



# New Jersey's Clean Energy Program

LGEA Exit Meeting for:

*Willingboro Municipal Utilities Authority*

August 22, 2017

# Introductions

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- *Willingboro MUA*
  - Andy Weber – Executive Director
  - Diallyo Diggs – Director of Finance
  - Emmanuel Stuppard – Operations Director
  
- *NJ Clean Energy Program – BPU & TRC*
  - Gary Finger – Ombudsman / ESIP
  - Vish Nimbalkar – Lead Auditor
  - Mike Roberts (phone) – Auditor
  - Ashley Miller – Case Manager

# Agenda

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- Overview of LGEA process
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified
- Questions or concerns regarding the draft audit reports
- Overview of NJCEP equipment incentives
- Next steps for Willingboro MUA

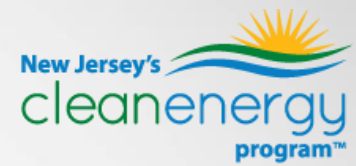
# Overview

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

# *(1) Water Treatment Plant (Meribrook Circle)*



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

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Process Equipment
- Onsite Generation / Renewables

## **Utility Consumption:**

- Electric Consumption and Costs
- Gas Consumption and Costs
- Distributed Generation

# (1) Water Treatment Plant (Meribrook Circle)



See report pages 7 or 19 for the following:

Energy Conservation Measure		Recommend?	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>68,601</b>	<b>6.8</b>	<b>\$8,405.77</b>	<b>\$7,961.66</b>	<b>\$565.00</b>	<b>\$7,396.66</b>	<b>0.88</b>	<b>69,080</b>
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	26,273	2.2	\$3,219.34	\$3,195.00	\$565.00	\$2,630.00	0.82	26,457
ECM 2	Retrofit Fixtures with LED Lamps	Yes	40,427	4.5	\$4,953.55	\$3,476.00	\$0.00	\$3,476.00	0.70	40,709
ECM 3	Install LED Exit Signs	Yes	1,901	0.2	\$232.88	\$1,290.66	\$0.00	\$1,290.66	5.54	1,914
<b>Lighting Control Measures</b>			<b>9,160</b>	<b>0.5</b>	<b>\$1,122.41</b>	<b>\$2,278.00</b>	<b>\$335.00</b>	<b>\$1,943.00</b>	<b>1.73</b>	<b>9,224</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	9,160	0.5	\$1,122.41	\$2,278.00	\$335.00	\$1,943.00	1.73	9,224
<b>Motor Upgrades</b>			<b>41,140</b>	<b>12.1</b>	<b>\$5,041.00</b>	<b>\$36,256.69</b>	<b>\$0.00</b>	<b>\$36,256.69</b>	<b>7.19</b>	<b>41,428</b>
ECM 5	Premium Efficiency Motors	Yes	41,140	12.1	\$5,041.00	\$36,256.69	\$0.00	\$36,256.69	7.19	41,428
<b>TOTALS</b>			<b>118,901</b>	<b>19.4</b>	<b>\$14,569.18</b>	<b>\$46,496.35</b>	<b>\$900.00</b>	<b>\$45,596.35</b>	<b>3.13</b>	<b>119,733</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).

## *(2) Pollution Control Plant*



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

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Process Equipment
- Onsite Generation / Renewables

### **Utility Consumption:**

- Electric Consumption and Spend
- Gas Consumption and Spend
- Distributed Generation

## (2) Pollution Control Plant



See report pages 2 or 14 for the following:

Energy Conservation Measure		Recommend?	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>128,327</b>	<b>17.4</b>	<b>\$15,754.56</b>	<b>\$19,003.77</b>	<b>\$850.00</b>	<b>\$18,153.77</b>	<b>1.15</b>	<b>129,224</b>
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	25,740	3.2	\$3,160.09	\$5,018.64	\$760.00	\$4,258.64	1.35	25,920
ECM 2	Retrofit Fixtures with LED Lamps	Yes	101,637	14.1	\$12,477.80	\$12,264.25	\$90.00	\$12,174.25	0.98	102,347
ECM 3	Install LED Exit Signs	Yes	950	0.1	\$116.67	\$1,720.88	\$0.00	\$1,720.88	14.75	957
<b>Lighting Control Measures</b>			<b>8,201</b>	<b>1.0</b>	<b>\$1,006.85</b>	<b>\$3,476.00</b>	<b>\$530.00</b>	<b>\$2,946.00</b>	<b>2.93</b>	<b>8,258</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	8,201	1.0	\$1,006.85	\$3,476.00	\$530.00	\$2,946.00	2.93	8,258
<b>Motor Upgrades</b>			<b>42,442</b>	<b>9.9</b>	<b>\$5,210.60</b>	<b>\$88,287.88</b>	<b>\$0.00</b>	<b>\$88,287.88</b>	<b>16.94</b>	<b>42,739</b>
ECM 5	Premium Efficiency Motors	Yes	42,442	9.9	\$5,210.60	\$88,287.88	\$0.00	\$88,287.88	16.94	42,739
<b>Variable Frequency Drive (VFD) Measures</b>			<b>1,379,614</b>	<b>315.0</b>	<b>\$169,373.64</b>	<b>\$114,119.90</b>	<b>\$0.00</b>	<b>\$114,119.90</b>	<b>0.67</b>	<b>1,389,260</b>
ECM 6	Install VFDs on WW Process Pumps	Yes	1,379,614	315.0	\$169,373.64	\$114,119.90	\$0.00	\$114,119.90	0.67	1,389,260
<b>TOTALS</b>			<b>1,558,585</b>	<b>343.3</b>	<b>\$191,345.65</b>	<b>\$224,887.55</b>	<b>\$1,380.00</b>	<b>\$223,507.55</b>	<b>1.17</b>	<b>1,569,482</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).



