

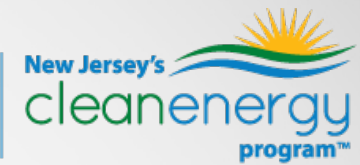
New Jersey's Clean Energy Program

LGEA Exit Meeting for:
Maplewood Township

TRC Energy Services

September 13, 2018

Introductions



- Maplewood Township
 - Victor DeLuca – Mayor
 - Sonia Alves-Viveiros – Business Administrator
 - Jason Sieira – Assistant Business Administrator
 - Paul Kittner – Township Engineer
 - Husam Zeidan – Assistant Township Engineer
 - Annette DePalma – Director of Community Development
 - Robert McCoy – Chairman of Environmental Advisory Committee
- NJ Clean Energy Program
 - Brian DeLuca, CEM – TRC Program Manager
 - Moussa Traore – TRC Auditor
 - Elizabeth Ebinger – TRC Account Manager
 - Arif Welcher – BPU Ombudsman

Agenda

- 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 Maplewood Township

LGEA Process



- 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

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Solar Photovoltaic Generation

Sites Visited/Analyzed

- Town Hall
- Town Hall Rear Buildings (Greenhouses)
- Police & Courthouse
- Public Works Building
- Main Firehouse
- Community Pool
- DeHart Community Center
- Boyden Avenue Firehouse
- 1978 Arts Center
- The Woodland
- Burgdorff Cultural Center
- Memorial Library
- Hilton Library

Benchmarking



Town Hall

ENERGY STAR® Statement of Energy Performance

89
ENERGY STAR® Score¹

Maplewood Town Hall (Main Building)
Primary Property Type: Office
Gross Floor Area (ft²): 22,100
Built: 1931
For Year Ending: December 31, 2016
Date Generated: May 27, 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

Property Address Maplewood Town Hall (Main Building) 574 Valley Street Maplewood, New Jersey 07040	Property Owner Township of Maplewood 574 Valley Street Maplewood, NJ 07040 (973) 762-8120	Primary Contact Joseph Manning 574 Valley Street Maplewood, NJ 07040 (973) 762-8120 Ext. 2000 twpadmin@twp.maplewood.nj.us
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Property ID: 6359501

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 71.8 kBtu/ft²	Annual Energy by Fuel Natural Gas (kBtu) 1,229,880 (78%) Electric - Grid (kBtu) 356,855 (22%)	National Median Comparison National Median Site EUI (kBtu/ft²) 126.2 National Median Source EUI (kBtu/ft²) 191.8 % Diff from National Median Source EUI -43% Annual Emissions Greenhouse Gas Emissions (Metric Tons CO2e/year) 105
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Source EUI
109.1 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)

Maplewood Township	Energy Star Score
Town Hall	89
Town Hall Rear Buildings (Greenhouses)	N/A
Police Court	N/A
Public Works	N/A
Main Firehouse	N/A
Community Pool	N/A
DeHart Community Center	N/A
Boyden Avenue Firehouse	N/A
1978 Arts Center	N/A
The Woodland	N/A
Burgdorff Cultural Center	N/A
Memorial Library	N/A
Hilton Library	N/A

- ENERGY STAR Scores are percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide.
- A score of N/A indicate that Energy Star does not compare these types of facilities

