

# New Jersey's Clean Energy Program

LGEA Exit Meeting for:  
*Robbinsville Board of Education*

Alex Klieverik, TRC

June 1, 2018

# Introductions

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## *Robbinsville Board of Education*

- Kathie Foster – Superintendent
- Beth Brooks – Business Administrator
- Kim Keener – Facilities Director

## *NJ Clean Energy Program – TRC*

- Alex Klieverik – Auditor
- Jim Friedl – Outreach Manager
- Sarah Walters – LGEA Account Manager

# Agenda

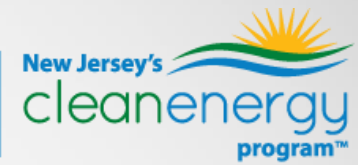
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- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Robbinsville Board of Education

# Process to Draft Report

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- Application submitted to NJCEP
- Site Visit Performed
- Utility Analysis
- Baseline Condition
- Analysis
- Recommendations
- Report

## **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

# Robbinsville 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>321,036</b>	<b>90.4</b>	<b>0.0</b>	<b>\$38,633.71</b>	<b>\$387,558.90</b>	<b>\$23,265.00</b>	<b>\$364,293.90</b>	<b>9.4</b>	<b>323,281</b>
ECM 1	Install LED Fixtures	Yes	114,749	41.2	0.0	\$13,808.96	\$234,673.07	\$2,980.00	\$231,693.07	16.8	115,551
ECM 2	Retrofit Fixtures with LED Lamps	Yes	206,287	49.2	0.0	\$24,824.75	\$152,885.83	\$20,285.00	\$132,600.83	5.3	207,730
<b>Lighting Control Measures</b>			<b>10,432</b>	<b>2.1</b>	<b>0.0</b>	<b>\$1,255.35</b>	<b>\$10,150.00</b>	<b>\$880.00</b>	<b>\$9,270.00</b>	<b>7.4</b>	<b>10,505</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,808	0.7	0.0	\$337.96	\$6,750.00	\$280.00	\$6,470.00	19.1	2,828
ECM 4	Install High/Low Lighting Controls	Yes	7,623	1.4	0.0	\$917.39	\$3,400.00	\$600.00	\$2,800.00	3.1	7,677
<b>Motor Upgrades</b>			<b>33,603</b>	<b>6.2</b>	<b>0.0</b>	<b>\$4,043.79</b>	<b>\$22,314.25</b>	<b>\$0.00</b>	<b>\$22,314.25</b>	<b>5.5</b>	<b>33,838</b>
ECM 5	Premium Efficiency Motors	Yes	33,603	6.2	0.0	\$4,043.79	\$22,314.25	\$0.00	\$22,314.25	5.5	33,838
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>4.4</b>	<b>\$32.91</b>	<b>\$65.25</b>	<b>\$0.00</b>	<b>\$65.25</b>	<b>2.0</b>	<b>520</b>
ECM 6	Install Pipe Insulation	Yes	0	0.0	4.4	\$32.91	\$65.25	\$0.00	\$65.25	2.0	520
<b>Plug Load Equipment Control - Vending Machine</b>			<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>\$0.00</b>	<b>\$1,610.00</b>	<b>\$0.00</b>	<b>\$1,610.00</b>	<b>0.0</b>	<b>0</b>
<b>TOTALS</b>			<b>365,071</b>	<b>98.7</b>	<b>4.4</b>	<b>\$43,965.75</b>	<b>\$421,698.40</b>	<b>\$24,145.00</b>	<b>\$397,553.40</b>	<b>9.0</b>	<b>368,143</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).

