New Jersey's Clean Energy Program

LGEA Exit Meeting for:

Hudson County Community College

January 23, 2020

INTRODUCTIONS

Hudson County Community College

- Chris Reber – President
- Erik Friedman, VP, Provost
- Nickolas Chiaravalotti, VP
- Veronica Zeichner, CFO
- Patricia Clay - CIO
- Ilya Ashmyan, Executive Director, Facilities
- Gerard Carbone, Manager MAST

INTRODUCTIONS

NJ Clean Energy Program

- Aimee Lalonde & Sarah Landis – TRC Auditor
- Amanda Muench – TRC Account Manager
- Mike Mandzik – TRC Outreach Manager
- Arif Welcher – BPU Government/Business Manager
- Michelle Rossi – BPU ESIP Coordinator, State Office of Clean Energy

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 Hudson County Community College

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
- Energy Management System

Utility Consumption:

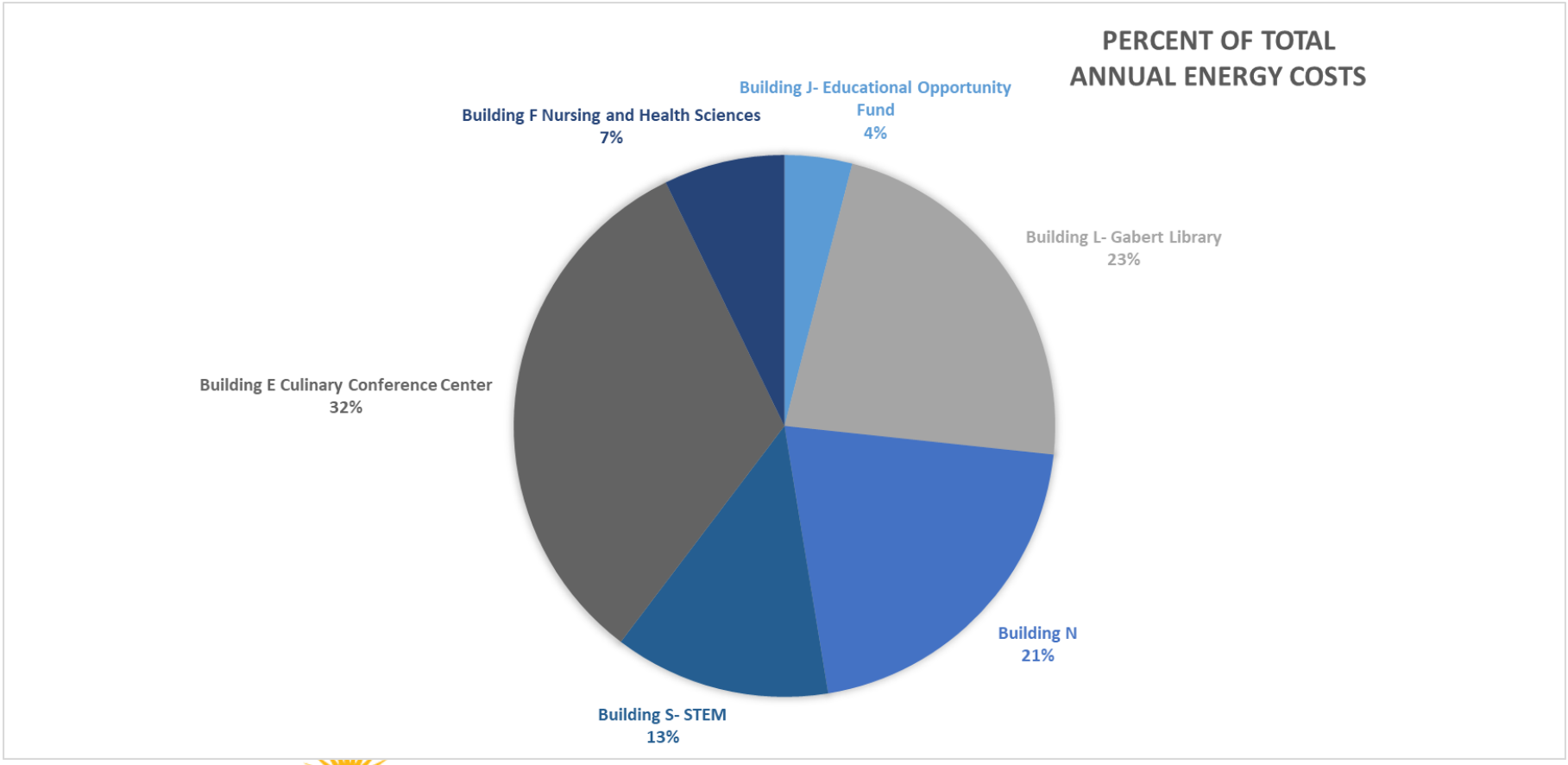
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

