

New Jersey's Clean Energy Program

LGEA Presentation

BelovED Community Charter School

October 9, 2020



INTRODUCTIONS

BelovED Community Charter School

- Laura Tasic – Business Administrator
- William Fitzpatrick – Assoc. Business Administrator
- Duanne Moeller – Director of Operations
- Mark Lenzo - Asst. Director of Operations

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 – ESIP Coordinator (BPU)
- Arif Welcher – Government/Business Manager (BPU)

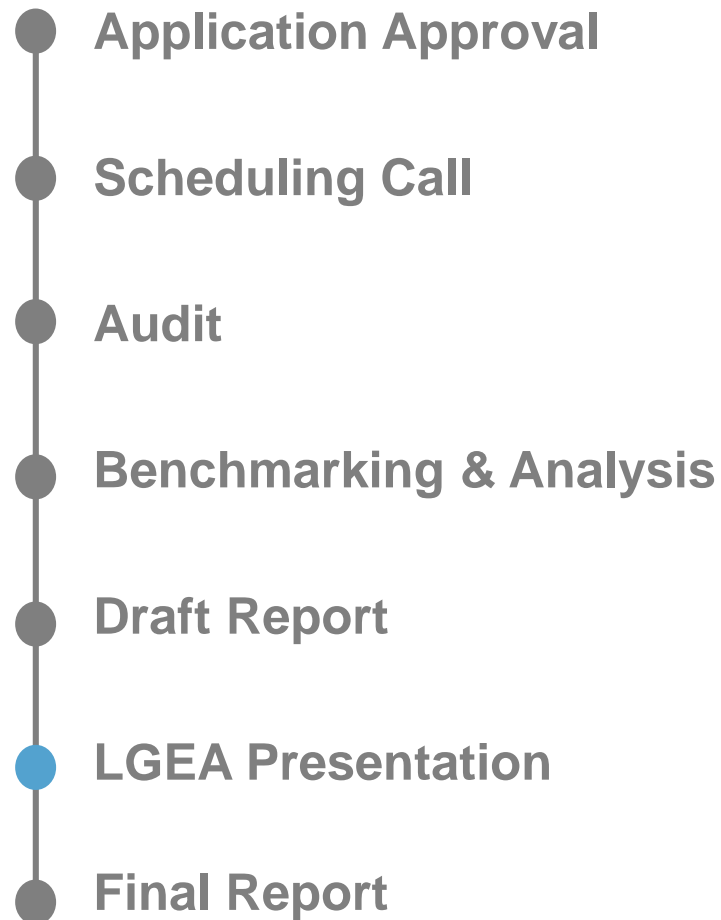


AGENDA

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



LGEA PROCESS



SITE VISIT & UTILITY ANALYSIS

Overview of Systems, Baseline & Existing Conditions:

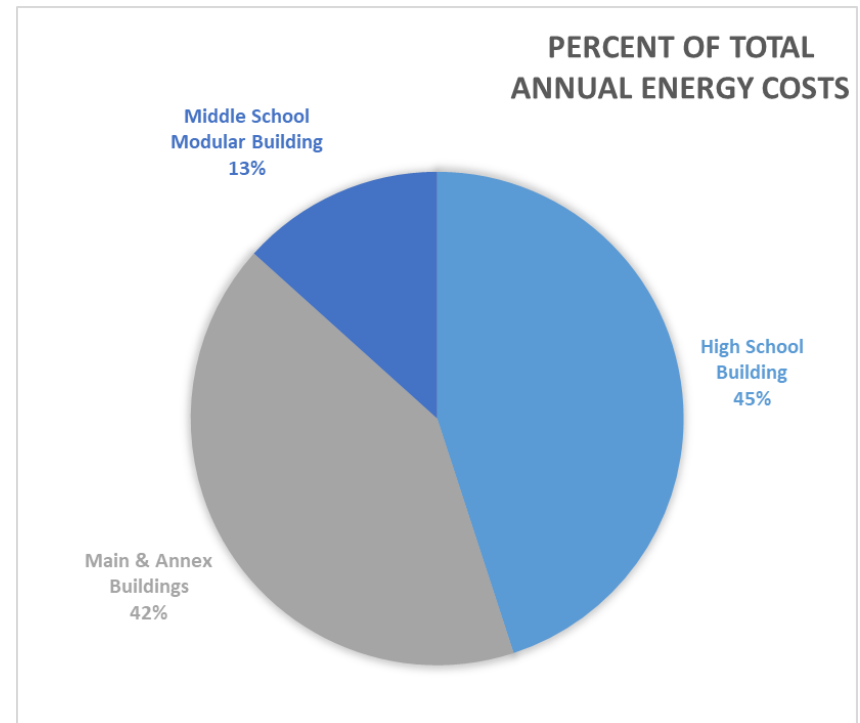
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Cooking and Refrigeration Equipment

