



# LGEA Presentation Township of Verona

February 11, 2025

### New Jersey's Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future

## INTRODUCTIONS

- Township of Verona
  - Kevin O'Sullivan
  - Chuck Molinaro
  - Len Waterman
  - Christine Liaukus
- NJ Clean Energy Program
  - Sarah Walters LGEA Project Manager
  - Moussa Traore LGEA Technical Manager
  - Sayje Essoka-Lasenberry LGEA Project Auditor
  - Ryan Knippenberg LGEA Project Auditor
  - Melissa Lott LGEA Account Manager



## Agenda

- The audit process overview
- Energy use & existing conditions
- Review of Energy Conservation Measures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Township of Verona



# 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:

- Building Envelope
- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Food Service and Refrigeration

### **Sites Visited/Analyzed**

- Town Hall & Police Station
- Community Center Main Building & VCC Annex
- Library
- DPW Garages
- B&G Shop
- Firehouse #2
- Waste Water Treatment Plant
- Hillwood Well House
- Verona Community Pool

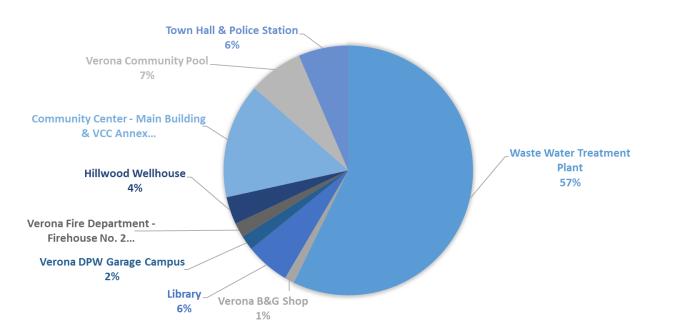
### **Utility Consumption:**

- Electric Consumption and Costs
- Natural Gas Consumption and Costs

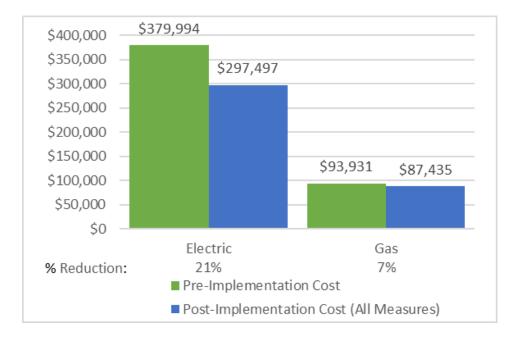


## UTILITY BREAKOUT

Percent of Total Annual Energy Costs

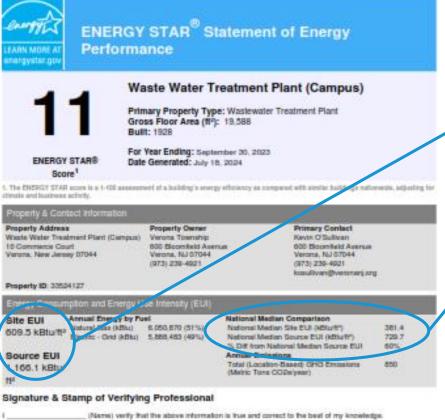


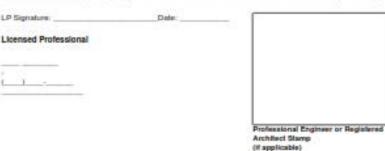
#### Pre & Post Implementation Cost

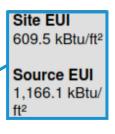




## Benchmarking





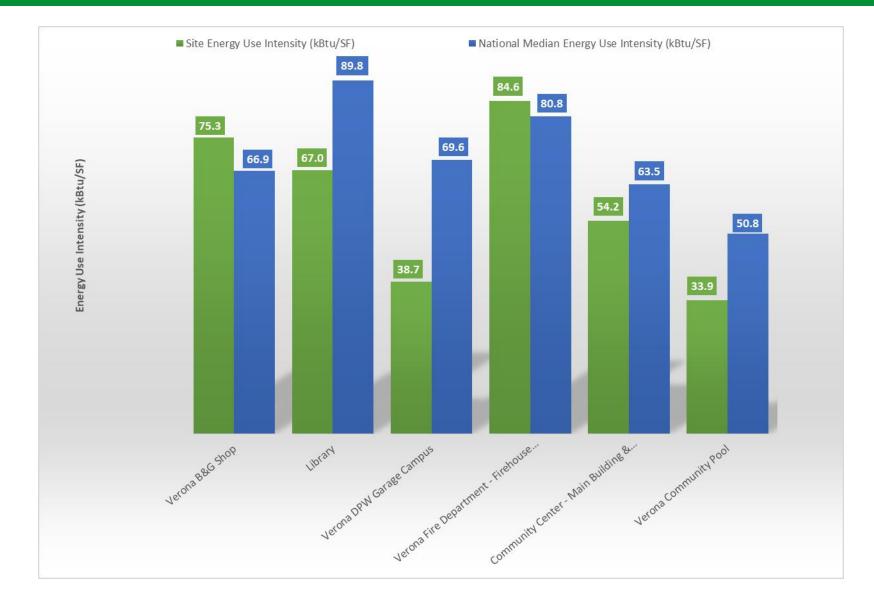


	National Median Comparison	
	National Median Site EUI (kBtu/ft2)	381.4
1	National Median Source EUI (kBtu/ft2)	729.7
	% Diff from National Median Source EUI	60%

Site Name	ENERGY STAR <sup>®</sup> Score
Town Hall & Police Station	N/A
Community Center	N/A
Library	N/A
DPW Garages	N/A
B & G Shop	N/A
Firehouse #2	N/A
WWTP	11
Hillwood Well House	N/A
Verona Community Pool	N/A