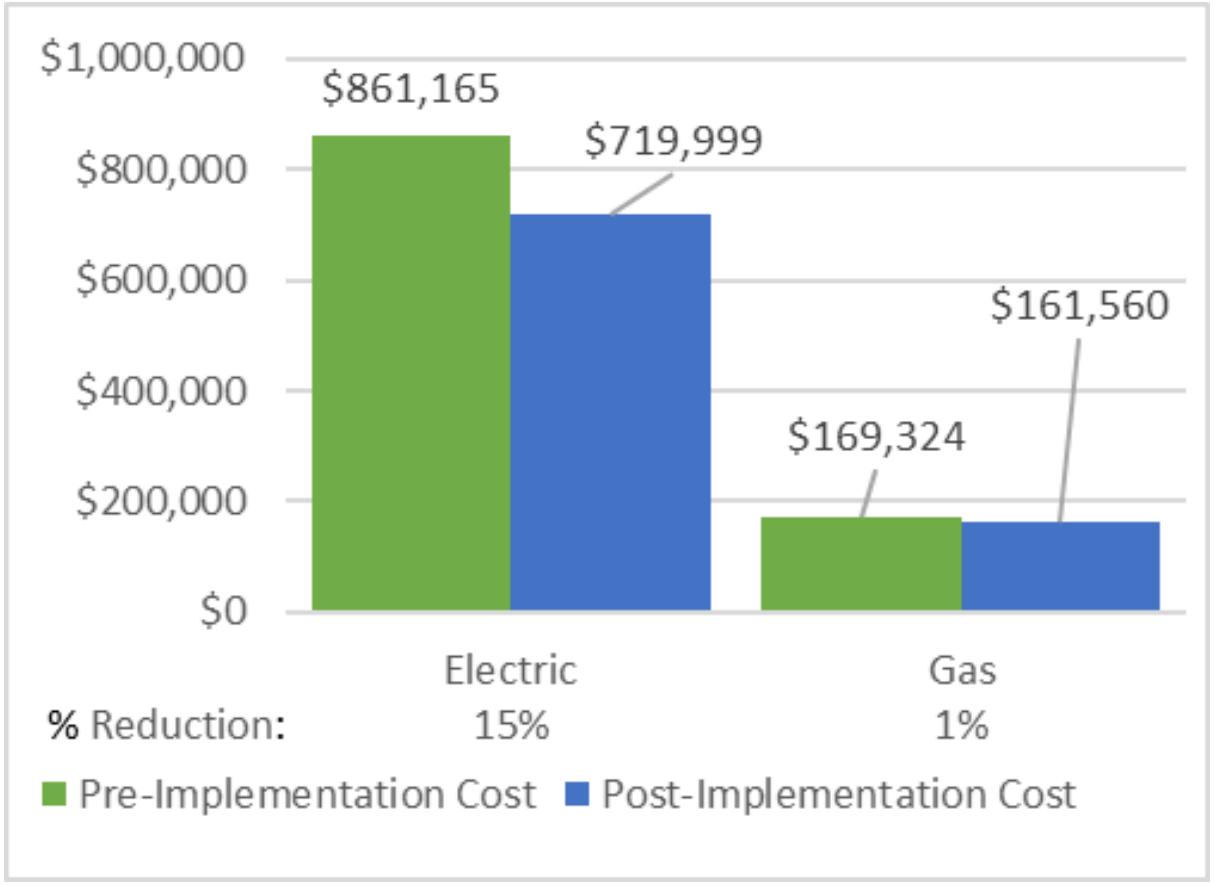
- A Building
- C-D Building
- E Building
- F Building
- I Building
- J Building
- L Building
- S Building
- N Building

Utility Breakout

Percent of Total Annual Energy Costs



Utility Breakout



New Jersey's cleanenergy program™

BENCHMARKING

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

HCCC - Building E Culinary Conference Center

Primary Property Type: College/University
Gross Floor Area (ft²): 69,500
Built: 2008

For Year Ending: October 31, 2018
Date Generated: July 23, 2019

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
HCCC - Building E Culinary Conference Center 161 Newkirk Street Jersey City, New Jersey 07306	Hudson County Community College 26 Journal Square 14th Floor Jersey City, NJ 07306 (201) 360-4693	Ilya Ashmyan 26 Journal Square 14th Floor Jersey City, NJ 07306 (201) 360-4693 iashmyan@hccc.edu

Property ID: 7424017

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
219.3 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	7,698,173 (50%)
Electric - Grid (kBtu)	7,541,785 (50%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	94.3
National Median Source EUI (kBtu/ft²)	180.6
% Diff from National Median Source EUI	133%

Source EUI
420.1 kBtu/ft²

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,173

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

Professional Engineer Stamp
(if applicable)