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

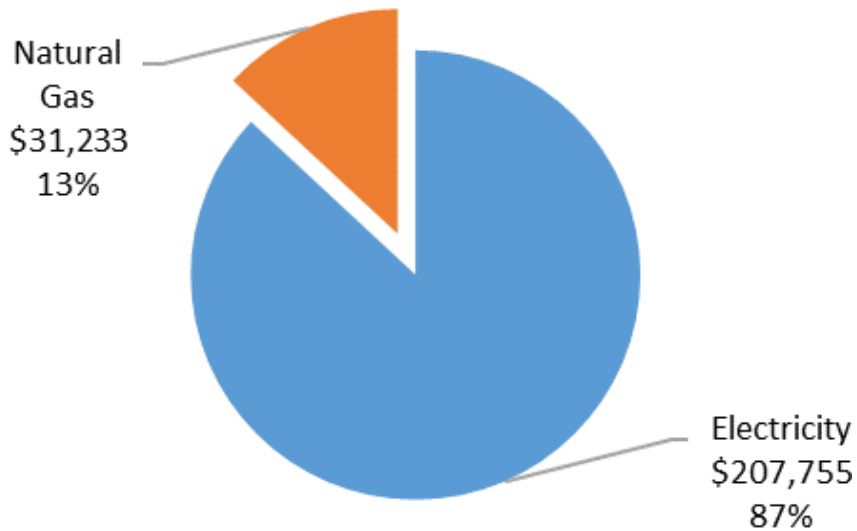
Sites Visited/Analyzed

- Main & Annex Building
- Middle School Modular Building
- High School Building

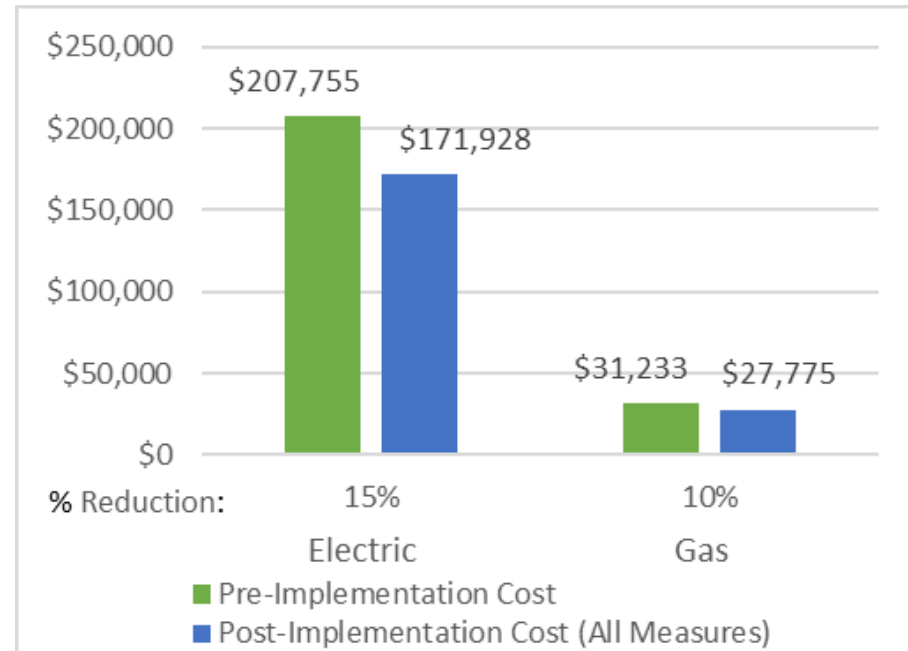


UTILITY BREAKOUT

Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING

ENERGY STAR® Statement of Energy Performance

46
ENERGY STAR® Score¹

BelovED CCS Elementary School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 66,290
Built: 2000

For Year Ending: February 29, 2020
Date Generated: August 12, 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

Property Address	Property Owner	Primary Contact
BelovED CCS Elementary School 508 Grand Street Jersey City, New Jersey 07304	BelovED Community Charter School 508 Grand Street Jersey City, NJ 07304 (201) 630-4700	Laura Tosic 508 Grand Street Jersey City, NJ 07304 (201) 630-4765 ltosic@belovedocs.org

