

# New Jersey's Clean Energy Program

LGEA Presentation  
*Hillsdale School District*

September 24, 2020



# INTRODUCTIONS

- *Hillsdale School District*
  - Sacha Pouliot – Business Administrator
- *NJ Clean Energy Program*
  - Aimee Lalonde – TRC Program Manager
  - Sarah Landis – TRC Auditor
  - Amanda Muench – TRC Account Manager
  - Mike Mandzik – TRC Outreach Manager
  - Michelle Rossi – ESIP Coordinator



# AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Hillsdale School District



# LGEA PROCESS

- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- LGEA Presentation
- Final Report

# SITE VISIT & UTILITY ANALYSIS

## Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Building Energy Management System

## Utility Consumption:

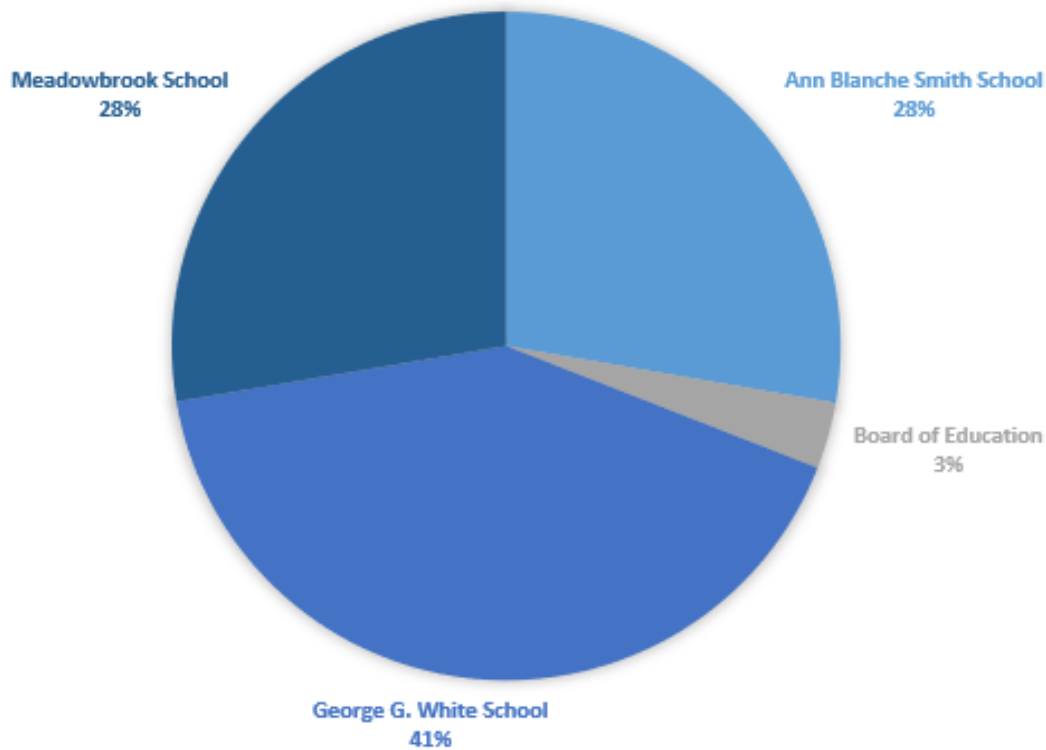
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

## Sites Visited/Analyzed

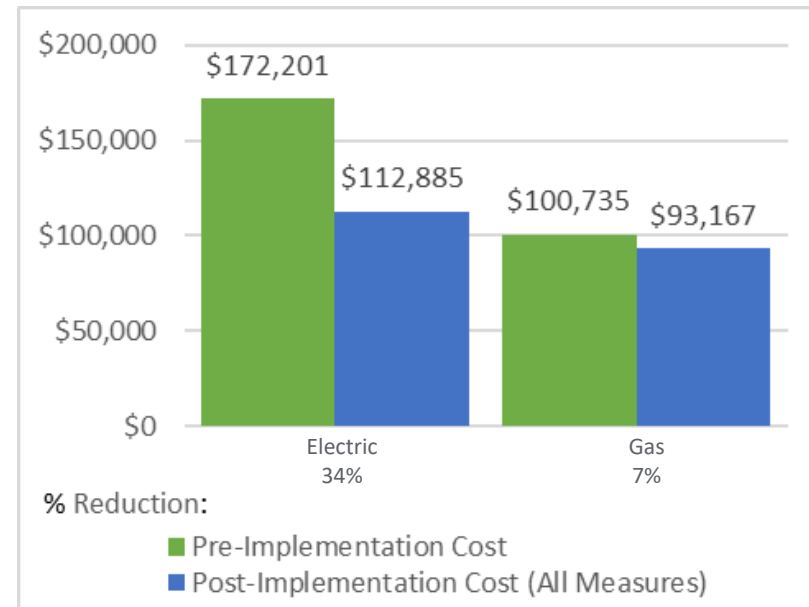
- Ann Blanche Smith School
- Meadowbrook School
- George G. White School
- BOE Office

# UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



# BENCHMARKING



ENERGY STAR® Statement of Energy Performance

LEARN MORE AT [energystar.gov](http://energystar.gov)

**55**  
ENERGY STAR® Score<sup>1</sup>

**Meadowbrook School**  
Primary Property Type: K-12 School  
Gross Floor Area (ft<sup>2</sup>): 46,683  
Built: 1963

For Year Ending: February 29, 2020  
Date Generated: September 02, 2020

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**

<b>Property Address</b> Meadowbrook School 50 Flemont Avenue Hillsdale, New Jersey 07642	<b>Property Owner</b> Hillsdale School District 32 Ruckman Road Hillsdale, NJ 07642 (201) 664-4512	<b>Primary Contact</b> Sacha Pouliot 32 Ruckman Road Hillsdale, NJ 07642 (201) 664-4512 spouliot@hillsdaleschools.com
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Property ID: 3255748