Site EUI
219.3 kBtu/ft²

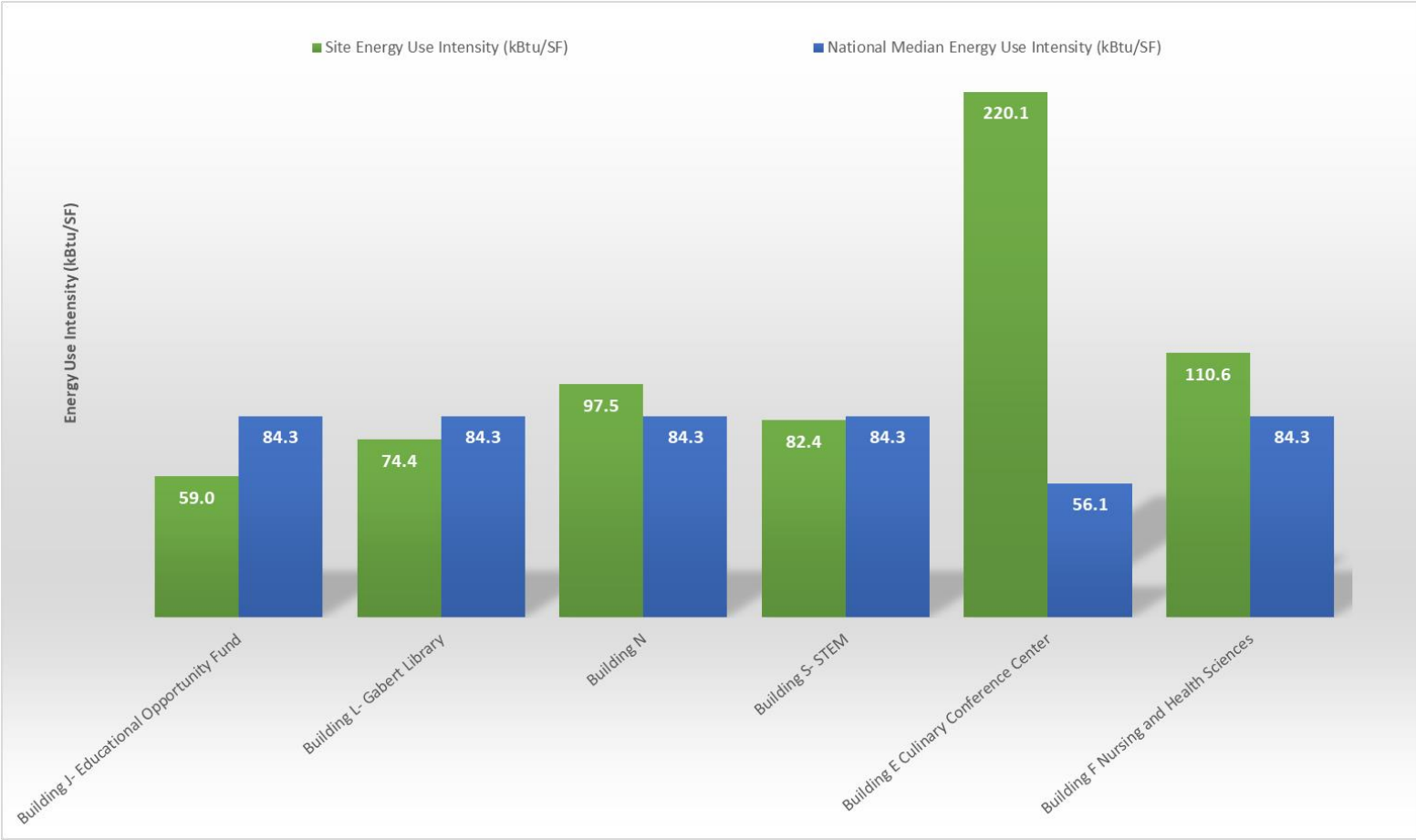
National Median Comparison

National Median Site EUI (kBtu/ft²)	94.3
National Median Source EUI (kBtu/ft²)	180.6
% Diff from National Median Source EUI	133%

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.

New Jersey's cleanenergy program™

BENCHMARKING

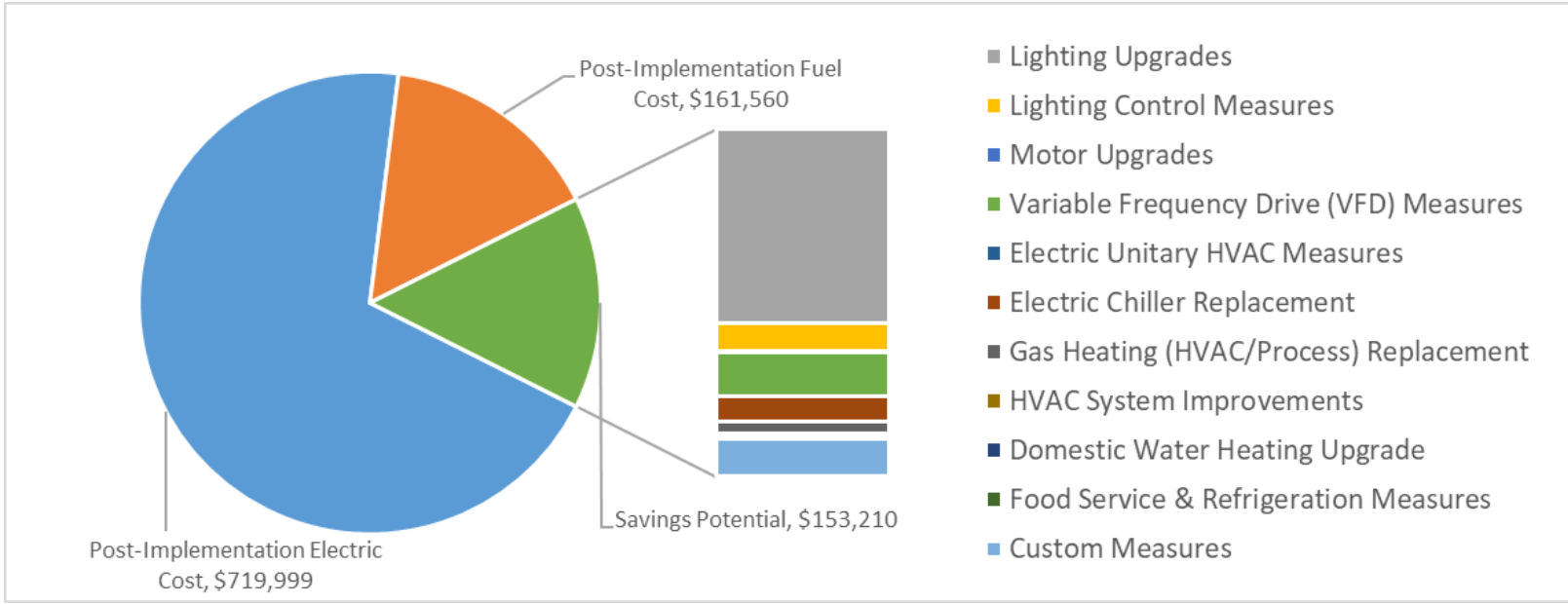


Building J- Educational Opportunity Fund
Building L- Gabert Library
Building N
Building S- STEM
Building E Culinary Conference Center
Building F Nursing and Health Sciences

