

# New Jersey's Clean Energy Program

LGEA Exit Meeting for:  
*Elmwood Park Board of Education*

TRC Energy Services

November 6, 2018

# Introductions

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- Elmwood Park BOE
  - John DiPaola – Business Administrator
  - Vincent Benenati – Director of Facilities
- NJ Clean Energy Program
  - Alex Klieverik – TRC Auditor
  - Sarah Walters – TRC Account Manager

# 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 Elmwood Park BOE

# 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

## Sites Visited/Analyzed

- Memorial Middle/High School
- Gilbert Avenue School
- Gantner Avenue School
- 16<sup>th</sup> Avenue School

## Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

# Benchmarking



## Memorial Middle/HS

**ENERGY STAR<sup>®</sup> Statement of Energy Performance**

### 43

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

**Elmwood Park Memorial Middle/High School**

Primary Property Type: K-12 School  
 Gross Floor Area (GFA): 192,800  
 Built: 1856

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

**Property & Contact Information**

<b>Property Address:</b> Elmwood Park Memorial Middle-High School 370 River Road Elmwood Park, New Jersey 07407	<b>Property Owner:</b> Elmwood Park BOC 90 East 53rd Street Elmwood Park, NJ 07407 (201) 796-8700	<b>Primary Contact:</b> John DiPaola 90 East 53rd Street Elmwood Park, NJ 07407 (201) 796-0700 ext#3175 jdiPaola@bpu.org
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**Property ID:** 0002817

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

<b>Site EUI</b> 66.7 kBtu/ft <sup>2</sup>	<b>Annual Energy by Fuel</b> Electric - Grid (kBtu) 2,472,668 (42%) Natural Gas (kBtu) 7,386,201 (51%)	<b>National Median Comparison:</b> National Median Site EUI (kBtu/ft <sup>2</sup> ) 62.3 National Median Source EUI (kBtu/ft <sup>2</sup> ) 111.8 % Off from National Median Source EUI 7%
<b>Source EUI</b> 119.7 kBtu/ft <sup>2</sup>	<b>Annual Emissions</b> Greenhouse Gas Emissions (Metric Tons CO2e/year) 617	

**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
Memorial Middle/High School	43
Gilbert Avenue School	50
Gantner Avenue School	12
16 <sup>th</sup> Avenue School	60

ENERGY STAR Scores are percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide.

