0.0	0	\$20	\$110	\$12	\$98	5.0	173
ECM 2	Retrofit Fixtures with LED Lamps	Yes	51,147	14.5	-11	\$5,690	\$23,411	\$5,465	\$17,946	3.2	50,260
Lighting Control Measures			16,026	4.1	-3	\$1,783	\$15,721	\$4,105	\$11,616	6.5	15,746
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	13,249	3.6	-3	\$1,474	\$12,346	\$1,655	\$10,691	7.3	13,018
ECM 4	Install High/Low Lighting Controls	Yes	2,777	0.5	-1	\$309	\$3,375	\$2,450	\$925	3.0	2,728
Variable Frequency Drive (VFD) Measures			12,392	2.4	0	\$1,398	\$18,324	\$2,025	\$16,299	11.7	12,479
ECM 5	Install VFDs on Constant Volume (CV) Fans	No	3,895	1.3	0	\$439	\$10,172	\$225	\$9,947	22.6	3,922
ECM 6	Install VFDs on Heating Water Pumps	Yes	8,497	1.1	0	\$959	\$8,152	\$1,800	\$6,352	6.6	8,557
Unitary HVAC Measures			887	1.1	0	\$100	\$12,249	\$525	\$11,724	117.2	893
ECM 7	Install High Efficiency Air Conditioning Units	No	887	1.1	0	\$100	\$12,249	\$525	\$11,724	117.2	893
HVAC System Improvements			0	0.0	3	\$24	\$29	\$8	\$21	0.9	371
ECM 8	Install Pipe Insulation	Yes	0	0.0	3	\$24	\$29	\$8	\$21	0.9	371
Domestic Water Heating Upgrade			0	0.0	14	\$105	\$208	\$104	\$104	1.0	1,611
ECM 9	Install Low-Flow DHW Devices	Yes	0	0.0	14	\$105	\$208	\$104	\$104	1.0	1,611
Food Service & Refrigeration Measures			1,612	0.2	0	\$182	\$230	\$50	\$180	1.0	1,623
ECM 10	Vending Machine Control	Yes	1,612	0.2	0	\$182	\$230	\$50	\$180	1.0	1,623
TOTALS (COST EFFECTIVE MEASURES)			77,459	19.9	3	\$8,761	\$47,862	\$11,544	\$36,318	4.1	78,341
TOTALS (ALL MEASURES)			82,241	22.4	3	\$9,301	\$70,282	\$12,294	\$57,988	6.2	83,156

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

TENAFLY MIDDLE SCHOOL

#	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 (lbs)
Lighting Upgrades			185,493	47.3	-38	\$25,222	\$71,609	\$16,560	\$55,049	2.2	182,371
ECM 1	Install LED Fixtures	Yes	1,717	0.0	0	\$236	\$950	\$250	\$700	3.0	1,729
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	236	0.1	0	\$32	\$156	\$15	\$141	4.4	232
ECM 3	Retrofit Fixtures with LED Lamps	Yes	183,540	47.2	-38	\$24,954	\$70,504	\$16,295	\$54,209	2.2	180,411
Lighting Control Measures			65,421	16.0	-14	\$8,893	\$52,168	\$17,340	\$34,828	3.9	64,277
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	48,632	12.5	-10	\$6,611	\$36,418	\$4,670	\$31,748	4.8	47,781
ECM 5	Install High/Low Lighting Controls	Yes	16,789	3.4	-4	\$2,282	\$15,750	\$12,670	\$3,080	1.3	16,496
Variable Frequency Drive (VFD) Measures			18,270	3.4	52	\$2,888	\$24,207	\$2,275	\$21,932	7.6	24,502
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	7,694	2.4	0	\$1,057	\$13,044	\$400	\$12,644	12.0	7,748
ECM 7	Install VFDs on Heating Water Pumps	Yes	6,792	1.0	0	\$934	\$8,152	\$1,800	\$6,352	6.8	6,840
ECM 8	Install VFDs on Kitchen Hood Fan Motors	Yes	3,784	0.0	52	\$897	\$3,010	\$75	\$2,935	3.3	9,915
Unitary HVAC Measures			3,405	2.5	0	\$468	\$40,668	\$1,260	\$39,408	84.2	3,429
ECM 9	Install High Efficiency Air Conditioning Units	No	1,398	1.5	0	\$192	\$25,144	\$1,260	\$23,884	124.3	1,408
ECM 10	Install High Efficiency Heat Pumps	No	2,007	1.0	0	\$276	\$15,524	\$0	\$15,524	56.3	2,021
Domestic Water Heating Upgrade			0	0.0	47	\$342	\$30,515	\$165	\$30,350	88.9	5,528
ECM 11	Install High Efficiency Gas-Fired Water Heater	No	0	0.0	25	\$184	\$30,185	\$0	\$30,185	164.4	2,972
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	22	\$158	\$330	\$165	\$165	1.0	2,555
Food Service & Refrigeration Measures			7,730	0.7	0	\$1,062	\$5,927	\$470	\$5,457	5.1	7,784
ECM 13	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	590	0.1	0	\$81	\$910	\$120	\$790	9.7	594
ECM 14	Refrigeration Controls	No	2,023	0.0	0	\$278	\$3,867	\$200	\$3,667	13.2	2,037
ECM 15	Vending Machine Control	Yes	5,118	0.6	0	\$703	\$1,150	\$150	\$1,000	1.4	5,153
TOTALS (COST EFFECTIVE MEASURES)			274,892	67.3	23	\$37,945	\$150,374	\$36,610	\$113,764	3.0	279,453
TOTALS (ALL MEASURES)			280,319	69.8	48	\$38,875	\$225,094	\$38,070	\$187,024	4.8	287,891

