

# New Jersey's Clean Energy Program

LGEA Exit Meeting for:  
*Manchester, Township of (Ocean County)*

Vish Nimbalkar, TRC

May 23, 2018

# Introductions

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- Manchester Township
  - Joseph Veni – Project Engineer
- NJ Clean Energy Program – TRC
  - Vish Nimbalkar – Auditor
  - Jim Friedl – Outreach Manager

# Agenda

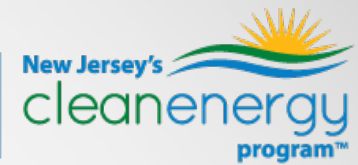
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- Overview of LGEA process (application to deliverable)
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions or concerns regarding the draft audit report
- Overview of NJCEP equipment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

# 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
- Process equipment

## Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

# Municipal Buildings



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>235,816</b>	<b>36.5</b>	<b>0.0</b>	<b>\$29,563.97</b>	<b>\$138,945.99</b>	<b>\$13,385.00</b>	<b>\$125,560.99</b>	<b>4.2</b>	<b>237,465</b>
Install LED Fixtures	68,975	9.8	0.0	\$8,819.61	\$72,280.27	\$3,645.00	\$68,635.27	7.8	69,457
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	10,406	3.2	0.0	\$1,290.90	\$7,988.57	\$520.00	\$7,468.57	5.8	10,479
Retrofit Fixtures with LED Lamps	149,469	23.0	0.0	\$18,558.58	\$51,040.73	\$9,220.00	\$41,820.73	2.3	150,514
Install LED Exit Signs	6,967	0.6	0.0	\$894.88	\$7,636.42	\$0.00	\$7,636.42	8.5	7,016
<b>Lighting Control Measures</b>	<b>49,750</b>	<b>7.4</b>	<b>0.0</b>	<b>\$6,132.90</b>	<b>\$51,002.00</b>	<b>\$7,715.00</b>	<b>\$43,287.00</b>	<b>7.1</b>	<b>50,098</b>
Install Occupancy Sensor Lighting Controls	44,000	6.5	0.0	\$5,423.66	\$45,162.00	\$6,545.00	\$38,617.00	7.1	44,308
Install Daylight Dimming Controls	5,750	0.9	0.0	\$709.24	\$5,840.00	\$1,170.00	\$4,670.00	6.6	5,790
<b>Motor Upgrades</b>	<b>855</b>	<b>0.3</b>	<b>0.0</b>	<b>\$108.69</b>	<b>\$8,523.53</b>	<b>\$0.00</b>	<b>\$8,523.53</b>	<b>78.4</b>	<b>861</b>
Premium Efficiency Motors	855	0.3	0.0	\$108.69	\$8,523.53	\$0.00	\$8,523.53	78.4	861
<b>Variable Frequency Drive (VFD) Measures</b>	<b>11,976</b>	<b>4.1</b>	<b>0.0</b>	<b>\$1,475.09</b>	<b>\$18,909.19</b>	<b>\$1,136.00</b>	<b>\$17,773.19</b>	<b>12.0</b>	<b>12,060</b>