## *(3) MUA Administration Office*

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

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems

### **Utility Consumption:**

- Electric Consumption and Spend
- Gas Consumption and Spend

# (3) MUA Administration Office



See report pages 2 or 14 for the following:

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	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)
			12,621	3.3	0.0	0.0	\$1,805.45	\$9,773.71	\$1,055.00	\$8,718.71	4.83	12,709
ECM 1	Install LED Fixtures	Yes	4,261	1.2	0.0	0.0	\$609.58	\$3,696.62	\$985.00	\$2,711.62	4.45	4,291
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	5,301	1.5	0.0	0.0	\$758.38	\$5,332.62	\$0.00	\$5,332.62	7.03	5,338
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,115	0.6	0.0	0.0	\$302.60	\$314.25	\$70.00	\$244.25	0.81	2,130
ECM 4	Install LED Exit Signs	Yes	943	0.1	0.0	0.0	\$134.89	\$430.22	\$0.00	\$430.22	3.19	950
<b>Lighting Control Measures</b>			<b>1,093</b>	<b>0.3</b>	<b>0.0</b>	<b>0.0</b>	<b>\$156.37</b>	<b>\$1,350.00</b>	<b>\$175.00</b>	<b>\$1,175.00</b>	<b>7.51</b>	<b>1,101</b>
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	1,093	0.3	0.0	0.0	\$156.37	\$1,350.00	\$175.00	\$1,175.00	7.51	1,101
<b>Electric Unitary HVAC Measures</b>			<b>1,200</b>	<b>0.8</b>	<b>0.0</b>	<b>0.0</b>	<b>\$171.67</b>	<b>\$5,236.77</b>	<b>\$322.00</b>	<b>\$4,914.77</b>	<b>28.63</b>	<b>1,208</b>
	Install High Efficiency Electric AC	No	1,200	0.8	0.0	0.0	\$171.67	\$5,236.77	\$322.00	\$4,914.77	28.63	1,208
<b>HVAC System Improvements</b>			<b>12,870</b>	<b>0.0</b>	<b>12.9</b>	<b>12.9</b>	<b>\$1,951.89</b>	<b>\$989.61</b>	<b>\$0.00</b>	<b>\$989.61</b>	<b>0.51</b>	<b>14,466</b>
ECM 6	Install Programmable Thermostats	Yes	12,870	0.0	12.9	12.9	\$1,951.89	\$989.61	\$0.00	\$989.61	0.51	14,466
<b>TOTALS</b>			<b>27,784</b>	<b>4.5</b>	<b>12.9</b>	<b>12.9</b>	<b>\$4,085.38</b>	<b>\$17,350.09</b>	<b>\$1,552.00</b>	<b>\$15,798.09</b>	<b>3.87</b>	<b>29,484</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.

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## *(4) Well Pumps, Water Tanks & Pump Station*

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

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Process Equipment

### **Utility Consumption:**

- Electric Consumption and Spend
- Gas Consumption and Spend



# (4) Well Pumps, Water Tanks & Pump Station

See report pages 2 or 22 for the following:

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>31,406</b>	<b>4.7</b>	<b>0.0</b>	<b>\$4,731.13</b>	<b>\$5,870.00</b>	<b>\$1,670.00</b>	<b>\$4,200.00</b>	<b>0.89</b>	<b>31,626</b>
ECM 1	Install LED Fixtures	Yes	8,820	1.4	0.0	\$1,328.66	\$4,500.00	\$1,500.00	\$3,000.00	2.26	8,881
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,388	0.5	0.0	\$209.14	\$850.00	\$170.00	\$680.00	3.25	1,398
ECM 3	Retrofit Fixtures with LED Lamps	Yes	21,198	2.8	0.0	\$3,193.34	\$520.00	\$0.00	\$520.00	0.16	21,346
<b>Variable Frequency Drive (VFD) Measures</b>			<b>422,069</b>	<b>145.2</b>	<b>0.0</b>	<b>\$63,582.22</b>	<b>\$85,382.80</b>	<b>\$0.00</b>	<b>\$85,382.80</b>	<b>1.34</b>	<b>425,020</b>
ECM 4	Install VFDs on Well Pumps	Yes	422,069	145.2	0.0	\$63,582.22	\$85,382.80	\$0.00	\$85,382.80	1.34	425,020
<b>HVAC System Improvements</b>			<b>1,747</b>	<b>0.0</b>	<b>0.0</b>	<b>\$263.17</b>	<b>\$715.62</b>	<b>\$225.00</b>	<b>\$490.62</b>	<b>1.86</b>	<b>1,759</b>
ECM 5	Install Occupancy-Controlled Thermostats	Yes	1,747	0.0	0.0	\$263.17	\$715.62	\$225.00	\$490.62	1.86	1,759
<b>TOTALS</b>			<b>455,222</b>	<b>149.8</b>	<b>0.0</b>	<b>\$68,576.52</b>	<b>\$91,968.42</b>	<b>\$1,895.00</b>	<b>\$90,073.42</b>	<b>1.31</b>	<b>458,405</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.