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	294,244	74.5	0.0	\$48,094.41	\$193,799.78	\$29,610.00	\$164,189.78	3.4	296,301
Install LED Fixtures	66,855	12.0	0.0	\$10,837.18	\$39,145.53	\$8,295.00	\$30,850.53	2.8	67,323
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,591	1.2	0.0	\$505.50	\$3,405.00	\$115.00	\$3,290.00	6.5	2,609
Retrofit Fixtures with LED Lamps	223,151	61.2	0.0	\$36,429.91	\$148,130.13	\$21,200.00	\$126,930.13	3.5	224,712
Install LED Exit Signs	1,647	0.1	0.0	\$321.82	\$3,119.12	\$0.00	\$3,119.12	9.7	1,658
Lighting Control Measures	34,948	9.0	0.0	\$5,883.03	\$32,216.00	\$4,840.00	\$27,376.00	4.7	35,192
Install Occupancy Sensor Lighting Controls	26,802	7.4	0.0	\$4,559.76	\$27,216.00	\$3,240.00	\$23,976.00	5.3	26,989
Install High/Low Lighting Controls	8,146	1.6	0.0	\$1,323.27	\$5,000.00	\$1,600.00	\$3,400.00	2.6	8,203
Motor Upgrades	1,481	0.6	0.0	\$282.73	\$4,672.59	\$0.00	\$4,672.59	16.5	1,492
Premium Efficiency Motors	1,481	0.6	0.0	\$282.73	\$4,672.59	\$0.00	\$4,672.59	16.5	1,492
Variable Frequency Drive (VFD) Measures	3,922	2.2	0.0	\$786.55	\$17,563.72	\$1,360.00	\$16,203.72	20.6	3,949
Install VFDs on Constant Volume (CV) HVAC	3,922	2.2	0.0	\$786.55	\$17,563.72	\$1,360.00	\$16,203.72	20.6	3,949
Electric Unitary HVAC Measures	30,023	26.8	0.0	\$5,458.04	\$226,858.48	\$7,218.00	\$219,640.48	40.2	30,233
Install High Efficiency Electric AC	30,023	26.8	0.0	\$5,458.04	\$226,858.48	\$7,218.00	\$219,640.48	40.2	30,233
Gas Heating (HVAC/Process) Replacement	0	0.0	192.3	\$1,745.78	\$39,314.27	\$3,814.60	\$35,499.67	20.3	22,515
Install High Efficiency Hot Water Boilers	0	0.0	176.5	\$1,599.15	\$35,825.04	\$3,414.60	\$32,410.44	20.3	20,669
Install High Efficiency Furnaces	0	0.0	15.8	\$146.63	\$3,489.23	\$400.00	\$3,089.23	21.1	1,846
Domestic Water Heating Upgrade	42	0.0	5.6	\$60.92	\$107.55	\$0.00	\$107.55	1.8	697
Install Low-Flow Domestic Hot Water Devices	42	0.0	5.6	\$60.92	\$107.55	\$0.00	\$107.55	1.8	697
Plug Load Equipment Control - Vending Machine	7,475	0.0	0.0	\$1,219.85	\$1,610.00	\$0.00	\$1,610.00	1.3	7,527
Vending Machine Control	7,475	0.0	0.0	\$1,219.85	\$1,610.00	\$0.00	\$1,610.00	1.3	7,527
TOTALS	372,136	113.2	197.9	\$63,531.31	\$516,142.39	\$46,842.60	\$469,299.79	7.4	397,907

* - 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades		294,244	74.5	0.0	\$48,094.41	\$193,799.78	\$29,610.00	\$164,189.78	3.4	296,301
ECM 1	Install LED Fixtures	66,855	12.0	0.0	\$10,837.18	\$39,145.53	\$8,295.00	\$30,850.53	2.8	67,323
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,591	1.2	0.0	\$505.50	\$3,405.00	\$115.00	\$3,290.00	6.5	2,609
ECM 3	Retrofit Fixtures with LED Lamps	223,151	61.2	0.0	\$36,429.91	\$148,130.13	\$21,200.00	\$126,930.13	3.5	224,712
ECM 4	Install LED Exit Signs	1,647	0.1	0.0	\$321.82	\$3,119.12	\$0.00	\$3,119.12	9.7	1,658
Lighting Control Measures		34,948	9.0	0.0	\$5,883.03	\$32,216.00	\$4,840.00	\$27,376.00	4.7	35,192
ECM 5	Install Occupancy Sensor Lighting Controls	26,802	7.4	0.0	\$4,559.76	\$27,216.00	\$3,240.00	\$23,976.00	5.3	26,989
ECM 6	Install High/Low Lighting Controls	8,146	1.6	0.0	\$1,323.27	\$5,000.00	\$1,600.00	\$3,400.00	2.6	8,203
Motor Upgrades		693	0.3	0.0	\$142.42	\$1,587.33	\$0.00	\$1,587.33	11.1	698
ECM 7	Premium Efficiency Motors	693	0.3	0.0	\$142.42	\$1,587.33	\$0.00	\$1,587.33	11.1	698
Variable Frequency Drive (VFD) Measures		2,504	1.2	0.0	\$494.59	\$9,022.95	\$720.00	\$8,302.95	16.8	2,522
ECM 8	Install VFDs on Constant Volume (CV) HVAC	2,504	1.2	0.0	\$494.59	\$9,022.95	\$720.00	\$8,302.95	16.8	2,522
Gas Heating (HVAC/Process) Replacement		0	0.0	104.8	\$940.91	\$10,801.54	\$1,000.00	\$9,801.54	10.4	12,275
ECM 9	Install High Efficiency Hot Water Boilers	0	0.0	104.8	\$940.91	\$10,801.54	\$1,000.00	\$9,801.54	10.4	12,275
Domestic Water Heating Upgrade		42	0.0	5.6	\$60.92	\$107.55	\$0.00	\$107.55	1.8	697
ECM 10	Install Low-Flow Domestic Hot Water Devices	42	0.0	5.6	\$60.92	\$107.55	\$0.00	\$107.55	1.8	697
Plug Load Equipment Control - Vending Machine		7,475	0.0	0.0	\$1,219.85	\$1,610.00	\$0.00	\$1,610.00	1.3	7,527
ECM 11	Vending Machine Control	7,475	0.0	0.0	\$1,219.85	\$1,610.00	\$0.00	\$1,610.00	1.3	7,527
TOTALS		339,906	85.0	110.4	\$56,836.13	\$249,145.15	\$36,170.00	\$212,975.15	3.7	355,212

