

# New Jersey's Clean Energy Program

LGEA Exit Meeting for:  
Middle Township

TRC Energy Services

January 24, 2019

# Introductions

## *Middle Township*

- Kimberly Krauss – Business Administrator
- Robert Flynn – Superintendent of Public Works

## *Rutala Associates*

- Jim Rutala – Principal

## *Engineering Design Associates*

- Vincent Orlando – Architect

## *NJ Clean Energy Program*

- Vish Nimbalkar, PE – TRC Lead Auditor
- Robert Grindrod – TRC Auditor
- Elizabeth Ebinger – TRC Account Manager
- Mike Thulen – ESIP Coordinator

# Agenda

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

# LGEA Process

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

# Site Visit and Utility Analysis

## Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Domestic Hot Water

## Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Propane Consumption and Costs

## Sites Visited/Analyzed:

- Township Municipal Building
- Public Works Building
- Goshen Recreation Center
- Construction Office
- Senior Center
- Whitesboro School
- MLK Center

# Benchmarking

## Construction Office



**ENERGY STAR® Statement of Energy Performance**

**34**

ENERGY STAR® Score<sup>1</sup>

**Middle Township Construction Office**

Primary Property Type: Office  
Gross Floor Area (ft²): 9,114  
Built: 1926

For Year Ending: October 31, 2017  
Date Generated: October 15, 2018

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> Middle Township Construction Office 10 S. Boyd Street Cape May Court House, New Jersey 08210	<b>Property Owner</b> Township of Middle 33 Mechanic Street Cape May Court House, NJ 08210 609-465-8732	<b>Primary Contact</b> Elizabeth Terenik 33 Mechanic Street Cape May Court House, NJ 08210 609-465-8732 eterenik@middletownship.com
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Property ID: 6542596

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

<b>Site EUI</b> 53.2 kBtu/ft²	<b>Annual Energy by Fuel</b> Electric - Grid (kBtu) 203,079 (42%) Natural Gas (kBtu) 281,555 (58%)	<b>National Median Comparison</b> National Median Site EUI (kBtu/ft²) 43.7 National Median Source EUI (kBtu/ft²) 78 % Diff from National Median Source EUI 22% <b>Annual Emissions</b> Greenhouse Gas Emissions (Metric Tons CO2e/year) 36
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**Source EUI**  
94.8 kBtu/ft²

**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)

Building Name	ENERGY STAR Score
Township Municipal Building	N/A
Public Works Building	N/A
Goshen Recreation Center	N/A
Construction Office	34
Senior Center	N/A
Whitesboro School	N/A
MLK Center	N/A

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.