**Energy Consumption and Energy Use Intensity (EUI)**

<b>Site EUI</b> 85.1 kBtu/ft <sup>2</sup>	<b>Annual Energy Intensity</b> Natural Gas (kBtu) 2,795,174 (70%) Electricity Grid (kBtu) 1,178,016 (30%)	<b>National Median Comparison</b> National Median Site EUI (kBtu/ft <sup>2</sup> ) 89.9 National Median Source EUI (kBtu/ft <sup>2</sup> ) 141 % Diff from National Median Source EUI -5%
----------------------------------------------	-----------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Source EUI**  
133.5 kBtu/ft<sup>2</sup>

**Site EUI**  
85.1 kBtu/ft<sup>2</sup>

**Source EUI**  
133.5 kBtu/ft<sup>2</sup>

**National Median Comparison**

National Median Site EUI (kBtu/ft <sup>2</sup> )	89.9
National Median Source EUI (kBtu/ft <sup>2</sup> )	141
% Diff from National Median Source EUI	-5%

**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: \_\_\_\_\_

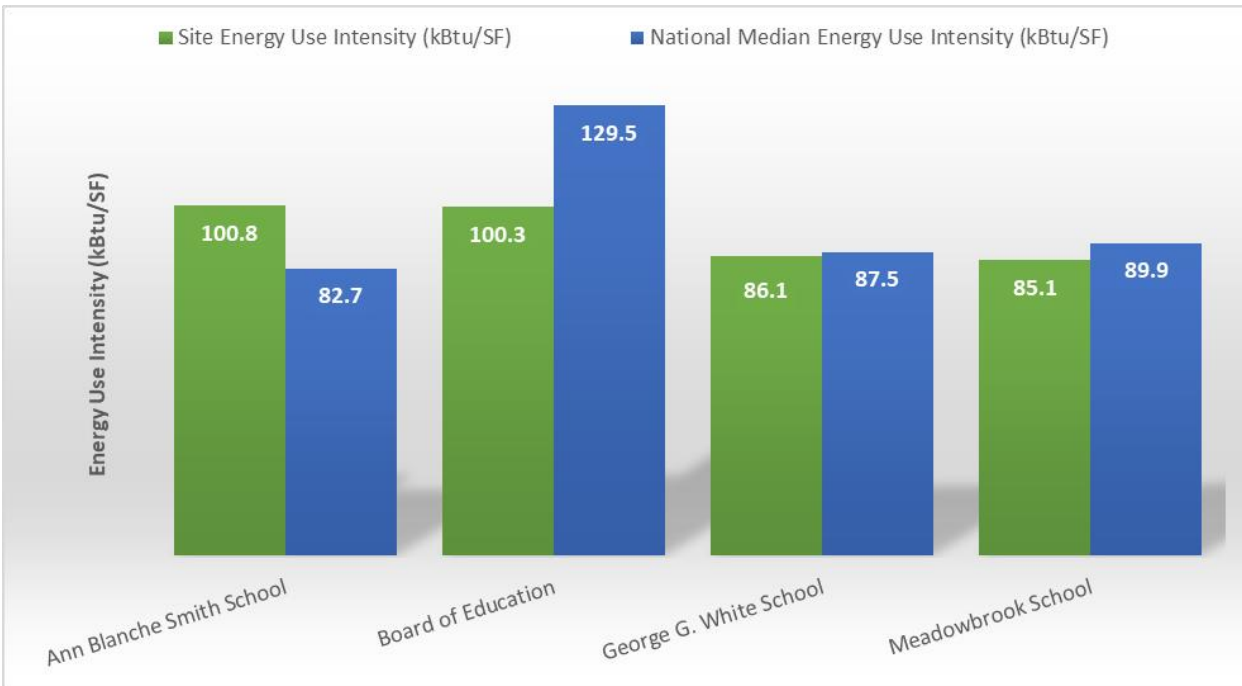
**Licensed Professional**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Professional Engineer or Registered Architect Stamp (if applicable)

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



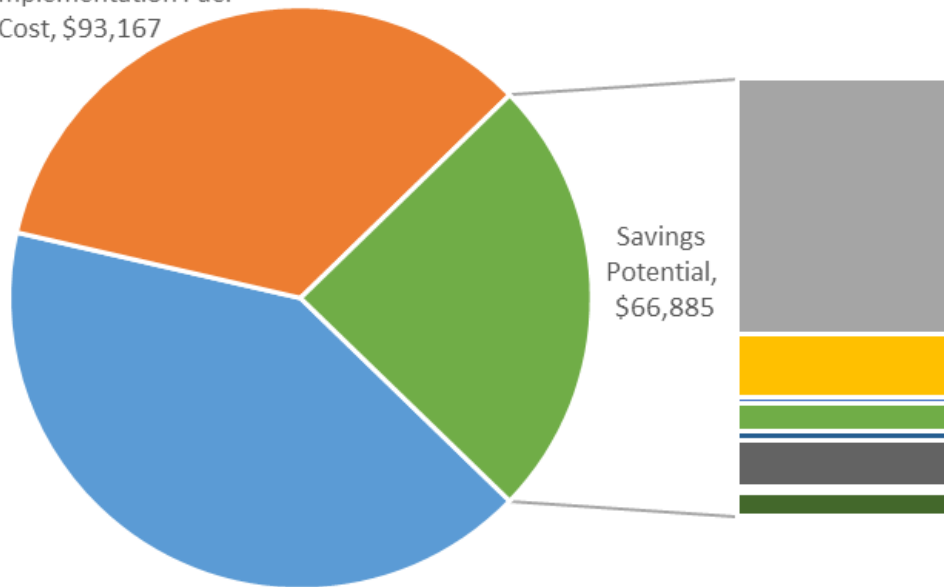
Site Name	ENERGY STAR® Score
Ann Blanche Smith School	29
Board of Education	69
George G. White School	51
Meadowbrook School	55