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

TENAFLY HIGH SCHOOL

#	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 (lbs)
Lighting Upgrades			474,851	78.6	-97	\$49,120	\$137,636	\$27,115	\$110,521	2.3	466,826
ECM 1	Install LED Fixtures	Yes	102,971	14.1	-21	\$10,655	\$31,027	\$3,250	\$27,777	2.6	101,289
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	35,523	5.1	-7	\$3,673	\$10,746	\$1,481	\$9,265	2.5	34,902
ECM 3	Retrofit Fixtures with LED Lamps	Yes	336,357	59.4	-69	\$34,791	\$95,864	\$22,384	\$73,480	2.1	330,635
Lighting Control Measures			121,226	20.6	-25	\$12,536	\$85,567	\$20,040	\$65,527	5.2	119,105
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	101,662	17.8	-21	\$10,513	\$72,742	\$9,540	\$63,202	6.0	99,884
ECM 5	Install High/Low Lighting Controls	Yes	19,563	2.8	-4	\$2,023	\$12,825	\$10,500	\$2,325	1.1	19,221
Variable Frequency Drive (VFD) Measures			236,264	34.6	78	\$25,307	\$172,177	\$18,975	\$153,202	6.1	247,073
ECM 6	Install VFD on Variable Air Volume (VAV) Fans	Yes	7,501	1.9	0	\$786	\$7,768	\$400	\$7,368	9.4	7,553
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	75,589	19.7	0	\$7,925	\$86,965	\$5,575	\$81,390	10.3	76,118
ECM 8	Install VFDs on Chilled Water Pumps	Yes	22,777	4.1	0	\$2,388	\$11,843	\$1,400	\$10,443	4.4	22,936
ECM 9	Install VFDs on Heating Water Pumps	Yes	33,136	3.8	0	\$3,474	\$18,885	\$3,500	\$15,385	4.4	33,367
ECM 10	Install VFDs on Kitchen Hood Fan Motors	Yes	27,711	0.2	78	\$3,442	\$11,844	\$1,300	\$10,544	3.1	37,061
ECM 11	Install VFDs on Water Supply Pump	Yes	69,550	4.9	0	\$7,292	\$34,872	\$6,800	\$28,072	3.8	70,037
Unitary HVAC Measures			12,016	6.1	0	\$1,260	\$68,064	\$2,387	\$65,677	52.1	12,100
ECM 12	Install High Efficiency Air Conditioning Units	No	10,505	5.3	0	\$1,101	\$57,679	\$2,387	\$55,292	50.2	10,579
ECM 13	Install High Efficiency Heat Pumps	No	1,510	0.9	0	\$158	\$10,385	\$0	\$10,385	65.6	1,521
Electric Chiller Replacement			31,360	14.7	0	\$3,288	\$202,039	\$14,800	\$187,239	56.9	31,579
ECM 14	Install High Efficiency Chillers	No	31,360	14.7	0	\$3,288	\$202,039	\$14,800	\$187,239	56.9	31,579
Gas Heating (HVAC/Process) Replacement			0	0.0	42	\$289	\$24,493	\$2,000	\$22,493	77.9	4,925
ECM 15	Install High Efficiency Furnaces	No	0	0.0	42	\$289	\$24,493	\$2,000	\$22,493	77.9	4,925
HVAC System Improvements			0	0.0	5	\$33	\$43	\$12	\$31	1.0	557
ECM 16	Install Pipe Insulation	Yes	0	0.0	5	\$33	\$43	\$12	\$31	1.0	557
Domestic Water Heating Upgrade			0	0.0	27	\$186	\$409	\$204	\$204	1.1	3,167
ECM 17	Install Low-Flow DHW Devices	Yes	0	0.0	27	\$186	\$409	\$204	\$204	1.1	3,167
Food Service & Refrigeration Measures			3,824	0.4	0	\$401	\$2,741	\$255	\$2,486	6.2	3,851
ECM 18	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	393	0.0	0	\$41	\$607	\$80	\$527	12.8	396
ECM 19	Refrigeration Controls	No	610	0.0	0	\$64	\$1,674	\$75	\$1,599	25.0	615
ECM 20	Vending Machine Control	Yes	2,821	0.3	0	\$296	\$460	\$100	\$360	1.2	2,840
TOTALS (COST EFFECTIVE MEASURES)			835,555	134.1	-12	\$87,518	\$396,899	\$66,526	\$330,372	3.8	839,963
TOTALS (ALL MEASURES)			879,541	155.0	30	\$92,418	\$693,168	\$85,788	\$607,380	6.6	889,182