New Jersey's cleanenergy program™

All Opportunities

Savings Potential



ALL OPPORTUNITIES

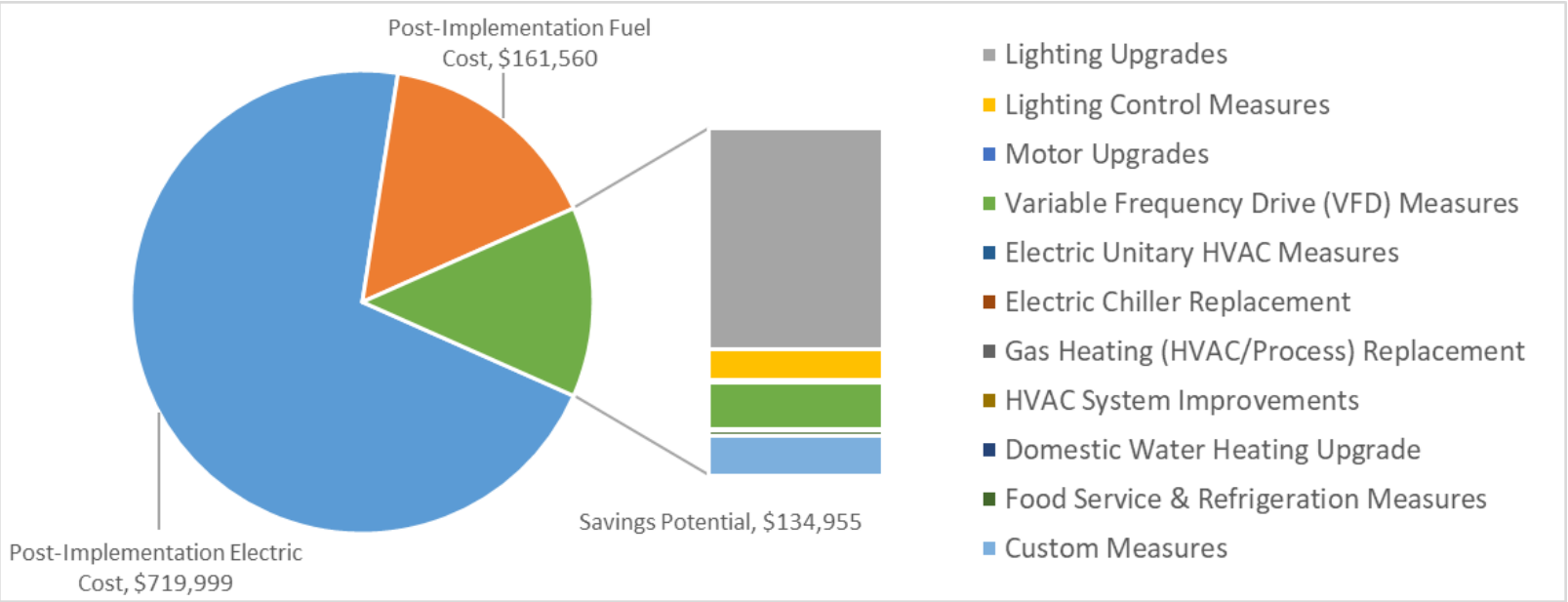
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**720,075**	**108.6**	**-146.7**	**$85,789**	**$174,760**	**$80,362**	**$94,398**	**1.1**	**707,931**
ECM 1	Install LED Fixtures	24,174	1.6	-2.9	$2,865	$7,812	$4,150	$3,662	1.3	23,998
ECM 2	Retrofit Fixtures with LED Lamps	695,900	107.1	-143.8	$82,923	$166,948	$76,212	$90,736	1.1	683,932
Lighting Control Measures		**101,243**	**14.0**	**-21.2**	**$12,118**	**$67,538**	**$25,620**	**$41,918**	**3.5**	**99,472**
ECM 3	Install Occupancy Sensor Lighting Controls	82,125	11.3	-17.2	$9,803	$51,888	$11,730	$40,158	4.1	80,689
ECM 4	Install Daylight Dimming/Photocell Controls	1,373	0.2	-0.3	$161	$1,250	$750	$500	3.1	1,349
ECM 5	Install High/Low Lighting Controls	17,744	2.5	-3.7	$2,154	$14,400	$13,140	$1,260	0.6	17,434
Motor Upgrades		**6,634**	**3.7**	**0.0**	**$821**	**$7,468**	**$0**	**$7,468**	**9.1**	**6,680**
ECM 6	Premium Efficiency Motors	6,634	3.7	0.0	$821	$7,468	$0	$7,468	9.1	6,680
Variable Frequency Drive (VFD) Measures		**151,827**	**34.9**	**90.6**	**$19,125**	**$83,155**	**$31,550**	**$51,605**	**2.7**	**163,495**
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	80,287	21.8	0.0	$9,699	$37,915	$18,350	$19,565	2.0	80,849
ECM 8	Install VFDs on Constant Volume (CV) Fans	16,874	4.5	0.0	$2,031	$9,476	$2,400	$7,076	3.5	16,992
ECM 9	Install VFDs on Chilled Water Pumps	20,401	7.4	0.0	$2,455	$17,164	$4,800	$12,364	5.0	20,543
ECM 10	Install VFDs on Heating Water Pumps	4,411	1.0	0.0	$559	$9,122	$0	$9,122	16.3	4,441
ECM 11	Install VFDs on Kitchen Hood Fan Motors	29,855	0.2	90.6	$4,382	$9,476	$6,000	$3,476	0.8	40,670
Electric Chiller Replacement		**94,798**	**32.8**	**0.0**	**$11,408**	**$300,347**	**$57,040**	**$243,307**	**21.3**	**95,460**
ECM 12	Install High Efficiency Chillers	94,798	32.8	0.0	$11,408	$300,347	$57,040	$243,307	21.3	95,460

