



# LGEA Presentation Township of Morris

January 10, 2022

#### New Jersey's Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

## INTRODUCTIONS

- Township of Morris
  - Timothy Quinn Township Administrator
  - James Slate Township Engineer
  - Mark Howarth WPCU Superintendent
  - Michael Nunn Fire Chief
  - Mark DiCarlo Police Chief
  - Thomas Eschmann DPW Superintendent
  - Bill Foelsch Parks & Rec Director
  - Randy Williams Building & Grounds Supervisor
  - Tim Hamfeldt Parks Assistant Superintendent
  - John Flanagan DPW Assistant Superintendent
  - Joseph Morrison WPCU Superintendent
  - Steven Cornine Fire Captain



- NJ Clean Energy Program
  - Sarah Walters LGEA Project Manager
  - Moussa Traore LGEA Lead Auditor
  - Eduardo Garcia Auditor
  - Meredith Coley LGEA Account Manager
  - Michelle Rossi ESIP Coordinator (BPU)

### Agenda

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- C&I Transition of EE Programs and details
- Questions regarding the draft audit report
- Next steps for Morris Township



# LGEA PROCESS



- Application Approval
- Initial Call
- Facility Interviews
- Audit
- Benchmarking & Analysis
- **Draft Reports**
- LGEA Presentation
- Final Reports

# SITE VISIT & UTILITY ANALYSIS

# Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Cooking Equipment

#### **Utility Consumption:**

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

#### Sites Visited/Analyzed

- Police Headquarters
- Department of Public Works
- Municipal Building
- OEM/Parks & Rec
- Ginty Woodland Garage
- Fairchild Firehouse Station # 4
- Mt Kemble Firehouse Station # 1
- Hillside Hose Firehouse Station # 3
- Woodland Firehouse Station # 5
- Collinsville Firehouse Station # 2
- Streeter Pool
- Ginty Pool
- Ginty Pool Concession Stand
- Butterworth Sewer Treatment Plant
- Woodland Sewer Treatment Plant



### **UTILITY BREAKOUT**

- -

#### Percent of Total Annual Energy Costs



### Benchmarking



program

	Site EUI
	171.5 kBtu/ft <sup>2</sup>
1	Source EUI
	285 7 kBtu/ft <sup>2</sup>
	200.7 1000

National Median Comparison	
National Median Site EUI (kBtu/ft²)	97.7
National Median Source EUI (kBtu/ft²)	162.8
% Diff from National Median Source EUI	76%

Site Name	ENERGY STAR <sup>®</sup>
	Score
Municipal Building	9
Butterworth Sewer Treatment Plant	11
Woodland Sewer Treatment Plant	14
Police Headquarters	NA
Department of Public Works	NA
OEM/Parks & Rec	NA
Ginty Woodland Garage	NA
Fairchild Firehouse Station # 4	NA
Mt Kemble Firehouse Station # 1	NA
Hillside Hose Firehouse Station # 3	NA
Woodland Firehouse Station # 5	NA
Collinsville Firehouse Station # 2	NA
Streeter Pool	NA
Ginty Pool	NA
Ginty Pool Concession Stand	NA

ENERGY STAR<sup>®</sup> scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

### Benchmarking

■ Site Energy Use Intensity (kBtu/SF) National Median Energy Use Intensity (kBtu/SF) Energy Use Intensity (kBtu/SF) 217.0 183.1 171.5 146.7 143.0 133.7 132.2 124.9 123.9 117.1 97.7 79.1 72.6 84.2 92.0 73.9 86.5 90.5 50.8 60.3 34.8 42.3 29.5 Streater Pool and Concession Stand Department of Public Morks - Road Services Faichid fre House station #A Woodland Freshouse Station #5 Ginty Pod and Concession Stand Collinsville Fire house station #2 Nrt. Kendle fre House station #1 e Fire House Station #3 Nunicipa Building Ginty Woodland Garage Treament Plant rent Plant Butenoth sever freatme Woodland Sewer Hillside Hoset



# ALL OPPORTUNITIES

#### **Savings Potential**





- Lighting Control Measures
- Motor Upgrades
- Variable Frequency Drive (VFD) Measures
- Electric Unitary HVAC Measures
- Gas Heating (HVAC/Process) Replacement
- HVAC System Improvements
- Domestic Water Heating Upgrade
- Food Service & Refrigeration Measures
- Custom Measures



# ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO₂e Emissions Reduction (lbs)
Lighting	Upgrades	313,547	56.7	-50.6	\$34,762	\$133,777	\$20,541	\$113,236	3.3	309,810
ECM 1	Install LED Fixtures	125,168	11.7	-14.4	\$13,745	\$78,662	\$9,600	\$69,062	5.0	124,357
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	68,773	17.2	-15.3	\$7,421	\$20,813	\$4,430	\$16,383	2.2	67,463
ECM 3	Retrofit Fixtures with LED Lamps	109,616	27.0	-18.8	\$12,432	\$32,565	\$6,511	\$26,054	2.1	108,182
ECM 4	Install LED Exit Signs	9,989	0.9	-2.1	\$1,165	\$1,738	\$0	\$1,738	1.5	9,808
Lighting	Control Measures	35,377	8.1	-7.6	\$3,916	\$40,945	\$10,075	\$30,870	7.9	34,733
ECM 5	Install Occupancy Sensor Lighting Controls	22,800	6.3	-5.0	\$2,516	\$30,445	\$4,325	\$26,120	10.4	22,375
ECM 6	Install Daylight Dimming/Photocell Controls	329	0.0	0.0	\$42	\$600	\$0	\$600	14.2	331
ECM 7	Install High/Low Lighting Controls	12,248	1.8	-2.6	\$1,358	\$9,900	\$5,750	\$4,150	3.1	12,027
Motor U	Ipgrades	44,850	13.2	0.0	\$4,785	\$123,726	\$0	\$123,726	25.9	45,163
ECM 8	Premium Efficiency Motors	44,850	13.2	0.0	\$4,785	\$123,726	\$0	\$123,726	25.9	45,163
Variable	Frequency Drive (VFD) Measures	283,099	62.1	0.0	\$32,906	\$242,695	\$19,050	\$223,645	6.8	285,079
ECM 9	Install VFD on Variable Air Volume (VAV) Fans	6,574	3.0	0.0	\$703	\$5,375	\$1,100	\$4,275	6.1	6,619
ECM 10	Install VFDs on Constant Volume (CV) Fans	55,696	15.1	0.0	\$6,196	\$77,740	\$3,200	\$74,540	12.0	56,085
ECM 11	Install VFDs on Heating Water Pumps	14,686	1.4	0.0	\$1,658	\$36,322	\$650	\$35,672	21.5	14,789
ECM 12	Install VFDs on Water Supply Pump	59,668	6.4	0.0	\$6,378	\$22,942	\$2,800	\$20,142	3.2	60,085
ECM 13	Install VFDs on Process Pumps	94,418	11.4	0.0	\$12,321	\$55,137	\$9,800	\$45,337	3.7	95,078
ECM 14	Install VFDs on Process Blowers	52,058	24.9	0.0	\$5,652	\$45,179	\$1,500	\$43,679	7.7	52,422
Electric	Unitary HVAC Measures	3,150	2.7	3.9	\$390	\$19,245	\$1,050	\$18,195	46.6	3,629
ECM 15	Install High Efficiency Air Conditioning Units	1,932	2.4	3.9	\$260	\$17,115	\$1,050	\$16,065	61.7	2,402
ECM 16	Install High Efficiency Heat Pumps	1,218	0.3	0.0	\$130	\$2,131	\$0	\$2,131	16.4	1,226

# ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Gas Heating (HVAC/Process) Replacement		0	0.0	155.0	\$1,384	\$44,146	\$3,226	\$40,920	29.6	18,151
ECM 17	Install High Efficiency Hot Water Boilers	0	0.0	77.0	\$704	\$14,687	\$1,226	\$13,461	19.1	9,016
ECM 18	Install High Efficiency Furnaces	0	0.0	42.1	\$381	\$8,758	\$500	\$8,258	21.7	4,925
ECM 19	Install High Efficiency Unit Heaters	0	0.0	4.4	\$35	\$5 <i>,</i> 026	\$0	\$5 <i>,</i> 026	145.4	519
ECM 20	Install Infrared Heaters	0	0.0	31.5	\$265	\$15,675	\$1,500	\$14,175	53.4	3,691
HVAC Sy	ystem Improvements	3,157	0.0	82.8	\$1,113	\$2,922	\$386	\$2 <i>,</i> 536	2.3	12,877
ECM 21	Install Programmable Thermostats	1,564	0.0	26.8	\$431	\$1,649	\$0	\$1,649	3.8	4,711
ECM 22	Install Pipe Insulation	1,594	0.0	56.0	\$682	\$1,273	\$386	\$887	1.3	8,166
Domest	ic Water Heating Upgrade	5,146	0.0	55.5	\$1,137	\$2,938	\$706	\$2,232	2.0	11,681
ECM 23	Install Low-Flow DHW Devices	5,146	0.0	55.5	\$1,137	\$2 <i>,</i> 938	\$706	\$2,232	2.0	11,681
Food Se	rvice & Refrigeration Measures	9,893	1.1	0.0	\$1,200	\$2,070	\$300	\$1,770	1.5	9,962
ECM 24	Vending Machine Control	9,893	1.1	0.0	\$1,200	\$2,070	\$300	\$1,770	1.5	9,962
Custom	Measures	54,784	0.0	102.8	\$7,087	\$6,827	\$0	\$6,827	1.0	67,198
ECM 25	Optimize HVAC Schedule	49,891	0.0	102.8	\$6,538	\$3,000	\$0	\$3,000	0.5	62,270
ECM 26	Install Heat Pump Water Heater	4,893	0.0	0.0	\$549	\$3,827	\$0	\$3,827	7.0	4,927
	TOTALS	753,003	144.0	341.7	\$88,682	\$619,291	\$55,334	\$563,957	6.4	798,282

\* - All incentives presented in this table are included as placesholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs

#### COST EFFECTIVE OPPORTUNITIES

#### **Savings Potential**





#### COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades	313,547	56.7	-50.6	\$34,762	\$133,777	\$20,541	\$113,236	3.3	309,810
ECM 1	Install LED Fixtures	125,168	11.7	-14.4	\$13,745	\$78,662	\$9,600	\$69,062	5.0	124,357
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	68,773	17.2	-15.3	\$7,421	\$20,813	\$4,430	\$16,383	2.2	67,463
ECM 3	Retrofit Fixtures with LED Lamps	109,616	27.0	-18.8	\$12,432	\$32,565	\$6,511	\$26,054	2.1	108,182
ECM 4	Install LED Exit Signs	9,989	0.9	-2.1	\$1,165	\$1,738	\$0	\$1,738	1.5	9,808
Lighting	Control Measures	34,489	7.6	-7.5	\$3,809	\$37,288	\$9,420	\$27,868	7.3	33,852
ECM 5	Install Occupancy Sensor Lighting Controls	22,462	5.9	-4.9	\$2,476	\$28,063	\$3,985	\$24,078	9.7	22,044
ECM 7	Install High/Low Lighting Controls	12,026	1.7	-2.6	\$1,332	\$9,225	\$5,435	\$3,790	2.8	11,809
Motor U	Ipgrades	24,762	7.7	0.0	\$2,647	\$44,038	\$0	\$44,038	16.6	24,935
ECM 8	Premium Efficiency Motors	24,762	7.7	0.0	\$2,647	\$44,038	\$0	\$44,038	16.6	24,935
Variable	Frequency Drive (VFD) Measures	252,079	51.7	0.0	\$29,524	\$166,958	\$16,300	\$150,658	5.1	253,842
ECM 9	Install VFD on Variable Air Volume (VAV) Fans	6,574	3.0	0.0	\$703	\$5,375	\$1,100	\$4,275	6.1	6,619
ECM 10	Install VFDs on Constant Volume (CV) Fans	33,170	5.7	0.0	\$3,766	\$31,441	\$900	\$30,541	8.1	33,402
ECM 11	Install VFDs on Heating Water Pumps	6,192	0.4	0.0	\$705	\$6,884	\$200	\$6,684	9.5	6,235
ECM 12	Install VFDs on Water Supply Pump	59,668	6.4	0.0	\$6,378	\$22,942	\$2,800	\$20,142	3.2	60,085
ECM 13	Install VFDs on Process Pumps	94,418	11.4	0.0	\$12,321	\$55,137	\$9,800	\$45,337	3.7	95,078
ECM 14	Install VFDs on Process Blowers	52,058	24.9	0.0	\$5,652	\$45,179	\$1,500	\$43,679	7.7	52,422

#### COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	72.9	\$666	\$10,589	\$826	\$9,763	14.7	8,534
ECM 17	Install High Efficiency Hot Water Boilers	0	0.0	72.9	\$666	\$10,589	\$826	\$9 <i>,</i> 763	14.7	8,534
HVAC Sy	vstem Improvements	3,157	0.0	82.8	\$1,113	\$2,922	\$386	\$2 <i>,</i> 536	2.3	12,877
ECM 21	Install Programmable Thermostats	1,564	0.0	26.8	\$431	\$1,649	\$0	\$1,649	3.8	4,711
ECM 22	Install Pipe Insulation	1,594	0.0	56.0	\$682	\$1,273	\$386	\$887	1.3	8,166
Domest	ic Water Heating Upgrade	5,146	0.0	55.5	\$1,137	\$2,938	\$706	\$2,232	2.0	11,681
ECM 23	Install Low-Flow DHW Devices	5,146	0.0	55.5	\$1,137	\$2,938	\$706	\$2,232	2.0	11,681
Food Se	rvice & Refrigeration Measures	9,893	1.1	0.0	\$1,200	\$2,070	\$300	\$1,770	1.5	9,962
ECM 24	Vending Machine Control	9,893	1.1	0.0	\$1,200	\$2,070	\$300	\$1,770	1.5	9,962
Custom	Measures	54,784	0.0	102.8	\$7,087	\$6,827	\$0	\$6,827	1.0	67,198
ECM 25	Optimize HVAC Schedule	49,891	0.0	102.8	\$6,538	\$3,000	\$0	\$3,000	0.5	62,270
ECM 26	Install Heat Pump Water Heater	4,893	0.0	0.0	\$549	\$3,827	\$0	\$3,827	7.0	4,927
	TOTALS	697,856	124.9	255.8	\$81,946	\$407,409	\$48,479	\$358,930	4.4	732,690

\* - All incentives presented in this table are included as placesholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs

## POLICE HEADQUARTERS

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO₂e Emissions Reduction (Ibs)
Lighting	Upgrades		36,191	8.6	-7	\$4,005	\$4,325	\$2,010	\$2,315	0.6	35,610
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	28,024	7.0	-6	\$3,097	\$3,200	\$1,600	\$1,600	0.5	27,521
ECM 2	Retrofit Fixtures with LED Lamps	Yes	8,167	1.6	-1	\$908	\$1,125	\$410	\$715	0.8	8,089
Lighting	Control Measures		7,593	1.5	-2	\$839	\$5,999	\$1,860	\$4,139	4.9	7,457
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,914	0.9	0	\$211	\$3,974	\$535	\$3,439	16.3	1,879
ECM 4	Install High/Low Lighting Controls	Yes	5,680	0.5	-1	\$628	\$2,025	\$1,325	\$700	1.1	5,578
Variable	Frequency Drive (VFD) Measures		10,198	2.6	0	\$1,146	\$25,112	\$500	\$24,612	21.5	10,270
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	7,544	2.4	0	\$847	\$13,974	\$400	\$13,574	16.0	7,597
ECM 6	Install VFDs on Heating Water Pumps	No	2,654	0.2	0	\$298	\$11,138	\$100	\$11,038	37.0	2,672
HVAC Sy	stem Improvements		1,312	0.0	10	\$235	\$265	\$92	\$173	0.7	2,524
ECM 7	Install Pipe Insulation	Yes	1,312	0.0	10	\$235	\$265	\$92	\$173	0.7	2,524
Domest	ic Water Heating Upgrade		278	0.0	7	\$92	\$43	\$24	\$19	0.2	1,123
ECM 8	Install Low-Flow DHW Devices	Yes	278	0.0	7	\$92	\$43	\$24	\$19	0.2	1,123
Custom	Measures		4,893	0.0	0	\$549	\$3,827	\$0	\$3,827	7.0	4,927
ECM 9	Install Heat Pump Water Heater	Yes	4,893	0.0	0	\$549	\$3,827	\$0	\$3,827	7.0	4,927
	TOTALS (COST EFFECTIVE MEASURES)		57,811	12.4	9	\$6,567	\$28,432	\$4,386	\$24,046	3.7	59,239
	TOTALS (ALL MEASURES)		60,465	12.6	9	\$6 <i>,</i> 865	\$39,570	\$4,486	\$35,084	5.1	61,911

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## DEPARTMENT OF PUBLIC WORKS