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

ADMINISTRATION BUILDING

#	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 (lbs)
Lighting Upgrades			21,210	5.3	-3	\$3,880	\$13,041	\$2,146	\$10,895	2.8	20,965
ECM 1	Install LED Fixtures	Yes	3,811	0.0	0	\$702	\$2,075	\$300	\$1,775	2.5	3,837
ECM 2	Retrofit Fixtures with LED Lamps	Yes	17,399	5.3	-3	\$3,178	\$10,966	\$1,846	\$9,120	2.9	17,128
Lighting Control Measures			5,569	1.8	-1	\$1,016	\$9,774	\$2,610	\$7,164	7.0	5,471
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	3,851	1.4	-1	\$703	\$7,524	\$1,000	\$6,524	9.3	3,784
ECM 4	Install High/Low Lighting Controls	Yes	1,717	0.4	0	\$313	\$2,250	\$1,610	\$640	2.0	1,687
Motor Upgrades			36	0.0	0	\$7	\$352	\$0	\$352	53.7	36
ECM 5	Premium Efficiency Motors	No	36	0.0	0	\$7	\$352	\$0	\$352	53.7	36
Variable Frequency Drive (VFD) Measures			7,496	2.8	0	\$1,382	\$11,351	\$1,175	\$10,176	7.4	7,548
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	7,496	2.8	0	\$1,382	\$11,351	\$1,175	\$10,176	7.4	7,548
Unitary HVAC Measures			5,342	6.7	3	\$1,015	\$52,173	\$2,823	\$49,351	48.6	5,784
ECM 7	Install High Efficiency Air Conditioning Units	No	5,342	6.7	3	\$1,015	\$52,173	\$2,823	\$49,351	48.6	5,784
Gas Heating (HVAC/Process) Replacement			0	0.0	7	\$58	\$8,195	\$400	\$7,795	134.1	771
ECM 8	Install High Efficiency Hot Water Boilers	No	0	0.0	7	\$58	\$8,195	\$400	\$7,795	134.1	771
Domestic Water Heating Upgrade			500	0.0	0	\$92	\$43	\$22	\$22	0.2	504
ECM 9	Install Low-Flow DHW Devices	Yes	500	0.0	0	\$92	\$43	\$22	\$22	0.2	504
Custom Measures			1,857	0.0	0	\$342	\$1,443	\$0	\$1,443	4.2	1,870
ECM 10	Install Heat Pump Water Heater	Yes	1,857	0.0	0	\$342	\$1,443	\$0	\$1,443	4.2	1,870
TOTALS (COST EFFECTIVE MEASURES)			36,632	10.0	-5	\$6,713	\$35,653	\$5,953	\$29,700	4.4	36,359
TOTALS (ALL MEASURES)			42,010	16.7	6	\$7,793	\$96,373	\$9,175	\$87,197	11.2	42,950

* - All incentives presented in this table are included as placeholders for planning purposes and 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).