Install VFDs on Constant Volume (CV) HVAC	11,976	4.1	0.0	\$1,475.09	\$18,909.19	\$1,136.00	\$17,773.19	12.0	12,060
<b>Electric Unitary HVAC Measures</b>	<b>15,761</b>	<b>7.6</b>	<b>0.0</b>	<b>\$1,941.34</b>	<b>\$39,834.80</b>	<b>\$2,578.79</b>	<b>\$37,256.01</b>	<b>19.2</b>	<b>15,872</b>
Install High Efficiency Electric AC	15,761	7.6	0.0	\$1,941.34	\$39,834.80	\$2,578.79	\$37,256.01	19.2	15,872
<b>Gas Heating (HVAC/Process) Replacement</b>	<b>0</b>	<b>0.0</b>	<b>10.2</b>	<b>\$160.81</b>	<b>\$3,398.60</b>	<b>\$400.00</b>	<b>\$2,998.60</b>	<b>18.6</b>	<b>1,195</b>
Install High Efficiency Furnaces	0	0.0	10.2	\$160.81	\$3,398.60	\$400.00	\$2,998.60	18.6	1,195
<b>HVAC System Improvements</b>	<b>329</b>	<b>0.0</b>	<b>20.3</b>	<b>\$320.74</b>	<b>\$1,207.11</b>	<b>\$0.00</b>	<b>\$1,207.11</b>	<b>3.8</b>	<b>2,709</b>
Install Programmable Thermostats	329	0.0	5.5	\$136.65	\$989.61	\$0.00	\$989.61	7.2	975
Install Pipe Insulation	0	0.0	14.8	\$184.09	\$217.50	\$0.00	\$217.50	1.2	1,733
<b>Domestic Water Heating Upgrade</b>	<b>6,645</b>	<b>1.4</b>	<b>-4.8</b>	<b>\$788.62</b>	<b>\$1,396.93</b>	<b>\$300.00</b>	<b>\$1,096.93</b>	<b>1.4</b>	<b>6,129</b>
Install Tankless Water Heater	1,407	1.4	-4.8	\$116.20	\$1,045.60	\$300.00	\$745.60	6.4	855
Install Low-Flow Domestic Hot Water Devices	5,238	0.0	0.0	\$672.42	\$351.33	\$0.00	\$351.33	0.5	5,274
<b>Food Service Equipment &amp; Refrigeration Measures</b>	<b>1,659</b>	<b>0.2</b>	<b>0.0</b>	<b>\$252.18</b>	<b>\$2,700.00</b>	<b>\$0.00</b>	<b>\$2,700.00</b>	<b>10.7</b>	<b>1,671</b>
Replace Refrigeration Equipment	1,659	0.2	0.0	\$252.18	\$2,700.00	\$0.00	\$2,700.00	10.7	1,671
<b>Plug Load Equipment Control - Vending Machine</b>	<b>1,612</b>	<b>0.0</b>	<b>0.0</b>	<b>\$198.53</b>	<b>\$230.00</b>	<b>\$0.00</b>	<b>\$230.00</b>	<b>1.2</b>	<b>1,623</b>
Vending Machine Control	1,612	0.0	0.0	\$198.53	\$230.00	\$0.00	\$230.00	1.2	1,623
<b>TOTALS</b>	<b>324,403</b>	<b>57.5</b>	<b>25.7</b>	<b>\$40,942.87</b>	<b>\$266,148.15</b>	<b>\$25,514.79</b>	<b>\$240,633.36</b>	<b>5.9</b>	<b>329,681</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).