# ALL OPPORTUNITIES

## Savings Potential

Post-Implementation Fuel  
Cost, \$93,167



- 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, \$112,885

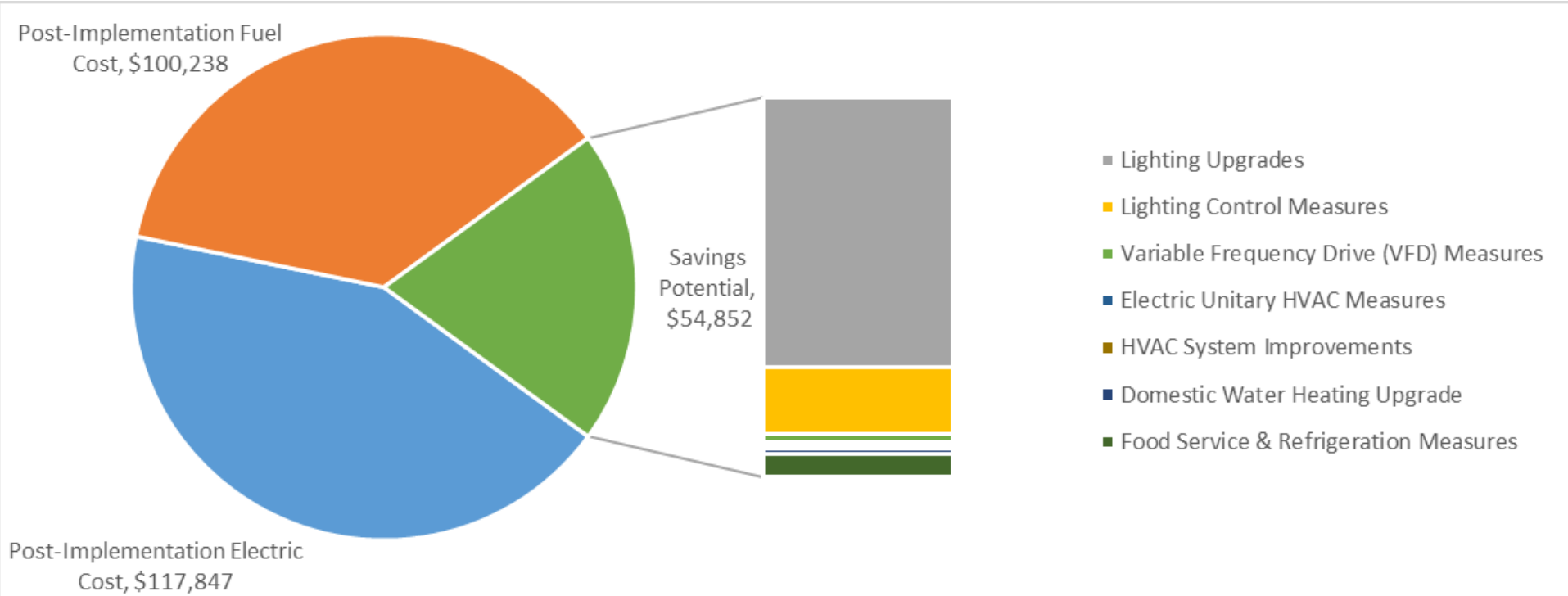


# ALL OPPORTUNITIES

#	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)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>		<b>276,823</b>	<b>75.4</b>	<b>-48.1</b>	<b>\$39,012</b>	<b>\$157,867</b>	<b>\$73,352</b>	<b>\$84,515</b>	<b>2.2</b>	<b>273,124</b>
ECM 1	Install LED Fixtures	81,890	6.9	-7.7	\$11,531	\$60,540	\$25,480	\$35,060	3.0	81,555
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,282	0.5	-0.5	\$325	\$1,210	\$244	\$966	3.0	2,242
ECM 3	Retrofit Fixtures with LED Lamps	192,651	67.9	-39.9	\$27,156	\$96,118	\$47,628	\$48,490	1.8	189,326
<b>Lighting Control Measures</b>		<b>68,908</b>	<b>19.7</b>	<b>-14.4</b>	<b>\$9,572</b>	<b>\$86,632</b>	<b>\$36,050</b>	<b>\$50,582</b>	<b>5.3</b>	<b>67,703</b>
ECM 4	Install Occupancy Sensor Lighting Controls	51,091	16.7	-10.7	\$7,092	\$65,932	\$17,160	\$48,772	6.9	50,197
ECM 5	Install High/Low Lighting Controls	17,817	3.0	-3.7	\$2,481	\$20,700	\$18,890	\$1,810	0.7	17,505
<b>Motor Upgrades</b>		<b>7,240</b>	<b>2.2</b>	<b>0.0</b>	<b>\$1,031</b>	<b>\$22,490</b>	<b>\$0</b>	<b>\$22,490</b>	<b>21.8</b>	<b>7,290</b>
ECM 6	Premium Efficiency Motors	7,240	2.2	0.0	\$1,031	\$22,490	\$0	\$22,490	21.8	7,290
<b>Variable Frequency Drive (VFD) Measures</b>		<b>26,069</b>	<b>6.6</b>	<b>61.3</b>	<b>\$4,211</b>	<b>\$109,555</b>	<b>\$5,300</b>	<b>\$104,255</b>	<b>24.8</b>	<b>33,433</b>
ECM 7	Install VFDs on Constant Volume (CV) Fans	13,667	5.2	0.0	\$1,933	\$37,344	\$2,050	\$35,294	18.3	13,762
ECM 8	Install VFDs on Heating Water Pumps	9,686	1.3	0.0	\$1,359	\$62,929	\$2,750	\$60,179	44.3	9,754
ECM 9	Install VFDs on Kitchen Hood Fan Motors	2,716	0.0	61.3	\$920	\$9,281	\$500	\$8,781	9.5	9,917
<b>Electric Unitary HVAC Measures</b>		<b>10,704</b>	<b>4.3</b>	<b>0.0</b>	<b>\$1,523</b>	<b>\$46,952</b>	<b>\$2,704</b>	<b>\$44,248</b>	<b>29.1</b>	<b>10,779</b>
ECM 10	Install High Efficiency Air Conditioning Units	6,969	3.9	0.0	\$1,021	\$42,154	\$2,336	\$39,818	39.0	7,017
ECM 11	Install High Efficiency Heat Pumps	3,735	0.4	0.0	\$502	\$4,798	\$368	\$4,430	8.8	3,761
<b>Gas Heating (HVAC/Process) Replacement</b>		<b>0</b>	<b>0.0</b>	<b>795.3</b>	<b>\$6,877</b>	<b>\$290,020</b>	<b>\$10,864</b>	<b>\$279,157</b>	<b>40.6</b>	<b>93,122</b>
ECM 12	Install High Efficiency Hot Water Boilers	0	0.0	741.1	\$6,391	\$279,145	\$9,264	\$269,881	42.2	86,775
ECM 13	Install High Efficiency Furnaces	0	0.0	54.2	\$485	\$10,876	\$1,600	\$9,276	19.1	6,347
<b>HVAC System Improvements</b>		<b>502</b>	<b>0.0</b>	<b>29.0</b>	<b>\$328</b>	<b>\$895</b>	<b>\$526</b>	<b>\$369</b>	<b>1.1</b>	<b>3,903</b>
ECM 14	Install Occupancy-Controlled Thermostats	502	0.0	0.0	\$74	\$477	\$300	\$177	2.4	506
ECM 15	Install Pipe Insulation	0	0.0	29.0	\$254	\$418	\$226	\$192	0.8	3,397
<b>Domestic Water Heating Upgrade</b>		<b>2,944</b>	<b>0.0</b>	<b>42.5</b>	<b>\$795</b>	<b>\$825</b>	<b>\$825</b>	<b>\$0</b>	<b>0.0</b>	<b>7,935</b>
ECM 16	Install Low-Flow DHW Devices	2,944	0.0	42.5	\$795	\$825	\$825	\$0	0.0	7,935