Property ID: 11176420

Energy Consumption and Energy Use Intensity (EUI)

Annual Energy by Fuel		National Median Comparison	
Site EUI		National Median Site EUI (kBtu/ft ²)	45.5
47.3 kBtu/ft ²		National Median Source EUI (kBtu/ft ²)	105.9
Natural Gas (kBtu)	718,755 (27%)	% Diff from National Median Source EUI	4%
Electric - Grid (kBtu)	1,941,972 (73%)	Annual Emissions	
Source EUI		Greenhouse Gas Emissions (Metric Tons CO ₂ e/year)	235
110 kBtu/ft ²			

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
47.3 kBtu/ft²

Source EUI
110 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft ²)	45.5
National Median Source EUI (kBtu/ft ²)	105.9
% Diff from National Median Source EUI	4%

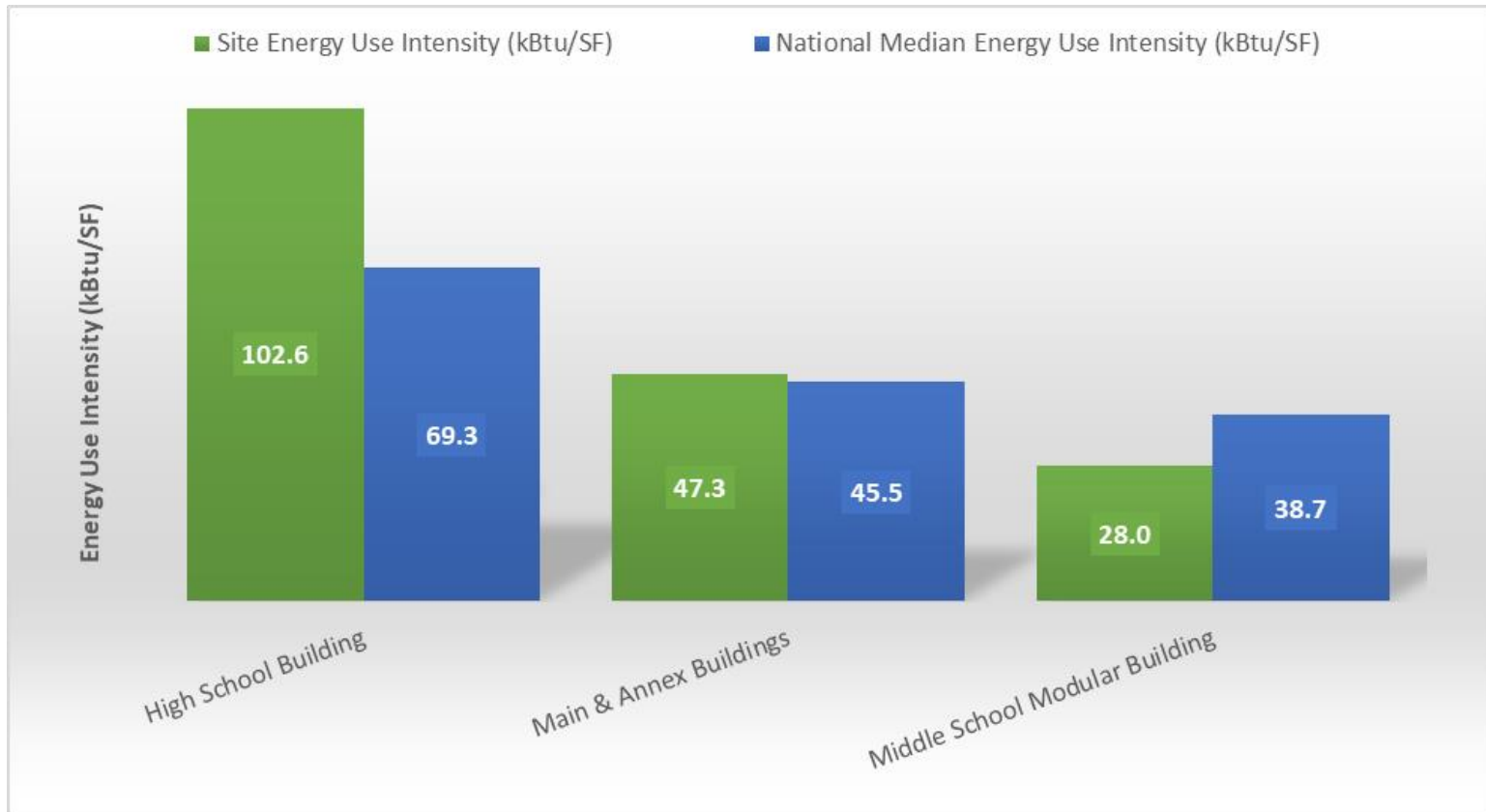
Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO ₂ e/year)	235
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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.