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Town Hall



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			26,202	6.8	0.0	\$4,848.05	\$23,292.03	\$2,945.00	\$20,347.03	4.2	26,385
ECM 1	Install LED Fixtures	Yes	12,369	1.9	0.0	\$2,288.62	\$8,345.32	\$1,515.00	\$6,830.32	3.0	12,456
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,069	0.4	0.0	\$197.72	\$1,244.00	\$20.00	\$1,224.00	6.2	1,076
ECM 3	Retrofit Fixtures with LED Lamps	Yes	12,764	4.5	0.0	\$2,361.71	\$13,702.71	\$1,410.00	\$12,292.71	5.2	12,853
Lighting Control Measures			2,355	0.8	0.0	\$435.67	\$3,844.00	\$390.00	\$3,454.00	7.9	2,371
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,061	0.7	0.0	\$381.33	\$3,244.00	\$390.00	\$2,854.00	7.5	2,075
ECM 5	Install High/Low Lighting Controls	Yes	294	0.1	0.0	\$54.34	\$600.00	\$0.00	\$600.00	11.0	296
Motor Upgrades			109	0.1	0.0	\$20.23	\$532.17	\$0.00	\$532.17	26.3	110
	Premium Efficiency Motors	No	109	0.1	0.0	\$20.23	\$532.17	\$0.00	\$532.17	26.3	110
Electric Unitary HVAC Measures			7,026	6.3	0.0	\$1,299.97	\$45,885.71	\$2,875.50	\$43,010.21	33.1	7,075
	Install High Efficiency Electric AC	No	7,026	6.3	0.0	\$1,299.97	\$45,885.71	\$2,875.50	\$43,010.21	33.1	7,075
Domestic Water Heating Upgrade			0	0.0	0.6	\$5.56	\$35.85	\$0.00	\$35.85	6.5	71
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	0.6	\$5.56	\$35.85	\$0.00	\$35.85	6.5	71
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$361.61	\$460.00	\$0.00	\$460.00	1.3	1,968
ECM 7	Vending Machine Control	Yes	1,954	0.0	0.0	\$361.61	\$460.00	\$0.00	\$460.00	1.3	1,968
TOTALS FOR HIGH PRIORITY MEASURES			30,511	7.6	0.6	\$5,650.88	\$27,631.88	\$3,335.00	\$24,296.88	4.3	30,795
TOTALS FOR ALL EVALUATED MEASURES			37,646	14.0	0.6	\$6,971.08	\$74,049.75	\$6,210.50	\$67,839.25	9.7	37,981

* - 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.

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Town Hall Rear Buildings (Greenhouses)



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			3,022	1.0	0.0	\$485.87	\$3,136.00	\$420.00	\$2,716.00	5.6	3,043
ECM 1	Install LED Fixtures	Yes	1,176	0.3	0.0	\$189.13	\$972.40	\$160.00	\$812.40	4.3	1,184
ECM 2	Retrofit Fixtures with LED Lamps	Yes	1,845	0.7	0.0	\$296.74	\$2,163.60	\$260.00	\$1,903.60	6.4	1,858
TOTALS FOR HIGH PRIORITY MEASURES			3,022	1.0	0.0	\$485.87	\$3,136.00	\$420.00	\$2,716.00	5.6	3,043
TOTALS FOR ALL EVALUATED MEASURES			3,022	1.0	0.0	\$485.87	\$3,136.00	\$420.00	\$2,716.00	5.6	3,043