<b>Food Service &amp; Refrigeration Measures</b>		<b>25,024</b>	<b>2.7</b>	<b>0.0</b>	<b>\$3,535</b>	<b>\$21,054</b>	<b>\$1,240</b>	<b>\$19,814</b>	<b>5.6</b>	<b>25,199</b>
ECM 17	Refrigerator/Freezer Case Electrically Commutated Motors	786	0.1	0.0	\$106	\$910	\$240	\$670	6.3	792
ECM 18	Refrigeration Controls	1,319	0.0	0.0	\$177	\$3,867	\$400	\$3,467	19.6	1,328
ECM 19	Replace Refrigeration Equipment	22,919	2.6	0.0	\$3,252	\$16,277	\$600	\$15,677	4.8	23,080
<b>TOTALS</b>		<b>418,213</b>	<b>111.0</b>	<b>865.6</b>	<b>\$66,885</b>	<b>\$736,290</b>	<b>\$130,860</b>	<b>\$605,429</b>	<b>9.1</b>	<b>522,487</b>

# 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 Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>		<b>276,823</b>	<b>75.4</b>	<b>-48.1</b>	<b>\$39,012</b>	<b>\$157,867</b>	<b>\$73,352</b>	<b>\$84,515</b>	<b>2.2</b>	<b>273,124</b>
ECM 1	Install LED Fixtures	81,890	6.9	-7.7	\$11,531	\$60,540	\$25,480	\$35,060	3.0	81,555
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,282	0.5	-0.5	\$325	\$1,210	\$244	\$966	3.0	2,242
ECM 3	Retrofit Fixtures with LED Lamps	192,651	67.9	-39.9	\$27,156	\$96,118	\$47,628	\$48,490	1.8	189,326
<b>Lighting Control Measures</b>		<b>68,908</b>	<b>19.7</b>	<b>-14.4</b>	<b>\$9,572</b>	<b>\$86,632</b>	<b>\$36,050</b>	<b>\$50,582</b>	<b>5.3</b>	<b>67,703</b>
ECM 4	Install Occupancy Sensor Lighting Controls	51,091	16.7	-10.7	\$7,092	\$65,932	\$17,160	\$48,772	6.9	50,197
ECM 5	Install High/Low Lighting Controls	17,817	3.0	-3.7	\$2,481	\$20,700	\$18,890	\$1,810	0.7	17,505
<b>Variable Frequency Drive (VFD) Measures</b>		<b>6,005</b>	<b>0.7</b>	<b>47.9</b>	<b>\$1,285</b>	<b>\$12,260</b>	<b>\$650</b>	<b>\$11,610</b>	<b>9.0</b>	<b>11,653</b>
ECM 7	Install VFDs on Constant Volume (CV) Fans	3,937	0.7	0.0	\$578	\$5,989	\$300	\$5,689	9.8	3,965
ECM 9	Install VFDs on Kitchen Hood Fan Motors	2,067	0.0	47.9	\$707	\$6,271	\$350	\$5,921	8.4	7,689
<b>Electric Unitary HVAC Measures</b>		<b>3,735</b>	<b>0.4</b>	<b>0.0</b>	<b>\$502</b>	<b>\$4,798</b>	<b>\$368</b>	<b>\$4,430</b>	<b>8.8</b>	<b>3,761</b>
ECM 11	Install High Efficiency Heat Pumps	3,735	0.4	0.0	\$502	\$4,798	\$368	\$4,430	8.8	3,761
<b>HVAC System Improvements</b>		<b>502</b>	<b>0.0</b>	<b>29.0</b>	<b>\$328</b>	<b>\$895</b>	<b>\$526</b>	<b>\$369</b>	<b>1.1</b>	<b>3,903</b>
ECM 14	Install Occupancy-Controlled Thermostats	502	0.0	0.0	\$74	\$477	\$300	\$177	2.4	506
ECM 15	Install Pipe Insulation	0	0.0	29.0	\$254	\$418	\$226	\$192	0.8	3,397
<b>Domestic Water Heating Upgrade</b>		<b>2,944</b>	<b>0.0</b>	<b>42.5</b>	<b>\$795</b>	<b>\$825</b>	<b>\$825</b>	<b>\$0</b>	<b>0.0</b>	<b>7,935</b>
ECM 16	Install Low-Flow DHW Devices	2,944	0.0	42.5	\$795	\$825	\$825	\$0	0.0	7,935
<b>Food Service &amp; Refrigeration Measures</b>		<b>23,705</b>	<b>2.7</b>	<b>0.0</b>	<b>\$3,358</b>	<b>\$17,187</b>	<b>\$840</b>	<b>\$16,347</b>	<b>4.9</b>	<b>23,871</b>
ECM 17	Refrigerator/Freezer Case Electrically Commutated Motors	786	0.1	0.0	\$106	\$910	\$240	\$670	6.3	792
ECM 19	Replace Refrigeration Equipment	22,919	2.6	0.0	\$3,252	\$16,277	\$600	\$15,677	4.8	23,080
<b>TOTALS</b>		<b>382,622</b>	<b>98.9</b>	<b>56.8</b>	<b>\$54,852</b>	<b>\$280,464</b>	<b>\$112,611</b>	<b>\$167,853</b>	<b>3.1</b>	<b>391,950</b>