# 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>383,497</b>	<b>99.8</b>	<b>0.0</b>	<b>\$59,097.18</b>	<b>\$241,441.38</b>	<b>\$57,915.00</b>	<b>\$183,526.38</b>	<b>3.1</b>	<b>386,179</b>
Install LED Fixtures	15,329	2.9	0.0	\$2,313.52	\$29,442.03	\$4,450.00	\$24,992.03	10.8	15,436
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,627	1.6	0.0	\$798.59	\$2,927.77	\$460.00	\$2,467.77	3.1	5,666
Retrofit Fixtures with LED Lamps	362,541	95.3	0.0	\$55,985.07	\$209,071.58	\$53,005.00	\$156,066.58	2.8	365,076
<b>Lighting Control Measures</b>	<b>30,968</b>	<b>7.8</b>	<b>0.0</b>	<b>\$4,677.37</b>	<b>\$40,118.00</b>	<b>\$4,605.00</b>	<b>\$35,513.00</b>	<b>7.6</b>	<b>31,185</b>
Install Occupancy Sensor Lighting Controls	27,024	6.9	0.0	\$4,105.71	\$35,518.00	\$4,605.00	\$30,913.00	7.5	27,213
Install High/Low Lighting Controls	3,944	0.8	0.0	\$571.66	\$4,600.00	\$0.00	\$4,600.00	8.0	3,972
<b>Motor Upgrades</b>	<b>1,083</b>	<b>0.3</b>	<b>0.0</b>	<b>\$150.08</b>	<b>\$31,670.36</b>	<b>\$0.00</b>	<b>\$31,670.36</b>	<b>211.0</b>	<b>1,091</b>
Premium Efficiency Motors	1,083	0.3	0.0	\$150.08	\$31,670.36	\$0.00	\$31,670.36	211.0	1,091
<b>Variable Frequency Drive (VFD) Measures</b>	<b>63,100</b>	<b>27.7</b>	<b>0.0</b>	<b>\$9,734.02</b>	<b>\$101,734.84</b>	<b>\$12,960.00</b>	<b>\$88,774.84</b>	<b>9.1</b>	<b>63,541</b>
Install VFDs on Constant Volume (CV) HVAC	52,423	24.1	0.0	\$8,047.49	\$86,151.49	\$12,960.00	\$73,191.49	9.1	52,789
Install VFDs on Chilled Water Pumps	10,677	3.6	0.0	\$1,686.53	\$15,583.35	\$0.00	\$15,583.35	9.2	10,752
<b>Electric Unitary HVAC Measures</b>	<b>6,487</b>	<b>3.8</b>	<b>0.0</b>	<b>\$942.62</b>	<b>\$99,659.29</b>	<b>\$4,750.00</b>	<b>\$94,909.29</b>	<b>100.7</b>	<b>6,532</b>
Install High Efficiency Electric AC	6,487	3.8	0.0	\$942.62	\$99,659.29	\$4,750.00	\$94,909.29	100.7	6,532
<b>Electric Chiller Replacement</b>	<b>71,122</b>	<b>79.4</b>	<b>0.0</b>	<b>\$11,234.01</b>	<b>\$620,072.22</b>	<b>\$58,880.00</b>	<b>\$561,192.22</b>	<b>50.0</b>	<b>71,620</b>
Install High Efficiency Chillers	71,122	79.4	0.0	\$11,234.01	\$620,072.22	\$58,880.00	\$561,192.22	50.0	71,620
<b>Gas Heating (HVAC/Process) Replacement</b>	<b>0</b>	<b>0.0</b>	<b>1.7</b>	<b>\$16.76</b>	<b>\$60,810.24</b>	<b>\$3,612.00</b>	<b>\$57,198.24</b>	<b>3412.8</b>	<b>194</b>
Install High Efficiency Steam Boilers	0	0.0	1.7	\$16.76	\$60,810.24	\$3,612.00	\$57,198.24	3412.8	194
<b>HVAC System Improvements</b>	<b>11,847</b>	<b>0.0</b>	<b>308.1</b>	<b>\$4,704.13</b>	<b>\$35,344.92</b>	<b>\$0.00</b>	<b>\$35,344.92</b>	<b>7.5</b>	<b>48,007</b>
Implement Demand Control Ventilation	11,847	0.0	308.1	\$4,704.13	\$35,344.92	\$0.00	\$35,344.92	7.5	48,007
<b>Domestic Water Heating Upgrade</b>	<b>0</b>	<b>0.0</b>	<b>40.1</b>	<b>\$360.24</b>	<b>\$293.97</b>	<b>\$0.00</b>	<b>\$293.97</b>	<b>0.8</b>	<b>4,696</b>
Install Low-Flow Domestic Hot Water Devices	0	0.0	40.1	\$360.24	\$293.97	\$0.00	\$293.97	0.8	4,696
<b>Food Service Equipment &amp; Refrigeration Measures</b>	<b>2,330</b>	<b>0.1</b>	<b>0.0</b>	<b>\$368.04</b>	<b>\$3,348.00</b>	<b>\$150.00</b>	<b>\$3,198.00</b>	<b>8.7</b>	<b>2,346</b>
Refrigeration Controls	2,330	0.1	0.0	\$368.04	\$3,348.00	\$150.00	\$3,198.00	8.7	2,346
<b>Plug Load Equipment Control - Vending Machine</b>	<b>8,059</b>	<b>0.0</b>	<b>0.0</b>	<b>\$1,265.33</b>	<b>\$1,150.00</b>	<b>\$0.00</b>	<b>\$1,150.00</b>	<b>0.9</b>	<b>8,116</b>
Vending Machine Control	8,059	0.0	0.0	\$1,265.33	\$1,150.00	\$0.00	\$1,150.00	0.9	8,116
<b>TOTALS</b>	<b>578,494</b>	<b>218.9</b>	<b>349.9</b>	<b>\$92,549.78</b>	<b>\$1,235,643.22</b>	<b>\$142,872.00</b>	<b>\$1,092,771.22</b>	<b>11.8</b>	<b>623,507</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 the expedited 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>		<b>383,497</b>	<b>99.8</b>	<b>0.0</b>	<b>\$59,097.18</b>	<b>\$241,441.38</b>	<b>\$57,915.00</b>	<b>\$183,526.38</b>	<b>3.1</b>	<b>386,179</b>
ECM 1	Install LED Fixtures	15,329	2.9	0.0	\$2,313.52	\$29,442.03	\$4,450.00	\$24,992.03	10.8	15,436
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,627	1.6	0.0	\$798.59	\$2,927.77	\$460.00	\$2,467.77	3.1	5,666
ECM 3	Retrofit Fixtures with LED Lamps	362,541	95.3	0.0	\$55,985.07	\$209,071.58	\$53,005.00	\$156,066.58	2.8	365,076
<b>Lighting Control Measures</b>		<b>30,968</b>	<b>7.8</b>	<b>0.0</b>	<b>\$4,677.37</b>	<b>\$40,118.00</b>	<b>\$4,605.00</b>	<b>\$35,513.00</b>	<b>7.6</b>	<b>31,185</b>
ECM 4	Install Occupancy Sensor Lighting Controls	27,024	6.9	0.0	\$4,105.71	\$35,518.00	\$4,605.00	\$30,913.00	7.5	27,213
ECM 5	Install High/Low Lighting Controls	3,944	0.8	0.0	\$571.66	\$4,600.00	\$0.00	\$4,600.00	8.0	3,972
<b>Motor Upgrades</b>		<b>1,083</b>	<b>0.3</b>	<b>0.0</b>	<b>\$150.08</b>	<b>\$31,670.36</b>	<b>\$0.00</b>	<b>\$31,670.36</b>	<b>211.0</b>	<b>1,091</b>
ECM 6	Premium Efficiency Motors	1,083	0.3	0.0	\$150.08	\$31,670.36	\$0.00	\$31,670.36	211.0	1,091
<b>Variable Frequency Drive (VFD) Measures</b>		<b>63,100</b>	<b>27.7</b>	<b>0.0</b>	<b>\$9,734.02</b>	<b>\$101,734.84</b>	<b>\$12,960.00</b>	<b>\$88,774.84</b>	<b>9.1</b>	<b>63,541</b>
ECM 7	Install VFDs on Constant Volume (CV) HVAC	52,423	24.1	0.0	\$8,047.49	\$86,151.49	\$12,960.00	\$73,191.49	9.1	52,789
ECM 8	Install VFDs on Chilled Water Pumps	10,677	3.6	0.0	\$1,686.53	\$15,583.35	\$0.00	\$15,583.35	9.2	10,752
<b>HVAC System Improvements</b>		<b>11,847</b>	<b>0.0</b>	<b>308.1</b>	<b>\$4,704.13</b>	<b>\$35,344.92</b>	<b>\$0.00</b>	<b>\$35,344.92</b>	<b>7.5</b>	<b>48,007</b>
ECM 9	Implement Demand Control Ventilation	11,847	0.0	308.1	\$4,704.13	\$35,344.92	\$0.00	\$35,344.92	7.5	48,007
<b>Domestic Water Heating Upgrade</b>		<b>0</b>	<b>0.0</b>	<b>40.1</b>	<b>\$360.24</b>	<b>\$293.97</b>	<b>\$0.00</b>	<b>\$293.97</b>	<b>0.8</b>	<b>4,696</b>
ECM 10	Install Low-Flow Domestic Hot Water Devices	0	0.0	40.1	\$360.24	\$293.97	\$0.00	\$293.97	0.8	4,696
<b>Food Service Equipment &amp; Refrigeration Measures</b>		<b>2,330</b>	<b>0.1</b>	<b>0.0</b>	<b>\$368.04</b>	<b>\$3,348.00</b>	<b>\$150.00</b>	<b>\$3,198.00</b>	<b>8.7</b>	<b>2,346</b>
ECM 11	Refrigeration Controls	2,330	0.1	0.0	\$368.04	\$3,348.00	\$150.00	\$3,198.00	8.7	2,346
<b>Plug Load Equipment Control - Vending Machine</b>		<b>8,059</b>	<b>0.0</b>	<b>0.0</b>	<b>\$1,265.33</b>	<b>\$1,150.00</b>	<b>\$0.00</b>	<b>\$1,150.00</b>	<b>0.9</b>	<b>8,116</b>
ECM 12	Vending Machine Control	8,059	0.0	0.0	\$1,265.33	\$1,150.00	\$0.00	\$1,150.00	0.9	8,116
<b>TOTALS</b>		<b>500,885</b>	<b>135.6</b>	<b>348.2</b>	<b>\$80,356.39</b>	<b>\$455,101.47</b>	<b>\$75,630.00</b>	<b>\$379,471.47</b>	<b>4.7</b>	<b>545,161</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).