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

Police & Courthouse



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			105,366	24.1	0.0	\$14,385.85	\$61,602.39	\$9,665.00	\$51,937.39	3.6	106,103
ECM 1	Install LED Fixtures	Yes	30,477	5.5	0.0	\$4,161.05	\$10,950.00	\$3,485.00	\$7,465.00	1.8	30,690
ECM 2	Retrofit Fixtures with LED Lamps	Yes	74,889	18.6	0.0	\$10,224.80	\$50,652.39	\$6,180.00	\$44,472.39	4.3	75,413
Lighting Control Measures			7,998	1.8	0.0	\$1,091.92	\$6,580.00	\$620.00	\$5,960.00	5.5	8,053
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	4,475	1.3	0.0	\$611.00	\$4,980.00	\$620.00	\$4,360.00	7.1	4,506
ECM 4	Install High/Low Lighting Controls	Yes	3,522	0.5	0.0	\$480.92	\$1,600.00	\$0.00	\$1,600.00	3.3	3,547
Electric Unitary HVAC Measures			2,430	1.3	0.0	\$331.77	\$20,198.97	\$1,242.00	\$18,956.97	57.1	2,447
	Install High Efficiency Electric AC	No	2,430	1.3	0.0	\$331.77	\$20,198.97	\$1,242.00	\$18,956.97	57.1	2,447
TOTALS FOR HIGH PRIORITY MEASURES			113,363	25.9	0.0	\$15,477.77	\$68,182.39	\$10,285.00	\$57,897.39	3.7	114,156
TOTALS FOR ALL EVALUATED MEASURES			115,793	27.2	0.0	\$15,809.55	\$88,381.36	\$11,527.00	\$76,854.36	4.9	116,603

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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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			36,575	8.2	0.0	\$5,445.46	\$20,459.21	\$3,315.00	\$17,144.21	3.1	36,831
ECM 1	Install LED Fixtures	Yes	5,063	0.8	0.0	\$753.84	\$2,408.06	\$230.00	\$2,178.06	2.9	5,099
ECM 2	Retrofit Fixtures with LED Lamps	Yes	31,512	7.3	0.0	\$4,691.62	\$18,051.15	\$3,085.00	\$14,966.15	3.2	31,732
Lighting Control Measures			2,253	0.5	0.0	\$335.43	\$1,392.00	\$120.00	\$1,272.00	3.8	2,269
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,253	0.5	0.0	\$335.43	\$1,392.00	\$120.00	\$1,272.00	3.8	2,269
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$290.97	\$460.00	\$0.00	\$460.00	1.6	1,968
ECM 4	Vending Machine Control	Yes	1,954	0.0	0.0	\$290.97	\$460.00	\$0.00	\$460.00	1.6	1,968
TOTALS FOR HIGH PRIORITY MEASURES			40,782	8.7	0.0	\$6,071.86	\$22,311.21	\$3,435.00	\$18,876.21	3.1	41,068
TOTALS FOR ALL EVALUATED MEASURES			40,782	8.7	0.0	\$6,071.86	\$22,311.21	\$3,435.00	\$18,876.21	3.1	41,068

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Main Firehouse



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			25,385	2.8	0.0	\$3,989.11	\$7,992.69	\$1,440.00	\$6,552.69	1.6	25,563
ECM 1	Retrofit Fixtures with LED Lamps	Yes	25,123	2.8	0.0	\$3,947.81	\$7,454.92	\$1,440.00	\$6,014.92	1.5	25,298
ECM 2	Install LED Exit Signs	Yes	263	0.0	0.0	\$41.30	\$537.78	\$0.00	\$537.78	13.0	265
Lighting Control Measures			7,090	0.8	0.0	\$1,114.16	\$1,906.00	\$205.00	\$1,701.00	1.5	7,140
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	5,874	0.6	0.0	\$923.07	\$1,506.00	\$205.00	\$1,301.00	1.4	5,915
ECM 4	Install High/Low Lighting Controls	Yes	1,216	0.2	0.0	\$191.09	\$400.00	\$0.00	\$400.00	2.1	1,225
Motor Upgrades			348	0.1	0.0	\$54.61	\$876.36	\$0.00	\$876.36	16.0	350
	Premium Efficiency Motors	No	348	0.1	0.0	\$54.61	\$876.36	\$0.00	\$876.36	16.0	350
Electric Unitary HVAC Measures			2,828	1.7	0.0	\$444.32	\$13,365.79	\$547.50	\$12,818.29	28.8	2,847
	Install High Efficiency Electric AC	No	2,828	1.7	0.0	\$444.32	\$13,365.79	\$547.50	\$12,818.29	28.8	2,847
Domestic Water Heating Upgrade			0	0.0	2.6	\$23.31	\$21.51	\$0.00	\$21.51	0.9	300
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	2.6	\$23.31	\$21.51	\$0.00	\$21.51	0.9	300
Plug Load Equipment Control - Vending Machine			1,612	0.0	0.0	\$253.29	\$230.00	\$0.00	\$230.00	0.9	1,623
ECM 6	Vending Machine Control	Yes	1,612	0.0	0.0	\$253.29	\$230.00	\$0.00	\$230.00	0.9	1,623
TOTALS FOR HIGH PRIORITY MEASURES			34,087	3.6	2.6	\$5,379.86	\$10,150.20	\$1,645.00	\$8,505.20	1.6	34,625
TOTALS FOR ALL EVALUATED MEASURES			37,262	5.4	2.6	\$5,878.80	\$24,392.36	\$2,192.50	\$22,199.86	3.8	37,822