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# Summary of ECMs – All Sites



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>240,954</b>	<b>32.2</b>	<b>0.0</b>	<b>\$30,696.92</b>	<b>\$42,609.14</b>	<b>\$4,140.00</b>	<b>\$38,469.14</b>	<b>1.3</b>	<b>242,639</b>
ECM 1	Install LED Fixtures	13,081	2.7	0.0	\$1,938.24	\$8,196.62	\$2,485.00	\$5,711.62	2.9	13,172
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	58,703	7.3	0.0	\$7,346.95	\$14,396.26	\$1,495.00	\$12,901.26	1.8	59,114
ECM 3	Retrofit Fixtures with LED Lamps	165,376	21.9	0.0	\$20,927.29	\$16,574.50	\$160.00	\$16,414.50	0.8	166,533
ECM 4	Install LED Exit Signs	3,794	0.3	0.0	\$484.44	\$3,441.76	\$0.00	\$3,441.76	7.1	3,820
<b>Lighting Control Measures</b>		<b>18,400</b>	<b>1.8</b>	<b>0.0</b>	<b>\$2,277.78</b>	<b>\$7,104.00</b>	<b>\$1,040.00</b>	<b>\$6,064.00</b>	<b>2.7</b>	<b>18,528</b>
ECM 5	Install Occupancy Sensor Lighting Controls	18,400	1.8	0.0	\$2,277.78	\$7,104.00	\$1,040.00	\$6,064.00	2.7	18,528
<b>Motor Upgrades</b>		<b>83,583</b>	<b>22.0</b>	<b>0.0</b>	<b>\$10,251.60</b>	<b>\$124,544.57</b>	<b>\$0.00</b>	<b>\$124,544.57</b>	<b>12.1</b>	<b>84,167</b>
ECM 6	Premium Efficiency Motors	83,583	22.0	0.0	\$10,251.60	\$124,544.57	\$0.00	\$124,544.57	12.1	84,167
<b>Variable Frequency Drive (VFD) Measures</b>		<b>1,801,683</b>	<b>460.1</b>	<b>0.0</b>	<b>\$232,955.86</b>	<b>\$199,502.70</b>	<b>\$0.00</b>	<b>\$199,502.70</b>	<b>0.9</b>	<b>1,814,280</b>
ECM 7	Install VFDs on Hot Water Pumps	1,801,683	460.1	0.0	\$232,955.86	\$199,502.70	\$0.00	\$199,502.70	0.9	1,814,280
<b>HVAC System Improvements</b>		<b>14,617</b>	<b>0.0</b>	<b>12.9</b>	<b>\$2,215.06</b>	<b>\$1,705.23</b>	<b>\$225.00</b>	<b>\$1,480.23</b>	<b>0.7</b>	<b>16,225</b>
ECM 8	Install Programmable Thermostats	12,870	0.0	12.9	\$1,951.89	\$989.61	\$0.00	\$989.61	0.5	14,466
ECM 9	Install Occupancy-Controlled Thermostats	1,747	0.0	0.0	\$263.17	\$715.62	\$225.00	\$490.62	1.9	1,759
<b>TOTALS</b>		<b>2,159,236</b>	<b>516.1</b>	<b>12.9</b>	<b>\$278,397.22</b>	<b>\$375,465.64</b>	<b>\$5,405.00</b>	<b>\$370,060.64</b>	<b>1.3</b>	<b>2,175,840</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.

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# *Some Energy Efficient Practices*

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- Reduce Air Leakage
- Close Doors and Windows
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Check for and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Maintenance on Compressed Air Systems
- Perform Proper Water Heater Maintenance
- Replace Computer Monitors

*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 & Next Steps



## ➤ Direct Install

### **Hutchinson Mechanical Services**

Ed Hutchinson

856-429-5828 x215

edhutchinson@hutchbiz.com

- Pay for Performance (P4P) Existing Buildings
- SmartStart Buildings (i.e Retrofit – Existing Buildings)
- Energy Savings Improvement Program (ESIP)



# 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)