# Memorial Middle/High 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)
<b>Lighting Upgrades</b>			<b>241,457</b>	<b>51.5</b>	<b>0.0</b>	<b>\$38,138.96</b>	<b>\$114,980.27</b>	<b>\$28,725.00</b>	<b>\$86,255.27</b>	<b>2.3</b>	<b>243,145</b>
ECM 1	Install LED Fixtures	Yes	4,678	0.6	0.0	\$738.97	\$3,863.86	\$400.00	\$3,463.86	4.7	4,711
ECM 2	Retrofit Fixtures with LED Lamps	Yes	236,779	50.9	0.0	\$37,399.99	\$111,116.41	\$28,325.00	\$82,791.40	2.2	238,434
<b>Lighting Control Measures</b>			<b>9,948</b>	<b>1.6</b>	<b>0.0</b>	<b>\$1,571.36</b>	<b>\$7,560.00</b>	<b>\$840.00</b>	<b>\$6,720.00</b>	<b>4.3</b>	<b>10,018</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	9,948	1.6	0.0	\$1,571.36	\$7,560.00	\$840.00	\$6,720.00	4.3	10,018
<b>Motor Upgrades</b>			<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>\$0.00</b>	<b>\$27,223.62</b>	<b>\$0.00</b>	<b>\$27,223.62</b>	<b>0.0</b>	<b>0</b>
ECM 4	Premium Efficiency Motors	Yes	0	0.0	0.0	\$0.00	\$27,223.62	\$0.00	\$27,223.62	0.0	0
<b>Variable Frequency Drive (VFD) Measures</b>			<b>51,116</b>	<b>24.3</b>	<b>0.0</b>	<b>\$8,073.89</b>	<b>\$88,036.59</b>	<b>\$10,920.00</b>	<b>\$77,116.59</b>	<b>9.6</b>	<b>51,473</b>
ECM 5	Install VFDs on Constant Volume (CV) HVAC	Yes	40,438	20.7	0.0	\$6,387.36	\$72,453.24	\$10,920.00	\$61,533.24	9.6	40,721
ECM 6	Install VFDs on Chilled Water Pumps	Yes	10,677	3.6	0.0	\$1,686.53	\$15,583.35	\$0.00	\$15,583.35	9.2	10,752
<b>Electric Chiller Replacement</b>			<b>71,122</b>	<b>79.4</b>	<b>0.0</b>	<b>\$11,234.01</b>	<b>\$620,072.22</b>	<b>\$58,880.00</b>	<b>\$561,192.22</b>	<b>50.0</b>	<b>71,620</b>
	Install High Efficiency Chillers	No	71,122	79.4	0.0	\$11,234.01	\$620,072.22	\$58,880.00	\$561,192.22	50.0	71,620
<b>HVAC System Improvements</b>			<b>8,839</b>	<b>0.0</b>	<b>308.1</b>	<b>\$4,275.44</b>	<b>\$32,626.08</b>	<b>\$0.00</b>	<b>\$32,626.08</b>	<b>7.6</b>	<b>44,979</b>
ECM 7	Implement Demand Control Ventilation	Yes	8,839	0.0	308.1	\$4,275.44	\$32,626.08	\$0.00	\$32,626.08	7.6	44,979
<b>Food Service Equipment &amp; Refrigeration Measures</b>			<b>2,330</b>	<b>0.1</b>	<b>0.0</b>	<b>\$368.04</b>	<b>\$3,348.00</b>	<b>\$150.00</b>	<b>\$3,198.00</b>	<b>8.7</b>	<b>2,346</b>
ECM 8	Refrigeration Controls	Yes	2,330	0.1	0.0	\$368.04	\$3,348.00	\$150.00	\$3,198.00	8.7	2,346
<b>Plug Load Equipment Control - Vending Machine</b>			<b>4,836</b>	<b>0.0</b>	<b>0.0</b>	<b>\$763.79</b>	<b>\$690.00</b>	<b>\$0.00</b>	<b>\$690.00</b>	<b>0.9</b>	<b>4,869</b>
ECM 9	Vending Machine Control	Yes	4,836	0.0	0.0	\$763.79	\$690.00	\$0.00	\$690.00	0.9	4,869
<b>TOTALS FOR HIGH PRIORITY MEASURES</b>			<b>318,526</b>	<b>77.5</b>	<b>308.1</b>	<b>\$53,191.48</b>	<b>\$274,464.56</b>	<b>\$40,635.00</b>	<b>\$233,829.56</b>	<b>4.4</b>	<b>356,831</b>
<b>TOTALS FOR ALL EVALUATED MEASURES</b>			<b>389,648</b>	<b>156.9</b>	<b>308.1</b>	<b>\$64,425.49</b>	<b>\$894,536.78</b>	<b>\$99,515.00</b>	<b>\$795,021.78</b>	<b>12.3</b>	<b>428,450</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).