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Community Pool



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			13,601	4.3	0.0	\$2,788.64	\$11,271.22	\$1,815.00	\$9,456.22	3.4	13,696
ECM 1	Install LED Fixtures	Yes	5,127	1.0	0.0	\$1,051.20	\$4,424.75	\$1,110.00	\$3,314.75	3.2	5,163
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,522	0.8	0.0	\$312.08	\$2,161.00	\$95.00	\$2,066.00	6.6	1,533
ECM 3	Retrofit Fixtures with LED Lamps	Yes	6,637	2.5	0.0	\$1,360.70	\$4,040.14	\$610.00	\$3,430.14	2.5	6,683
ECM 4	Install LED Exit Signs	Yes	315	0.0	0.0	\$64.66	\$645.33	\$0.00	\$645.33	10.0	318
Lighting Control Measures			709	0.4	0.0	\$145.33	\$1,428.00	\$200.00	\$1,228.00	8.4	714
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	709	0.4	0.0	\$145.33	\$1,428.00	\$200.00	\$1,228.00	8.4	714
Motor Upgrades			194	0.1	0.0	\$39.79	\$710.97	\$0.00	\$710.97	17.9	195
ECM 6	Premium Efficiency Motors	Yes	194	0.1	0.0	\$39.79	\$710.97	\$0.00	\$710.97	17.9	195
TOTALS FOR HIGH PRIORITY MEASURES			14,504	4.8	0.0	\$2,973.76	\$13,410.19	\$2,015.00	\$11,395.19	3.8	14,605
TOTALS FOR ALL EVALUATED MEASURES			14,504	4.8	0.0	\$2,973.76	\$13,410.19	\$2,015.00	\$11,395.19	3.8	14,605

* - 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.

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DeHart Community 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			10,586	2.7	0.0	\$1,743.41	\$7,384.49	\$900.00	\$6,484.49	3.7	10,661
ECM 1	Install LED Fixtures	Yes	4,577	0.8	0.0	\$753.77	\$2,982.29	\$55.00	\$2,927.29	3.9	4,609
ECM 2	Retrofit Fixtures with LED Lamps	Yes	6,009	2.0	0.0	\$989.64	\$4,402.20	\$845.00	\$3,557.20	3.6	6,051
Lighting Control Measures			1,479	0.5	0.0	\$243.58	\$1,320.00	\$130.00	\$1,190.00	4.9	1,489
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,361	0.4	0.0	\$224.16	\$1,120.00	\$130.00	\$990.00	4.4	1,371
ECM 4	Install High/Low Lighting Controls	Yes	118	0.0	0.0	\$19.42	\$200.00	\$0.00	\$200.00	10.3	119
Electric Unitary HVAC Measures			1,900	1.3	0.0	\$312.87	\$11,344.80	\$460.00	\$10,884.80	34.8	1,913
	Install High Efficiency Electric AC	No	1,900	1.3	0.0	\$312.87	\$11,344.80	\$460.00	\$10,884.80	34.8	1,913
Gas Heating (HVAC/Process) Replacement			0	0.0	104.8	\$940.91	\$10,801.54	\$1,000.00	\$9,801.54	10.4	12,275
ECM 5	Install High Efficiency Hot Water Boilers	Yes	0	0.0	104.8	\$940.91	\$10,801.54	\$1,000.00	\$9,801.54	10.4	12,275
Plug Load Equipment Control - Vending Machine			1,954	0.0	0.0	\$321.85	\$460.00	\$0.00	\$460.00	1.4	1,968
ECM 6	Vending Machine Control	Yes	1,954	0.0	0.0	\$321.85	\$460.00	\$0.00	\$460.00	1.4	1,968
TOTALS FOR HIGH PRIORITY MEASURES			14,020	3.2	104.8	\$3,249.76	\$19,966.03	\$2,030.00	\$17,936.03	5.5	26,392
TOTALS FOR ALL EVALUATED MEASURES			15,920	4.5	104.8	\$3,562.63	\$31,310.83	\$2,490.00	\$28,820.83	8.1	28,306