## **Overview of Systems, Baseline & Existing Conditions:**

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# Pond Road Middle 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>212,662</b>	<b>44.2</b>	<b>0.0</b>	<b>\$26,972.69</b>	<b>\$138,704.29</b>	<b>\$20,050.00</b>	<b>\$118,654.29</b>	<b>4.4</b>	<b>214,149</b>
ECM 1	Install LED Fixtures	Yes	31,671	5.8	0.0	\$4,016.98	\$39,376.25	\$2,460.00	\$36,916.25	9.2	31,893
ECM 2	Retrofit Fixtures with LED Lamps	Yes	180,991	38.4	0.0	\$22,955.70	\$99,328.04	\$17,590.00	\$81,738.04	3.6	182,256
<b>Lighting Control Measures</b>			<b>26,246</b>	<b>4.8</b>	<b>0.0</b>	<b>\$3,328.93</b>	<b>\$25,550.00</b>	<b>\$1,785.00</b>	<b>\$23,765.00</b>	<b>7.1</b>	<b>26,430</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	17,725	3.2	0.0	\$2,248.07	\$23,150.00	\$1,785.00	\$21,365.00	9.5	17,848
ECM 4	Install High/Low Lighting Controls	Yes	8,522	1.6	0.0	\$1,080.86	\$2,400.00	\$0.00	\$2,400.00	2.2	8,581
<b>Domestic Water Heating Upgrade</b>			<b>12,192</b>	<b>4.5</b>	<b>-30.2</b>	<b>\$1,286.10</b>	<b>\$4,220.77</b>	<b>\$104.00</b>	<b>\$4,116.77</b>	<b>3.2</b>	<b>8,743</b>
ECM 5	Install High Efficiency Gas Water Heater	Yes	12,192	4.5	-41.6	\$1,187.72	\$3,084.64	\$104.00	\$2,980.64	2.5	7,407
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	11.4	\$98.39	\$1,136.13	\$0.00	\$1,136.13	11.5	1,336
<b>TOTALS</b>			<b>251,100</b>	<b>53.5</b>	<b>-30.2</b>	<b>\$31,587.72</b>	<b>\$168,475.06</b>	<b>\$21,939.00</b>	<b>\$146,536.06</b>	<b>4.6</b>	<b>249,321</b>

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## **Overview of Systems, Baseline & Existing Conditions:**