# Gilbert Avenue 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)
<b>Lighting Upgrades</b>			<b>41,601</b>	<b>17.2</b>	<b>0.0</b>	<b>\$6,044.94</b>	<b>\$49,395.80</b>	<b>\$10,930.00</b>	<b>\$38,465.80</b>	<b>6.4</b>	<b>41,892</b>
ECM 1	Install LED Fixtures	Yes	4,389	1.1	0.0	\$637.75	\$13,951.41	\$2,200.00	\$11,751.41	18.4	4,420
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,819	1.1	0.0	\$409.56	\$2,099.23	\$320.00	\$1,779.23	4.3	2,838
ECM 3	Retrofit Fixtures with LED Lamps	Yes	34,393	15.0	0.0	\$4,997.62	\$33,345.16	\$8,410.00	\$24,935.16	5.0	34,634
<b>Lighting Control Measures</b>			<b>5,139</b>	<b>1.8</b>	<b>0.0</b>	<b>\$746.75</b>	<b>\$9,212.00</b>	<b>\$1,230.00</b>	<b>\$7,982.00</b>	<b>10.7</b>	<b>5,175</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	4,871	1.7	0.0	\$707.76	\$8,812.00	\$1,230.00	\$7,582.00	10.7	4,905
ECM 5	Install High/Low Lighting Controls	Yes	268	0.1	0.0	\$38.99	\$400.00	\$0.00	\$400.00	10.3	270
<b>Electric Unitary HVAC Measures</b>			<b>6,487</b>	<b>3.8</b>	<b>0.0</b>	<b>\$942.62</b>	<b>\$99,659.29</b>	<b>\$4,750.00</b>	<b>\$94,909.29</b>	<b>100.7</b>	<b>6,532</b>
	Install High Efficiency Electric AC	No	6,487	3.8	0.0	\$942.62	\$99,659.29	\$4,750.00	\$94,909.29	100.7	6,532
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>1.7</b>	<b>\$16.76</b>	<b>\$60,810.24</b>	<b>\$3,612.00</b>	<b>\$57,198.24</b>	<b>3413.5</b>	<b>194</b>
	Install High Efficiency Steam Boilers	No	0	0.0	1.7	\$16.76	\$60,810.24	\$3,612.00	\$57,198.24	3413.5	194
<b>HVAC System Improvements</b>			<b>1,786</b>	<b>0.0</b>	<b>0.0</b>	<b>\$259.49</b>	<b>\$1,359.42</b>	<b>\$0.00</b>	<b>\$1,359.42</b>	<b>5.2</b>	<b>1,798</b>
ECM 6	Implement Demand Control Ventilation	Yes	1,786	0.0	0.0	\$259.49	\$1,359.42	\$0.00	\$1,359.42	5.2	1,798
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>10.1</b>	<b>\$102.43</b>	<b>\$64.53</b>	<b>\$0.00</b>	<b>\$64.53</b>	<b>0.6</b>	<b>1,185</b>
ECM 7	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	10.1	\$102.43	\$64.53	\$0.00	\$64.53	0.6	1,185
<b>TOTALS FOR HIGH PRIORITY MEASURES</b>			<b>48,526</b>	<b>19.0</b>	<b>10.1</b>	<b>\$7,153.61</b>	<b>\$60,031.75</b>	<b>\$12,160.00</b>	<b>\$47,871.75</b>	<b>6.7</b>	<b>50,050</b>
<b>TOTALS FOR ALL EVALUATED MEASURES</b>			<b>55,013</b>	<b>22.9</b>	<b>11.8</b>	<b>\$8,112.98</b>	<b>\$220,501.27</b>	<b>\$20,522.00</b>	<b>\$199,979.27</b>	<b>24.6</b>	<b>56,776</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).