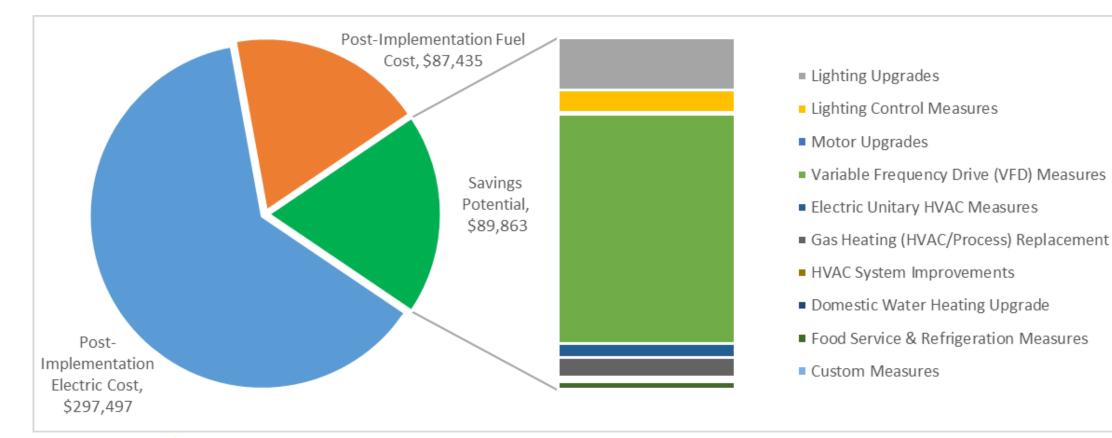
ENERGY STAR<sup>®</sup> scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

## Benchmarking



## ALL OPPORTUNITIES

### **Savings Potential**





# ALL OPPORTUNITIES (1 OF 2)

#	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 (\$)		CO <sub>2</sub> e Emissions Reduction (Ibs)
Lighting	Upgrades	82,948	25.9	-7.4	\$13,225	\$67,150	\$10,530	\$56,620	4.3	82,662
ECM 1	Install LED Fixtures	37,827	4.5	-2.1	\$5,009	\$40,120	\$6,220	\$33,900	6.8	37,845
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,670	0.4	-0.4	\$241	\$860	\$100	\$760	3.2	1,640
ECM 3	Retrofit Fixtures with LED Lamps	43,451	21.0	-4.9	\$7,975	\$26,170	\$4,210	\$21,960	2.8	43,176
Lighting	Control Measures	34,045	10.5	-6.8	\$5,882	\$57,400	\$10,500	\$46,900	8.0	33,486
ECM 4	Install Occupancy Sensor Lighting Controls	30,405	9.6	-6.0	\$5,272	\$49,260	\$5,830	\$43,430	8.2	29,912
ECM 5	Install High/Low Lighting Controls	3,640	0.9	-0.8	\$610	\$8,140	\$4,670	\$3 <i>,</i> 470	5.7	3,575
Motor L	Jpgrades	2,213	0.6	0.0	\$367	\$8,100	\$0	\$8,100	22.1	2,228
ECM 6	Premium Efficiency Motors	2,213	0.6	0.0	\$367	\$8,100	\$0	\$8,100	22.1	2,228
Variable	e Frequency Drive (VFD) Measures	407,020	71.2	0.0	\$58,429	\$254,700	\$11,700	\$243,000	4.2	409,866
ECM 7	Install VFDs on Constant Volume (CV) Fans	80,144	24.3	0.0	\$14,927	\$130,400	\$8,000	\$122,400	8.2	80,704
ECM 8	Install VFDs on Heating Water Pumps	11,327	1.5	0.0	\$2,124	\$30,000	\$1,500	\$28,500	13.4	11,406
ECM 9	Install VFDs on Process/Pool Filtration Pumps	315,549	45.4	0.0	\$41,378	\$94,300	\$2,200	\$92,100	2.2	317,755
Unitary	HVAC Measures	20,242	19.0	0.0	\$3,628	\$221,700	\$9,600	\$212,100	58.5	20,384
ECM 10	Install High Efficiency Air Conditioning Units	17,552	16.2	0.0	\$3,182	\$195,600	\$8,600	\$187,000	58.8	17,675
ECM 11	Install High Efficiency Heat Pumps	2,690	2.8	0.0	\$446	\$26,100	\$1,000	\$25,100	56.2	2,709

# ALL OPPORTUNITIES (2 OF 2)

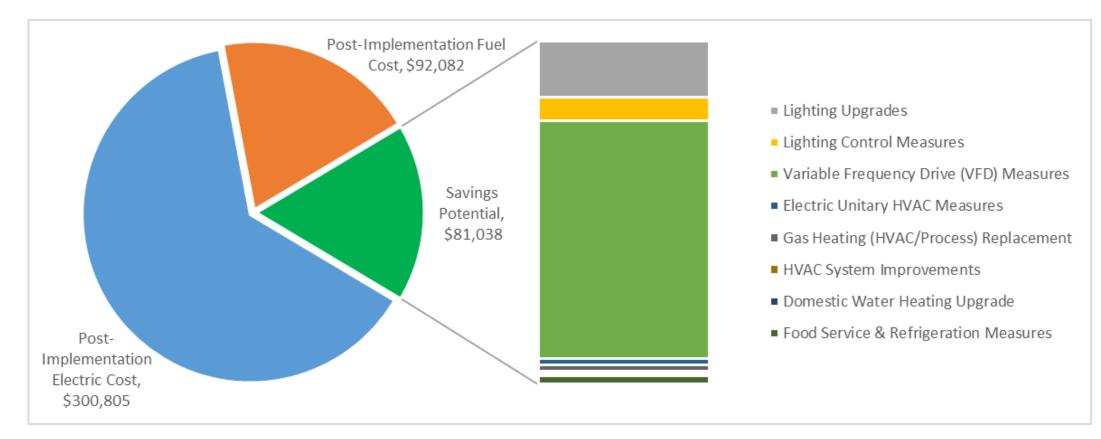
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO2e Emissions Reduction (Ibs)
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	498.6	\$4,956	\$194,000	\$10,500	\$183,500	37.0	58,375
ECM 12	Install High Efficiency Hot Water Boilers	0	0.0	339.5	\$3,435	\$170,800	\$8,000	\$162,800	47.4	39,747
ECM 13	Install High Efficiency Furnaces	0	0.0	159.1	\$1,521	\$23,200	\$2,500	\$20,700	13.6	18,628
HVAC Sy	ystem Improvements	507	0.0	29.6	\$442	\$1,790	\$130	\$1,660	3.8	3,978
ECM 14	Install Programmable Thermostats	222	0.0	8.8	\$170	\$760	\$0	\$760	4.5	1,249
ECM 15	Install Pipe Insulation	286	0.0	20.8	\$272	\$1,030	\$130	\$900	3.3	2,729
Domest	ic Water Heating Upgrade	343	0.0	29.1	\$624	\$3,210	\$420	\$2,790	4.5	4,469
ECM 16	Install High Efficiency Gas-Fired Water Heater	0	0.0	1.8	\$21	\$2,200	\$200	\$2,000	93.8	206
ECM 17	Install Low-Flow DHW Devices	343	0.0	27.4	\$603	\$1,010	\$220	\$790	1.3	4,263
Food Se	rvice & Refrigeration Measures	9,953	1.1	0.0	\$1,874	\$2,160	\$300	\$1,860	1.0	10,023
ECM 18	Vending Machine Control	9,953	1.1	0.0	\$1,874	\$2,160	\$300	\$1,860	1.0	10,023
Custom	Measures	-9,423	0.0	110.0	-\$435	\$17,400	\$0	\$17,400	-40.0	3,391
ECM 19	Replace Electric Water Heater with Heat Pump Water Heater	809	0.0	0.0	\$99	\$2,500	\$0	\$2,500	25.3	815
ECM 20	Replace Gas Fired Water Heater with Heat Pump Water Heater	-10,232	0.0	110.0	-\$534	\$14,900	\$0	\$14,900	-27.9	2,576
	TOTALS (ALL MEASURES)	547,849	128.3	653.1	\$88,993	\$827,610	\$53,680	\$773,930	8.7	628,861