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>114,174</b>	<b>32.8</b>	<b>0.0</b>	<b>\$17,258.86</b>	<b>\$62,466.35</b>	<b>\$11,906.00</b>	<b>\$50,560.35</b>	<b>2.9</b>	<b>114,972</b>
Install LED Fixtures	17,652	3.5	0.0	\$2,806.70	\$18,421.56	\$3,001.00	\$15,420.56	5.5	17,775
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	13,425	6.3	0.0	\$2,101.55	\$6,611.48	\$1,065.00	\$5,546.48	2.6	13,519
Retrofit Fixtures with LED Lamps	82,132	23.0	0.0	\$12,201.77	\$35,912.59	\$7,840.00	\$28,072.59	2.3	82,706
Install LED Exit Signs	965	0.1	0.0	\$148.84	\$1,520.72	\$0.00	\$1,520.72	10.2	972
<b>Lighting Control Measures</b>	<b>21,628</b>	<b>6.7</b>	<b>0.0</b>	<b>\$3,296.35</b>	<b>\$15,228.00</b>	<b>\$2,045.00</b>	<b>\$13,183.00</b>	<b>4.0</b>	<b>21,779</b>
Install Occupancy Sensor Lighting Controls	21,554	6.7	0.0	\$3,283.09	\$15,028.00	\$2,045.00	\$12,983.00	4.0	21,705
Install High/Low Lighting Controls	74	0.0	0.0	\$13.26	\$200.00	\$0.00	\$200.00	15.1	75
<b>Motor Upgrades</b>	<b>1,271</b>	<b>0.4</b>	<b>0.0</b>	<b>\$183.80</b>	<b>\$3,737.16</b>	<b>\$0.00</b>	<b>\$3,737.16</b>	<b>20.3</b>	<b>1,280</b>
Premium Efficiency Motors	1,271	0.4	0.0	\$183.80	\$3,737.16	\$0.00	\$3,737.16	20.3	1,280
<b>Variable Frequency Drive (VFD) Measures</b>	<b>16,791</b>	<b>2.6</b>	<b>0.0</b>	<b>\$2,253.44</b>	<b>\$13,188.22</b>	<b>\$1,800.00</b>	<b>\$11,388.22</b>	<b>5.1</b>	<b>16,908</b>
Install VFD on Variable Air Volume (VAV) HVAC	7,344	1.9	0.0	\$985.66	\$5,194.45	\$1,800.00	\$3,394.45	3.4	7,396
Install VFDs on Hot Water Pumps	9,446	0.7	0.0	\$1,267.78	\$7,993.77	\$0.00	\$7,993.77	6.3	9,512
<b>Electric Unitary HVAC Measures</b>	<b>10,893</b>	<b>5.1</b>	<b>0.0</b>	<b>\$1,598.67</b>	<b>\$65,553.37</b>	<b>\$2,198.50</b>	<b>\$63,354.87</b>	<b>39.6</b>	<b>10,970</b>
Install High Efficiency Electric AC	6,772	4.7	0.0	\$1,045.49	\$52,149.70	\$1,743.50	\$50,406.20	48.2	6,819
Install High Efficiency Packaged Terminal AC/HP	4,122	0.4	0.0	\$553.18	\$13,403.67	\$455.00	\$12,948.67	23.4	4,151
<b>Gas Heating (HVAC/Process) Replacement</b>	<b>0</b>	<b>0.0</b>	<b>39.2</b>	<b>\$444.75</b>	<b>\$37,651.31</b>	<b>\$3,317.65</b>	<b>\$34,333.66</b>	<b>77.2</b>	<b>4,589</b>
Install High Efficiency Hot Water Boilers	0	0.0	39.2	\$444.75	\$37,651.31	\$3,317.65	\$34,333.66	77.2	4,589
<b>HVAC System Improvements</b>	<b>0</b>	<b>0.0</b>	<b>8.4</b>	<b>\$98.06</b>	<b>\$152.25</b>	<b>\$0.00</b>	<b>\$152.25</b>	<b>1.6</b>	<b>979</b>
Install Pipe Insulation	0	0.0	8.4	\$98.06	\$152.25	\$0.00	\$152.25	1.6	979
<b>Domestic Water Heating Upgrade</b>	<b>6,995</b>	<b>3.2</b>	<b>35.3</b>	<b>\$1,400.80</b>	<b>\$6,838.87</b>	<b>\$700.00</b>	<b>\$6,138.87</b>	<b>4.4</b>	<b>11,175</b>
Install High Efficiency Gas Water Heater	859	1.4	-0.1	\$152.51	\$5,484.96	\$100.00	\$5,384.96	35.3	857
Install Tankless Water Heater	2,345	1.8	-5.9	\$246.05	\$1,045.60	\$600.00	\$445.60	1.8	1,676
Install Low-Flow Domestic Hot Water Devices	3,791	0.0	41.2	\$1,002.24	\$308.31	\$0.00	\$308.31	0.3	8,643
<b>Food Service Equipment &amp; Refrigeration Measures</b>	<b>1,253</b>	<b>0.1</b>	<b>0.0</b>	<b>\$224.26</b>	<b>\$5,728.00</b>	<b>\$325.00</b>	<b>\$5,403.00</b>	<b>24.1</b>	<b>1,262</b>
Replace Refrigeration Equipment	1,253	0.1	0.0	\$224.26	\$5,728.00	\$325.00	\$5,403.00	24.1	1,262
<b>Plug Load Equipment Control - Vending Machine</b>	<b>7,414</b>	<b>0.0</b>	<b>0.0</b>	<b>\$1,169.88</b>	<b>\$1,840.00</b>	<b>\$0.00</b>	<b>\$1,840.00</b>	<b>1.6</b>	<b>7,466</b>
Vending Machine Control	7,414	0.0	0.0	\$1,169.88	\$1,840.00	\$0.00	\$1,840.00	1.6	7,466
<b>TOTALS</b>	<b>180,420</b>	<b>50.9</b>	<b>82.8</b>	<b>\$27,928.87</b>	<b>\$212,383.53</b>	<b>\$22,292.15</b>	<b>\$190,091.38</b>	<b>6.8</b>	<b>191,382</b>

\* - All incentives presented in this table are based on NJ Smart Start Building 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).

