

# New Jersey's Clean Energy Program

LGEA Presentation  
*City of Clifton*

April 29, 2020



# INTRODUCTIONS

- *City of Clifton*
  - Dominick Villano – City Manager
  - James Jorgensen – Purchasing Agent
  - James Vanwinkle – Director of Public Works
  - Michael Lardner – City Engineer
  - Grace Lisbona – Executive Director
  - Jodi Neumann – All Programs Manager
- *NJ Clean Energy Program*
  - Aimee Lalonde – TRC Auditor
  - Amanda Muench – TRC Account Manager
  - Mike Mandzik – TRC Outreach Manager
  - Michelle Rossi – BPU ESIP Coordinator



# AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for City of Clifton



# LGEA PROCESS

- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- Exit Meeting Presentation
- Final Report

# SITE VISIT & UTILITY ANALYSIS

## Overview of Systems, Baseline & Existing Conditions:

- Building Envelope
- Lighting System
- HVAC and Control Systems
- Plug Load Equipment

## Utility Consumption:

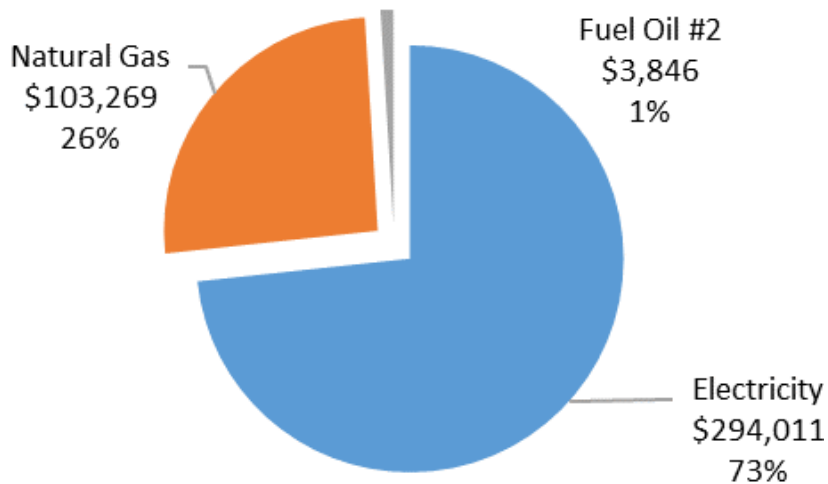
- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Fuel Oil #2 Consumption and Costs

## Sites Visited/Analyzed

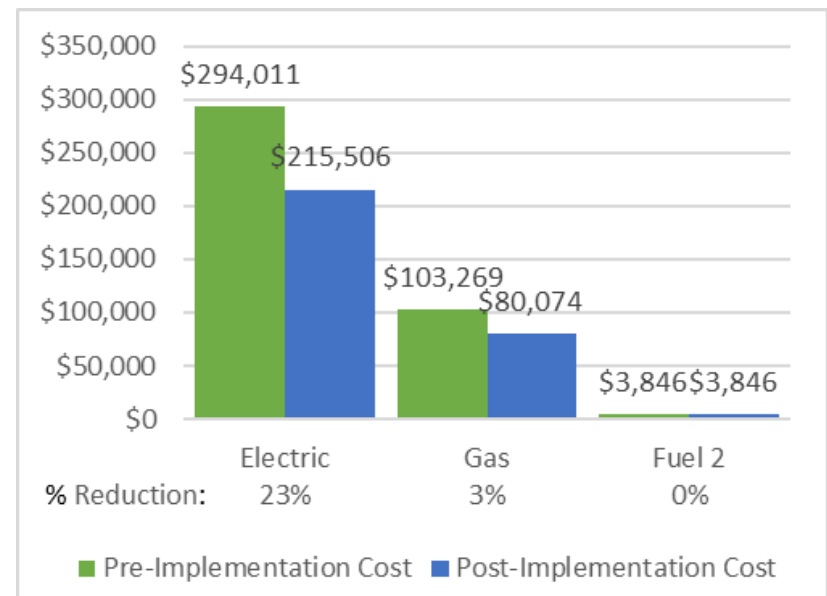
- Community Recreation Center
- Fire Stations #1 – 6
- Municipal Complex
- Senior Citizen Center
- Arts Center
- Hamilton House Museum
- DPW Garages #1 & #2
- Adult Opportunity Center
- Group Home
- Adult Learning Center
- Animal Shelter