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_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**519.6**	**$4,849**	**$134,238**	**$19,200**	**$115,038**	**23.7**	**60,844**
ECM 13	Install High Efficiency Hot Water Boilers	0	0.0	289.8	$2,846	$76,235	$16,000	$60,235	21.2	33,926
ECM 14	Install High Efficiency Furnaces	0	0.0	229.9	$2,002	$58,003	$3,200	$54,803	27.4	26,918
HVAC System Improvements		**0**	**0.0**	**3.7**	**$32**	**$22**	**$12**	**$10**	**0.3**	**432**
ECM 15	Install Pipe Insulation	0	0.0	3.7	$32	$22	$12	$10	0.3	432
Domestic Water Heating Upgrade		**0**	**0.0**	**58.2**	**$541**	**$36,002**	**$237**	**$35,765**	**66.2**	**6,812**
ECM 16	Install High Efficiency Gas-Fired Water Heater	0	0.0	42.8	$373	$35,765	$0	$35,765	96.0	5,008
ECM 17	Install Low-Flow DHW Devices	0	0.0	15.4	$168	$237	$237	$0	0.0	1,804
Food Service & Refrigeration Measures		**18,261**	**1.8**	**0.0**	**$2,219**	**$7,069**	**$2,140**	**$4,929**	**2.2**	**18,388**
ECM 18	Refrigerator/Freezer Case Electrically Commutated Motors	7,381	0.6	0.0	$888	$5,459	$1,440	$4,019	4.5	7,432
ECM 19	Vending Machine Control	10,880	1.2	0.0	$1,330	$1,610	$700	$910	0.7	10,956
Custom Measures		**112,057**	**0.0**	**347.6**	**$16,309**	**$175,000**	**$0**	**$175,000**	**10.7**	**153,536**
ECM 20	Replace Energy Management System	68,303	0.0	226.6	$10,405	$126,300	$0	$126,300	12.1	95,315
ECM 21	Retro-Commissioning Study & HVAC Improvements	43,754	0.0	121.0	$5,904	$48,700	$0	$48,700	8.2	58,222
TOTALS		**1,204,894**	**195.9**	**851.8**	**$153,210**	**$985,599**	**$216,161**	**$769,439**	**5.0**	**1,313,052**

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_2e Emissions Reduction (lbs)
Lighting Upgrades		**720,075**	**108.6**	**-146.7**	**$85,789**	**$174,760**	**$80,362**	**$94,398**	**1.1**	**707,931**
ECM 1	Install LED Fixtures	24,174	1.6	-2.9	$2,865	$7,812	$4,150	$3,662	1.3	23,998
ECM 2	Retrofit Fixtures with LED Lamps	695,900	107.1	-143.8	$82,923	$166,948	$76,212	$90,736	1.1	683,932
Lighting Control Measures		**101,243**	**14.0**	**-21.2**	**$12,118**	**$67,538**	**$25,620**	**$41,918**	**3.5**	**99,472**
ECM 3	Install Occupancy Sensor Lighting Controls	82,125	11.3	-17.2	$9,803	$51,888	$11,730	$40,158	4.1	80,689
ECM 4	Install Daylight Dimming/Photocell Controls	1,373	0.2	-0.3	$161	$1,250	$750	$500	3.1	1,349
ECM 5	Install High/Low Lighting Controls	17,744	2.5	-3.7	$2,154	$14,400	$13,140	$1,260	0.6	17,434
Motor Upgrades		**5,689**	**3.5**	**0.0**	**$702**	**$4,781**	**$0**	**$4,781**	**6.8**	**5,729**
ECM 6	Premium Efficiency Motors	5,689	3.5	0.0	$702	$4,781	$0	$4,781	6.8	5,729
Variable Frequency Drive (VFD) Measures		**147,416**	**33.9**	**90.6**	**$18,566**	**$74,032**	**$31,550**	**$42,482**	**2.3**	**159,054**
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	80,287	21.8	0.0	$9,699	$37,915	$18,350	$19,565	2.0	80,849
ECM 8	Install VFDs on Constant Volume (CV) Fans	16,874	4.5	0.0	$2,031	$9,476	$2,400	$7,076	3.5	16,992
ECM 9	Install VFDs on Chilled Water Pumps	20,401	7.4	0.0	$2,455	$17,164	$4,800	$12,364	5.0	20,543
ECM 10	Install VFDs on Heating Water Pumps	0	0.0	0.0	$0	$0	$0	$0	0.0	0
ECM 11	Install VFDs on Kitchen Hood Fan Motors	29,855	0.2	90.6	$4,382	$9,476	$6,000	$3,476	0.8	40,670
Electric Chiller Replacement		**0**	**0.0**	**0.0**	**$0**	**$0**	**$0**	**$0**	**0.0**	**0**
ECM 12	Install High Efficiency Chillers	0	0.0	0.0	$0	$0	$0	$0	0.0	0

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_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**0.0**	**$0**	**$0**	**$0**	**$0**	**0.0**	**0**
ECM 13	Install High Efficiency Hot Water Boilers	0	0.0	0.0	$0	$0	$0	$0	0.0	0
ECM 14	Install High Efficiency Furnaces	0	0.0	0.0	$0	$0	$0	$0	0.0	0
HVAC System Improvements		**0**	**0.0**	**3.7**	**$32**	**$22**	**$12**	**$10**	**0.3**	**432**
ECM 15	Install Pipe Insulation	0	0.0	3.7	$32	$22	$12	$10	0.3	432
Domestic Water Heating Upgrade		**0**	**0.0**	**15.4**	**$168**	**$237**	**$237**	**$0**	**0.0**	**1,804**
ECM 16	Install High Efficiency Gas-Fired Water Heater	0	0.0	0.0	$0	$0	$0	$0	0.0	0
ECM 17	Install Low-Flow DHW Devices	0	0.0	15.4	$168	$237	$237	$0	0.0	1,804
Food Service & Refrigeration Measures		**18,261**	**1.8**	**0.0**	**$2,219**	**$7,069**	**$2,140**	**$4,929**	**2.2**	**18,388**
ECM 18	Refrigerator/Freezer Case Electrically Commutated Motors	7,381	0.6	0.0	$888	$5,459	$1,440	$4,019	4.5	7,432
ECM 19	Vending Machine Control	10,880	1.2	0.0	$1,330	$1,610	$700	$910	0.7	10,956
Custom Measures		**105,800**	**0.0**	**333.1**	**$15,361**	**$149,900**	**$0**	**$149,900**	**9.8**	**145,544**
ECM 20	Replace Energy Management System	62,046	0.0	212.2	$9,457	$101,200	$0	$101,200	10.7	87,323
ECM 21	Retro-Commissioning Study & HVAC Improvements	43,754	0.0	121.0	$5,904	$48,700	$0	$48,700	8.2	58,222
TOTALS		**1,098,484**	**161.8**	**274.9**	**$134,955**	**$478,339**	**$139,921**	**$338,419**	**2.5**	**1,138,355**