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Boyden Avenue Firehouse



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			11,086	0.9	0.0	\$1,909.89	\$2,594.67	\$370.00	\$2,224.67	1.2	11,164
ECM 1	Retrofit Fixtures with LED Lamps	Yes	10,929	0.9	0.0	\$1,882.72	\$2,272.01	\$370.00	\$1,902.01	1.0	11,005
ECM 2	Install LED Exit Signs	Yes	158	0.0	0.0	\$27.16	\$322.67	\$0.00	\$322.67	11.9	159
Lighting Control Measures			2,432	0.2	0.0	\$418.99	\$1,134.00	\$455.00	\$679.00	1.6	2,449
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,292	0.1	0.0	\$222.59	\$734.00	\$55.00	\$679.00	3.1	1,301
ECM 4	Install High/Low Lighting Controls	Yes	1,140	0.1	0.0	\$196.40	\$400.00	\$400.00	\$0.00	0.0	1,148
Electric Unitary HVAC Measures			1,289	0.8	0.0	\$222.10	\$4,488.66	\$276.00	\$4,212.66	19.0	1,298
	Install High Efficiency Electric AC	No	1,289	0.8	0.0	\$222.10	\$4,488.66	\$276.00	\$4,212.66	19.0	1,298
Gas Heating (HVAC/Process) Replacement			0	0.0	49.4	\$451.18	\$15,434.20	\$1,414.60	\$14,019.60	31.1	5,788
	Install High Efficiency Hot Water Boilers	No	0	0.0	49.4	\$451.18	\$15,434.20	\$1,414.60	\$14,019.60	31.1	5,788
Domestic Water Heating Upgrade			0	0.0	1.0	\$9.34	\$14.34	\$0.00	\$14.34	1.5	120
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	1.0	\$9.34	\$14.34	\$0.00	\$14.34	1.5	120
TOTALS FOR HIGH PRIORITY MEASURES			13,519	1.1	1.0	\$2,338.21	\$3,743.01	\$825.00	\$2,918.01	1.2	13,733
TOTALS FOR ALL EVALUATED MEASURES			14,808	1.9	50.5	\$3,011.50	\$23,665.87	\$2,515.60	\$21,150.27	7.0	20,819

* - 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.

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1978 Arts 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			1,057	0.3	0.0	\$255.41	\$1,118.31	\$70.00	\$1,048.31	4.1	1,065
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,005	0.3	0.0	\$242.71	\$1,010.76	\$70.00	\$940.76	3.9	1,012
ECM 2	Install LED Exit Signs	Yes	53	0.0	0.0	\$12.70	\$107.56	\$0.00	\$107.56	8.5	53
Lighting Control Measures			114	0.0	0.0	\$27.54	\$116.00	\$0.00	\$116.00	4.2	115
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	114	0.0	0.0	\$27.54	\$116.00	\$0.00	\$116.00	4.2	115
Domestic Water Heating Upgrade			42	0.0	0.0	\$10.17	\$7.17	\$0.00	\$7.17	0.7	42
ECM 4	Install Low-Flow Domestic Hot Water Devices	Yes	42	0.0	0.0	\$10.17	\$7.17	\$0.00	\$7.17	0.7	42
TOTALS FOR HIGH PRIORITY MEASURES			1,213	0.4	0.0	\$293.12	\$1,241.48	\$70.00	\$1,171.48	4.0	1,222
TOTALS FOR ALL EVALUATED MEASURES			1,213	0.4	0.0	\$293.12	\$1,241.48	\$70.00	\$1,171.48	4.0	1,222

* - 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.

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The Woodland



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			11,512	3.7	0.0	\$2,353.18	\$12,335.49	\$1,905.00	\$10,430.49	4.4	11,592
ECM 1	Install LED Fixtures	Yes	5,899	1.2	0.0	\$1,205.74	\$7,500.00	\$1,340.00	\$6,160.00	5.1	5,940
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,123	2.4	0.0	\$1,047.17	\$4,082.60	\$565.00	\$3,517.60	3.4	5,159
ECM 3	Install LED Exit Signs	Yes	491	0.0	0.0	\$100.28	\$752.89	\$0.00	\$752.89	7.5	494
Lighting Control Measures			625	0.3	0.0	\$127.71	\$2,162.00	\$215.00	\$1,947.00	15.2	629
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	625	0.3	0.0	\$127.71	\$2,162.00	\$215.00	\$1,947.00	15.2	629
Variable Frequency Drive (VFD) Measures			599	0.3	0.0	\$122.34	\$5,264.92	\$240.00	\$5,024.92	41.1	603
	Install VFDs on Constant Volume (CV) HVAC	No	599	0.3	0.0	\$122.34	\$5,264.92	\$240.00	\$5,024.92	41.1	603
Electric Unitary HVAC Measures			342	0.6	0.0	\$69.83	\$2,917.88	\$0.00	\$2,917.88	41.8	344
	Install High Efficiency Electric AC	No	342	0.6	0.0	\$69.83	\$2,917.88	\$0.00	\$2,917.88	41.8	344
TOTALS FOR HIGH PRIORITY MEASURES			12,137	3.9	0.0	\$2,480.90	\$14,497.49	\$2,120.00	\$12,377.49	5.0	12,222
TOTALS FOR ALL EVALUATED MEASURES			13,077	4.9	0.0	\$2,673.07	\$22,680.28	\$2,360.00	\$20,320.28	7.6	13,168