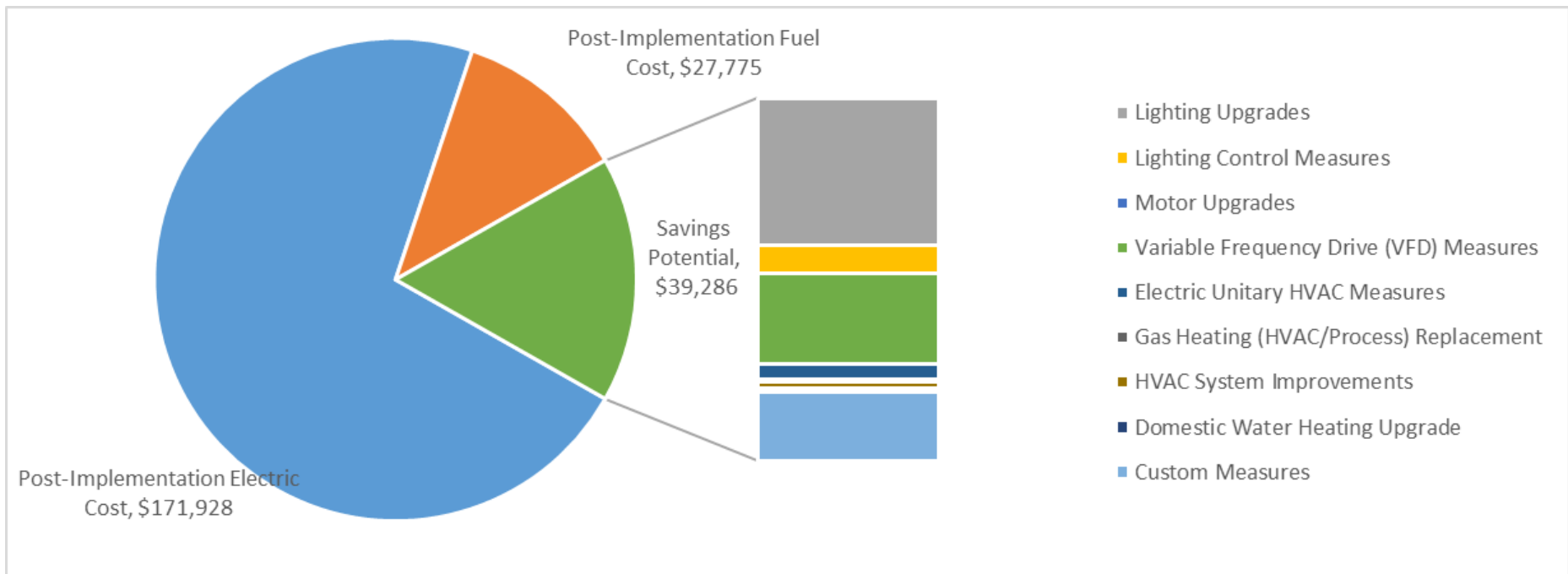
Site Name	Energy Star Score
High School Building	15
Main & Annex Buildings	46
Middle School Modular Building	78