# Gantner Avenue 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)
<b>Lighting Upgrades</b>			<b>29,317</b>	<b>11.4</b>	<b>0.0</b>	<b>\$5,061.19</b>	<b>\$30,977.50</b>	<b>\$7,475.00</b>	<b>\$23,502.50</b>	<b>4.6</b>	<b>29,522</b>
ECM 1	Install LED Fixtures	Yes	2,035	0.7	0.0	\$351.30	\$6,973.94	\$1,350.00	\$5,623.94	16.0	2,049
ECM 2	Retrofit Fixtures with LED Lamps	Yes	27,282	10.7	0.0	\$4,709.89	\$24,003.56	\$6,125.00	\$17,878.56	3.8	27,473
<b>Lighting Control Measures</b>			<b>4,673</b>	<b>1.6</b>	<b>0.0</b>	<b>\$806.71</b>	<b>\$8,518.00</b>	<b>\$970.00</b>	<b>\$7,548.00</b>	<b>9.4</b>	<b>4,706</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	3,985	1.3	0.0	\$688.03	\$6,918.00	\$970.00	\$5,948.00	8.6	4,013
ECM 4	Install High/Low Lighting Controls	Yes	687	0.2	0.0	\$118.68	\$1,600.00	\$0.00	\$1,600.00	13.5	692
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>17.8</b>	<b>\$148.29</b>	<b>\$136.23</b>	<b>\$0.00</b>	<b>\$136.23</b>	<b>0.9</b>	<b>2,085</b>
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	17.8	\$148.29	\$136.23	\$0.00	\$136.23	0.9	2,085
<b>Plug Load Equipment Control - Vending Machine</b>			<b>1,612</b>	<b>0.0</b>	<b>0.0</b>	<b>\$278.26</b>	<b>\$230.00</b>	<b>\$0.00</b>	<b>\$230.00</b>	<b>0.8</b>	<b>1,623</b>
ECM 6	Vending Machine Control	Yes	1,612	0.0	0.0	\$278.26	\$230.00	\$0.00	\$230.00	0.8	1,623
<b>TOTALS FOR HIGH PRIORITY MEASURES</b>			<b>35,602</b>	<b>12.9</b>	<b>17.8</b>	<b>\$6,294.45</b>	<b>\$39,861.73</b>	<b>\$8,445.00</b>	<b>\$31,416.73</b>	<b>5.0</b>	<b>37,935</b>
<b>TOTALS FOR ALL EVALUATED MEASURES</b>			<b>35,602</b>	<b>12.9</b>	<b>17.8</b>	<b>\$6,294.45</b>	<b>\$39,861.73</b>	<b>\$8,445.00</b>	<b>\$31,416.73</b>	<b>5.0</b>	<b>37,935</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).