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		27,291	5.2	-3	\$3,088	\$46,327	\$12,073	\$2,169	\$9,904	3.2	27,093
ECM 1	Install LED Fixtures	Yes	16,807	2.4	-1	\$1,908	\$28,624	\$7,856	\$1,200	\$6,656	3.5	16,764
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,569	0.6	0	\$176	\$2,641	\$761	\$125	\$636	3.6	1,538
ECM 3	Retrofit Fixtures with LED Lamps	Yes	8,593	2.1	-2	\$968	\$14,521	\$3,312	\$844	\$2,468	2.5	8,474
ECM 4	Install LED Exit Signs	Yes	322	0.0	0	\$36	\$541	\$145	\$0	\$145	4.0	315
Lighting	Control Measures		3,093	1.2	-1	\$347	\$2,777	\$2,784	\$480	\$2,304	6.6	3,033
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	3,093	1.2	-1	\$347	\$2,777	\$2,784	\$480	\$2,304	6.6	3,033
Motor L	Jpgrades		83	0.0	0	\$9	\$142	\$1,019	\$0	\$1,019	107.9	83
ECM 6	Premium Efficiency Motors	No	83	0.0	0	\$9	\$142	\$1,019	\$0	\$1,019	107.9	83
Variable	Frequency Drive (VFD) Measures		18,998	4.5	0	\$2,171	\$32,567	\$43,640	\$925	\$42,715	19.7	19,131
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	3,107	0.8	0	\$355	\$5,325	\$17,629	\$325	\$17,304	48.7	3,128
ECM 8	Install VFDs on Heating Water Pumps	No	4,102	0.5	0	\$469	\$7,032	\$11,519	\$200	\$11,319	24.1	4,131
ECM 9	Install VFDs on Process Blowers	Yes	11,789	3.2	0	\$1,347	\$20,210	\$14,492	\$400	\$14,092	10.5	11,872
Unitary	HVAC Measures		528	0.7	0	\$60	\$906	\$4,073	\$0	\$4,073	67.5	532
ECM 10	Install High Efficiency Air Conditioning Units	No	528	0.7	0	\$60	\$906	\$4,073	\$0	\$4,073	67.5	532
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	73	\$666	\$13,329	\$10,589	\$826	\$9,763	14.7	8,534
ECM 11	Install High Efficiency Hot Water Boilers	Yes	0	0.0	73	\$666	\$13,329	\$10,589	\$826	\$9,763	14.7	8,534
HVAC S	ystem Improvements		0	0.0	27	\$245	\$2,699	\$475	\$120	\$355	1.4	3,142
ECM 12	Install Pipe Insulation	Yes	0	0.0	27	\$245	\$2,699	\$475	\$120	\$355	1.4	3,142
Domest	ic Water Heating Upgrade		0	0.0	6	\$52	\$516	\$200	\$40	\$160	3.1	661
ECM 13	Install Low-Flow DHW Devices	Yes	0	0.0	6	\$52	\$516	\$200	\$40	\$160	3.1	661
Food Se	rvice & Refrigeration Measures		1,954	0.2	0	\$223	\$1,117	\$460	\$50	\$410	1.8	1,968
ECM 14	Vending Machine Control	Yes	1,954	0.2	0	\$223	\$1,117	\$460	\$50	\$410	1.8	1,968
	TOTALS (COST EFFECTIVE MEASURES)		44,128	9.8	101	\$5,970	\$86,975	\$41,075	\$4,085	\$36,990	6.2	56,302
	TOTALS (ALL MEASURES)		51,947	11.8	101	\$6,863	\$100,379	\$75,314	\$4,610	\$70,704	10.3	64,176

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## MUNICIPAL BUILDING

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		55,285	7.6	-8	\$6,228	\$12,278	\$1,626	\$10,652	1.7	54,697
ECM 1	Install LED Fixtures	Yes	2,961	0.0	0	\$337	\$300	\$50	\$250	0.7	2,982
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	405	0.2	0	\$45	\$206	\$30	\$176	3.9	398
ECM 3	Retrofit Fixtures with LED Lamps	Yes	44,635	6.7	-7	\$5,028	\$10,758	\$1,546	\$9,212	1.8	44,160
ECM 4	Install LED Exit Signs	Yes	7,285	0.7	-2	\$817	\$1,014	\$0	\$1,014	1.2	7,157
Lighting	Control Measures		10,534	2.1	-2	\$1,182	\$9,689	\$2,885	\$6,804	5.8	10,350
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	7,531	1.7	-2	\$845	\$7,439	\$980	\$6,459	7.6	7,399
ECM 6	Install High/Low Lighting Controls	Yes	3,003	0.5	-1	\$337	\$2,250	\$1,905	\$345	1.0	2,950
Variable	Frequency Drive (VFD) Measures		31,818	3.7	0	\$3,624	\$24,351	\$700	\$23,651	6.5	32,040
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	25,626	3.3	0	\$2,919	\$17,467	\$500	\$16,967	5.8	25,805
ECM 8	Install VFDs on Heating Water Pumps	Yes	6,192	0.4	0	\$705	\$6 <i>,</i> 884	\$200	\$6,684	9.5	6,235
HVAC Sy	stem Improvements		218	0.0	0	<b>\$25</b>	\$58	\$20	\$38	1.5	219
ECM 9	Install Pipe Insulation	Yes	218	0.0	0	\$25	\$58	\$20	\$38	1.5	219
Domest	ic Water Heating Upgrade		0	0.0	18	\$147	\$122	\$64	\$58	0.4	2,072
ECM 10	Install Low-Flow DHW Devices	Yes	0	0.0	18	\$147	\$122	\$64	\$58	0.4	2,072
Food Se	rvice & Refrigeration Measures		685	0.1	0	\$78	\$460	\$0	\$460	5.9	690
ECM 11	Vending Machine Control	Yes	685	0.1	0	\$78	\$460	\$0	\$460	5.9	690
Custom	Measures		49,891	0.0	103	\$6,538	\$3,000	\$0	\$3,000	0.5	62,270
ECM 12	Optimize HVAC Schedule	Yes	49,891	0.0	103	\$6 <i>,</i> 538	\$3,000	\$0	\$3,000	0.5	62,270
	TOTALS (COST EFFECTIVE MEASURES)			13.5	110	\$17,822	\$49,959	\$5,295	\$44,664	2.5	162,339
	TOTALS (ALL MEASURES)		148,431	13.5	110	\$17,822	\$49,959	\$5,295	\$44,664	2.5	162,339