E 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**202,405**	**27.8**	**-42**	**$23,994**	**$48,809**	**$22,522**	**$26,287**	**1.1**	**198,938**
ECM 1	Install LED Fixtures	Yes	2,655	0.0	0	$319	$2,656	$2,200	$456	1.4	2,673
ECM 2	Retrofit Fixtures with LED Lamps	Yes	199,750	27.8	-42	$23,674	$46,153	$20,322	$25,831	1.1	196,265
Lighting Control Measures			**49,606**	**6.9**	**-10**	**$5,879**	**$31,252**	**$9,755**	**$21,497**	**3.7**	**48,738**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	44,070	6.2	-9	$5,223	$26,002	$5,430	$20,572	3.9	43,300
ECM 4	Install Daylight Dimming/Photocell Controls	Yes	627	0.1	0	$74	$750	$250	$500	6.7	616
ECM 5	Install High/Low Lighting Controls	Yes	4,908	0.6	-1	$582	$4,500	$4,075	$425	0.7	4,823
Motor Upgrades			**1,329**	**0.3**	**0**	**$160**	**$1,289**	**$0**	**$1,289**	**8.1**	**1,338**
ECM 6	Premium Efficiency Motors	Yes	1,329	0.3	0	$160	$1,289	$0	$1,289	8.1	1,338
Variable Frequency Drive (VFD) Measures			**67,129**	**12.1**	**91**	**$8,867**	**$36,117**	**$13,200**	**$22,917**	**2.6**	**78,205**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	16,874	4.5	0	$2,031	$9,476	$2,400	$7,076	3.5	16,992
ECM 8	Install VFDs on Chilled Water Pumps	Yes	20,401	7.4	0	$2,455	$17,164	$4,800	$12,364	5.0	20,543
ECM 9	Install VFDs on Kitchen Hood Fan Motors	Yes	29,855	0.2	91	$4,382	$9,476	$6,000	$3,476	0.8	40,670
Electric Chiller Replacement			**94,798**	**32.8**	**0**	**$11,408**	**$300,347**	**$57,040**	**$243,307**	**21.3**	**95,460**
ECM 10	Install High Efficiency Chillers	No	94,798	32.8	0	$11,408	$300,347	$57,040	$243,307	21.3	95,460
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**230**	**$2,002**	**$58,003**	**$3,200**	**$54,803**	**27.4**	**26,918**
ECM 11	Install High Efficiency Furnaces	No	0	0.0	230	$2,002	$58,003	$3,200	$54,803	27.4	26,918
HVAC System Improvements			**0**	**0.0**	**4**	**$32**	**$22**	**$12**	**$10**	**0.3**	**432**
ECM 12	Install Pipe Insulation	Yes	0	0.0	4	$32	$22	$12	$10	0.3	432
Domestic Water Heating Upgrade			**0**	**0.0**	**43**	**$373**	**$35,765**	**$0**	**$35,765**	**96.0**	**5,008**
ECM 13	Install High Efficiency Gas-Fired Water Heater	No	0	0.0	43	$373	$35,765	$0	$35,765	96.0	5,008
Food Service & Refrigeration Measures			**8,993**	**0.8**	**0**	**$1,082**	**$5,689**	**$1,540**	**$4,149**	**3.8**	**9,056**
ECM 14	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	7,381	0.6	0	$888	$5,459	$1,440	$4,019	4.5	7,432
ECM 15	Vending Machine Control	Yes	1,612	0.2	0	$194	$230	$100	$130	0.7	1,623
Custom Measures			**49,990**	**0.0**	**153**	**$7,347**	**$69,500**	**$0**	**$69,500**	**9.5**	**68,240**
ECM 16	Replace Energy Management System	Yes	49,990	0.0	153	$7,347	$69,500	$0	$69,500	9.5	68,240
TOTALS (COST EFFECTIVE MEASURES)			**379,450**	**47.9**	**195**	**$47,361**	**$192,679**	**$47,029**	**$145,650**	**3.1**	**404,947**
TOTALS (ALL MEASURES)			**474,248**	**80.8**	**468**	**$61,144**	**$586,794**	**$107,269**	**$479,525**	**7.8**	**532,333**

* - 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).

BPU | New Jersey's cleanenergy program™

F 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**3,014**	**0.4**	**-1**	**$377**	**$943**	**$184**	**$759**	**2.0**	**2,975**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	3,014	0.4	-1	$377	$943	$184	$759	2.0	2,975
Lighting Control Measures			**11,349**	**2.0**	**-2**	**$1,415**	**$12,718**	**$5,420**	**$7,298**	**5.2**	**11,151**
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	8,162	1.4	-2	$1,017	$9,568	$2,270	$7,298	7.2	8,020
ECM 3	Install High/Low Lighting Controls	Yes	3,187	0.6	-1	$397	$3,150	$3,150	$0	0.0	3,131
Motor Upgrades			**945**	**0.2**	**0**	**$120**	**$2,687**	**$0**	**$2,687**	**22.4**	**951**
ECM 4	Premium Efficiency Motors	No	945	0.2	0	$120	$2,687	$0	$2,687	22.4	951
Variable Frequency Drive (VFD) Measures			**68,993**	**20.0**	**0**	**$8,742**	**$41,663**	**$15,950**	**$25,713**	**2.9**	**69,475**
ECM 5	Install VFD on Variable Air Volume (VAV) Fans	Yes	64,582	19.0	0	$8,183	$32,540	$15,950	$16,590	2.0	65,034
ECM 6	Install VFDs on Heating Water Pumps	No	4,411	1.0	0	$559	$9,122	$0	$9,122	16.3	4,441
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**290**	**$2,846**	**$76,235**	**$16,000**	**$60,235**	**21.2**	**33,926**
ECM 7	Install High Efficiency Hot Water Boilers	No	0	0.0	290	$2,846	$76,235	$16,000	$60,235	21.2	33,926
Domestic Water Heating Upgrade			**0**	**0.0**	**5**	**$49**	**$93**	**$93**	**$0**	**0.0**	**582**
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	5	$49	$93	$93	$0	0.0	582
Food Service & Refrigeration Measures			**3,224**	**0.4**	**0**	**$408**	**$460**	**$200**	**$260**	**0.6**	**3,246**
ECM 9	Vending Machine Control	Yes	3,224	0.4	0	$408	$460	$200	$260	0.6	3,246
Custom Measures			**12,057**	**0.0**	**59**	**$2,110**	**$31,700**	**$0**	**$31,700**	**15.0**	**19,083**
ECM 10	Replace Energy Management System	Yes	12,057	0.0	59	$2,110	$31,700	$0	$31,700	15.0	19,083
TOTALS (COST EFFECTIVE MEASURES)			**94,226**	**21.7**	**61**	**$12,542**	**$78,455**	**$21,847**	**$56,608**	**4.5**	**102,071**
TOTALS (ALL MEASURES)			**99,582**	**23.0**	**351**	**$16,067**	**$166,499**	**$37,847**	**$128,652**	**8.0**	**141,391**