# 16<sup>th</sup> Avenue 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)
<b>Lighting Upgrades</b>			<b>71,122</b>	<b>19.8</b>	<b>0.0</b>	<b>\$9,852.10</b>	<b>\$46,087.81</b>	<b>\$10,785.00</b>	<b>\$35,302.81</b>	<b>3.6</b>	<b>71,620</b>
ECM 1	Install LED Fixtures	Yes	4,227	0.6	0.0	\$585.50	\$4,652.82	\$500.00	\$4,152.82	7.1	4,256
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,808	0.5	0.0	\$389.03	\$828.54	\$140.00	\$688.54	1.8	2,828
ECM 3	Retrofit Fixtures with LED Lamps	Yes	64,087	18.8	0.0	\$8,877.57	\$40,606.45	\$10,145.00	\$30,461.45	3.4	64,535
<b>Lighting Control Measures</b>			<b>11,208</b>	<b>2.7</b>	<b>0.0</b>	<b>\$1,552.55</b>	<b>\$14,828.00</b>	<b>\$1,565.00</b>	<b>\$13,263.00</b>	<b>8.5</b>	<b>11,286</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	8,219	2.2	0.0	\$1,138.56	\$12,228.00	\$1,565.00	\$10,663.00	9.4	8,277
ECM 5	Install High/Low Lighting Controls	Yes	2,989	0.5	0.0	\$413.99	\$2,600.00	\$0.00	\$2,600.00	6.3	3,009
<b>Motor Upgrades</b>			<b>1,083</b>	<b>0.3</b>	<b>0.0</b>	<b>\$150.08</b>	<b>\$4,446.74</b>	<b>\$0.00</b>	<b>\$4,446.74</b>	<b>29.6</b>	<b>1,091</b>
ECM 6	Premium Efficiency Motors	Yes	1,083	0.3	0.0	\$150.08	\$4,446.74	\$0.00	\$4,446.74	29.6	1,091
<b>Variable Frequency Drive (VFD) Measures</b>			<b>11,984</b>	<b>3.4</b>	<b>0.0</b>	<b>\$1,660.13</b>	<b>\$13,698.25</b>	<b>\$2,040.00</b>	<b>\$11,658.25</b>	<b>7.0</b>	<b>12,068</b>
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	11,984	3.4	0.0	\$1,660.13	\$13,698.25	\$2,040.00	\$11,658.25	7.0	12,068
<b>HVAC System Improvements</b>			<b>1,221</b>	<b>0.0</b>	<b>0.0</b>	<b>\$169.20</b>	<b>\$1,359.42</b>	<b>\$0.00</b>	<b>\$1,359.42</b>	<b>8.0</b>	<b>1,230</b>
ECM 8	Implement Demand Control Ventilation	Yes	1,221	0.0	0.0	\$169.20	\$1,359.42	\$0.00	\$1,359.42	8.0	1,230
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>12.2</b>	<b>\$109.52</b>	<b>\$93.21</b>	<b>\$0.00</b>	<b>\$93.21</b>	<b>0.9</b>	<b>1,426</b>
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	12.2	\$109.52	\$93.21	\$0.00	\$93.21	0.9	1,426
<b>Plug Load Equipment Control - Vending Machine</b>			<b>1,612</b>	<b>0.0</b>	<b>0.0</b>	<b>\$223.28</b>	<b>\$230.00</b>	<b>\$0.00</b>	<b>\$230.00</b>	<b>1.0</b>	<b>1,623</b>
ECM 10	Vending Machine Control	Yes	1,612	0.0	0.0	\$223.28	\$230.00	\$0.00	\$230.00	1.0	1,623
<b>TOTALS FOR HIGH PRIORITY MEASURES</b>			<b>98,231</b>	<b>26.1</b>	<b>12.2</b>	<b>\$13,716.86</b>	<b>\$80,743.43</b>	<b>\$14,390.00</b>	<b>\$66,353.43</b>	<b>4.8</b>	<b>100,345</b>
<b>TOTALS FOR ALL EVALUATED MEASURES</b>			<b>98,231</b>	<b>26.1</b>	<b>12.2</b>	<b>\$13,716.86</b>	<b>\$80,743.43</b>	<b>\$14,390.00</b>	<b>\$66,353.43</b>	<b>4.8</b>	<b>100,345</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).