BENCHMARKING



ALL OPPORTUNITIES

Savings Potential

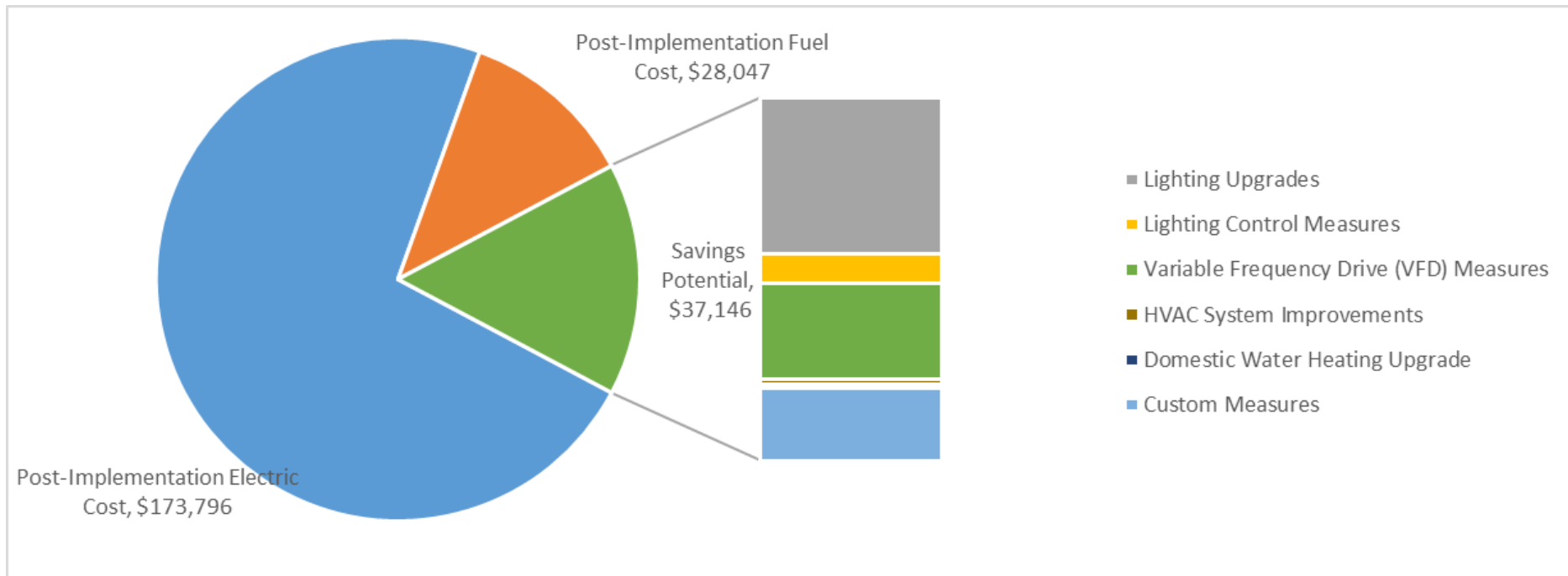


ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		97,791	24.1	-15.2	\$15,997	\$45,650	\$21,736	\$23,914	1.5	96,697
ECM 1	Install LED Fixtures	9,667	0.0	0.0	\$1,587	\$7,360	\$1,700	\$5,660	3.6	9,734
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	52	0.0	0.0	\$8	\$69	\$20	\$49	5.8	51
ECM 3	Retrofit Fixtures with LED Lamps	88,072	24.1	-15.2	\$14,401	\$38,222	\$20,016	\$18,206	1.3	86,912
Lighting Control Measures		18,772	4.1	-3.7	\$2,946	\$20,804	\$8,780	\$12,024	4.1	18,467
ECM 4	Install Occupancy Sensor Lighting Controls	14,664	3.3	-3.1	\$2,273	\$14,504	\$3,100	\$11,404	5.0	14,408
ECM 5	Install High/Low Lighting Controls	4,108	0.8	-0.7	\$673	\$6,300	\$5,680	\$620	0.9	4,058
Motor Upgrades		368	0.1	0.0	\$60	\$1,896	\$0	\$1,896	31.4	371
ECM 6	Premium Efficiency Motors	368	0.1	0.0	\$60	\$1,896	\$0	\$1,896	31.4	371
Variable Frequency Drive (VFD) Measures		61,831	14.9	40.2	\$9,835	\$73,759	\$8,650	\$65,109	6.6	66,967
ECM 7	Install VFDs on Constant Volume (CV) Fans	55,533	14.9	0.0	\$8,851	\$70,498	\$8,450	\$62,048	7.0	55,921
ECM 8	Install VFDs on Kitchen Hood Fan Motors	6,298	0.0	40.2	\$984	\$3,261	\$200	\$3,061	3.1	11,045
Electric Unitary HVAC Measures		10,109	11.1	0.0	\$1,660	\$189,037	\$17,294	\$171,742	103.5	10,180
ECM 9	Install High Efficiency Air Conditioning Units	10,109	11.1	0.0	\$1,660	\$189,037	\$17,294	\$171,742	103.5	10,180
Gas Heating (HVAC/Process) Replacement		0	0.0	18.9	\$202	\$46,176	\$10,400	\$35,776	176.9	2,214
ECM 10	Install High Efficiency Furnaces	0	0.0	18.9	\$202	\$46,176	\$10,400	\$35,776	176.9	2,214
HVAC System Improvements		3,541	0.0	41.4	\$798	\$16,313	\$0	\$16,313	20.5	8,419
ECM 11	Implement Demand Control Ventilation (DCV)	3,541	0.0	41.4	\$798	\$16,313	\$0	\$16,313	20.5	8,419
Domestic Water Heating Upgrade		2,502	0.0	0.0	\$413	\$72	\$72	\$0	0.0	2,520
ECM 12	Install Low-Flow DHW Devices	2,502	0.0	0.0	\$413	\$72	\$72	\$0	0.0	2,520
Custom Measures		52,016	0.0	248.4	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
ECM 13	Retro-Commissioning Study	52,016	0.0	248.4	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
TOTALS		246,930	54.4	330.1	\$39,286	\$447,306	\$66,932	\$380,374	9.7	287,304