* - 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).

J 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**53,043**	**11.6**	**-11**	**$6,456**	**$17,512**	**$8,120**	**$9,392**	**1.5**	**52,172**
ECM 1	Install LED Fixtures	Yes	1,360	0.0	0	$169	$233	$200	$33	0.2	1,369
ECM 2	Retrofit Fixtures with LED Lamps	Yes	51,683	11.6	-11	$6,287	$17,280	$7,920	$9,360	1.5	50,803
Lighting Control Measures			**2,491**	**0.4**	**-1**	**$303**	**$1,949**	**$1,045**	**$904**	**3.0**	**2,447**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,951	0.3	0	$237	$1,274	$370	$904	3.8	1,917
ECM 4	Install High/Low Lighting Controls	Yes	540	0.1	0	$66	$675	$675	$0	0.0	530
Domestic Water Heating Upgrade			**0**	**0.0**	**9**	**$101**	**$129**	**$129**	**$0**	**0.0**	**1,000**
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	9	$101	$129	$129	$0	0.0	1,000
Food Service & Refrigeration Measures			**1,612**	**0.2**	**0**	**$200**	**$230**	**$100**	**$130**	**0.6**	**1,623**
ECM 6	Vending Machine Control	Yes	1,612	0.2	0	$200	$230	$100	$130	0.6	1,623
Custom Measures			**6,257**	**0.0**	**14**	**$948**	**$25,100**	**$0**	**$25,100**	**26.5**	**7,992**
ECM 7	Replace Energy Management System	No	6,257	0.0	14	$948	$25,100	$0	$25,100	26.5	7,992
TOTALS (COST EFFECTIVE MEASURES)			**57,146**	**12.2**	**-3**	**$7,060**	**$19,820**	**$9,394**	**$10,426**	**1.5**	**57,242**
TOTALS (ALL MEASURES)			**63,403**	**12.2**	**12**	**$8,008**	**$44,920**	**$9,394**	**$35,526**	**4.4**	**65,235**

* - 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).

L 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**248,100**	**39.1**	**-50**	**$30,395**	**$59,939**	**$27,178**	**$32,761**	**1.1**	**243,993**
ECM 1	Install LED Fixtures	Yes	6,066	0.0	0	$753	$1,819	$850	$969	1.3	6,108
ECM 2	Retrofit Fixtures with LED Lamps	Yes	242,034	39.1	-50	$29,641	$58,121	$26,328	$31,793	1.1	237,885
Lighting Control Measures			**23,654**	**2.9**	**-5**	**$2,896**	**$13,584**	**$7,120**	**$6,464**	**2.2**	**23,240**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	14,612	1.8	-3	$1,789	$7,484	$1,770	$5,714	3.2	14,356
ECM 4	Install Daylight Dimming/Photocell Controls	Yes	130	0.0	0	$16	$250	$250	$0	0.0	128
ECM 5	Install High/Low Lighting Controls	Yes	8,912	1.1	-2	$1,091	$5,850	$5,100	$750	0.7	8,756
Motor Upgrades			**4,361**	**3.2**	**0**	**$542**	**$3,492**	**$0**	**$3,492**	**6.4**	**4,391**
ECM 6	Premium Efficiency Motors	Yes	4,361	3.2	0	$542	$3,492	$0	$3,492	6.4	4,391
Food Service & Refrigeration Measures			**1,209**	**0.1**	**0**	**$150**	**$230**	**$100**	**$130**	**0.9**	**1,217**
ECM 7	Vending Machine Control	Yes	1,209	0.1	0	$150	$230	$100	$130	0.9	1,217
TOTALS (COST EFFECTIVE MEASURES)			**277,323**	**45.4**	**-55**	**$33,983**	**$77,245**	**$34,398**	**$42,847**	**1.3**	**272,841**
TOTALS (ALL MEASURES)			**277,323**	**45.4**	**-55**	**$33,983**	**$77,245**	**$34,398**	**$42,847**	**1.3**	**272,841**

* - 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).

BPU | New Jersey's cleanenergy program™

S 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**1,784**	**0.2**	**0**	**$169**	**$317**	**$18**	**$299**	**1.8**	**1,753**
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,784	0.2	0	$169	$317	$18	$299	1.8	1,753
Lighting Control Measures			**197**	**0.0**	**0**	**$19**	**$225**	**$140**	**$85**	**4.6**	**193**
ECM 2	Install High/Low Lighting Controls	Yes	197	0.0	0	$19	$225	$140	$85	4.6	193
Variable Frequency Drive (VFD) Measures			**15,705**	**2.9**	**0**	**$1,516**	**$5,375**	**$2,400**	**$2,975**	**2.0**	**15,815**
ECM 3	Install VFD on Variable Air Volume (VAV) Fans	Yes	15,705	2.9	0	$1,516	$5,375	$2,400	$2,975	2.0	15,815
Custom Measures			**18,183**	**0.0**	**45**	**$2,193**	**$21,000**	**$0**	**$21,000**	**9.6**	**23,586**
ECM 4	Retro-Commissioning Study & HVAC Improvements	Yes	18,183	0.0	45	$2,193	$21,000	$0	$21,000	9.6	23,586
TOTALS (COST EFFECTIVE MEASURES)			**35,869**	**3.1**	**45**	**$3,896**	**$26,917**	**$2,558**	**$24,359**	**6.3**	**41,347**
TOTALS (ALL MEASURES)			**35,869**	**3.1**	**45**	**$3,896**	**$26,917**	**$2,558**	**$24,359**	**6.3**	**41,347**

* - 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).