# Cost Effective Opportunities\*



\* Opportunities considered cost effective have a payback period less than 2/3rds of the useful life of the measure

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>		114,020	32.8	0.0	\$17,238.23	\$62,104.27	\$11,906.00	\$50,198.27	2.9	114,817
ECM 1	Install LED Fixtures	17,652	3.5	0.0	\$2,806.70	\$18,421.56	\$3,001.00	\$15,420.56	5.5	17,775
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	13,425	6.3	0.0	\$2,101.55	\$6,611.48	\$1,065.00	\$5,546.48	2.6	13,519
ECM 3	Retrofit Fixtures with LED Lamps	82,132	23.0	0.0	\$12,201.77	\$35,912.59	\$7,840.00	\$28,072.59	2.3	82,706
ECM 4	Install LED Exit Signs	812	0.1	0.0	\$128.21	\$1,158.64	\$0.00	\$1,158.64	9.0	817
<b>Lighting Control Measures</b>		21,525	6.6	0.0	\$3,279.44	\$14,880.00	\$1,985.00	\$12,895.00	3.9	21,675
ECM 5	Install Occupancy Sensor Lighting Controls	21,451	6.6	0.0	\$3,266.18	\$14,680.00	\$1,985.00	\$12,695.00	3.9	21,601
ECM 6	Install High/Low Lighting Controls	74	0.0	0.0	\$13.26	\$200.00	\$0.00	\$200.00	15.1	75
<b>Variable Frequency Drive (VFD) Measures</b>		16,791	2.6	0.0	\$2,253.44	\$13,188.22	\$1,800.00	\$11,388.22	5.1	16,908
ECM 7	Install VFD on Variable Air Volume (VAV) HVAC	7,344	1.9	0.0	\$985.66	\$5,194.45	\$1,800.00	\$3,394.45	3.4	7,396
ECM 8	Install VFDs on Hot Water Pumps	9,446	0.7	0.0	\$1,267.78	\$7,993.77	\$0.00	\$7,993.77	6.3	9,512
<b>HVAC System Improvements</b>		0	0.0	8.4	\$98.06	\$152.25	\$0.00	\$152.25	1.6	979
ECM 9	Install Pipe Insulation	0	0.0	8.4	\$98.06	\$152.25	\$0.00	\$152.25	1.6	979
<b>Domestic Water Heating Upgrade</b>		6,136	1.8	35.4	\$1,248.29	\$1,353.91	\$600.00	\$753.91	0.6	10,318
ECM 10	Install Tankless Water Heater	2,345	1.8	-5.9	\$246.05	\$1,045.60	\$600.00	\$445.60	1.8	1,676
ECM 11	Install Low-Flow Domestic Hot Water Devices	3,791	0.0	41.2	\$1,002.24	\$308.31	\$0.00	\$308.31	0.3	8,643
<b>Plug Load Equipment Control - Vending Machine</b>		7,414	0.0	0.0	\$1,169.88	\$1,840.00	\$0.00	\$1,840.00	1.6	7,466
ECM 12	Vending Machine Control	7,414	0.0	0.0	\$1,169.88	\$1,840.00	\$0.00	\$1,840.00	1.6	7,466
<b>TOTALS</b>		165,886	43.8	43.7	\$25,287.34	\$93,518.65	\$16,291.00	\$77,227.65	3.1	172,164