# ANN BLANCHE SMITH 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)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>			<b>93,885</b>	<b>23.8</b>	<b>-15</b>	<b>\$13,417</b>	<b>\$53,800</b>	<b>\$24,692</b>	<b>\$29,108</b>	<b>2.2</b>	<b>92,778</b>
ECM 1	Install LED Fixtures	Yes	29,660	2.2	-2	\$4,265	\$20,273	\$8,900	\$11,373	2.7	29,654
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,266	0.4	0	\$323	\$1,072	\$204	\$868	2.7	2,226
ECM 3	Retrofit Fixtures with LED Lamps	Yes	61,959	21.2	-13	\$8,829	\$32,455	\$15,588	\$16,867	1.9	60,898
<b>Lighting Control Measures</b>			<b>16,399</b>	<b>5.3</b>	<b>-3</b>	<b>\$2,336</b>	<b>\$20,490</b>	<b>\$9,765</b>	<b>\$10,725</b>	<b>4.6</b>	<b>16,112</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	12,782	4.7	-3	\$1,821	\$14,640	\$3,990	\$10,650	5.8	12,559
ECM 5	Install High/Low Lighting Controls	Yes	3,616	0.6	-1	\$515	\$5,850	\$5,775	\$75	0.1	3,553
<b>Motor Upgrades</b>			<b>982</b>	<b>0.3</b>	<b>0</b>	<b>\$142</b>	<b>\$4,554</b>	<b>\$0</b>	<b>\$4,554</b>	<b>32.1</b>	<b>989</b>
ECM 6	Premium Efficiency Motors	No	982	0.3	0	\$142	\$4,554	\$0	\$4,554	32.1	989
<b>Variable Frequency Drive (VFD) Measures</b>			<b>9,365</b>	<b>2.5</b>	<b>13</b>	<b>\$1,471</b>	<b>\$47,382</b>	<b>\$1,650</b>	<b>\$45,732</b>	<b>31.1</b>	<b>11,005</b>
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	4,763	1.8	0	\$687	\$12,542	\$700	\$11,842	17.2	4,796
ECM 8	Install VFDs on Heating Water Pumps	No	3,954	0.7	0	\$571	\$31,829	\$800	\$31,029	54.4	3,981
ECM 9	Install VFDs on Kitchen Hood Fan Motors	No	649	0.0	13	\$213	\$3,010	\$150	\$2,860	13.4	2,228
<b>Electric Unitary HVAC Measures</b>			<b>2,241</b>	<b>1.9</b>	<b>0</b>	<b>\$324</b>	<b>\$17,350</b>	<b>\$0</b>	<b>\$17,350</b>	<b>53.6</b>	<b>2,257</b>
ECM 10	Install High Efficiency Air Conditioning Units	No	2,241	1.9	0	\$324	\$17,350	\$0	\$17,350	53.6	2,257
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>114</b>	<b>\$1,011</b>	<b>\$61,972</b>	<b>\$9,264</b>	<b>\$52,708</b>	<b>52.1</b>	<b>13,352</b>
ECM 11	Install High Efficiency Hot Water Boilers	No	0	0.0	114	\$1,011	\$61,972	\$9,264	\$52,708	52.1	13,352
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>6</b>	<b>\$50</b>	<b>\$144</b>	<b>\$80</b>	<b>\$64</b>	<b>1.3</b>	<b>664</b>
ECM 12	Install Pipe Insulation	Yes	0	0.0	6	\$50	\$144	\$80	\$64	1.3	664
<b>Domestic Water Heating Upgrade</b>			<b>2,944</b>	<b>0.0</b>	<b>5</b>	<b>\$467</b>	<b>\$244</b>	<b>\$244</b>	<b>\$0</b>	<b>0.0</b>	<b>3,520</b>
ECM 13	Install Low-Flow DHW Devices	Yes	2,944	0.0	5	\$467	\$244	\$244	\$0	0.0	3,520
<b>Food Service &amp; Refrigeration Measures</b>			<b>9,845</b>	<b>1.1</b>	<b>0</b>	<b>\$1,421</b>	<b>\$7,385</b>	<b>\$0</b>	<b>\$7,385</b>	<b>5.2</b>	<b>9,913</b>
ECM 14	Replace Refrigeration Equipment	Yes	9,845	1.1	0	\$1,421	\$7,385	\$0	\$7,385	5.2	9,913
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>123,072</b>	<b>30.3</b>	<b>-8</b>	<b>\$17,692</b>	<b>\$82,063</b>	<b>\$34,781</b>	<b>\$47,282</b>	<b>2.7</b>	<b>122,988</b>
<b>TOTALS (ALL MEASURES)</b>			<b>135,661</b>	<b>34.9</b>	<b>119</b>	<b>\$20,639</b>	<b>\$213,321</b>	<b>\$45,695</b>	<b>\$167,626</b>	<b>8.1</b>	<b>150,591</b>

\* - All incentives presented in this table are based on NJ SmartStart 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).