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

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

## COST EFFECTIVE OPPORTUNITIES

### **Savings Potential**





## COST EFFECTIVE OPPORTUNITIES (1 OF 2)

#	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 (\$)		CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	y Upgrades	82,948	25.9	-7.4	\$13,225	\$67,150	\$10,530	\$56,620	4.3	82,662
ECM 1	Install LED Fixtures	37,827	4.5	-2.1	\$5,009	\$40,120	\$6,220	\$33,900	6.8	37,845
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	1,670	0.4	-0.4	\$241	\$860	\$100	\$760	3.2	1,640
ECM 3	Retrofit Fixtures with LED Lamps	43,451	21.0	-4.9	\$7,975	\$26,170	\$4,210	\$21,960	2.8	43,176
Lighting	control Measures	32,237	9.1	-6.4	\$5,624	\$53,260	\$9,990	\$43,270	7.7	31,711
ECM 4	Install Occupancy Sensor Lighting Controls	28,597	8.3	-5.6	\$5,013	\$44,640	\$5,320	\$39,320	7.8	28,136
ECM 5	Install Daylight Dimming/Photocell Controls	0	0.0	0.0	\$0	\$480	\$0	\$480	0.0	0
ECM 6	Install High/Low Lighting Controls	3,640	0.9	-0.8	\$610	\$8,140	\$4,670	\$3,470	5.7	3,575
Variable	e Frequency Drive (VFD) Measures	391,826	68.6	0.0	\$56,210	\$223,800	\$11,000	\$212,800	3.8	394,566
ECM 8	Install VFDs on Constant Volume (CV) Fans	68,501	22.1	0.0	\$13,142	\$108,900	\$7,500	\$101,400	7.7	68,980
ECM 9	Install VFDs on Heating Water Pumps	7,776	1.1	0.0	\$1,690	\$20,600	\$1,300	\$19,300	11.4	7,830
ECM 10	Install VFDs on Process/Pool Filtration Pumps	315,549	45.4	0.0	\$41,378	\$94,300	\$2,200	\$92,100	2.2	317,755
Unitary	HVAC Measures	7,364	8.2	0.0	\$1,564	\$108,100	\$4,600	\$103,500	66.2	7,415
ECM 11	Install High Efficiency Air Conditioning Units	7,364	8.2	0.0	\$1,564	\$108,100	\$4,600	\$103,500	66.2	7,415



## COST EFFECTIVE OPPORTUNITIES (2 OF 2)

#	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 (\$)		CO2e Emissions Reduction (lbs)
Gas Hea	ting (HVAC/Process) Replacement	0	0.0	151.7	\$1,474	\$24,400	\$1,400	\$23,000	15.6	17,757
ECM 13	Install High Efficiency Hot Water Boilers	0	0.0	20.3	\$246	\$14,100	\$400	\$13,700	55.7	2,382
ECM 14	Install High Efficiency Furnaces	0	0.0	131.3	\$1,228	\$10,300	\$1,000	\$9,300	7.6	15,375
HVAC Sy	ystem Improvements	507	0.0	29.6	\$442	\$1,790	\$130	\$1,660	3.8	3,978
ECM 15	Install Programmable Thermostats	222	0.0	8.8	\$170	\$760	\$0	\$760	4.5	1,249
ECM 16	Install Pipe Insulation	286	0.0	20.8	\$272	\$1,030	\$130	\$900	3.3	2,729
Domest	ic Water Heating Upgrade	343	0.0	29.1	\$624	\$3,210	\$420	\$2,790	4.5	4,469
ECM 17	Install High Efficiency Gas-Fired Water Heater	0	0.0	1.8	\$21	\$2,200	\$200	\$2,000	93.8	206
ECM 18	Install Low-Flow DHW Devices	343	0.0	27.4	\$603	\$1,010	\$220	\$790	1.3	4,263
Food Se	rvice & Refrigeration Measures	9,953	1.1	0.0	\$1,874	\$2,160	\$300	\$1,860	1.0	10,023
ECM 19	Vending Machine Control	9,953	1.1	0.0	\$1,874	\$2,160	\$300	\$1,860	1.0	10,023
	TOTALS	525,179	113.0	196.6	\$81,038	\$483,870	\$38,370	\$445,500	5.5	552,580