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

#### GINTY WOODLAND GARAGE

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		3,317	1.4	0	\$491	\$1,258	\$450	\$808	1.6	3,329
ECM 1	Install LED Fixtures	Yes	2,891	0.0	0	\$428	\$400	\$0	\$400	0.9	2,911
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	427	1.4	0	\$62	\$858	\$450	\$408	6.6	418
Lighting	; Control Measures		10	0.0	0	\$1	\$106	\$40	\$66	45.9	10
ECM 3	Install Occupancy Sensor Lighting Controls	No	10	0.0	0	\$1	\$106	\$40	\$66	45.9	10
HVAC S	ystem Improvements		64	0.0	0	\$9	\$87	\$30	\$57	6.0	64
ECM 4	Install Pipe Insulation	Yes	64	0.0	0	\$9	\$87	\$30	\$57	6.0	64
Domest	ic Water Heating Upgrade		144	0.0	0	\$21	\$22	\$10	\$12	0.5	145
ECM 5	Install Low-Flow DHW Devices	Yes	144	0.0	0	\$21	\$22	\$10	\$12	0.5	145
	TOTALS (COST EFFECTIVE MEASURES)		3,525	1.4	0	\$522	\$1,366	\$490	\$876	1.7	3,538
	TOTALS (ALL MEASURES)		3,535	1.5	0	\$523	\$1,472	\$530	\$942	1.8	3,548

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## FAIRCHILD FIREHOUSE STATION # 4

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		7,030	1.9	-1	\$821	\$2,145	\$396	\$1,749	2.1	6,980
ECM 1	Install LED Fixtures	Yes	964	0.0	0	\$114	\$100	\$50	\$50	0.4	970
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	127	0.2	0	\$15	\$275	\$40	\$235	15.9	125
ECM 3	Retrofit Fixtures with LED Lamps	Yes	5,939	1.7	-1	\$693	\$1,769	\$306	\$1,463	2.1	5 <i>,</i> 885
Lighting	Control Measures		458	0.4	0	\$53	\$1,800	\$525	\$1,275	24.0	450
ECM 4	Install Occupancy Sensor Lighting Controls	No	202	0.3	0	\$23	\$1,350	\$175	\$1,175	50.2	198
ECM 5	Install High/Low Lighting Controls	Yes	257	0.1	0	\$30	\$450	\$350	\$100	3.4	252
Unitary	HVAC Measures		1,404	1.8	4	\$200	\$13,041	\$1,050	\$11,991	60.0	1,870
ECM 6	Install High Efficiency Air Conditioning Units	No	1,404	1.8	4	\$200	\$13,041	\$1,050	\$11,991	60.0	1,870
HVAC S	ystem Improvements		0	0.0	10	\$89	\$146	\$40	\$106	1.2	1,184
ECM 7	Install Pipe Insulation	Yes	0	0.0	10	\$89	\$146	\$40	\$106	1.2	1,184
Domest	ic Water Heating Upgrade		0	0.0	3	\$27	\$104	\$21	\$83	3.1	360
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	3	\$27	\$104	\$21	\$83	3.1	360
Food Se	rvice & Refrigeration Measures		1,209	0.1	0	\$143	\$230	\$50	\$180	1.3	1,217
ECM 9	Vending Machine Control	Yes	1,209	0.1	0	\$143	\$230	\$50	\$180	1.3	1,217
	TOTALS (COST EFFECTIVE MEASURES)			2.1	12	\$1,110	\$3,074	\$857	\$2,217	2.0	9,994
	TOTALS (ALL MEASURES)		10,101	4.2	16	\$1,333	\$17,465	\$2,082	\$15,383	11.5	12,063

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

# MT KEMBLE FIREHOUSE STATION # 1

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		4,193	1.0	0	\$508	\$862	\$434	\$428	0.8	4,199
ECM 1	Install LED Fixtures	Yes	2,300	0.0	0	\$280	\$351	\$150	\$201	0.7	2,316
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	746	0.3	0	\$89	\$50	\$50	\$0	0.0	733
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,148	0.7	0	\$139	\$461	\$234	\$227	1.6	1,151
HVAC S	ystem Improvements		0	0.0	1	\$12	\$23	\$8	\$15	1.2	160
ECM 4	Install Pipe Insulation	Yes	0	0.0	1	\$12	\$23	\$8	\$15	1.2	160
Domest	ic Water Heating Upgrade		0	0.0	4	\$34	\$43	\$20	\$23	0.7	444
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	4	\$34	\$43	\$20	\$23	0.7	444
	TOTALS (COST EFFECTIVE MEASURES)		4,193	1.0	5	\$554	\$928	\$462	\$466	0.8	4,804
	TOTALS (ALL MEASURES)		4,193	1.0	5	\$554	\$928	\$462	\$466	0.8	4,804

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.



#### HILLSIDE HOSE FIREHOUSE STATION # 3

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		4,515	0.6	-1	\$576	\$1,548	\$328	\$1,220	2.1	4,485
ECM 1	Install LED Fixtures	Yes	1,840	0.0	0	\$237	\$695	\$150	\$545	2.3	1,852
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	178	0.1	0	\$23	\$69	\$10	\$59	2.6	175
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,497	0.6	0	\$317	\$784	\$168	\$616	1.9	2,457
Lighting	Control Measures		1,176	0.2	0	\$150	\$1,706	\$195	\$1,511	10.1	1,163
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	847	0.2	0	\$107	\$1,106	\$195	\$911	8.5	832
ECM 5	Install Photocell Controls	No	329	0.0	0	\$42	\$600	\$0	\$600	14.2	331
HVAC Sy	stem Improvements		442	0.0	12	\$168	\$775	\$40	\$735	4.4	1,794
ECM 6	Install Programmable Thermostats	Yes	442	0.0	10	\$154	\$660	\$0	\$660	4.3	1,623
ECM 7	Install Pipe Insulation	Yes	0	0.0	1	\$14	\$115	\$40	\$75	5.4	170
Domesti	c Water Heating Upgrade		0	0.0	2	\$22	\$111	\$27	\$84	3.8	268
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$22	\$111	\$27	\$84	3.8	268
	TOTALS (COST EFFECTIVE MEASURES)		5,804	0.9	13	\$873	\$3,540	\$590	\$2,950	3.4	7,379
	TOTALS (ALL MEASURES)		6,132	0.9	13	\$915	\$4,140	\$590	\$3,550	3.9	7,710