# Treatment Facilities



Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	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>95,793</b>	<b>13.0</b>	<b>\$12,561.31</b>	<b>\$50,882.90</b>	<b>\$6,150.00</b>	<b>\$44,732.90</b>	<b>3.6</b>	<b>96,463</b>
Install LED Fixtures	46,086	7.8	\$5,992.19	\$39,430.25	\$4,450.00	\$34,980.25	5.8	46,408
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	3,587	0.4	\$537.35	\$936.00	\$80.00	\$856.00	1.6	3,612
Retrofit Fixtures with LED Lamps	46,120	4.9	\$6,031.77	\$10,516.65	\$1,620.00	\$8,896.65	1.5	46,443
<b>Lighting Control Measures</b>	<b>13,306</b>	<b>1.4</b>	<b>\$1,778.31</b>	<b>\$11,032.00</b>	<b>\$1,400.00</b>	<b>\$9,632.00</b>	<b>5.4</b>	<b>13,400</b>
Install Occupancy Sensor Lighting Controls	13,306	1.4	\$1,778.31	\$11,032.00	\$1,400.00	\$9,632.00	5.4	13,400
<b>Motor Upgrades</b>	<b>83,150</b>	<b>22.5</b>	<b>\$10,778.70</b>	<b>\$97,257.69</b>	<b>\$0.00</b>	<b>\$97,257.69</b>	<b>9.0</b>	<b>83,732</b>
Premium Efficiency Motors	83,150	22.5	\$10,778.70	\$97,257.69	\$0.00	\$97,257.69	9.0	83,732
<b>Variable Frequency Drive (VFD) Measures</b>	<b>391,342</b>	<b>101.9</b>	<b>\$50,222.86</b>	<b>\$30,000.00</b>	<b>\$27,000.00</b>	<b>\$3,000.00</b>	<b>0.1</b>	<b>394,078</b>
Program VFDs to Run Slower and Longer	391,342	101.9	\$50,222.86	\$30,000.00	\$27,000.00	\$3,000.00	0.1	394,078
<b>Electric Unitary HVAC Measures</b>	<b>1,264</b>	<b>1.7</b>	<b>\$162.22</b>	<b>\$7,659.24</b>	<b>\$260.00</b>	<b>\$7,399.24</b>	<b>45.6</b>	<b>1,273</b>
Install High Efficiency Packaged Terminal AC/HP	1,264	1.7	\$162.22	\$7,659.24	\$260.00	\$7,399.24	45.6	1,273
<b>Domestic Water Heating Upgrade</b>	<b>1,804</b>	<b>0.0</b>	<b>\$231.46</b>	<b>\$28.68</b>	<b>\$0.00</b>	<b>\$28.68</b>	<b>0.1</b>	<b>1,816</b>
Install Low-Flow Domestic Hot Water Devices	1,804	0.0	\$231.46	\$28.68	\$0.00	\$28.68	0.1	1,816
<b>Custom Measures</b>	<b>902</b>	<b>0.0</b>	<b>\$115.80</b>	<b>\$2,740.00</b>	<b>\$0.00</b>	<b>\$2,740.00</b>	<b>23.7</b>	<b>909</b>
Install Insulation in Operations Office Attic	902	0.0	\$115.80	\$2,740.00	\$0.00	\$2,740.00	23.7	909
<b>TOTALS</b>	<b>587,562</b>	<b>140.4</b>	<b>\$75,850.66</b>	<b>\$199,600.51</b>	<b>\$34,810.00</b>	<b>\$164,790.51</b>	<b>2.2</b>	<b>591,670</b>

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# Pump Stations and Lift Stations



Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	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>20,047</b>	<b>3.5</b>	<b>\$2,942.61</b>	<b>\$11,235.57</b>	<b>\$1,995.00</b>	<b>\$9,240.57</b>	<b>3.1</b>	<b>20,187</b>
Install LED Fixtures	11,881	1.9	\$1,734.64	\$7,620.91	\$1,505.00	\$6,115.91	3.5	11,964
Retrofit Fluorescent Fixtures with LED Lamps and Drivers	86	0.1	\$12.19	\$400.00	\$20.00	\$380.00	31.2	87
Retrofit Fixtures with LED Lamps	8,080	1.6	\$1,195.78	\$3,214.66	\$470.00	\$2,744.66	2.3	8,136
<b>Lighting Control Measures</b>	<b>1,043</b>	<b>0.2</b>	<b>\$151.34</b>	<b>\$1,890.00</b>	<b>\$245.00</b>	<b>\$1,645.00</b>	<b>10.9</b>	<b>1,050</b>
Install Occupancy Sensor Lighting Controls	1,043	0.2	\$151.34	\$1,890.00	\$245.00	\$1,645.00	10.9	1,050
<b>Motor Upgrades</b>	<b>4,433</b>	<b>1.7</b>	<b>\$678.72</b>	<b>\$9,368.77</b>	<b>\$0.00</b>	<b>\$9,368.77</b>	<b>13.8</b>	<b>4,464</b>
Premium Efficiency Motors	4,433	1.7	\$678.72	\$9,368.77	\$0.00	\$9,368.77	13.8	4,464
<b>Electric Unitary HVAC Measures</b>	<b>526</b>	<b>0.3</b>	<b>\$81.99</b>	<b>\$849.03</b>	<b>\$0.00</b>	<b>\$849.03</b>	<b>10.4</b>	<b>530</b>
Install High Efficiency Electric AC	526	0.3	\$81.99	\$849.03	\$0.00	\$849.03	10.4	530
<b>TOTALS</b>	<b>26,048</b>	<b>5.6</b>	<b>\$3,854.66</b>	<b>\$23,343.37</b>	<b>\$2,240.00</b>	<b>\$21,103.37</b>	<b>5.5</b>	<b>26,231</b>