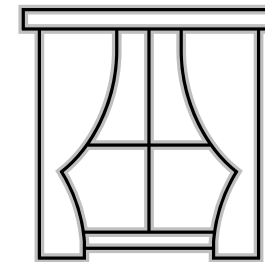
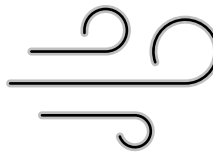
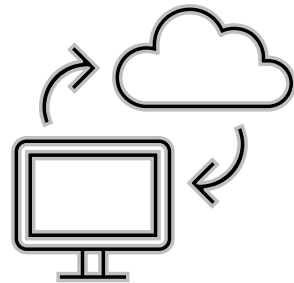
ENERGY EFFICIENT BEST PRACTICES

- 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

- Upgrade/Replace Energy Management System
- Installation of an Energy Management System

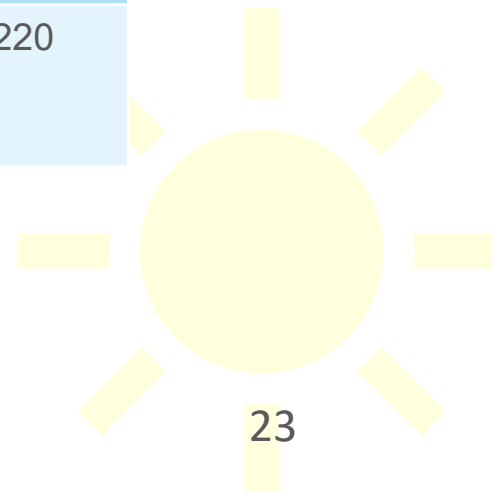


- Heating System Conversion from Steam to Hot Water
- Window Replacements

SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Mackay	Maugham	Smith	Stillman	Middle School	High School
<i>Potential:</i>	Medium	HIGH	HIGH	HIGH	HIGH	HIGH
<i>System Potential: (kW)</i>	57	69	58	62	240	322
<i>Electric Generation: (kWh per year)</i>	67,908	82,204	69,099	73,865	285,929	383,621
<i>Displaced Cost: (per year)</i>	\$9,290	\$12,950	\$10,080	\$8,330	\$39,300	\$40,220