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# Municipal Building



Energy Conservation Measure		Recommend?	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>			51,980	11.0	0.0	\$6,976.12	\$20,991.99	\$4,160.00	\$16,831.99	2.4	52,343
ECM 1	Install LED Fixtures	Yes	2,731	0.3	0.0	\$366.58	\$2,548.93	\$235.00	\$2,313.93	6.3	2,750
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	153	0.0	0.0	\$20.47	\$68.77	\$10.00	\$58.77	2.9	154
ECM 3	Retrofit Fixtures with LED Lamps	Yes	48,942	10.6	0.0	\$6,568.44	\$18,012.21	\$3,915.00	\$14,097.21	2.1	49,284
	Install LED Exit Signs	No	154	0.0	0.0	\$20.63	\$362.08	\$0.00	\$362.08	17.5	155
<b>Lighting Control Measures</b>			8,949	1.9	0.0	\$1,201.07	\$5,914.00	\$985.00	\$4,929.00	4.1	9,012
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	8,949	1.9	0.0	\$1,201.07	\$5,914.00	\$985.00	\$4,929.00	4.1	9,012
<b>Motor Upgrades</b>			952	0.2	0.0	\$127.74	\$2,911.06	\$0.00	\$2,911.06	22.8	958
	Premium Efficiency Motors	No	952	0.2	0.0	\$127.74	\$2,911.06	\$0.00	\$2,911.06	22.8	958
<b>Variable Frequency Drive (VFD) Measures</b>			16,791	2.6	0.0	\$2,253.44	\$13,188.22	\$1,800.00	\$11,388.22	5.1	16,908
ECM 5	Install VFD on Variable Air Volume (VAV) HVAC	Yes	7,344	1.9	0.0	\$985.66	\$5,194.45	\$1,800.00	\$3,394.45	3.4	7,396
ECM 6	Install VFDs on Hot Water Pumps	Yes	9,446	0.7	0.0	\$1,267.78	\$7,993.77	\$0.00	\$7,993.77	6.3	9,512
<b>Electric Unitary HVAC Measures</b>			6,533	1.9	0.0	\$876.84	\$27,610.93	\$1,002.50	\$26,608.43	30.3	6,579
	Install High Efficiency Electric AC	No	2,412	1.4	0.0	\$323.65	\$14,207.26	\$547.50	\$13,659.76	42.2	2,428
	Install High Efficiency Packaged Terminal AC/HP	No	4,122	0.4	0.0	\$553.18	\$13,403.67	\$455.00	\$12,948.67	23.4	4,151
<b>HVAC System Improvements</b>			0	0.0	8.4	\$98.06	\$152.25	\$0.00	\$152.25	1.6	979
ECM 7	Install Pipe Insulation	Yes	0	0.0	8.4	\$98.06	\$152.25	\$0.00	\$152.25	1.6	979
<b>Domestic Water Heating Upgrade</b>			5,050	1.8	3.9	\$723.38	\$1,167.49	\$600.00	\$567.49	0.8	5,541
ECM 8	Install Tankless Water Heater	Yes	2,345	1.8	-5.9	\$246.05	\$1,045.60	\$600.00	\$445.60	1.8	1,676
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	2,705	0.0	9.7	\$477.33	\$121.89	\$0.00	\$121.89	0.3	3,865
<b>Plug Load Equipment Control - Vending Machine</b>			1,954	0.0	0.0	\$262.29	\$460.00	\$0.00	\$460.00	1.8	1,968
ECM 10	Vending Machine Control	Yes	1,954	0.0	0.0	\$262.29	\$460.00	\$0.00	\$460.00	1.8	1,968
<b>TOTALS FOR HIGH PRIORITY MEASURES</b>			84,570	17.3	12.3	\$11,493.73	\$41,511.88	\$7,545.00	\$33,966.88	3.0	86,597
<b>TOTALS FOR ALL EVALUATED MEASURES</b>			92,209	19.3	12.3	\$12,518.94	\$72,395.95	\$8,547.50	\$63,848.45	5.1	94,289

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# Public Works Building



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			16,814	7.8	0.0	\$2,636.48	\$12,672.76	\$2,825.00	\$9,847.76	3.7	16,932
ECM 1	Install LED Fixtures	Yes	1,700	0.8	0.0	\$266.62	\$4,309.79	\$1,450.00	\$2,859.79	10.7	1,712
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	13,272	6.2	0.0	\$2,081.08	\$6,542.71	\$1,055.00	\$5,487.71	2.6	13,365
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,604	0.8	0.0	\$251.53	\$1,240.94	\$320.00	\$920.94	3.7	1,615
ECM 4	Install LED Exit Signs	Yes	238	0.0	0.0	\$37.25	\$579.32	\$0.00	\$579.32	15.6	239
Lighting Control Measures			5,018	2.5	0.0	\$786.79	\$3,592.00	\$470.00	\$3,122.00	4.0	5,053
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	5,018	2.5	0.0	\$786.79	\$3,592.00	\$470.00	\$3,122.00	4.0	5,053
Electric Unitary HVAC Measures			555	0.5	0.0	\$87.06	\$4,488.66	\$276.00	\$4,212.66	48.4	559
	Install High Efficiency Electric AC	No	555	0.5	0.0	\$87.06	\$4,488.66	\$276.00	\$4,212.66	48.4	559
Domestic Water Heating Upgrade			301	0.0	3.7	\$88.66	\$28.68	\$0.00	\$28.68	0.3	731
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	301	0.0	3.7	\$88.66	\$28.68	\$0.00	\$28.68	0.3	731
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$306.44	\$460.00	\$0.00	\$460.00	1.5	1,968
ECM 7	Vending Machine Control	Yes	1,954	0.0	0.0	\$306.44	\$460.00	\$0.00	\$460.00	1.5	1,968
TOTALS FOR HIGH PRIORITY MEASURES			24,087	10.3	3.7	\$3,818.38	\$16,753.44	\$3,295.00	\$13,458.44	3.5	24,683
TOTALS FOR ALL EVALUATED MEASURES			24,642	10.7	3.7	\$3,905.44	\$21,242.10	\$3,571.00	\$17,671.10	4.5	25,242