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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades		97,791	24.1	-15.2	\$15,997	\$45,650	\$21,736	\$23,914	1.5	96,697
ECM 1	Install LED Fixtures	9,667	0.0	0.0	\$1,587	\$7,360	\$1,700	\$5,660	3.6	9,734
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	52	0.0	0.0	\$8	\$69	\$20	\$49	5.8	51
ECM 3	Retrofit Fixtures with LED Lamps	88,072	24.1	-15.2	\$14,401	\$38,222	\$20,016	\$18,206	1.3	86,912
Lighting Control Measures		18,772	4.1	-3.7	\$2,946	\$20,804	\$8,780	\$12,024	4.1	18,467
ECM 4	Install Occupancy Sensor Lighting Controls	14,664	3.3	-3.1	\$2,273	\$14,504	\$3,100	\$11,404	5.0	14,408
ECM 5	Install High/Low Lighting Controls	4,108	0.8	-0.7	\$673	\$6,300	\$5,680	\$620	0.9	4,058
Variable Frequency Drive (VFD) Measures		61,831	14.9	40.2	\$9,835	\$73,759	\$8,650	\$65,109	6.6	66,967
ECM 7	Install VFDs on Constant Volume (CV) Fans	55,533	14.9	0.0	\$8,851	\$70,498	\$8,450	\$62,048	7.0	55,921
ECM 8	Install VFDs on Kitchen Hood Fan Motors	6,298	0.0	40.2	\$984	\$3,261	\$200	\$3,061	3.1	11,045
HVAC System Improvements		2,557	0.0	36.2	\$580	\$6,797	\$0	\$6,797	11.7	6,817
ECM 11	Implement Demand Control Ventilation (DCV)	2,557	0.0	36.2	\$580	\$6,797	\$0	\$6,797	11.7	6,817
Domestic Water Heating Upgrade		2,502	0.0	0.0	\$413	\$72	\$72	\$0	0.0	2,520
ECM 12	Install Low-Flow DHW Devices	2,502	0.0	0.0	\$413	\$72	\$72	\$0	0.0	2,520
Custom Measures		52,016	0.0	248.4	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
ECM 13	Retro-Commissioning Study	52,016	0.0	248.4	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
TOTALS		235,469	43.1	305.9	\$37,146	\$200,682	\$39,238	\$161,444	4.3	272,938

MAIN & ANNEX BUILDING

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			82,326	18.4	-15	\$13,354	\$36,777	\$16,876	\$19,901	1.5	81,124
ECM 1	Install LED Fixtures	Yes	9,667	0.0	0	\$1,587	\$7,360	\$1,700	\$5,660	3.6	9,734
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	52	0.0	0	\$8	\$69	\$20	\$49	5.8	51
ECM 3	Retrofit Fixtures with LED Lamps	Yes	72,607	18.3	-15	\$11,759	\$29,348	\$15,156	\$14,192	1.2	71,339
Lighting Control Measures			16,257	3.8	-3	\$2,633	\$17,313	\$6,815	\$10,498	4.0	15,973
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	13,051	3.1	-3	\$2,114	\$13,038	\$2,990	\$10,048	4.8	12,823
ECM 5	Install High/Low Lighting Controls	Yes	3,206	0.6	-1	\$519	\$4,275	\$3,825	\$450	0.9	3,150
Motor Upgrades			368	0.1	0	\$60	\$1,896	\$0	\$1,896	31.4	371
ECM 6	Premium Efficiency Motors	No	368	0.1	0	\$60	\$1,896	\$0	\$1,896	31.4	371
Variable Frequency Drive (VFD) Measures			51,467	14.3	0	\$8,450	\$67,237	\$8,250	\$58,987	7.0	51,827
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	51,467	14.3	0	\$8,450	\$67,237	\$8,250	\$58,987	7.0	51,827
Electric Unitary HVAC Measures			10,109	11.1	0	\$1,660	\$189,037	\$17,294	\$171,742	103.5	10,180
ECM 8	Install High Efficiency Air Conditioning Units	No	10,109	11.1	0	\$1,660	\$189,037	\$17,294	\$171,742	103.5	10,180
Gas Heating (HVAC/Process) Replacement			0	0.0	19	\$202	\$46,176	\$10,400	\$35,776	176.9	2,214
ECM 9	Install High Efficiency Furnaces	No	0	0.0	19	\$202	\$46,176	\$10,400	\$35,776	176.9	2,214
HVAC System Improvements			984	0.0	5	\$217	\$9,516	\$0	\$9,516	43.8	1,602
ECM 10	Implement Demand Control Ventilation (DCV)	No	984	0.0	5	\$217	\$9,516	\$0	\$9,516	43.8	1,602
Domestic Water Heating Upgrade			2,224	0.0	0	\$365	\$57	\$57	\$0	0.0	2,240
ECM 11	Install Low-Flow DHW Devices	Yes	2,224	0.0	0	\$365	\$57	\$57	\$0	0.0	2,240
TOTALS (COST EFFECTIVE MEASURES)			152,275	36.5	-19	\$24,803	\$121,384	\$31,998	\$89,386	3.6	151,164
TOTALS (ALL MEASURES)			163,735	47.7	6	\$26,943	\$368,009	\$59,693	\$308,316	11.4	165,530