\* - 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

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



## TOWN HALL & POLICE STATION

#	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 (lbs)
Lighting	Upgrades		9,840	1.3	-2	\$1,485	\$1,770	\$340	\$1,430	1.0	9,680
ECM 1	Install LED Fixtures	Yes	657	0.0	0	\$101	\$510	\$200	\$310	3.1	662
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,322	0.2	0	\$199	\$240	\$30	\$210	1.1	1,298
ECM 3	Retrofit Fixtures with LED Lamps	Yes	7,861	1.1	-2	\$1,185	\$1,020	\$110	\$910	0.8	7,720
Lighting	Control Measures		16,021	2.5	-3	\$2,415	\$11,360	\$2,150	\$9,210	3.8	15,733
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	14,468	2.3	-3	\$2,181	\$9,960	\$1,200	\$8,760	4.0	14,209
ECM 5	Install High/Low Lighting Controls	Yes	1,553	0.2	0	\$234	\$1,400	\$950	\$450	1.9	1,525
Variable	Frequency Drive (VFD) Measures		11,643	2.2	0	\$1,785	\$21,500	\$500	\$21,000	11.8	11,724
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	11,643	2.2	0	\$1,785	\$21,500	\$500	\$21,000	11.8	11,724
Unitary	HVAC Measures		7,408	5.6	0	\$1,135	\$67,800	\$3,000	\$64,800	57.1	7,460
ECM 7	Install High Efficiency Air Conditioning Units	No	6,502	4.3	0	\$997	\$62,700	\$2,800	\$59,900	60.1	6,547
ECM 8	Install High Efficiency Heat Pumps	No	906	1.2	0	\$139	\$5,100	\$200	\$4,900	35.3	913
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	36	\$434	\$34,800	\$1,900	\$32,900	75.8	4,249
ECM 9	Install High Efficiency Hot Water Boilers	No	0	0.0	36	\$434	\$34,800	\$1,900	\$32,900	75.8	4,249
HVAC Sy	/stem Improvements		0	0.0	9	\$110	\$350	\$40	\$310	2.8	1,078
ECM 10	Install Pipe Insulation	Yes	0	0.0	9	\$110	\$350	\$40	\$310	2.8	1,078
Domesti	c Water Heating Upgrade		0	0.0	3	\$42	\$80	\$30	\$50	1.2	408
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	3	\$42	\$80	\$30	\$50	1.2	408
Custom	Measures***		-2,363	0.0	25	-\$63	\$2,900	\$0	\$2,900	-46.0	548
ECM 12	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	-2,363	0.0	25	-\$63	\$2,900	\$0	\$2,900	-46.0	548
	TOTALS (COST EFFECTIVE MEASURES)		25,861	3.8	7	\$4,052	\$13,560	\$2,560	\$11,000	2.7	26,901
	TOTALS (ALL MEASURES)		42,549	11.6	69	\$7,343	\$140,560	\$7,960	\$132,600	18.1	50,881

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

## COMMUNITY CENTER

#	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		7,024	3.4	-1	\$1,531	\$15,510	\$3,020	\$12,490	8.2	6,947
ECM 1	Install LED Fixtures	Yes	1,971	0.0	0	\$432	\$9,780	\$1,800	\$7,980	18.5	1,985
ECM 2	Retrofit Fixtures with LED Lamps	Yes	5,053	3.4	-1	\$1,098	\$5,730	\$1,220	\$4,510	4.1	4,963
Lighting	Control Measures		7,743	3.3	-2	\$1,683	\$22,230	\$4,310	\$17,920	10.6	7,604
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	7,075	3.1	-2	\$1,537	\$18,300	\$2,190	\$16,110	10.5	6,948
ECM 4	Install High/Low Lighting Controls	Yes	669	0.3	0	\$145	\$3,930	\$2,120	\$1,810	12.5	657
Motor U	Ipgrades		992	0.3	0	\$218	\$4,300	\$0	\$4,300	19.8	999
ECM 5	Premium Efficiency Motors	No	992	0.3	0	\$218	\$4,300	\$0	\$4,300	19.8	999
Variable	e Frequency Drive (VFD) Measures		49,291	15.3	0	\$10,815	\$90,300	\$5,900	\$84,400	7.8	49,636
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	41,851	14.3	0	\$9,182	\$79,600	\$4,800	\$74,800	8.1	42,143
ECM 7	Install VFDs on Heating Water Pumps	Yes	7,440	1.1	0	\$1,632	\$10,700	\$1,100	\$9,600	5.9	7,492
Unitary	HVAC Measures		6,418	7.6	0	\$1,408	\$93,000	\$3,900	\$89,100	63.3	6,463
ECM 8	Install High Efficiency Air Conditioning Units	Yes	6,418	7.6	0	\$1,408	\$93,000	\$3,900	\$89,100	63.3	6,463
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	89	\$872	\$53,500	\$3,200	\$50,300	57.7	10,393
ECM 9	Install High Efficiency Hot Water Boilers	No	0	0.0	68	\$664	\$48,600	\$2,700	\$45,900	69.1	7,918
ECM 10	Install High Efficiency Furnaces	No	0	0.0	21	\$208	\$4,900	\$500	\$4,400	21.2	2,475
HVAC S	ystem Improvements		0	0.0	9	\$85	\$240	\$30	\$210	2.5	1,018
ECM 11	Install Pipe Insulation	Yes	0	0.0	9	\$85	\$240	\$30	\$210	2.5	1,018
Domest	ic Water Heating Upgrade		0	0.0	4	\$41	\$140	\$60	\$80	2.0	487
ECM 12	Install Low-Flow DHW Devices	Yes	0	0.0	4	\$41	\$140	\$60	\$80	2.0	487
Food Se	rvice & Refrigeration Measures		3,506	0.4	0	\$769	\$1,080	\$100	\$980	1.3	3,530
ECM 13	Vending Machine Control	Yes	3,506	0.4	0	\$769	\$1,080	\$100	\$980	1.3	3,530
Custom	Measures***		-2,954	0.0	32	-\$334	\$4,200	\$0	\$4,200	-12.6	772
ECM 14	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	-2,954	0.0	32	-\$334	\$4,200	\$0	\$4,200	-12.6	772
	TOTALS (COST EFFECTIVE MEASURES)		73,982	30.1	10	\$16,332	\$222,500	\$17,320	\$205,180	12.6	75,685
	TOTALS (ALL MEASURES)		72,020	30.4	131	\$17,087	\$284,500	\$20,520	\$263,980	15.4	87,849