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# Goshen Recreation Center



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			7,904	1.6	0.0	\$1,308.63	\$3,159.99	\$1,160.00	\$1,999.99	1.5	7,959
ECM 1	Install LED Fixtures	Yes	1,415	0.2	0.0	\$234.19	\$750.00	\$500.00	\$250.00	1.1	1,424
ECM 2	Retrofit Fixtures with LED Lamps	Yes	6,489	1.3	0.0	\$1,074.44	\$2,409.99	\$660.00	\$1,749.99	1.6	6,535
Lighting Control Measures			3,174	0.6	0.0	\$525.44	\$1,236.00	\$150.00	\$1,086.00	2.1	3,196
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	3,174	0.6	0.0	\$525.44	\$1,236.00	\$150.00	\$1,086.00	2.1	3,196
Domestic Water Heating Upgrade			786	0.0	0.0	\$130.06	\$28.68	\$0.00	\$28.68	0.2	791
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	786	0.0	0.0	\$130.06	\$28.68	\$0.00	\$28.68	0.2	791
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$323.58	\$460.00	\$0.00	\$460.00	1.4	1,968
ECM 5	Vending Machine Control	Yes	1,954	0.0	0.0	\$323.58	\$460.00	\$0.00	\$460.00	1.4	1,968
TOTALS FOR HIGH PRIORITY MEASURES			13,817	2.2	0.0	\$2,287.70	\$4,884.67	\$1,310.00	\$3,574.67	1.6	13,914
TOTALS FOR ALL EVALUATED MEASURES			13,817	2.2	0.0	\$2,287.70	\$4,884.67	\$1,310.00	\$3,574.67	1.6	13,914

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\*\* - Simple Payback Period is based on net measure costs (i.e. after incentives).

# Construction Center



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			16,755	5.1	0.0	\$2,655.28	\$12,305.40	\$1,391.00	\$10,914.40	4.1	16,872
ECM 1	Install LED Fixtures	Yes	8,457	1.6	0.0	\$1,340.23	\$5,562.84	\$116.00	\$5,446.84	4.1	8,516
ECM 2	Retrofit Fixtures with LED Lamps	Yes	7,724	3.5	0.0	\$1,224.09	\$6,163.23	\$1,275.00	\$4,888.23	4.0	7,778
ECM 3	Install LED Exit Signs	Yes	574	0.0	0.0	\$90.96	\$579.32	\$0.00	\$579.32	6.4	578
Lighting Control Measures			895	0.3	0.0	\$141.76	\$850.00	\$115.00	\$735.00	5.2	901
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	895	0.3	0.0	\$141.76	\$850.00	\$115.00	\$735.00	5.2	901
Electric Unitary HVAC Measures			2,090	1.5	0.0	\$331.23	\$18,491.58	\$0.00	\$18,491.58	55.8	2,105
	Install High Efficiency Electric AC	No	2,090	1.5	0.0	\$331.23	\$18,491.58	\$0.00	\$18,491.58	55.8	2,105
Gas Heating (HVAC/Process) Replacement			0	0.0	25.9	\$301.32	\$27,891.98	\$2,556.40	\$25,335.58	84.1	3,029
	Install High Efficiency Hot Water Boilers	No	0	0.0	25.9	\$301.32	\$27,891.98	\$2,556.40	\$25,335.58	84.1	3,029
Domestic Water Heating Upgrade			0	0.0	3.7	\$42.57	\$21.51	\$0.00	\$21.51	0.5	428
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	3.7	\$42.57	\$21.51	\$0.00	\$21.51	0.5	428
TOTALS FOR HIGH PRIORITY MEASURES			17,650	5.4	3.7	\$2,839.62	\$13,176.91	\$1,506.00	\$11,670.91	4.1	18,201
TOTALS FOR ALL EVALUATED MEASURES			19,740	6.9	29.5	\$3,472.18	\$59,560.46	\$4,062.40	\$55,498.06	16.0	23,335

\* - All incentives presented in this table are based on NJ Smart Start Building 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).