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# Sharon Elementary School

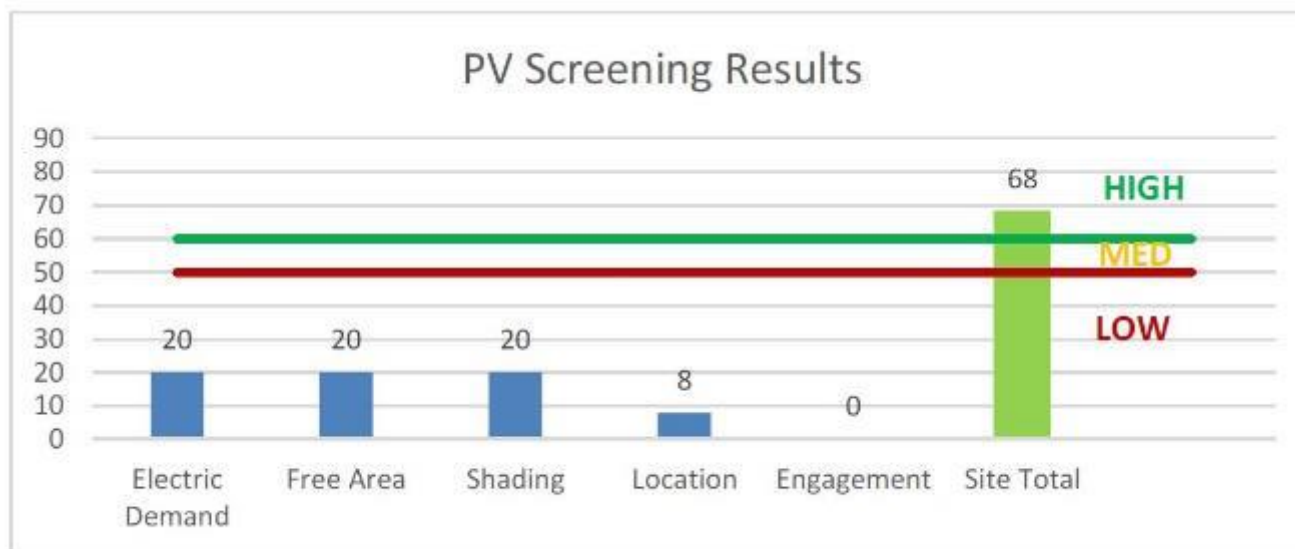


Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
<b>Lighting Upgrades</b>			<b>230,736</b>	<b>39.4</b>	<b>0.0</b>	<b>\$26,959.24</b>	<b>\$152,238.29</b>	<b>\$19,445.00</b>	<b>\$132,793.29</b>	<b>4.9</b>	<b>232,349</b>
ECM 1	Install LED Fixtures	Yes	53,160	7.1	0.0	\$6,211.17	\$63,545.06	\$4,685.00	\$58,860.06	9.5	53,531
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	261	0.0	0.0	\$30.51	\$117.00	\$10.00	\$107.00	3.5	263
ECM 3	Retrofit Fixtures with LED Lamps	Yes	177,315	32.3	0.0	\$20,717.56	\$88,576.23	\$14,750.00	\$73,826.23	3.6	178,555
<b>Lighting Control Measures</b>			<b>19,608</b>	<b>2.9</b>	<b>0.0</b>	<b>\$2,291.01</b>	<b>\$18,318.00</b>	<b>\$1,775.00</b>	<b>\$16,543.00</b>	<b>7.2</b>	<b>19,745</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	14,283	2.1	0.0	\$1,668.86	\$14,118.00	\$1,775.00	\$12,343.00	7.4	14,383
ECM 5	Install High/Low Lighting Controls	Yes	5,325	0.8	0.0	\$622.16	\$4,200.00	\$0.00	\$4,200.00	6.8	5,362
<b>Motor Upgrades</b>			<b>215</b>	<b>0.0</b>	<b>0.0</b>	<b>\$25.10</b>	<b>\$4,954.54</b>	<b>\$0.00</b>	<b>\$4,954.54</b>	<b>197.4</b>	<b>216</b>
	Premium Efficiency Motors	No	215	0.0	0.0	\$25.10	\$4,954.54	\$0.00	\$4,954.54	197.4	216
<b>Variable Frequency Drive (VFD) Measures</b>			<b>11,567</b>	<b>3.3</b>	<b>0.0</b>	<b>\$1,351.47</b>	<b>\$13,765.30</b>	<b>\$3,875.00</b>	<b>\$9,890.30</b>	<b>7.3</b>	<b>11,648</b>
ECM 6	Install VFD on Variable Air Volume (VAV) HVAC	Yes	11,567	3.3	0.0	\$1,351.47	\$13,765.30	\$3,875.00	\$9,890.30	7.3	11,648
<b>TOTAL FOR ALL MEASURES</b>			<b>262,125</b>	<b>45.7</b>	<b>0.0</b>	<b>\$30,626.82</b>	<b>\$189,276.13</b>	<b>\$25,095.00</b>	<b>\$164,181.13</b>	<b>5.4</b>	<b>263,958</b>
<b>TOTAL FOR RECOMMENDED MEASURES</b>			<b>261,911</b>	<b>45.7</b>	<b>0.0</b>	<b>\$30,601.72</b>	<b>\$184,321.59</b>	<b>\$25,095.00</b>	<b>\$159,226.59</b>	<b>5.2</b>	<b>263,742</b>

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# On-Site Generation - Assessment



Potential	High	
System Potential	397	kW DC STC
Electric Generation	472,974	kWh/yr
Displaced Cost	\$41,150	/yr
Installed Cost	\$1,548,300	

Robbinsville High School

Potential	High	
System Potential	150	kW DC STC
Electric Generation	178,705	kWh/yr
Displaced Cost	\$15,550	/yr
Installed Cost	\$624,000	

Pond Road Middle School

Potential	High	
System Potential	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	\$11,090	/yr
Installed Cost	\$278,200	

\*Sharon Elementary School

# On-Site Generation - Assessment

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For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

Basic Info on Solar PV in NJ: <http://www.njcleanenergy.com/whysolar>

NJ Solar Market FAQs: <http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs>

Approved Solar Installers in the NJ Market:

[http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved\\_vendorsearch/?id=60&start=1](http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1)

# *Some 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*

# PROGRAM PORTFOLIO



## ELIGIBLE SECTORS

Commercial, Industrial, Government, Non-Profit,  
Institutional and Multifamily

## PROGRAMS

### Equipment Rebates:

- Retrofit – Existing Buildings
- New Construction
- Direct Install – Small Business
- Large Energy Users

### Whole Buildings:

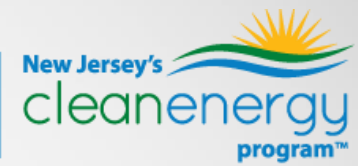
- Pay for Performance Existing Buildings
- Pay for Performance New Construction

### Energy Generation:

- Combined Heat and Power (CHP) and Fuel Cells

# Recommended NJCEP Incentives

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- SmartStart Buildings (i.e Retrofit – Existing Buildings)
- Pay for Performance Existing Building (P4P EB)