MIDDLE SCHOOL MODULAR BUILDING

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			15,465	5.8	0	\$2,642	\$8,873	\$4,860	\$4,013	1.5	15,573
ECM 1	Retrofit Fixtures with LED Lamps	Yes	15,465	5.8	0	\$2,642	\$8,873	\$4,860	\$4,013	1.5	15,573
Lighting Control Measures			948	0.2	0	\$162	\$2,141	\$1,895	\$246	1.5	954
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	46	0.0	0	\$8	\$116	\$40	\$76	9.8	46
ECM 3	Install High/Low Lighting Controls	Yes	902	0.2	0	\$154	\$2,025	\$1,855	\$170	1.1	909
Domestic Water Heating Upgrade			278	0.0	0	\$48	\$14	\$14	\$0	0.0	280
ECM 4	Install Low-Flow DHW Devices	Yes	278	0.0	0	\$48	\$14	\$14	\$0	0.0	280
TOTALS (COST EFFECTIVE MEASURES)			16,691	6.0	0	\$2,851	\$11,028	\$6,769	\$4,259	1.5	16,807
TOTALS (ALL MEASURES)			16,691	6.0	0	\$2,851	\$11,028	\$6,769	\$4,259	1.5	16,807

HIGH SCHOOL BUILDING

#	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 ₂ e Emissions Reduction (lbs)
Lighting Control Measures			1,567	0.1	0	\$151	\$1,350	\$70	\$1,280	8.5	1,540
ECM1	Install Occupancy Sensor Lighting Controls	Yes	1,567	0.1	0	\$151	\$1,350	\$70	\$1,280	8.5	1,540
Variable Frequency Drive (VFD) Measures			10,364	0.6	40	\$1,385	\$6,522	\$400	\$6,122	4.4	15,140
ECM2	Install VFDs on Constant Volume (CV) Fans	Yes	4,066	0.6	0	\$400	\$3,261	\$200	\$3,061	7.6	4,094
ECM3	Install VFDs on Kitchen Hood Fan Motors	Yes	6,298	0.0	40	\$984	\$3,261	\$200	\$3,061	3.1	11,045
HVAC System Improvements			2,557	0.0	36	\$580	\$6,797	\$0	\$6,797	11.7	6,817
ECM4	Implement Demand Control Ventilation (DCV)	Yes	2,557	0.0	36	\$580	\$6,797	\$0	\$6,797	11.7	6,817
Custom Measures			52,016	0.0	248	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
ECM5	Retro-Commissioning Study	Yes	52,016	0.0	248	\$7,375	\$53,600	\$0	\$53,600	7.3	81,470
TOTALS (COST EFFECTIVE MEASURES)			66,504	0.7	325	\$9,492	\$68,269	\$470	\$67,799	7.1	104,966
TOTALS (ALL MEASURES)			66,504	0.7	325	\$9,492	\$68,269	\$470	\$67,799	7.1	104,966

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
- Installation of an Energy Management System