# Samuel S. Devico Senior Center



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			2,345	1.0	0.0	\$411.38	\$1,505.54	\$410.00	\$1,095.54	2.7	2,361
ECM 1	Retrofit Fixtures with LED Lamps	Yes	2,345	1.0	0.0	\$411.38	\$1,505.54	\$410.00	\$1,095.54	2.7	2,361
Motor Upgrades			320	0.2	0.0	\$56.06	\$826.10	\$0.00	\$826.10	14.7	322
	Premium Efficiency Motors	No	320	0.2	0.0	\$56.06	\$826.10	\$0.00	\$826.10	14.7	322
Electric Unitary HVAC Measures			932	0.6	0.0	\$163.46	\$7,481.10	\$460.00	\$7,021.10	43.0	938
	Install High Efficiency Electric AC	No	932	0.6	0.0	\$163.46	\$7,481.10	\$460.00	\$7,021.10	43.0	938
Domestic Water Heating Upgrade			859	1.4	-0.5	\$145.64	\$2,827.14	\$50.00	\$2,777.14	19.1	807
	Install High Efficiency Gas Water Heater	No	859	1.4	-2.9	\$120.40	\$2,812.80	\$50.00	\$2,762.80	22.9	522
ECM 2	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	2.4	\$25.24	\$14.34	\$0.00	\$14.34	0.6	285
TOTALS FOR HIGH PRIORITY MEASURES			2,345	1.0	2.4	\$436.62	\$1,519.88	\$410.00	\$1,109.88	2.5	2,646
TOTALS FOR ALL EVALUATED MEASURES			4,455	3.1	-0.5	\$776.54	\$12,639.88	\$920.00	\$11,719.88	15.1	4,428

\* - All incentives presented in this table are based on NJ Smart Start Building 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).

# Whitesboro School



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			1,111	1.1	0.0	\$181.97	\$1,512.60	\$400.00	\$1,112.60	6.1	1,118
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,111	1.1	0.0	\$181.97	\$1,512.60	\$400.00	\$1,112.60	6.1	1,118
Lighting Control Measures			103	0.1	0.0	\$16.91	\$348.00	\$60.00	\$288.00	17.0	104
	Install Occupancy Sensor Lighting Controls	No	103	0.1	0.0	\$16.91	\$348.00	\$60.00	\$288.00	17.0	104
Gas Heating (HVAC/Process) Replacement			0	0.0	13.3	\$143.43	\$9,759.33	\$761.25	\$8,998.08	62.7	1,561
	Install High Efficiency Hot Water Boilers	No	0	0.0	13.3	\$143.43	\$9,759.33	\$761.25	\$8,998.08	62.7	1,561
Domestic Water Heating Upgrade			0	0.0	11.5	\$123.52	\$50.19	\$0.00	\$50.19	0.4	1,344
ECM 2	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	11.5	\$123.52	\$50.19	\$0.00	\$50.19	0.4	1,344
TOTALS FOR HIGH PRIORITY MEASURES			1,111	1.1	11.5	\$305.50	\$1,562.79	\$400.00	\$1,162.79	3.8	2,462
TOTALS FOR ALL EVALUATED MEASURES			1,214	1.2	24.8	\$465.84	\$11,670.12	\$1,221.25	\$10,448.87	22.4	4,127

\* - All incentives presented in this table are based on NJ Smart Start Building 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).