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## WOODLAND FIREHOUSE STATION # 5

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		19,158	3.0	-3	\$2,192	\$5,835	\$1,270	\$4,565	2.1	18,935
ECM 1	Install LED Fixtures	Yes	4,818	0.0	0	\$558	\$1,020	\$300	\$720	1.3	4,852
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	668	0.2	0	\$76	\$395	\$60	\$335	4.4	656
ECM 3	Retrofit Fixtures with LED Lamps	Yes	13,672	2.8	-3	\$1,558	\$4,420	\$910	\$3,510	2.3	13,427
Lighting	Control Measures		3,265	0.7	-1	\$372	\$2,939	\$285	\$2,654	7.1	3,206
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,679	0.4	0	\$191	\$1,814	\$180	\$1,634	8.5	1,649
ECM 5	Install High/Low Lighting Controls	Yes	1,586	0.3	0	\$181	\$1,125	\$105	\$1,020	5.6	1,558
HVAC Sy	stem Improvements		1,122	0.0	17	\$277	\$990	\$0	\$990	3.6	3,088
ECM 6	Install Programmable Thermostats	Yes	1,122	0.0	17	\$277	\$990	\$0	\$990	3.6	3,088
Domest	ic Water Heating Upgrade		0	0.0	6	\$52	\$161	\$49	\$112	2.2	687
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	6	\$52	\$161	\$49	\$112	2.2	687
Food Se	rvice & Refrigeration Measures		1,612	0.2	0	\$187	\$230	\$50	\$180	1.0	1,623
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	\$187	\$230	\$50	\$180	1.0	1,623
	TOTALS (COST EFFECTIVE MEASURES)		25,157	3.8	19	\$3,079	\$10,155	\$1,654	\$8,501	2.8	27,539
	TOTALS (ALL MEASURES)		25,157	3.8	19	\$3,079	\$10,155	\$1,654	\$8,501	2.8	27,539

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## COLLINSVILLE FIREHOUSE STATION # 2

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		15,610	4.8	-2	\$1,798	\$2,273	\$697	\$1,576	0.9	15,516
ECM 1	Install LED Fixtures	Yes	7,455	0.0	0	\$866	\$1,150	\$400	\$750	0.9	7,507
ECM 2	Retrofit Fixtures with LED Lamps	Yes	8,155	4.8	-2	\$932	\$1,123	\$297	\$826	0.9	8,009
Lighting	Control Measures		222	0.1	0	\$25	\$675	\$315	\$360	14.2	218
ECM 3	Install High/Low Lighting Controls	No	222	0.1	0	\$25	\$675	\$315	\$360	14.2	218
HVAC Sy	ystem Improvements		0	0.0	2	\$18	\$35	\$12	\$23	1.3	241
ECM 4	Install Pipe Insulation	Yes	0	0.0	2	\$18	\$35	\$12	\$23	1.3	241
Domest	ic Water Heating Upgrade		0	0.0	5	\$44	\$118	\$31	\$87	2.0	582
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	5	\$44	\$118	\$31	\$87	2.0	582
Food Se	rvice & Refrigeration Measures		1,612	0.2	0	\$187	\$230	\$50	\$180	1.0	1,623
ECM 6	Vending Machine Control	Yes	1,612	0.2	0	\$187	\$230	\$50	\$180	1.0	1,623
	TOTALS (COST EFFECTIVE MEASURES)		17,222	5.0	5	\$2,047	\$2,656	\$790	\$1,866	0.9	17,962
	TOTALS (ALL MEASURES)		17,444	5.1	5	\$2,072	\$3,331	\$1,105	\$2,226	1.1	18,180

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## STREETER POOL & CONCESSION STAND

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		6,542	1.8	-1	\$878	\$2,789	\$648	\$2,141	2.4	6,487
ECM 1	Install LED Fixtures	Yes	1,214	0.0	0	\$164	\$550	\$450	\$100	0.6	1,222
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	44	0.0	0	\$6	\$69	\$10	\$59	10.1	43
ECM 3	Retrofit Fixtures with LED Lamps	Yes	3,393	1.6	0	\$455	\$1,881	\$188	\$1,693	3.7	3,367
ECM 4	Install LED Exit Signs	Yes	1,892	0.1	0	\$252	\$290	\$0	\$290	1.1	1,854
Variable	Frequency Drive (VFD) Measures		55,526	6.5	0	\$7,521	\$31,402	\$5,600	\$25,802	3.4	55,914
ECM 5	Install VFDs on Process Pumps	Yes	55,526	6.5	0	\$7,521	\$31,402	\$5,600	\$25,802	3.4	55,914
Domest	ic Water Heating Upgrade		1,730	0.0	0	\$236	\$965	\$188	\$777	3.3	1,761
ECM 6	Install Low-Flow DHW Devices	Yes	1,730	0.0	0	\$236	\$965	\$188	\$777	3.3	1,761
Food Se	rvice & Refrigeration Measures		2,821	0.3	0	\$382	\$460	\$100	\$360	0.9	2,840
ECM 7	Vending Machine Control	Yes	2,821	0.3	0	\$382	\$460	\$100	\$360	0.9	2,840
	TOTALS (COST EFFECTIVE MEASURES)		66,619	8.7	-1	\$9,017	\$35,616	\$6,536	\$29,080	3.2	67,002
	TOTALS (ALL MEASURES)		66,619	8.7	-1	\$9,017	\$35,616	\$6,536	\$29,080	3.2	67,002