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

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

## LIBRARY

#	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		815	0.2	0	\$138	\$490	\$30	\$460	3.3	800
ECM 1	Retrofit Fixtures with LED Lamps	Yes	815	0.2	0	\$138	\$490	\$30	\$460	3.3	800
Lighting	Control Measures		2,626	0.6	-1	\$446	\$4,610	\$1,410	\$3,200	7.2	2,579
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	1,404	0.3	0	\$238	\$2,640	\$310	\$2,330	9.8	1,379
ECM 3	Install High/Low Lighting Controls	Yes	1,222	0.3	0	\$207	\$1,970	\$1,100	\$870	4.2	1,200
Variable	Frequency Drive (VFD) Measures		14,026	3.2	0	\$2,417	\$11,400	\$1,200	\$10,200	4.2	14,124
ECM 4	Install VFDs on Constant Volume (CV) Fans	Yes	14,026	3.2	0	\$2,417	\$11,400	\$1,200	\$10,200	4.2	14,124
Unitary	HVAC Measures		1,784	1.6	0	\$307	\$21,000	\$800	\$20,200	65.7	1,796
ECM 5	Install High Efficiency Heat Pumps	No	1,784	1.6	0	\$307	\$21,000	\$800	\$20,200	65.7	1,796
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	25	\$314	\$23,200	\$900	\$22,300	70.9	2,952
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	25	\$314	\$23,200	\$900	\$22,300	70.9	2,952
HVAC Sy	stem Improvements		0	0.0	2	\$21	\$160	\$20	\$140	6.7	197
ECM 7	Install Pipe Insulation	Yes	0	0.0	2	\$21	\$160	\$20	\$140	6.7	197
Domesti	c Water Heating Upgrade		0	0.0	2	\$28	\$40	\$0	\$40	1.4	261
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$28	\$40	\$0	\$40	1.4	261
Custom	Measures***		-1,576	0.0	17	-\$60	\$2,500	\$0	\$2,500	-41.7	403
ECM 9	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	-1,576	0.0	17	-\$60	\$2,500	\$0	\$2,500	-41.7	403
	TOTALS (COST EFFECTIVE MEASURES)		17,467	3.9	3	\$3,049	\$16,700	\$2,660	\$14,040	4.6	17,962
	TOTALS (ALL MEASURES)		17,675	5.5	45	\$3,611	\$63,400	\$4,360	\$59,040	16.3	23,113

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

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

## DPW GARAGES

#	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 (\$)		CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		444	0.3	0	\$63	\$140	\$0	\$140	2.2	436
ECM 1	Retrofit Fixtures with LED Lamps	Yes	444	0.3	0	\$63	\$140	\$0	\$140	2.2	436
Lighting	Control Measures		1,808	1.3	0	\$258	\$4,620	\$510	\$4,110	15.9	1,776
ECM 2	Install Occupancy Sensor Lighting Controls	No	1,808	1.3	0	\$258	\$4,620	\$510	\$4,110	15.9	1,776
Unitary	HVAC Measures		193	0.2	0	\$28	\$7,000	\$400	\$6,600	235.3	195
ECM 3	Install High Efficiency Air Conditioning Units	Yes	193	0.2	0	\$28	\$7,000	\$400	\$6,600	235.3	195
HVAC Sy	stem Improvements		286	0.0	1	\$55	\$280	\$40	\$240	4.3	435
ECM 4	Install Pipe Insulation	Yes	286	0.0	1	\$55	\$280	\$40	\$240	4.3	435
Domesti	c Water Heating Upgrade		65	0.0	1	\$21	\$20	\$0	\$20	1.0	184
ECM 5	Install Low-Flow DHW Devices	Yes	65	0.0	1	\$21	\$20	\$0	\$20	1.0	184
Custom	Measures***		-1,182	0.0	13	-\$28	\$2,500	\$0	\$2,500	-89.3	332
ECM 6	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	<u> </u>	0.0	13	-\$28	\$2,500	\$0	\$2,500	-89.3	332
	TOTALS (COST EFFECTIVE MEASURES)		989	0.5	2	\$167	\$7,440	\$440	\$7,000	41.8	1,250
	TOTALS (ALL MEASURES)		1,615	1.9	15	\$398	\$14,560	\$950	\$13,610	34.2	3,357

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

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

## B & G Shop

#	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		180	0.1	0	\$46	\$50	\$0	\$50	1.1	177
ECM 1	Retrofit Fixtures with LED Lamps	Yes	180	0.1	0	\$46	\$50	\$0	\$50	1.1	177
Lighting	Control Measures		717	0.4	0	\$183	\$3,100	\$240	\$2,860	15.6	703
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	717	0.4	0	\$183	\$2,130	\$240	\$1,890	10.3	703
ECM 3	Install Photocell Controls	Yes	0	0.0	0	\$0	\$970	\$0	\$970	0.0	0
Unitary	HVAC Measures		1,259	1.6	0	\$324	\$12,500	\$500	\$12,000	37.0	1,267
ECM 4	Install High Efficiency Air Conditioning Units	No	1,259	1.6	0	\$324	\$12,500	\$500	\$12,000	37.0	1,267
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	7	\$86	\$8,000	\$1,000	\$7,000	81.9	778
ECM 5	Install High Efficiency Furnaces	No	<b>▼</b> 0	0.0	7	\$86	\$8,000	\$1,000	\$7,000	81.9	778
HVAC Sy	stem Improvements		222	0.0	9	\$170	\$760	\$0	\$760	4.5	1,249
ECM 6	Install Programmable Thermostats	Yes	222	0.0	9	\$170	\$760	\$0	\$760	4.5	1,249
Domesti	c Water Heating Upgrade		139	0.0	0	\$36	\$10	\$0	\$10	0.3	140
ECM 7	Install Low-Flow DHW Devices	Yes	139	0.0	0	\$36	\$10	\$0	\$10	0.3	140
	TOTALS (COST EFFECTIVE MEASURES)		1,258	0.4	9	\$434	\$3,920	\$240	\$3,680	8.5	2,269
	TOTALS (ALL MEASURES)		2,517	2.0	15	\$844	\$24,420	\$1,740	\$22,680	26.9	4,314