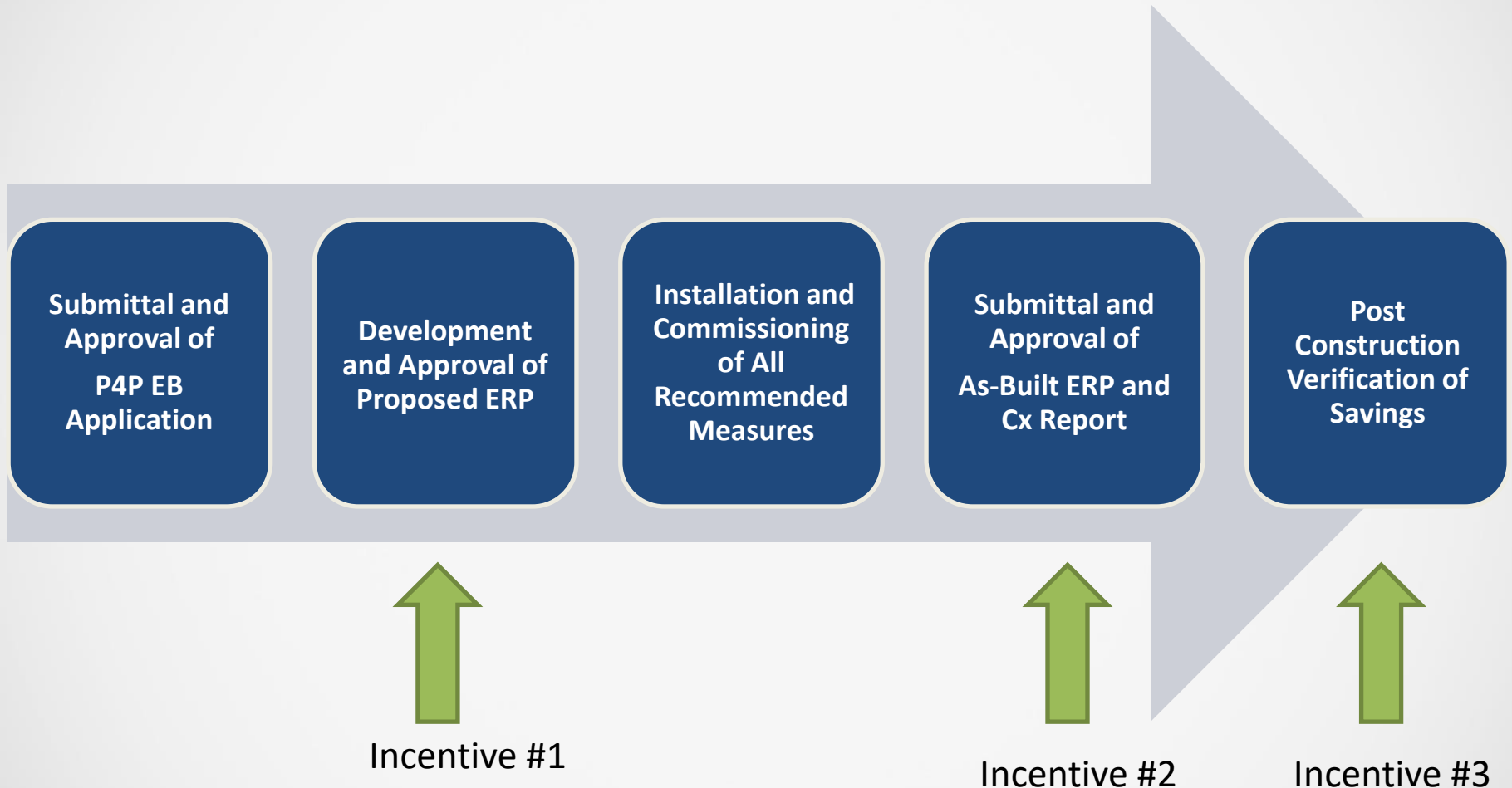
# SmartStart Prescriptive: Overview



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



# P4P EB: PROCESS



# P4P EB: INCENTIVES



Incentive #1: Energy Reduction Plan			
Incentive Amount:		\$0.15	per sq ft
Minimum Incentive:		\$7,500	
Maximum Incentive:		\$50,000	or 50% of facility annual energy cost
Incentive #2: Installation of Recommended Measures			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15 % savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost
Incentive #3: Post-Construction Benchmarking Report			
Minimum Performance Target:		15%	
Electric Incentives	Base Incentive based on 15% savings:	\$0.09	per projected kWh saved
	For each % over 15% add:	\$0.005	
	Maximum Incentive:	\$0.11	
Gas Incentives	Base Incentive based on 15% savings:	\$0.90	per projected Therm saved
	For each % over 15% add:	\$0.05	
	Maximum Incentive:	\$1.25	
Incentive Cap:		25%	of total project cost

## 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

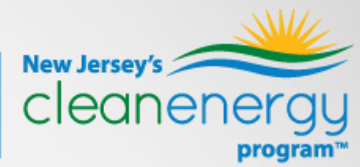
Office: 609-777-3338

Cell: 732-330-2419

ESIP@bpu.nj.gov

# Questions

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# FOR MORE INFORMATION

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

**Call** (866) NJSMART

**Jim Friedl**

Outreach Manager

732-855-6543

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