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## GINTY POOL & CONCESSION STAND

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		2,919	1.1	0	\$355	\$1,603	\$104	\$1,499	4.2	2,887
ECM 1	Install LED Fixtures	Yes	586	0.0	0	\$72	\$440	\$0	\$440	6.1	590
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	52	0.0	0	\$6	\$69	\$10	\$59	9.3	51
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,790	1.1	0	\$217	\$805	\$94	\$711	3.3	1,764
ECM 4	Install LED Exit Signs	Yes	491	0.0	0	\$59	\$290	\$0	\$290	4.9	481
Lighting	Control Measures		126	0.1	0	\$15	\$926	\$125	\$801	52.5	124
ECM 5	Install Occupancy Sensor Lighting Controls	No	126	0.1	0	\$15	\$926	\$125	\$801	52.5	124
Variable	e Frequency Drive (VFD) Measures		38,892	4.9	0	\$4,800	\$23,736	\$4,200	\$19,536	4.1	39,164
ECM 6	Install VFDs on Process Pumps	Yes	38,892	4.9	0	\$4,800	\$23,736	\$4,200	\$19,536	4.1	39,164
Domest	ic Water Heating Upgrade		2,883	0.0	1	\$362	\$965	\$188	\$777	2.1	2,968
ECM 7	Install Low-Flow DHW Devices	Yes	2,883	0.0	1	\$362	\$965	\$188	\$777	2.1	2,968
	TOTALS (COST EFFECTIVE MEASURES)		44,694	6.0	0	\$5,517	\$26,304	\$4,492	\$21,812	4.0	45,019
	TOTALS (ALL MEASURES)		44,821	6.1	0	\$5,532	\$27,230	\$4,617	\$22,613	4.1	45,143

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

## BUTTERWORTH SEWER TREATMENT PLANT

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades		57,244	9.1	-10	\$6,013	\$47,467	\$5,734	\$41,733	6.9	56,476
ECM 1	Install LED Fixtures	Yes	28,620	2.7	-3	\$3,019	\$36,200	\$3,500	\$32,700	10.8	28,420
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	18,146	3.6	-4	\$1,898	\$6,277	\$930	\$5,347	2.8	17,785
ECM 3	Retrofit Fixtures with LED Lamps	Yes	10,477	2.8	-2	\$1,096	\$4,989	\$1,304	\$3,685	3.4	10,271
Lighting	Control Measures		5,625	1.2	-1	\$588	\$8,673	\$2,050	\$6,623	11.3	5,513
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	5,072	1.0	-1	\$531	\$7,098	\$1,140	\$5,958	11.2	4,971
ECM 5	Install High/Low Lighting Controls	Yes	553	0.2	0	\$58	\$1,575	\$910	\$665	11.5	542
Motor L	Jpgrades		20,005	5.5	0	\$2,129	\$78,669	\$0	\$78,669	37.0	20,145
ECM 6	Premium Efficiency Motors	No	20,005	5.5	0	\$2,129	\$78,669	\$0	\$78,669	37.0	20,145
Variable	Frequency Drive (VFD) Measures		3,096	1.5	0	\$329	\$7,145	\$300	\$6,845	20.8	3,117
ECM 7	Install VFDs on Constant Volume (CV) Fans	No	3,096	1.5	0	\$329	\$7,145	\$300	\$6,845	20.8	3,117
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	20	\$159	\$15,657	\$1,000	\$14,657	92.2	2,384
ECM 8	Install High Efficiency Unit Heaters	No	0	0.0	4	\$35	\$5,026	\$0	\$5,026	145.4	519
ECM 9	Install Infrared Heaters	No	0	0.0	16	\$124	\$10,631	\$1,000	\$9,631	77.5	1,866
HVAC Sy	stem Improvements		0	0.0	1	\$7	\$12	\$4	\$8	1.1	103
ECM 10	Install Pipe Insulation	Yes	0	0.0	1	\$7	\$12	\$4	\$8	1.1	103
Domest	ic Water Heating Upgrade		0	0.0	2	\$15	\$29	\$16	\$13	0.9	222
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$15	\$29	\$16	\$13	0.9	222
	TOTALS (COST EFFECTIVE MEASURES)		62,869	10.3	-8	\$6,623	\$56,180	\$7,804	\$48,376	7.3	62,313
	TOTALS (ALL MEASURES)		85,970	17.3	12	\$9,240	\$157,651	\$9,104	\$148,547	16.1	87,961