# MEADOWBROOK 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)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>			90,211	24.8	-15	\$13,114	\$49,986	\$24,352	\$25,634	2.0	89,118
ECM 1	Install LED Fixtures	Yes	22,326	0.5	-1	\$3,272	\$14,880	\$5,560	\$9,320	2.8	22,407
ECM 2	Retrofit Fixtures with LED Lamps	Yes	67,885	24.2	-14	\$9,842	\$35,106	\$18,792	\$16,314	1.7	66,711
<b>Lighting Control Measures</b>			18,644	6.2	-4	\$2,703	\$26,000	\$10,480	\$15,520	5.7	18,318
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	11,956	5.0	-2	\$1,733	\$20,600	\$5,530	\$15,070	8.7	11,747
ECM 4	Install High/Low Lighting Controls	Yes	6,687	1.2	-1	\$969	\$5,400	\$4,950	\$450	0.5	6,570
<b>Motor Upgrades</b>			1,382	0.4	0	\$203	\$6,538	\$0	\$6,538	32.2	1,392
ECM 5	Premium Efficiency Motors	No	1,382	0.4	0	\$203	\$6,538	\$0	\$6,538	32.2	1,392
<b>Variable Frequency Drive (VFD) Measures</b>			6,564	0.9	23	\$1,165	\$23,170	\$650	\$22,520	19.3	9,293
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	3,937	0.7	0	\$578	\$5,989	\$300	\$5,689	9.8	3,965
ECM 7	Install VFDs on Heating Water Pumps	No	1,443	0.2	0	\$212	\$13,920	\$150	\$13,770	65.0	1,453
ECM 8	Install VFDs on Kitchen Hood Fan Motors	Yes	1,184	0.0	23	\$375	\$3,261	\$200	\$3,061	8.2	3,875
<b>Electric Unitary HVAC Measures</b>			4,120	1.3	0	\$605	\$17,821	\$1,460	\$16,361	27.0	4,149
ECM 9	Install High Efficiency Air Conditioning Units	No	4,120	1.3	0	\$605	\$17,821	\$1,460	\$16,361	27.0	4,149
<b>Gas Heating (HVAC/Process) Replacement</b>			0	0.0	94	\$825	\$71,694	\$0	\$71,694	86.9	11,004
ECM 10	Install High Efficiency Hot Water Boilers	No	0	0.0	94	\$825	\$71,694	\$0	\$71,694	86.9	11,004
<b>HVAC System Improvements</b>			502	0.0	17	\$223	\$647	\$384	\$263	1.2	2,501
ECM 11	Install Occupancy-Controlled Thermostats	Yes	502	0.0	0	\$74	\$477	\$300	\$177	2.4	506
ECM 12	Install Pipe Insulation	Yes	0	0.0	17	\$150	\$169	\$84	\$85	0.6	1,995
<b>Domestic Water Heating Upgrade</b>			0	0.0	17	\$150	\$258	\$258	\$0	0.0	2,000
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	17	\$150	\$258	\$258	\$0	0.0	2,000
<b>Food Service &amp; Refrigeration Measures</b>			5,972	0.7	0	\$877	\$4,792	\$600	\$4,192	4.8	6,014
ECM 14	Replace Refrigeration Equipment	Yes	5,972	0.7	0	\$877	\$4,792	\$600	\$4,192	4.8	6,014
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			120,450	32.4	38	\$18,020	\$90,933	\$36,574	\$54,358	3.0	125,790
<b>TOTALS (ALL MEASURES)</b>			127,395	34.1	132	\$19,864	\$200,907	\$38,184	\$162,722	8.2	143,788

\* - All incentives presented in this table are based on NJ SmartStart 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).