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

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

## FIREHOUSE #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)**	CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades		4,359	2.2	-1	\$732	\$5,150	\$780	\$4,370	6.0	4,287
ECM 1	Retrofit Fixtures with LED Lamps	Yes	4,359	2.2	-1	\$732	\$5,150	\$780	\$4,370	6.0	4,287
Lighting	Control Measures		1,150	0.6	0	\$193	\$2,310	\$270	\$2,040	10.6	1,130
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	1,150	0.6	0	\$193	\$2,310	\$270	\$2,040	10.6	1,130
Variable	Frequency Drive (VFD) Measures		336	0.0	0	\$57	\$9,900	\$200	\$9,700	169.5	338
ECM 3	Install VFDs on Heating Water Pumps	Yes	336	0.0	0	\$57	\$9,900	\$200	\$9,700	169.5	338
Unitary	HVAC Measures		1,267	0.9	0	\$216	\$9,200	\$0	\$9,200	42.6	1,276
ECM 4	Install High Efficiency Air Conditioning Units	Yes	1,267	0.9	0	\$216	\$9,200	\$0	\$9,200	42.6	1,276
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	25	\$299	\$14,100	\$400	\$13,700	45.9	2,889
ECM 5	Install High Efficiency Hot Water Boilers	Yes	0	0.0	25	\$299	\$14,100	\$400	\$13,700	45.9	2,889
HVAC Sy	stem Improvements		0	0.0	14	\$170	\$390	\$40	\$350	2.1	1,642
ECM 6	Install Pipe Insulation	Yes	0	0.0	14	\$170	\$390	\$40	\$350	2.1	1,642
Domesti	c Water Heating Upgrade		0	0.0	1	\$15	\$20	\$0	\$20	1.3	144
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$15	\$20	\$0	\$20	1.3	144
Food Se	rvice & Refrigeration Measures		1,612	0.2	0	\$275	\$270	\$50	\$220	0.8	1,623
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	\$275	\$270	\$50	\$220	0.8	1,623
Custom	Measures***		-2,007	0.0	21	-\$88	\$2,500	\$0	\$2,500	-28.4	438
ECM 9	Replace Gas Fired Water Heater with Heat Pump Water Heater***	Yes	-2,007	0.0	21	-\$88	\$2,500	\$0	\$2,500	-28.4	438
	TOTALS (COST EFFECTIVE MEASURES)		6,717	3.9	60	\$1,868	\$43,840	\$1,740	\$42,100	22.5	13,767
	TOTALS (ALL MEASURES)		6,717	3.9	60	\$1,868	\$43,840	\$1,740	\$42,100	22.5	13,767

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

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

# WASTE WATER TREATMENT PLANT (1 OF 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 (\$)		CO₂e Emissions Reduction (Ibs)
Lighting	Upgrades		41,007	9.7	-3	\$4,981	\$39,460	\$5,320	\$34,140	6.9	40,897
ECM 1	Install LED Fixtures	Yes	32,606	4.5	-2	\$3,966	\$27,810	\$3,420	\$24,390	6.1	32,588
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	348	0.3	0	\$42	\$620	\$70	\$550	13.1	342
ECM 3	Retrofit Fixtures with LED Lamps	Yes	8,053	5.0	-1	\$973	\$11,030	\$1,830	\$9,200	9.5	7,967
Lighting	Control Measures		2,109	1.0	0	\$254	\$5,430	\$990	\$4,440	17.5	2,071
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,912	0.9	0	\$230	\$4,110	\$490	\$3,620	15.7	1,878
ECM 6	Install High/Low Lighting Controls	Yes	197	0.1	0	\$24	\$840	\$500	\$340	14.4	193
Motor L	Jpgrades		1,221	0.3	0	\$149	\$3,800	\$0	\$3,800	25.5	1,229
ECM 7	Premium Efficiency Motors	No	1,221	0.3	0	\$149	\$3,800	\$0	\$3,800	25.5	1,229
Variable	Frequency Drive (VFD) Measures		293,957	50.4	0	\$35,931	\$102,000	\$1,700	\$100,300	2.8	296,012
ECM 8	Install VFDs on Constant Volume (CV) Fans	Yes	12,624	4.6	0	\$1,543	\$17,900	\$1,500	\$16,400	10.6	12,713
ECM 9	Install VFDs on Heating Water Pumps	No	3,551	0.4	0	\$434	\$9 <i>,</i> 400	\$200	\$9,200	21.2	3,576
ECM 10	Install VFDs on Process Pumps	Yes	277,782	45.4	0	\$33,954	\$74,700	\$0	\$74,700	2.2	279,724
Unitary	HVAC Measures		2,429	2.0	0	\$297	\$12,300	\$700	\$11,600	39.1	2,446
ECM 11	Install High Efficiency Air Conditioning Units	No	2,429	2.0	0	\$297	\$12,300	\$700	\$11,600	39.1	2,446

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# WASTE WATER TREATMENT PLANT (2 OF 2)

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)		Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO <sub>2</sub> e Emissions Reduction (Ibs)
Gas Hea	ting (HVAC/Process) Replacement		0	0.0	321	\$3,005	\$60,400	\$3,100	\$57,300	19.1	37,622
ECM 12	Install High Efficiency Hot Water Boilers	No	0	0.0	190	\$1,777	\$50,100	\$2,100	\$48,000	27.0	22,247
ECM 13	Install High Efficiency Furnaces	Yes	0	0.0	131	\$1,228	\$10,300	\$1,000	\$9,300	7.6	15,375
Food Se	rvice & Refrigeration Measures		1,612	0.2	0	\$197	\$270	\$50	\$220	1.1	1,623
ECM 14	Vending Machine Control	Yes	1,612	0.2	0	\$197	\$270	\$50	\$220	1.1	1,623
Custom	Measures		-1,348	0.0	23	<b>\$50</b>	\$5,300	\$0	\$5,300	106.0	1,336
ECM 15	Replace Electric Water Heater with Heat Pump Water Heater	No	809	0.0	0	\$99	\$2,500	\$0	\$2,500	25.3	815
1 + (1)/(1)	Replace Gas Fired Water Heater with Heat Pump Water Heater***	No	-2,157	0.0	23	-\$49	\$2,800	\$0	\$2,800	-57.1	521
	TOTALS (COST EFFECTIVE MEASURES)		335,134	60.9	127	\$42,156	\$148,060	\$8,860	\$139,200	3.3	352,403
	TOTALS (ALL MEASURES)		340,986	63.6	340	\$44,863	\$228,960	\$11,860	\$217,100	4.8	383,236

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

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

## HILLWOOD WELL HOUSE

#	Energy Conservation Measure	Annual Electric Savings (kWh)	-	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)		CO <sub>2</sub> e Emissions Reduction (lbs)
Lighting	Upgrades	1,192	0.2	0	\$667	\$590	\$60	\$530	0.8	1,201
ECM 1	Retrofit Fixtures with LED Lamps	1,192	0.2	0	\$667	\$590	\$60	\$530	0.8	1,201
Lighting	Control Measures	209	0.0	0	\$117	\$660	\$80	\$580	5.0	211
ECM 2	Install Occupancy Sensor Lighting Controls	209	0.0	0	\$117	\$660	\$80	\$580	5.0	211
	TOTALS	1,402	0.3	0	\$784	\$1,250	\$140	\$1,110	1.4	1,411