# MLK Recreation Center



Energy Conservation Measure		Recommend?	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)
Lighting Upgrades			17,265	5.3	0.0	\$3,089.00	\$10,318.08	\$1,560.00	\$8,758.08	2.8	17,386
	Install LED Fixtures	No	3,348	0.5	0.0	\$599.08	\$5,250.00	\$700.00	\$4,550.00	7.6	3,372
ECM 1	Retrofit Fixtures with LED Lamps	Yes	13,917	4.7	0.0	\$2,489.92	\$5,068.08	\$860.00	\$4,208.08	1.7	14,014
Lighting Control Measures			3,490	1.2	0.0	\$624.38	\$3,288.00	\$265.00	\$3,023.00	4.8	3,514
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	3,416	1.2	0.0	\$611.12	\$3,088.00	\$265.00	\$2,823.00	4.6	3,440
ECM 3	Install High/Low Lighting Controls	Yes	74	0.0	0.0	\$13.26	\$200.00	\$0.00	\$200.00	15.1	75
Electric Unitary HVAC Measures			783	0.6	0.0	\$140.09	\$7,481.10	\$460.00	\$7,021.10	50.1	788
	Install High Efficiency Electric AC	No	783	0.6	0.0	\$140.09	\$7,481.10	\$460.00	\$7,021.10	50.1	788
Domestic Water Heating Upgrade			0	0.0	13.1	\$146.96	\$2,715.18	\$50.00	\$2,665.18	18.1	1,533
	Install High Efficiency Gas Water Heater	No	0	0.0	2.9	\$32.11	\$2,672.16	\$50.00	\$2,622.16	81.7	335
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	10.2	\$114.85	\$43.02	\$0.00	\$43.02	0.4	1,198
Food Service Equipment & Refrigeration Measures			1,253	0.1	0.0	\$224.26	\$5,728.00	\$325.00	\$5,403.00	24.1	1,262
	Replace Refrigeration Equipment	No	1,253	0.1	0.0	\$224.26	\$5,728.00	\$325.00	\$5,403.00	24.1	1,262
Plug Load Equipment Control - Vending Machine			1,551	0.0	0.0	\$277.57	\$460.00	\$0.00	\$460.00	1.7	1,562
ECM 5	Vending Machine Control	Yes	1,551	0.0	0.0	\$277.57	\$460.00	\$0.00	\$460.00	1.7	1,562
TOTALS FOR HIGH PRIORITY MEASURES			18,958	6.0	10.2	\$3,506.72	\$8,859.10	\$1,125.00	\$7,734.10	2.2	20,289
TOTALS FOR ALL EVALUATED MEASURES			24,343	7.2	13.1	\$4,502.26	\$29,990.36	\$2,660.00	\$27,330.36	6.1	26,046

\* - All incentives presented in this table are based on NJ Smart Start Building 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).



# Solar Energy Generation Potential



	Municipal Building	Public Works Building	Goshen Recreation Center	Construction Office	Samuel S. Devico Senior Center	Whitesboro School	MLK Center
<i>Potential:</i>	<b>HIGH</b>	<b>HIGH</b>	<b>LOW</b>	<b>LOW</b>	<b>LOW</b>	<b>LOW</b>	<b>MEDIUM</b>
<i>System Potential: (kW)</i>	68	20					50
<i>Electric Generation: (kWh per year)</i>	81,013	23,827					37,622
<i>Displaced Cost: (per year)</i>	\$7,050	\$2,070					\$3,270

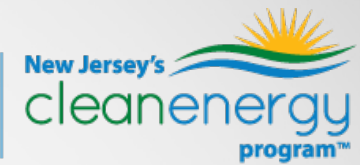
For more information on the SREC Registration Program (SRP) please visit:

<http://www.njcleanenergy.com/renewable-energy/programs/solar-renewable-energy-certificates-srec/new-jersey-solar-renewable-energy>



# Energy Efficient Best Practices

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- 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 Boiler Maintenance
- Perform 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
- CTEEP  
(Customer Tailored Energy Efficiency Pilot)
- Direct Install
- Large Energy Users

### Whole Buildings:

- Pay for Performance

### Energy Generation:

- Combined Heat and Power (CHP)

## OTHER PROGRAMS

### Renewable Energy Generation:

- SREC Registration Program (SRP)

\* eligible programs are highlighted in yellow

# Recommended NJCEP Incentives per Building



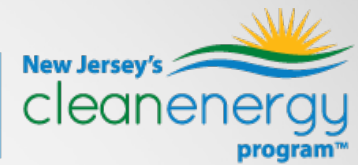
Middle Township	Direct Install	SmartStart	CTEEP
Township Municipal Building	X	X	X
Public Works Building	X	X	X
Goshen Recreation Center	X	X	X
Construction Office	X	X	X
Senior Center	X	X	X
Whitesboro School	X	X	X
MLK Center	X	X	X

# Direct Install: Overview

- Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.
- Open to Small to Mid-Sized Commercial and Industrial facilities with an average electric demand  $\leq 200$  kW
- Provides incentives of up to 70% of the installed cost
- Incentives are paid directly to the contractor
  - Customer only pays remaining 30% of installed cost
  - \$125,000 project/building cap
  - \$250,000 per entity cap (up to \$500,000 if using ESIP)
- Participating contractors provide support and process all paperwork
- Fast turnaround time: Average length of time for job completion (4-6 months)

# Direct Install:

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## Participating Contractor

### Hutchinson Mechanical Services

Ed Hutchinson

856-429-5828 x215

[edhutchinson@hutchbiz.com](mailto:edhutchinson@hutchbiz.com)

# Direct Install: Financing Option

The State of NJ pays:

- 70% of all qualified upgrades
- Up to \$125,000

South Jersey Gas will finance:

- Remaining 30%
- 0% financing
- For 3 years
- Up to \$53,571

# SmartStart: Overview

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- Two types of incentives for high efficiency equipment installation:
  - Prescriptive
  - Custom
- Project Categories:
  - New Construction
  - Renovation
  - Remodeling
  - Equipment Replacement
- Project pre-approval required for lighting and custom measures
- Incentives up to \$500,000 per electric account & \$500,000 per natural gas account
- Specific incentives and individual applications for Lighting, HVAC, VFDs, Refrigeration, Controls and more!