# GEORGE G. WHITE 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)**	CO <sub>2</sub> e Reduction (lbs)
<b>Lighting Upgrades</b>			83,003	23.6	-17	\$11,010	\$48,931	\$21,562	\$27,369	2.5	81,645
ECM 1	Install LED Fixtures	Yes	28,723	4.2	-5	\$3,814	\$24,159	\$10,400	\$13,759	3.6	28,305
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	16	0.1	0	\$2	\$138	\$40	\$98	45.4	16
ECM 3	Retrofit Fixtures with LED Lamps	Yes	54,264	19.3	-11	\$7,194	\$24,635	\$11,122	\$13,513	1.9	53,324
<b>Lighting Control Measures</b>			31,495	7.3	-7	\$4,175	\$36,362	\$15,035	\$21,327	5.1	30,944
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	23,981	6.1	-5	\$3,179	\$26,912	\$6,870	\$20,042	6.3	23,562
ECM 5	Install High/Low Lighting Controls	Yes	7,514	1.2	-2	\$996	\$9,450	\$8,165	\$1,285	1.3	7,382
<b>Motor Upgrades</b>			3,168	0.9	0	\$426	\$8,092	\$0	\$8,092	19.0	3,190
ECM 6	Premium Efficiency Motors	No	3,168	0.9	0	\$426	\$8,092	\$0	\$8,092	19.0	3,190
<b>Variable Frequency Drive (VFD) Measures</b>			10,140	3.2	25	\$1,576	\$39,003	\$3,000	\$36,003	22.8	13,135
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	4,967	2.7	0	\$667	\$18,813	\$1,050	\$17,763	26.6	5,001
ECM 8	Install VFDs on Heating Water Pumps	No	4,290	0.5	0	\$576	\$17,180	\$1,800	\$15,380	26.7	4,320
ECM 9	Install VFDs on Kitchen Hood Fan Motors	Yes	883	0.0	25	\$332	\$3,010	\$150	\$2,860	8.6	3,813
<b>Electric Unitary HVAC Measures</b>			3,735	0.4	0	\$502	\$4,798	\$368	\$4,430	8.8	3,761
ECM 10	Install High Efficiency Heat Pumps	Yes	3,735	0.4	0	\$502	\$4,798	\$368	\$4,430	8.8	3,761
<b>Gas Heating (HVAC/Process) Replacement</b>			0	0.0	569	\$4,866	\$152,729	\$800	\$151,929	31.2	66,664
ECM 11	Install High Efficiency Hot Water Boilers	No	0	0.0	533	\$4,556	\$145,479	\$0	\$145,479	31.9	62,419
ECM 12	Install High Efficiency Furnaces	No	0	0.0	36	\$310	\$7,250	\$800	\$6,450	20.8	4,245
<b>HVAC System Improvements</b>			0	0.0	6	\$49	\$75	\$52	\$23	0.5	668
ECM 13	Install Pipe Insulation	Yes	0	0.0	6	\$49	\$75	\$52	\$23	0.5	668
<b>Domestic Water Heating Upgrade</b>			0	0.0	19	\$160	\$294	\$294	\$0	0.0	2,193
ECM 14	Install Low-Flow DHW Devices	Yes	0	0.0	19	\$160	\$294	\$294	\$0	0.0	2,193
<b>Food Service &amp; Refrigeration Measures</b>			9,208	0.9	0	\$1,237	\$8,877	\$640	\$8,237	6.7	9,272
ECM 15	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	786	0.1	0	\$106	\$910	\$240	\$670	6.3	792
ECM 16	Refrigeration Controls	No	1,319	0.0	0	\$177	\$3,867	\$400	\$3,467	19.6	1,328
ECM 17	Replace Refrigeration Equipment	Yes	7,103	0.8	0	\$954	\$4,100	\$0	\$4,100	4.3	7,153
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			127,005	32.2	26	\$17,288	\$98,481	\$37,701	\$60,780	3.5	130,969
<b>TOTALS (ALL MEASURES)</b>			140,749	36.3	596	\$24,001	\$299,161	\$41,751	\$257,410	10.7	211,472

\* - All incentives presented in this table are based on NJ SmartStart 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).

# BOARD OF EDUCATION

#	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)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>			9,724	3.2	-2	\$1,470	\$5,150	\$2,746	\$2,404	1.6	9,583
ECM 1	Install LED Fixtures	Yes	1,182	0.0	0	\$181	\$1,228	\$620	\$608	3.4	1,190
ECM 2	Retrofit Fixtures with LED Lamps	Yes	8,542	3.2	-2	\$1,289	\$3,922	\$2,126	\$1,796	1.4	8,393
<b>Lighting Control Measures</b>			2,371	0.9	0	\$358	\$3,780	\$770	\$3,010	8.4	2,329
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,371	0.9	0	\$358	\$3,780	\$770	\$3,010	8.4	2,329
<b>Motor Upgrades</b>			1,707	0.6	0	\$261	\$3,306	\$0	\$3,306	12.7	1,719
ECM 4	Premium Efficiency Motors	No	1,707	0.6	0	\$261	\$3,306	\$0	\$3,306	12.7	1,719
<b>Electric Unitary HVAC Measures</b>			607	0.8	0	\$93	\$6,983	\$876	\$6,107	65.8	611
ECM 5	Install High Efficiency Air Conditioning Units	No	607	0.8	0	\$93	\$6,983	\$876	\$6,107	65.8	611
<b>Gas Heating (HVAC/Process) Replacement</b>			0	0.0	18	\$175	\$3,625	\$800	\$2,825	16.1	2,102
ECM 6	Install High Efficiency Furnaces	No	0	0.0	18	\$175	\$3,625	\$800	\$2,825	16.1	2,102
<b>HVAC System Improvements</b>			0	0.0	1	\$6	\$29	\$10	\$19	3.3	69
ECM 7	Install Pipe Insulation	Yes	0	0.0	1	\$6	\$29	\$10	\$19	3.3	69
<b>Domestic Water Heating Upgrade</b>			0	0.0	2	\$19	\$1,709	\$29	\$1,680	90.7	222
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$19	\$29	\$29	\$0	0.0	222
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			12,095	4.1	0	\$1,852	\$8,987	\$3,555	\$5,433	2.9	12,204
<b>TOTALS (ALL MEASURES)</b>			14,409	5.6	18	\$2,381	\$24,581	\$5,231	\$19,351	8.1	16,635

\* - All incentives presented in this table are based on NJ SmartStart 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).