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

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



## VERONA COMMUNITY POOL

#	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		19,008	8.5	0	\$3,737	\$3,990	\$980	\$3,010	0.8	19,141
ECM 1	Install LED Fixtures	Yes	2,593	0.0	0	\$510	\$2,020	\$800	\$1,220	2.4	2,611
ECM 2	Retrofit Fixtures with LED Lamps	Yes	16,415	8.5	0	\$3,227	\$1,970	\$180	\$1,790	0.6	16,530
Lighting	Control Measures		1,920	0.7	0	\$377	\$4,530	\$540	\$3,990	10.6	1,934
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,920	0.7	0	\$377	\$4,530	\$540	\$3,990	10.6	1,934
Variable	Frequency Drive (VFD) Measures		37,767	0.0	0	\$7,424	\$19,600	\$2,200	\$17,400	2.3	38,031
ECM 4	Install VFDs on Process/Pool Filtration Pumps	Yes	37,767	0.0	0	\$7,424	\$19,600	\$2,200	\$17,400	2.3	38,031
Domesti	c Water Heating Upgrade		0	0.0	15	\$386	\$690	\$120	\$570	1.5	2,498
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	15	\$386	\$690	\$120	\$570	1.5	2,498
Food Se	rvice & Refrigeration Measures		3,224	0.4	0	\$634	\$540	\$100	\$440	0.7	3,246
ECM 6	Vending Machine Control	Yes	3,224	0.4	0	\$634	\$540	\$100	\$440	0.7	3,246
	TOTALS (COST EFFECTIVE MEASURES)		61,919	9.5	15	\$12,558	\$29,350	\$3,940	\$25,410	2.0	64,850
	TOTALS (ALL MEASURES)		61,919	9.5	15	\$12,558	\$29,350	\$3,940	\$25,410	2.0	64,850

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

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

## 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 Best Practices by building



## WATER BEST PRACTICES





- Leak Detection and Repair
- Toilets and Urinals
- Faucets and Showerheads
- Commercial Kitchen Equipment
- Laundry Equipment
- Cooling Towners
- Steam Boiler System
- Pools and Spas

- Laboratory and Medical Equipment
- Water Metering and Submetering
- Vehicle Washing
- Single Pass Cooling System
- Landscaping and Irrigation
- On-Site Alternative Water Sources

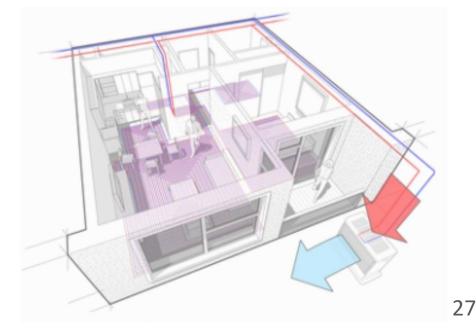
See individual reports for specific Water Best Practices by building



## MEASURES FOR FUTURE CONSIDERATION

- Installation of Energy Management System
- Electric Submetering
- Pool Heating System Upgrades
- Heating System Conversion from Steam to Hot Water
- Window Replacements

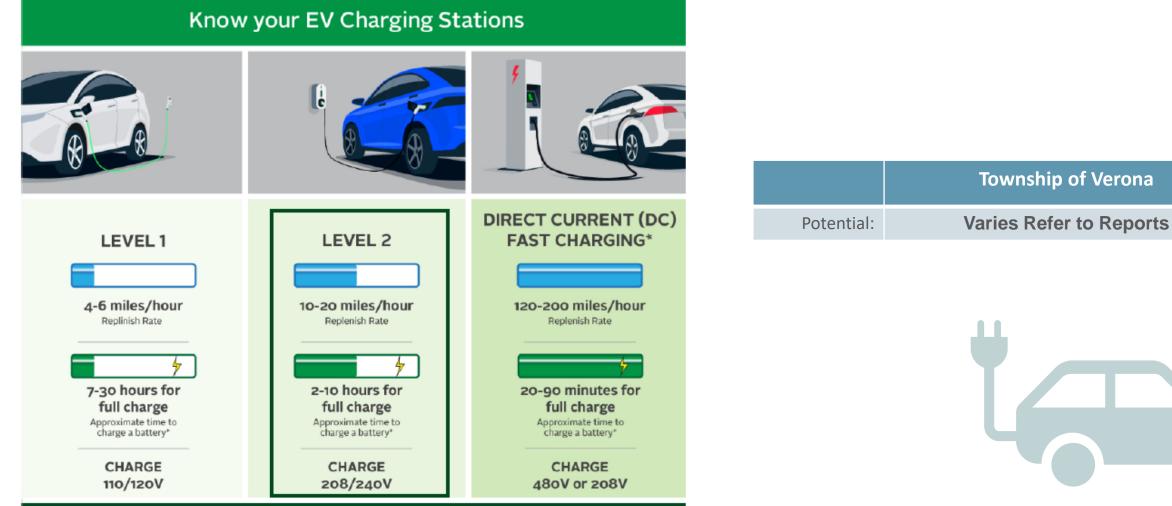
- VRF Systems
- High Speed Insulated Overhead Doors
- Upgrade to a Heat Pump System





### EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV



- -

### SOLAR ENERGY GENERATION POTENTIAL

NJCleanEnergy.com/renewable-energy

	Community Center	Verona Community Pool
Potential:	High	MEDIUM
System Potential: (kW)	107	59
Electric Generation: (kWh per year)	127,477	70,291
Displaced Cost: (per year)	\$27,970	\$13,820