N 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_2e Emissions Reduction (lbs)
Lighting Upgrades			**211,729**	**29.4**	**-44**	**$24,399**	**$47,239**	**$22,340**	**$24,899**	**1.0**	**208,100**
ECM 1	Install LED Fixtures	Yes	14,094	1.6	-3	$1,624	$3,105	$900	$2,205	1.4	13,848
ECM 2	Retrofit Fixtures with LED Lamps	Yes	197,635	27.8	-41	$22,775	$44,134	$21,440	$22,694	1.0	194,252
Lighting Control Measures			**13,947**	**1.7**	**-3**	**$1,607**	**$7,810**	**$2,140**	**$5,670**	**3.5**	**13,703**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	13,330	1.6	-3	$1,536	$7,560	$1,890	$5,670	3.7	13,097
ECM 4	Install Daylight Dimming/Photocell Controls	Yes	616	0.1	0	$71	$250	$250	$0	0.0	606
Domestic Water Heating Upgrade			**0**	**0.0**	**2**	**$18**	**$14**	**$14**	**$0**	**0.0**	**222**
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	2	$18	$14	$14	$0	0.0	222
Food Service & Refrigeration Measures			**3,224**	**0.4**	**0**	**$378**	**$460**	**$200**	**$260**	**0.7**	**3,246**
ECM 6	Vending Machine Control	Yes	3,224	0.4	0	$378	$460	$200	$260	0.7	3,246
Custom Measures			**25,570**	**0.0**	**76**	**$3,711**	**$27,700**	**$0**	**$27,700**	**7.5**	**34,635**
ECM 7	Retro-Commissioning Study & HVAC Improvements	Yes	25,570	0.0	76	$3,711	$27,700	$0	$27,700	7.5	34,635
TOTALS (COST EFFECTIVE MEASURES)			**254,470**	**31.5**	**31**	**$30,112**	**$83,223**	**$24,694**	**$58,529**	**1.9**	**259,906**
TOTALS (ALL MEASURES)			**254,470**	**31.5**	**31**	**$30,112**	**$83,223**	**$24,694**	**$58,529**	**1.9**	**259,906**

* - 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).

BPU | New Jersey's cleanenergy program™

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 →

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:

- SREC Registration Program (SRP)
- Community Solar

BPU | New Jersey's cleanenergy program™

Recommended NJCEP Incentives per Building

HCCC	P4P	Direct Install	SmartStart
E Building		X	X
F Building		X	X
J Building		X	X
L Building	X		X
S Building	X		X
N Building	X		X

Buildings marked with a lighter X do not quite meet the requirements of the current P4P program. P4P should be evaluated again once project planning is underway.

New Jersey's cleanenergy program™

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/MUNI/K-12 Public Schools), or
- $250,000 entity cap ($4MM UEZ/OZ/MUNI/K-12 Public Schools)

DIRECT INSTALL

NJCleanEnergy.com/DI

Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), municipalities, 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

New Jersey's cleanenergy program™

DIRECT INSTALL

NJCleanEnergy.com/DI

Participating Contractor

Lime Energy
Chris Fornicola
732-427-7278
chris.fornicola@lime-energy.com

BPU | New Jersey's cleanenergy program™

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

Prescriptive Only:

DOUBLE INCENTIVES FOR OZ/UEZ/ MUNI/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

BPU | New Jersey's cleanenergy program™

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

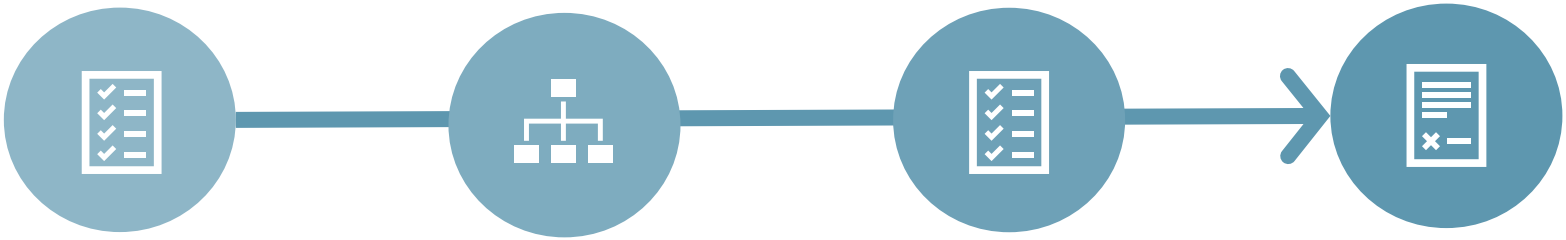
New Jersey's cleanenergy program™

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



Initial Energy Audit

Includes LGEA

Select Path

ESCO (requires RFP)
Hybrid
DIY

Investment Grade Energy Audit

Energy Savings Plan Developed & Approved

Plan includes use of incentives through New Jersey's Clean Energy Program

Energy Savings Improvement Program (ESIP)

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

Office: 609-633-9641

ESIP@bpu.nj.gov

BPU New Jersey's cleanenergy program™

For More Information

Visit NJCleanEnergy.com

Call (732) 855-0033

Mike Mandzik

Regional Outreach Manager

732.570.7534

mmandzik@trccompanies.com

BPU | New Jersey's cleanenergy program™

QUESTIONS

?