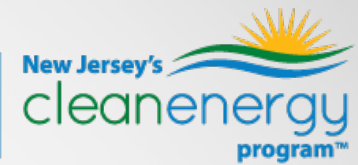
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\*\* - Simple Payback Period is based on net measure costs (i.e. after incentives).

# Solar PV Potential



Total Installed Cost	\$5,691,000	\$
Value of Electric Generation per Year	\$256,074.44	\$
Annual Income from SRECS	\$178,600.00	\$
Total Economic Value per Year	\$434,674.44	\$
Simple Payback Period	13.09	years



## *Some Energy Efficient 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:

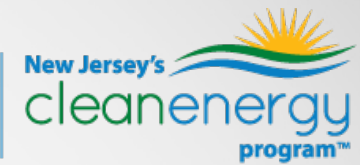
- Pay for Performance Existing Buildings
- Pay for Performance New Construction

### Energy Generation:

- Combined Heat and Power (CHP) and Fuel Cells

# Recommended NJCEP Incentives

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- Pay For Performance New Construction
- Direct Install

## **Hutchinson Mechanical Services**

Ed Hutchinson

856-429-5828 x215

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

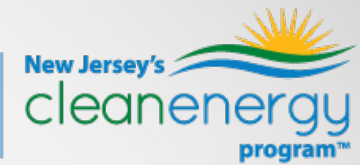
- SmartStart Buildings (i.e Retrofit – Existing Buildings)