## FINANCING MECHANISM: ESIP

NJCleanEnergy.com/ESIP

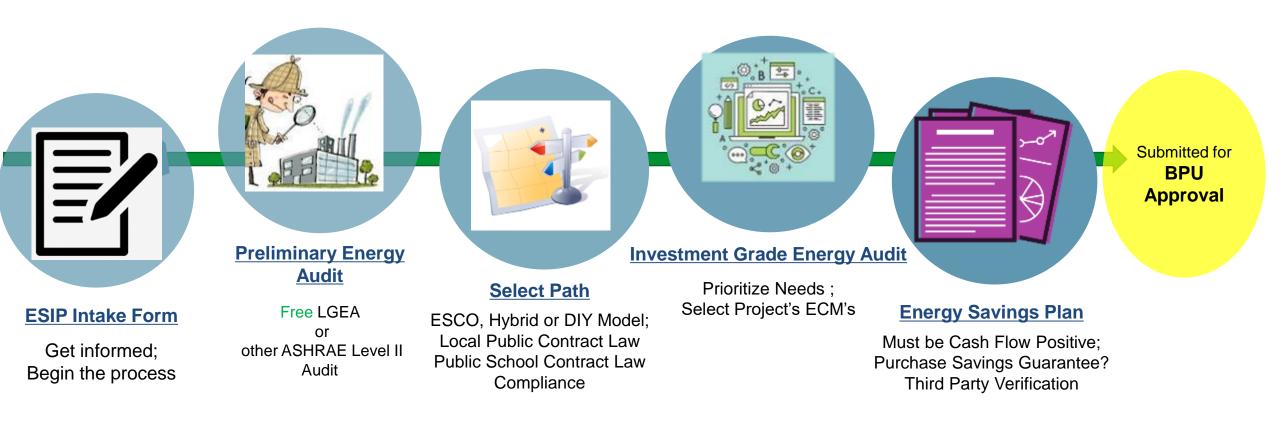
### **ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)**

- Energy Performance Contracting = NJ ESIP Program
- A creative tool and financing mechanism that allows public 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
- 2 Options: Lease Purchase Loan or Bond
- 15 or 20 year pay back term
- NJBPU Approved Incentive Programs
  - Utility or NJCEP
- Can be combined with Federal/State Grants
- No upfront capital expenses
- No referendum or impact to tax payers



## ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP





## ENERGY SAVINGS IMPROVEMENT PROGRAM

NJCleanEnergy.com/ESIP

### FOR MORE INFORMATION

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## SUSTAINABLE JERSEY – DIRECT PAY



## **Combining NJBPU Incentives with Direct Pay**

Direct Pay (Elective Pay), part of Inflation Reduction Act (IRA), allows tax-exempt entities, including municipalities and school districts, to receive tax credits for clean energy projects.

#### **About Direct Pay**

- All eligible projects receive tax credits (not competitive)
- Currently authorized for 10 years
- Projects completed in 2023 are eligible for tax credits until Nov 15 For local governments filing on a calendar year, fiscal year deadline is May 15

#### **Eligible Projects Include**

- Renewables solar, geothermal, wind, etc.
- Electric vehicles
- Electric vehicle charging infrastructure (limited)
- · Combined heat and power; Electric storage

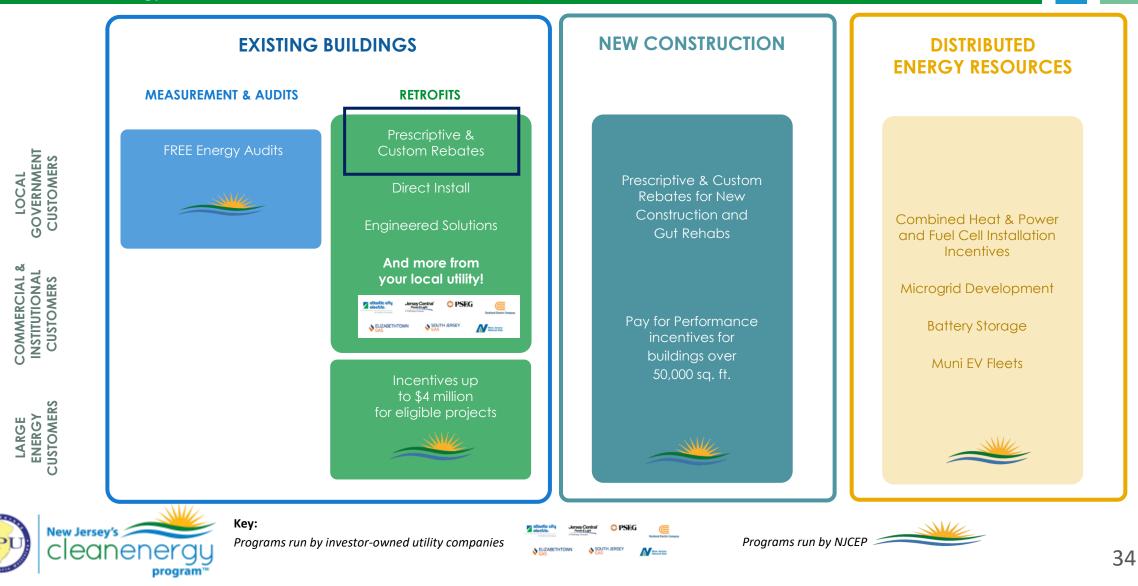
Full list of Direct Pay eligible tax credits at <a href="https://www.irs.gov/pub/irs-pdf/p5817a.pdf">https://www.irs.gov/pub/irs-pdf/p5817a.pdf</a>

Direct Pay can be used in other funding sources like	
Example	e
Lightweight EV	\$24,000
NJBPU Clean Fleet Grant	-\$4,000
Direct Pay Tax Credit	-\$7,500
Total cost to entity	\$12,500
Note: Total incentive can not exceed to	tal project cost.

For more information, visit Sustainable Jersey's <u>Direct Pay Tax Credits page</u>.

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

#### NJCleanEnergy.com



## UTILITY RUN ENERGY EFFICIENCY PROGRAMS\*

#### NJCleanEnergy.com/Transition

#### **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:

#### **ENERGY MANAGEMENT :**

- 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
- Includes the Building Tune-up (BT), Retro-commissioning (RCx), and Strategic Energy Management (SEM) subprograms. These subprograms offer a comprehensive mix of custom energy-savings measures such as basic HVAC tune-ups, building systems tune-ups, controls' calibration, diagnostic testing, and installation of measures to enhance your building's energy performance and savings.

#### **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

\*Other programs may be available to you. Check with your Utility Provider to see a full list of offering and what you may be qualified for.

## UTILITY RUN ENERGY EFFICIENCY PROGRAMS

### PSE&G

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# **THANK YOU**