[www.NJCleanEnergy/SSB](http://www.NJCleanEnergy/SSB)

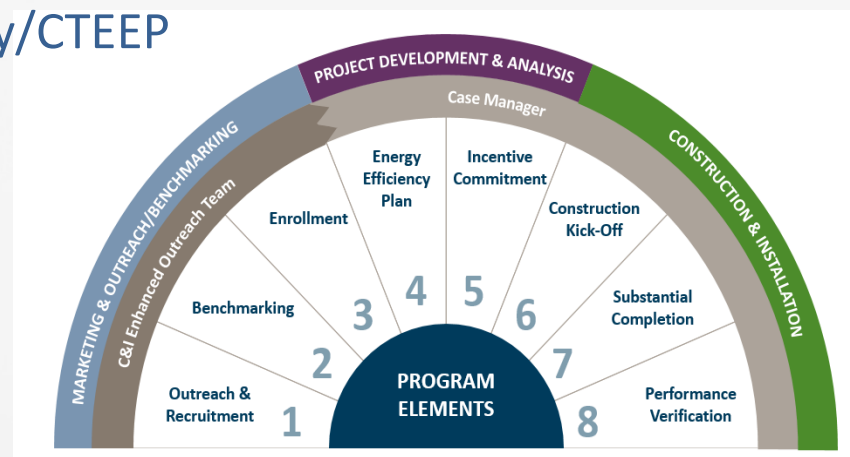
# CTEEP: Overview



## Customer Tailored Energy Efficiency Pilot (CTEEP)

- Provide customers with **on-site assistance** to discuss project opportunities and program incentives.
- A **single application** submission streamlines multiple prescriptive and custom measures.
- Provide **technical assistance incentives** to help offset soft costs associated with developing and planning an energy efficiency project.
- Incentives up to \$250,000 entity cap.

[www.NJCleanEnergy/CTEEP](http://www.NJCleanEnergy/CTEEP)





# SmartStart, CTEEP:

## Financing Option

- 0% Financing
- Up to \$130,000 for 10 years
- SJG can help guide you through the process

Contact:

Bruce Grossman – Program Manager

South Jersey Gas

#1 South Jersey Plaza

Folsom, NJ 08037

Phone: 609-561-9000, ext. 4271

# Recommended NJCEP Incentives per Building



Middle Township	Direct Install	SmartStart	CTEEP
Township Municipal Building	X	X	X
Public Works Building	X	X	X
Goshen Recreation Center	X	X	X
Construction Office	X	X	X
Senior Center	X	X	X
Whitesboro School	X	X	X
MLK Center	X	X	X

## Energy Savings Improvement Program (ESIP)

- Provides alternative financing for energy savings projects at public institutions. Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract. Does not count as debt/require voter approval.
- Requires an audit as 1<sup>st</sup> step (LGEA satisfies requirement)
- ESIP participation question on LGEA application
- Program administered directly by BPU

## ESIP Process

## New Jersey's Clean Energy Program Interaction

Initial Energy Audit completed  
for entity building(s)

Local Government Energy Audit  
(LGEA) may be used to meet  
this requirement

Entity issues ESIP RFP (previously  
approved by BPU) and selects ESCO  
or DIY approach

Investment Grade Energy Audit completed  
and Energy Savings Plan (ESP)  
developed

P4P Energy Reduction Plan (ERP),  
Direct Install, or SmartStart application  
recommended submittal time frame

Third party review of ESP

Review and approval of ESP  
by Board of Public Utilities (BPU)

Entity adopts ESP,  
determines guarantee



# FOR MORE INFORMATION

## ESIP

**Mike Thulen**

ESIP Coordinator

Office: 609-777-3338

Cell: 732-330-2419

[ESIP@bpu.nj.gov](mailto:ESIP@bpu.nj.gov)

# Questions

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# FOR MORE INFORMATION

**Visit** [NJCleanEnergy.com](http://NJCleanEnergy.com)

**Call** (866) NJSMART

**Gary Finger**

Regional Outreach Manager

856.780.8553

[gfinger@trcsolutions.com](mailto:gfinger@trcsolutions.com)