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

### WOODLAND SEWER TREATMENT PLANT

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO2e Emissions Reduction (Ibs)
Lighting	Upgrades		74,250	10.5	-14	\$7,809	\$39,320	\$4,675	\$34,645	4.4	73,118
ECM 1	Install LED Fixtures	Yes	54,714	6.5	-10	\$5,761	\$29,599	\$3,350	\$26,249	4.6	53,971
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	18,386	3.5	-4	\$1,927	\$8,584	\$1,115	\$7,469	3.9	18,020
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,150	0.4	0	\$121	\$1,137	\$210	\$927	7.7	1,127
Lighting	Control Measures		3,274	0.8	-1	\$343	\$5,648	\$1,315	\$4,333	12.6	3,209
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,326	0.6	-1	\$244	\$3,848	\$475	\$3,373	13.8	2,280
ECM 5	Install High/Low Lighting Controls	Yes	948	0.2	0	\$99	\$1,800	\$840	\$960	9.7	929
Motor I	Jpgrades		24,762	7.7	0	\$2,647	\$44,038	\$0	\$44,038	16.6	24,935
ECM 6	Premium Efficiency Motors	Yes	24,762	7.7	0	\$2,647	\$44,038	\$0	\$44,038	16.6	24,935
Variable	e Frequency Drive (VFD) Measures		124,571	38.4	0	\$13,315	\$87,309	\$6,825	\$80,484	6.0	125,442
ECM 7	Install VFD on Variable Air Volume (VAV) Fans	Yes	6,574	3.0	0	\$703	\$5 <i>,</i> 375	\$1,100	\$4,275	6.1	6,619
ECM 8	Install VFDs on Constant Volume (CV) Fans	No	16,323	7.1	0	\$1,745	\$21,525	\$1,675	\$19,850	11.4	16,438
ECM 9	Install VFDs on Heating Water Pumps	No	1,739	0.3	0	\$186	\$6,781	\$150	\$6,631	35.7	1,751
ECM 10	Install VFDs on Water Supply Pump	Yes	59,668	6.4	0	\$6 <i>,</i> 378	\$22,942	\$2,800	\$20,142	3.2	60,085
ECM 11	Install VFDs on Process Blowers	Yes	40,268	21.7	0	\$4,304	\$30,686	\$1,100	\$29,586	6.9	40,550
Unitary	HVAC Measures		1,218	0.3	0	\$130	\$2,131	\$0	\$2,131	16.4	1,226
ECM 12	Install High Efficiency Heat Pumps	No	1,218	0.3	0	\$130	\$2,131	\$0	\$2,131	16.4	1,226
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	62	\$559	\$17,899	\$1,400	\$16,499	29.5	7,233
ECM 13	Install High Efficiency Hot Water Boilers	No	0	0.0	4	\$37	\$4,097	\$400	\$3,697	99.2	482
ECM 14	Install High Efficiency Furnaces	No	0	0.0	42	\$381	\$8,758	\$500	\$8,258	21.7	4,925
ECM 15	Install Infrared Heaters	No	0	0.0	16	\$141	\$5,044	\$500	\$4,544	32.2	1,826
HVAC S	ystem Improvements		0	0.0	3	\$28	\$58	\$20	\$38	1.4	357
ECM 16	Install Pipe Insulation	Yes	0	0.0	3	\$28	\$58	\$20	\$38	1.4	357
Domest	ic Water Heating Upgrade		111	0.0	2	\$33	\$57	\$28	\$29	0.9	386
ECM 17	Install Low-Flow DHW Devices	Yes	111	0.0	2	\$33	\$57	\$28	\$29	0.9	386
	TOTALS (COST EFFECTIVE MEASURES)		208,907	50.0	-9	\$22,244	\$148,125	\$11,038	\$137,087	6.2	209,260
	TOTALS (ALL MEASURES)		228,187	57.7	52	\$24,864	\$196,460	\$14,263	\$182,197	7.3	235,907

\* - All incentives presented in this table are included as placeholders and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

#### ENERGY EFFICIENT BEST PRACTICES

- 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



#### SOLAR ENERGY GENERATION POTENTIAL

	Butterworth Sewer Treatment Plant	Woodland Sewer Treatment Plant
Potential:	HIGH	MEDIUM
System Potential: (kW)	86	107
Electric Generation: (kWh per year)	102,458	80,512
Displaced Cost: (per year)	\$10,900	\$8,610

Successor Solar Incentive Program https://www.njcleanenergy.com/renewableenergy/programs/susi-program



**Community Solar Energy Pilot Program** 

http://www.NJCleanEnergy.com/ CommunitySolar

#### FINANCING MECHANISM: ESIP

#### **ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)**

- Energy Performance Contracting NJ ESIP
- Financing Mechanism that allows state entities to make energy efficiency improvements without impacting their budgets
- Administered by the NJBPU
- Project is paid for with the value of its own energy savings
- 15 or 20 year self-funding loan
- Recent Energy Efficiency Transition
  - NJBPU Approved Incentive Programs
    - Utility or NJCEP
- Can be combined with Federal/State Pandemic Relief Funds
- No upfront capital expenses
- No referendum or impact to tax payers





#### FINANCING MECHANISM: ESIP

New Jersey's Clean

program



#### Energy SAVINGS Improvement Program

#### FOR MORE INFORMATION

Michelle Rossi ESIP Coordinator ESIP@bpu.nj.gov o: 609.633.9641 c: 609.915.0903



#### **C&I** TRANSITION OF ENERGY EFFICIENCY PROGRAMS

https://www.njcleanenergy.com/transition



#### UTILITY RUN ENERGY EFFICIENCY PROGRAMS

#### **PRESCRIPTIVE & CUSTOM REBATES:**

- Individual high efficiency equipment rebates for renovation, remodeling, and equipment replacement
- Flexibility to do a little or a lot
- No size requirement

#### **DIRECT INSTALL:**

- Turn-key retrofit program to replace outdated and inefficient equipment including, lighting, HVAC, refrigeration, etc.
- The facility must have an average electric peak demand <200kW in the previous year to qualify



- **ENGINEERED SOLUTIONS:**
- Comprehensive, whole-building approach to saving energy
- The facility must have an average electric peak demand >200kW in the previous year to qualify

#### CLEAN FLEET ELECTRIC VEHICLE INCENTIVE PROGRAM

www.NJCleanEnergy.com/EV

- Electric vehicles are now included on the State Purchasing Contract under Award T0099
- Clean Fleet Electric Vehicle Incentive Program
  - Designed to encourage local and state governments to add EVs to their fleet
    - \$4,000 per battery electric vehicle (maximum of 2); and
    - \$1,500 for one Level-Two EV charging station
  - Grants awarded on rolling basis until June 2021, or until funding expended
- Questions? EV.programs@bpu.nj.gov



## FOR MORE INFORMATION

#### Sarah Walters – LGEA Project Manager

SWalters@trccompanies.com (732) 589-7372

#### Moussa Traore – LGEA Lead Energy Auditor

MTraore@trccompanies.com (732) 902-1797

#### Meredith Coley – LGEA Account Manager

mcoley@trccompanies.com (252) 459-4664

#### Eduardo Garcia – LGEA Energy Auditor

eggarcia@trccompanies.com (240) 447-2764