# P4P Existing Buildings: Overview



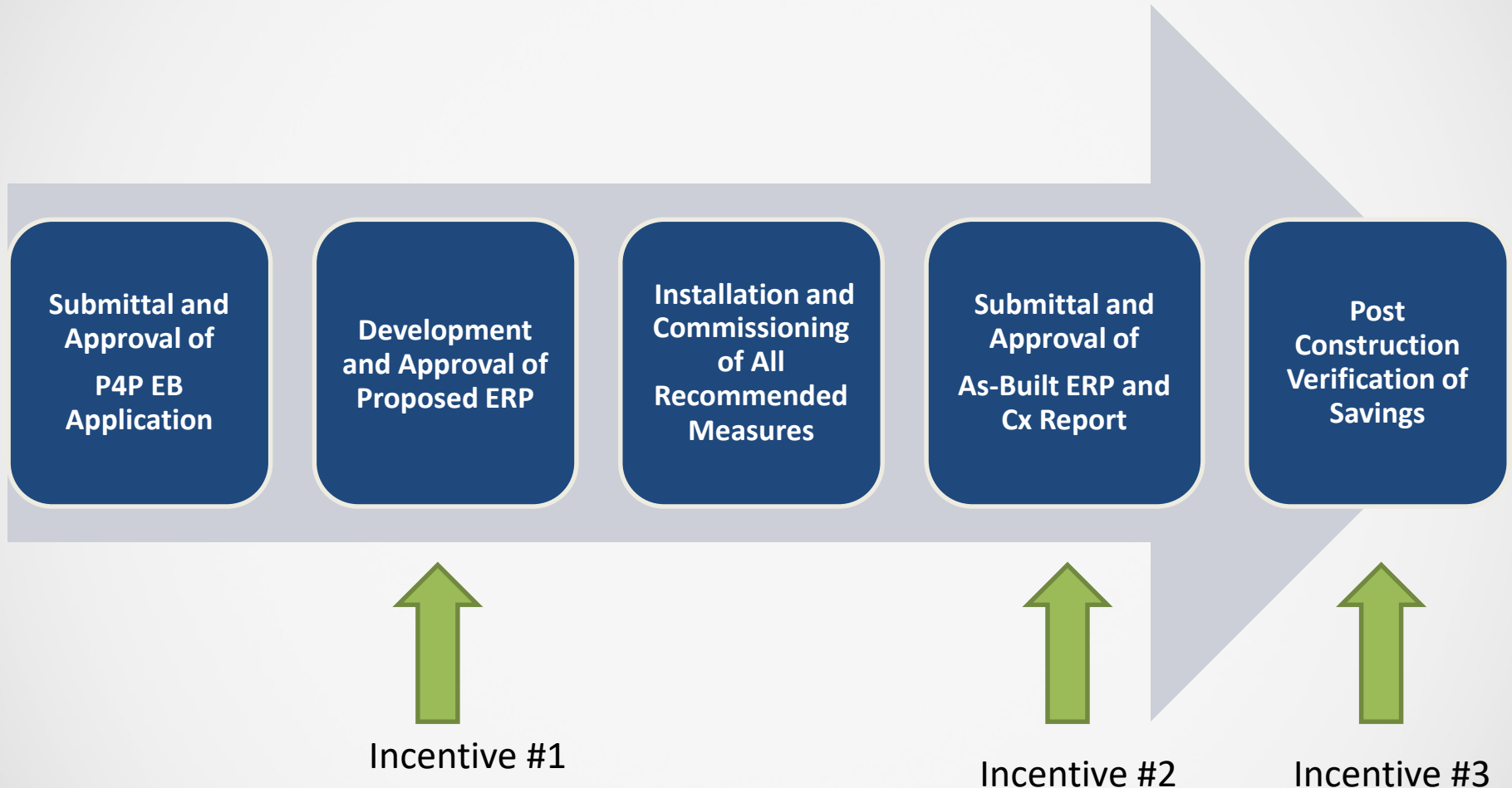
- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Customer chooses from network of pre-approved participating Partners
- Incentives up to \$2 million per project
  - \$1 million for electric measures
  - \$1 million for gas measures
- \$4 million annual entity cap per fiscal year
- Incentives up to 50% of total project cost
- Incentives paid in three installments at milestones

# P4P Existing Buildings: Overview



- Open to Commercial and Industrial facilities with annual peak demand of at least 200 kW in previous year
- Minimum savings 15% from existing energy use
  - Savings requirement may be 4% of total facility source energy consumption for high energy intensity user like waste water treatment. Eligibility verified by P4P partner.
- Must have at least two unique measures per project
- No more than 50% of total savings may come from lighting measures
  - Lighting savings up to 70% may be considered with minimum savings target increasing up to 35%

# 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

# Direct Install: Overview

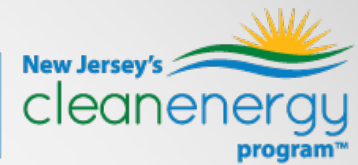
- Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.
- Open to Small to Mid-Sized Commercial and Industrial facilities with a peak electric demand  $\leq 200$  kW
- Provides incentives of up to 70% of the installed cost
- Incentives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

# 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!

# Direct Install – Financing Option



- Eligible NJNG customers can finance the remaining 30 percent balance at 0% APR through the “SAVEGREEN Project® On-Bill Repayment Program” (OBRP) for 36 months.
- For measures that may not qualify for Direct Install, NJNG also offers financing options for SmartStart that will cover up to \$130,000 per year.



# Direct Install – Financing Option

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- Questions? Contact Jerry at the following:

## **Jerry Ryan**

Energy Efficiency Operations Manager

New Jersey Natural Gas

732-433-4362 (cell)

732 378 4920 (office)

[jryan@njng.com](mailto:jryan@njng.com)



## 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

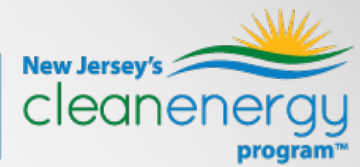
Office: 609-777-3338

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

**Jim Friedl**

Outreach Manager

732-855-6543

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