# UTILITY BREAKOUT

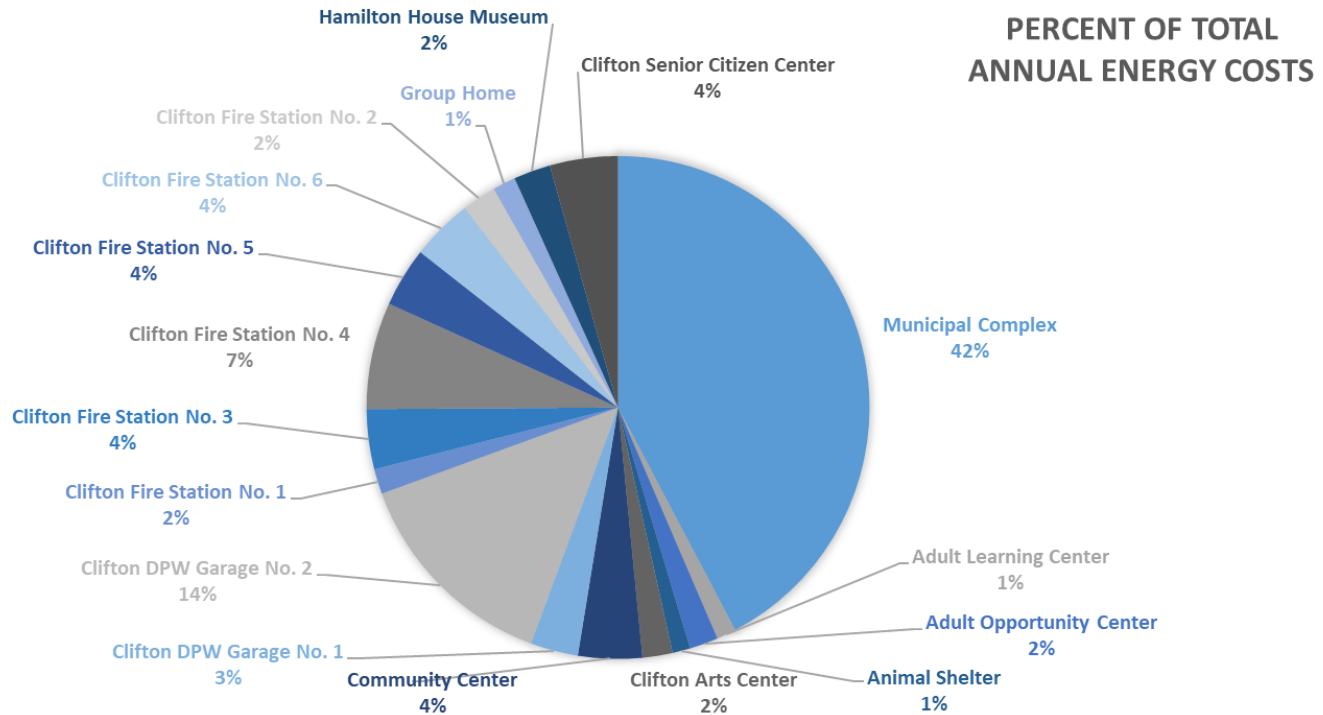
Percent of Total Annual Energy Costs



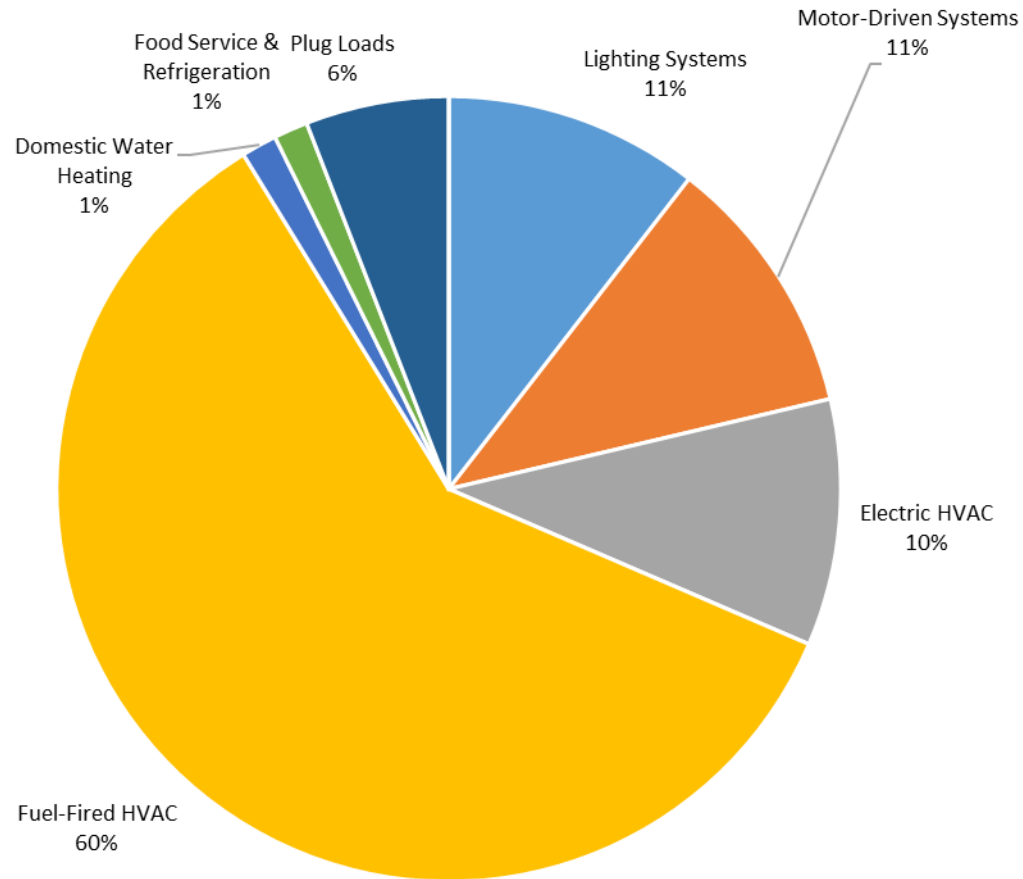
Pre & Post Implementation Cost



# BUILDING BREAKOUT




# END USE BREAKOUT





# BENCHMARKING

 **ENERGY STAR® Statement of Energy Performance**  
LEARN MORE AT [energystar.gov](http://energystar.gov)

**N/A** **Clifton DPW Garage No. 1**  
Primary Property Type: Repair Services (Vehicle, Shoe, Locksmith, etc.)  
Gross Floor Area (ft<sup>2</sup>): 8,752  
Built: 1957

ENERGY STAR® Score<sup>1</sup>

For Year Ending: April 30, 2019  
Date Generated: February 20, 2020

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

**Property & Contact Information**

<b>Property Address</b> Clifton DPW Garage No. 1 307 East 7th Avenue Clifton, New Jersey 07010	<b>Property Owner</b> City of Clifton 900 Clifton Avenue Clifton, NJ 07013 (973) 470-5854	<b>Primary Contact</b> Dominick Villano 900 Clifton Avenue Clifton, NJ 07013 (973) 470-5854 dvillano@cliftonnj.org
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Property ID: 9002081