See individual reports for specific descriptions by building



SOLAR ENERGY GENERATION POTENTIAL

	Main/Annex Building	Middle School	High School
<i>Potential:</i>	HIGH	HIGH	HIGH
<i>System Potential: (kW)</i>	150	50	90
<i>Electric Generation: (kWh per year)</i>	178,705	59,569	107,224
<i>Displaced Cost: (per year)</i>	\$29,340	\$10,180	\$10,560

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

BelovED Community Charter School	Direct Install	SmartStart	CTEEP
Main & Annex Building		X	X
Middle School Modular Building	X	X	X
High School Building	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 Govt./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

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



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

- Electric Chillers
- Gas Cooling
- Electric Unitary HVAC
- Ground Source Heat Pumps
- Gas Heating
- Variable Frequency Drives
- Gas Water Heating
- Lighting/Lighting Controls
- Refrigeration Doors
- Refrigeration Controls
- Food Service Equipment
- Refrigerator/Freezer Motors

DOUBLE INCENTIVES

for OZ/UEZ, local government (munis & counties), K-12 public school, or designated as affordable housing



CUSTOM INCENTIVES

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Must meet code for retrofit projects or exceed code for new construction
- 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:

- Up to \$500,000 for each electric or gas account
- Technical assistance incentives for custom project evaluation (up to \$10K)

**SAME INCENTIVE
VALUES AS
SMARTSTART**

CTEEP: CUSTOMER TAILORED ENERGY EFFICIENCY PILOT

NJCleanEnergy.com/CTEEP



SAME INCENTIVE VALUES AS SMARTSTART



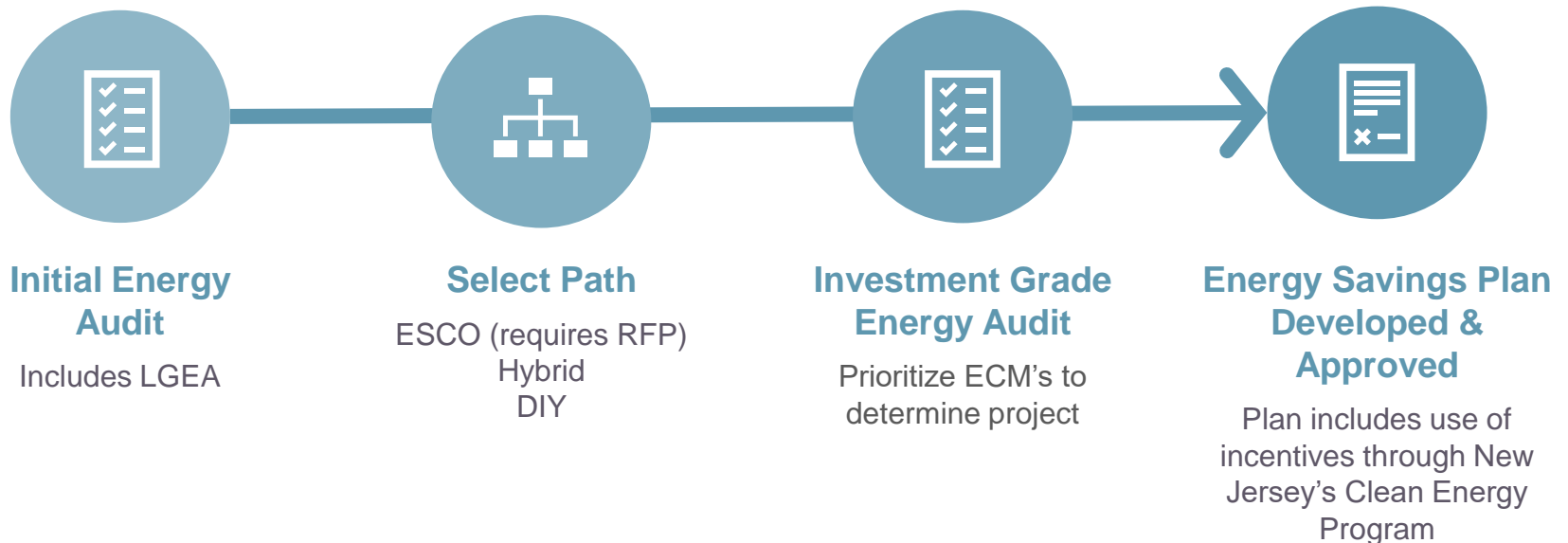
FINANCING MECHANISM: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

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



FINANCING MECHANISM: ESIP



ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

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c: 609.915.0903

FOR MORE INFORMATION

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(732) 570-7534



NJCleanEnergy.com
(732) 855-0033

QUESTIONS