# 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**
- **Upgrade/Replace Energy Management System**
- **Upgrade to All-Electric Heating System**
- **Window Replacements**

*See individual reports for specific descriptions of future capital projects*

# SOLAR ENERGY GENERATION POTENTIAL

	Anne Blanche Smith School	Meadowbrook School	George G. White School
<i>Potential:</i>	<b>MEDIUM</b>	<b>HIGH</b>	<b>HIGH</b>
<i>System Potential: (kW)</i>	75	80	130
<i>Electric Generation: (kWh per year)</i>	56,434	95,310	154,879
<i>Displaced Cost: (per year)</i>	\$8,150	\$13,990	\$20,810

## Transition Incentive (TI) Program:

<https://www.njcleanenergy.com/renewable-energy/programs/transition-incentive-program>

## Community Solar Energy Pilot Program:

<http://www.NJCleanEnergy.com/CommunitySolar>

# CLEAN ENERGY PROGRAM PORTFOLIO

## ELIGIBLE SECTORS

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

## INCENTIVE PROGRAMS

### 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

## OTHER PROGRAMS

### Renewable Energy Generation:

- **Transition Incentive (TI) Program**
- **Community Solar**

# RECOMMENDED NJCEP INCENTIVES PER BUILDING

Entity Name	Direct Install	SmartStart	CTEEP
Ann Blanche Smith School	X	X	X
Meadowbrook School	X	X	X
George G. White School	X	X	X
Board of Education	X	X	X



# 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 Government/K-12 Public Schools), or
- \$250,000 entity cap ([\\$4MM](#) UEZ/OZ/Local Govt./[K-12 Public Schools](#))

# DIRECT INSTALL

[NJCleanEnergy.com/DI](http://NJCleanEnergy.com/DI)

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

## INCENTIVE FUNDING

Up to **80%** of installed cost is paid directly to the contractor

## CUSTOMER

20% of installed cost

All other eligible facilities:

## INCENTIVE FUNDING

Up to **70%** of installed cost is paid directly to the contractor

## CUSTOMER

30% of installed cost



# DIRECT INSTALL

NJCleanEnergy.com/DI

## Participating Contractor

**Lime Energy**

Chris Fornicola

732-427-7278

[chris.fornicola@lime-energy.com](mailto:chris.fornicola@lime-energy.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 all 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

FY20 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](http://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:**

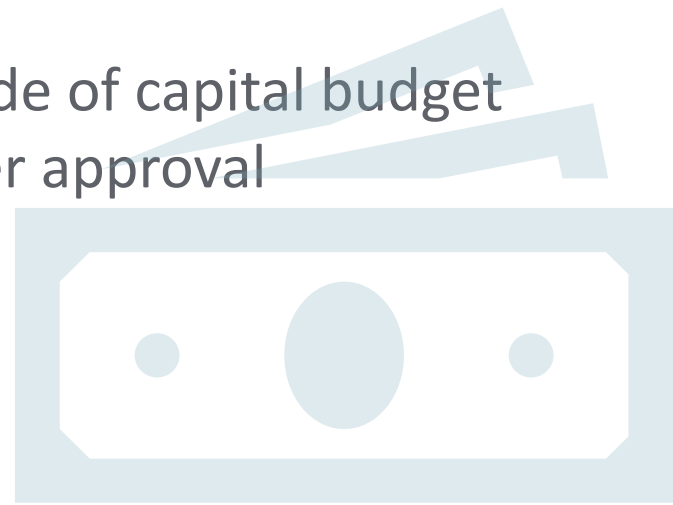
- \$250,000 fiscal year entity cap
- Technical assistance incentives for custom project evaluation (up to \$10K)

**SAME INCENTIVE  
VALUES AS  
SMARTSTART**

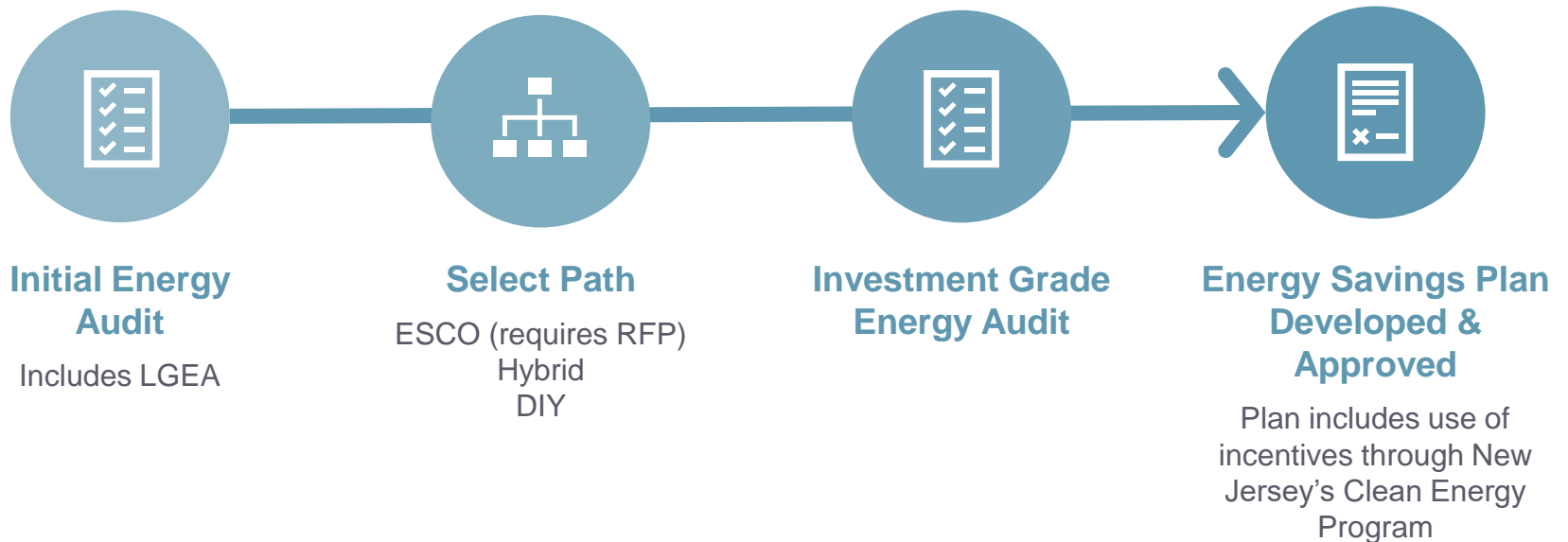
# FINANCING MECHANISM: ESIP

## 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



# ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

## FOR MORE INFORMATION

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# FOR MORE INFORMATION

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# QUESTIONS