# Solar Energy Generation Potential



	Memorial MS/HS	Gilbert Avenue School	Gantner Avenue School	16 <sup>th</sup> Avenue School
<i>Potential:</i>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>
<i>System Potential:</i>	514 kW	90 kW	90 kW	54 kW
<i>Electric Generation:</i>	612,364 kWh/year	107,224 kWh/year	107,224 kWh/year	64,334 kWh/year
<i>Displaced Cost (per year):</i>	\$53,280	\$9,330	\$9,330	\$5,600

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 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

### Equipment Rebates:

- SmartStart Retrofit
- SmartStart New Construction
- Direct Install
- Large Energy Users

## INCENTIVE PROGRAMS

### Whole Buildings:

- Pay for Performance Existing Buildings
- Pay for Performance New Construction

### Energy Generation:

- Combined Heat and Power (CHP)

## OTHER PROGRAMS

### Renewable Energy Generation:

- SREC Registration Program (SRP)

\* eligible programs are highlighted in yellow

# SmartStart: Overview



- 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)**



# 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

**Lime Energy**

Tony McCoy

855-600-5463

[njdi@lime-energy.com](mailto:njdi@lime-energy.com)

# Recommended NJCEP Incentives per Building



Elmwood Park BOE	SmartStart	Direct Install
Memorial Middle/High School	X	
Gilbert Avenue School	X	X
Gantner Avenue School	X	X
16 <sup>th</sup> Avenue School	X	X

\*\* Site is eligible as of July 1, 2018 for Direct Install due to FY 19 updates. Draft Report does not indicate this eligibility because delivered prior in FY18.

## 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

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