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Burgdorff Cultural 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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			11,825	5.4	0.0	\$2,433.73	\$6,897.80	\$800.00	\$6,097.80	2.5	11,908
ECM 1	Install LED Fixtures	Yes	1,975	0.3	0.0	\$406.54	\$1,172.03	\$300.00	\$872.03	2.1	1,989
ECM 2	Retrofit Fixtures with LED Lamps	Yes	9,482	5.0	0.0	\$1,951.47	\$4,972.88	\$500.00	\$4,472.88	2.3	9,548
ECM 3	Install LED Exit Signs	Yes	368	0.0	0.0	\$75.72	\$752.89	\$0.00	\$752.89	9.9	370
Lighting Control Measures			364	0.2	0.0	\$74.84	\$1,010.00	\$105.00	\$905.00	12.1	366
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	296	0.1	0.0	\$60.87	\$810.00	\$105.00	\$705.00	11.6	298
ECM 5	Install High/Low Lighting Controls	Yes	68	0.0	0.0	\$13.97	\$200.00	\$0.00	\$200.00	14.3	68
Motor Upgrades			499	0.2	0.0	\$102.63	\$876.36	\$0.00	\$876.36	8.5	502
ECM 6	Premium Efficiency Motors	Yes	499	0.2	0.0	\$102.63	\$876.36	\$0.00	\$876.36	8.5	502
Variable Frequency Drive (VFD) Measures			819	0.4	0.0	\$168.59	\$3,007.65	\$240.00	\$2,767.65	16.4	825
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	819	0.4	0.0	\$168.59	\$3,007.65	\$240.00	\$2,767.65	16.4	825
Gas Heating (HVAC/Process) Replacement			0	0.0	38.0	\$353.69	\$13,078.53	\$1,400.00	\$11,678.53	33.0	4,452
	Install High Efficiency Hot Water Boilers	No	0	0.0	22.3	\$207.06	\$9,589.30	\$1,000.00	\$8,589.30	41.5	2,606
	Install High Efficiency Furnaces	No	0	0.0	15.8	\$146.63	\$3,489.23	\$400.00	\$3,089.23	21.1	1,846
TOTALS FOR HIGH PRIORITY MEASURES			13,507	6.2	0.0	\$2,779.79	\$11,791.81	\$1,145.00	\$10,646.81	3.8	13,601
TOTALS FOR ALL EVALUATED MEASURES			13,507	6.2	38.0	\$3,133.48	\$24,870.34	\$2,545.00	\$22,325.34	7.1	18,054

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Memorial Library



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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			28,246	10.6	0.0	\$5,464.14	\$26,220.42	\$4,340.00	\$21,880.42	4.0	28,443
ECM 1	Retrofit Fixtures with LED Lamps	Yes	28,246	10.6	0.0	\$5,464.14	\$26,220.42	\$4,340.00	\$21,880.42	4.0	28,443
Lighting Control Measures			7,046	2.6	0.0	\$1,363.09	\$8,764.00	\$1,060.00	\$7,704.00	5.7	7,096
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	6,912	2.6	0.0	\$1,337.05	\$8,564.00	\$1,060.00	\$7,504.00	5.6	6,960
ECM 3	Install High/Low Lighting Controls	Yes	135	0.1	0.0	\$26.04	\$200.00	\$0.00	\$200.00	7.7	136
Motor Upgrades			207	0.1	0.0	\$40.02	\$876.36	\$0.00	\$876.36	21.9	208
	Premium Efficiency Motors	No	207	0.1	0.0	\$40.02	\$876.36	\$0.00	\$876.36	21.9	208
Variable Frequency Drive (VFD) Measures			1,685	0.8	0.0	\$326.00	\$6,015.30	\$480.00	\$5,535.30	17.0	1,697
ECM 4	Install VFDs on Constant Volume (CV) HVAC	Yes	1,685	0.8	0.0	\$326.00	\$6,015.30	\$480.00	\$5,535.30	17.0	1,697
Electric Unitary HVAC Measures			6,101	6.6	0.0	\$1,180.27	\$60,000.00	\$1,817.00	\$58,183.00	49.3	6,144
	Install High Efficiency Electric AC	No	6,101	6.6	0.0	\$1,180.27	\$60,000.00	\$1,817.00	\$58,183.00	49.3	6,144
Domestic Water Heating Upgrade			0	0.0	1.4	\$12.57	\$28.68	\$0.00	\$28.68	2.3	164
ECM 5	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	1.4	\$12.57	\$28.68	\$0.00	\$28.68	2.3	164
TOTALS FOR HIGH PRIORITY MEASURES			36,977	14.0	1.4	\$7,165.80	\$41,028.40	\$5,880.00	\$35,148.40	4.9	37,400
TOTALS FOR ALL EVALUATED MEASURES			43,285	20.6	1.4	\$8,386.09	\$101,904.76	\$7,697.00	\$94,207.76	11.2	43,752