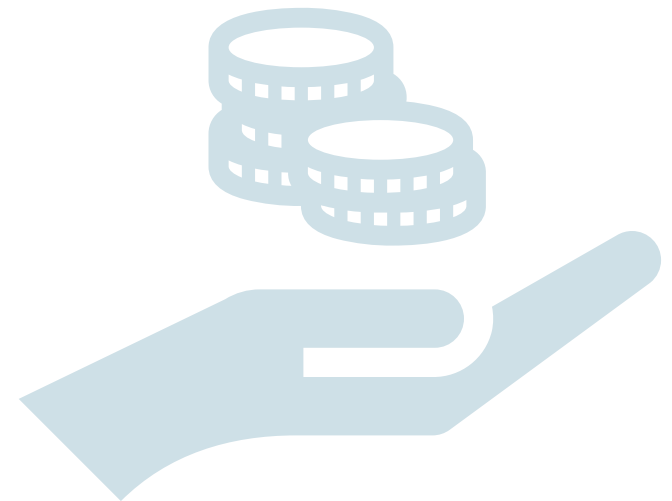


FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

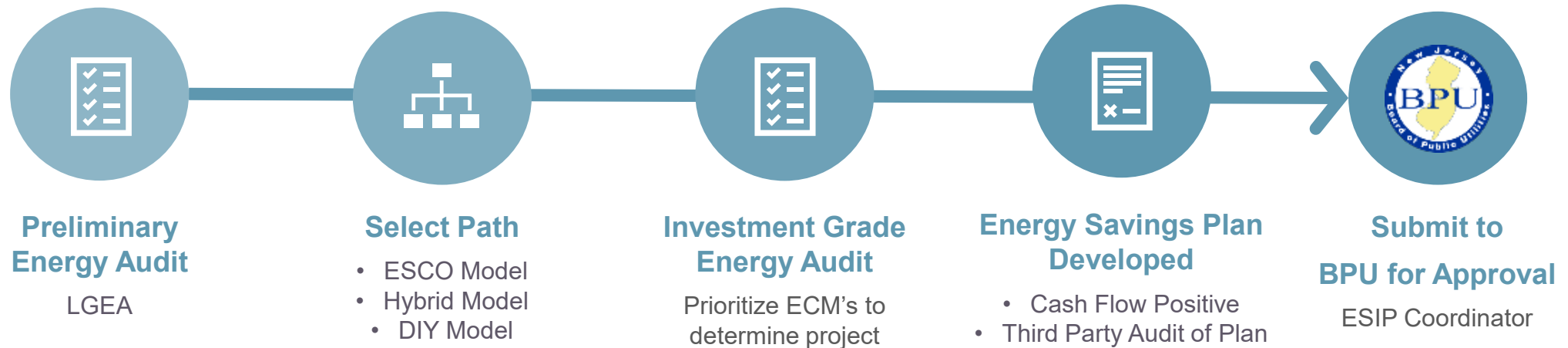
ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting – NJ ESIP
- Financing Mechanism that allows state entities to make energy efficiency improvements without impacting their budgets
- Administered by the NJBPU
- NJBPU Approved EE Incentive Programs: NJCEP or Utility
- Project is paid for with the value of its own energy savings
- 15 or 20 year self-funding loan
- Can be combined with Federal/State Pandemic Relief Funds
- No upfront capital expenses
- No referendum is required
- No impact to taxpayers



FINANCING MECHANISM: ESIP

NJCleanEnergy.com/EV



ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

ESIP@bpu.nj.gov

o: 609.913.6295

c: 609.915.0903

C&I TRANSITION OF ENERGY EFFICIENCY PROGRAMS

NJCleanEnergy.com/Transition

LOCAL
GOVERNMENT
CUSTOMERS

COMMERCIAL &
INSTITUTIONAL
CUSTOMERS

LARGE
ENERGY
CUSTOMERS

EXISTING BUILDINGS

MEASUREMENT & AUDITS

FREE Energy Audits



RETROFITS

Prescriptive &
Custom Rebates

Direct Install

Engineered Solutions

And more from
your local utility!



Incentives up
to \$4 million
for eligible projects



NEW CONSTRUCTION

Prescriptive & Custom
Rebates for New
Construction and
Gut Rehabs

Pay for Performance
incentives for
buildings over
50,000 sq. ft.



DISTRIBUTED ENERGY RESOURCES

Combined Heat & Power
and Fuel Cell Installation
Incentives

Microgrid Development

Battery Storage

Muni EV Fleets



Key:

Programs run by investor-owned utility companies



Programs run by NJCEP



UTILITY RUN ENERGY EFFICIENCY PROGRAMS

NJCleanEnergy.com/Transition

PRESCRIPTIVE & CUSTOM REBATES:

- Individual high efficiency equipment rebates for renovation, remodeling, and equipment replacement
- Flexibility to do a little or a lot
- No size requirement

DIRECT INSTALL:

- Turn-key retrofit program to replace outdated and inefficient equipment including, lighting, HVAC, refrigeration, etc.
- The facility must have an average electric peak demand <200kW in the previous year to qualify

ENGINEERED SOLUTIONS:

- Comprehensive, whole-building approach to saving energy
- The facility must have an average electric peak demand >200kW in the previous year to qualify



UTILITY RUN ENERGY EFFICIENCY PROGRAMS

PSE&G

Dave Kirsch – David.Kirsch@pseg.com
Steve Barba – Steven.T.Barba@pseg.com

SCHOOL & SMALL BUSINESS ENERGY EFFICIENCY STIMULUS PROGRAM

NJCleanEnergy.com/SSBEE

ABOUT

Provides grants to ensure facilities have functional HVAC systems that are tested, adjusted, and, if necessary or cost effective, repaired, upgraded or replaced to improve performance. (*SSB-VEEVR*)

Provides grants to replace noncompliant plumbing fixtures and appliances that fail to meet water efficiency standards. (*SSB-NPFA*)

REQUIREMENTS

Assessment verified by a Certified Energy Auditor or TAB Technician and proof of noncompliant equipment.

INCENTIVE CAP

Grants shall provide no more than 75% of the approved project cost up to \$5 million.



FOR MORE INFORMATION

Sarah Walters – LGEA Project Manager

SWalters@trccompanies.com

(732) 589-7372

Moussa Traore – LGEA Lead Energy Auditor

MTraore@trccompanies.com

(732) 902-1797

Amanda Muench – LGEA Account Manager

AMuench@trccompanies.com

(732) 612-9381

Nick Nocco – LGEA Energy Auditor

NNocco@trccompanies.com

(848) 235-4169

THANK YOU