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Hilton Library

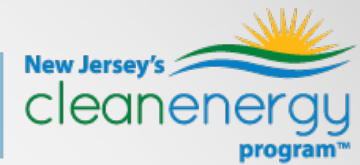


Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			10,209	3.8	0.0	\$2,113.74	\$9,492.58	\$1,625.00	\$7,867.58	3.7	10,280
ECM 1	Install LED Fixtures	Yes	714	0.1	0.0	\$147.83	\$390.68	\$100.00	\$290.68	2.0	719
ECM 2	Retrofit Fixtures with LED Lamps	Yes	9,495	3.7	0.0	\$1,965.92	\$9,101.91	\$1,525.00	\$7,576.91	3.9	9,561
Lighting Control Measures			2,484	1.0	0.0	\$514.26	\$2,560.00	\$1,340.00	\$1,220.00	2.4	2,501
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	831	0.3	0.0	\$171.98	\$1,160.00	\$140.00	\$1,020.00	5.9	836
ECM 4	Install High/Low Lighting Controls	Yes	1,653	0.6	0.0	\$342.28	\$1,400.00	\$1,200.00	\$200.00	0.6	1,665
Motor Upgrades			125	0.1	0.0	\$25.89	\$800.37	\$0.00	\$800.37	30.9	126
	Premium Efficiency Motors	No	125	0.1	0.0	\$25.89	\$800.37	\$0.00	\$800.37	30.9	126
Variable Frequency Drive (VFD) Measures			819	0.7	0.0	\$169.62	\$3,275.85	\$400.00	\$2,875.85	17.0	825
	Install VFDs on Constant Volume (CV) HVAC	No	819	0.7	0.0	\$169.62	\$3,275.85	\$400.00	\$2,875.85	17.0	825
Electric Unitary HVAC Measures			6,051	8.3	0.0	\$1,252.82	\$68,656.67	\$0.00	\$68,656.67	54.8	6,093
	Install High Efficiency Electric AC	No	6,051	8.3	0.0	\$1,252.82	\$68,656.67	\$0.00	\$68,656.67	54.8	6,093
TOTALS FOR HIGH PRIORITY MEASURES			12,692	4.7	0.0	\$2,628.00	\$12,052.58	\$2,965.00	\$9,087.58	3.5	12,781
TOTALS FOR ALL EVALUATED MEASURES			19,687	13.8	0.0	\$4,076.33	\$84,785.47	\$3,365.00	\$81,420.47	20.0	19,825

* - 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.

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Energy Efficient Best Practices



- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure HVAC and 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 Retrofit
- SmartStart New Construction
- Direct Install
- Large Energy Users

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

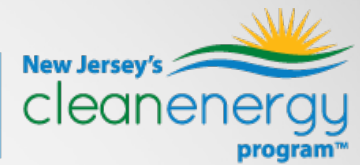


- Two types of incentives for high efficiency equipment installation:
 - Prescriptive
 - Custom
- Project Categories:
 - New Construction
 - Renovation
 - Remodeling
 - Equipment Replacement
- Project pre-approval required for lighting and custom projects
- Incentives up to \$500,000 per electric account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

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 ≤ 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:



Participating Contractor

Willdan Energy Solutions

Robert Vidaurre

908-337-8477

rvidaurre@willdan.com

Recommended NJCEP Incentives per Building



Maplewood Township	SmartStart	Direct Install
Town Hall	X	X
Town Hall Rear Buildings (Greenhouses)	X	X*
Police & Courthouse	X	X*
Public Works	X	X
Main Firehouse	X	X
Community Pool	X	X
DeHart Community Center	X	X
Boyden Avenue Firehouse	X	X
1978 Arts Center	X	X*
The Woodland	X	X
Burgdorff Cultural Center	X	X
Memorial Library	X	X
Hilton Library	X	X*

* These sites below require a waiver to be in Direct Install because only lighting upgrades have been identified. They are eligible for a full free assessment with the DI Participating Contractor to submit the waiver or to identify other measure/s to enable participation.

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 1st 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

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Cell: 732-330-2419

ESIP@bpu.nj.gov

Questions



?



FOR MORE INFORMATION

Visit NJCleanEnergy.com

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