**Energy Consumption and Energy Use Intensity (EUI)**

<b>Site EUI</b> 109.7 kBtu/ft <sup>2</sup>	<b>Annual Energy Use Intensity (EUI)</b>	<b>National Median Comparison</b>	
<b>Source EUI</b> 140.8 kBtu/ft <sup>2</sup>	Natural Gas (kBtu) 831,550 (87%)	National Median Site EUI (kBtu/ft <sup>2</sup> )	75.5
	Electricity - Grid (kBtu) 128,169 (13%)	National Median Source EUI (kBtu/ft <sup>2</sup> )	98.9
		% Diff from National Median Source EUI	45%
		<b>Annual Emissions</b>	
		Greenhouse Gas Emissions (Metric Tons CO2e/year)	57

**Site EUI**  
109.7 kBtu/ft<sup>2</sup>

**Source EUI**  
140.8 kBtu/ft<sup>2</sup>

**National Median Comparison**

National Median Site EUI (kBtu/ft <sup>2</sup> )	75.5
National Median Source EUI (kBtu/ft <sup>2</sup> )	98.9
% Diff from National Median Source EUI	45%
<b>Annual Emissions</b>	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	57

**Signature & Stamp of Verifying Professional**

I, \_\_\_\_\_ (Name) verify that the above information is true and correct to the best of my knowledge.

LP Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Licensed Professional

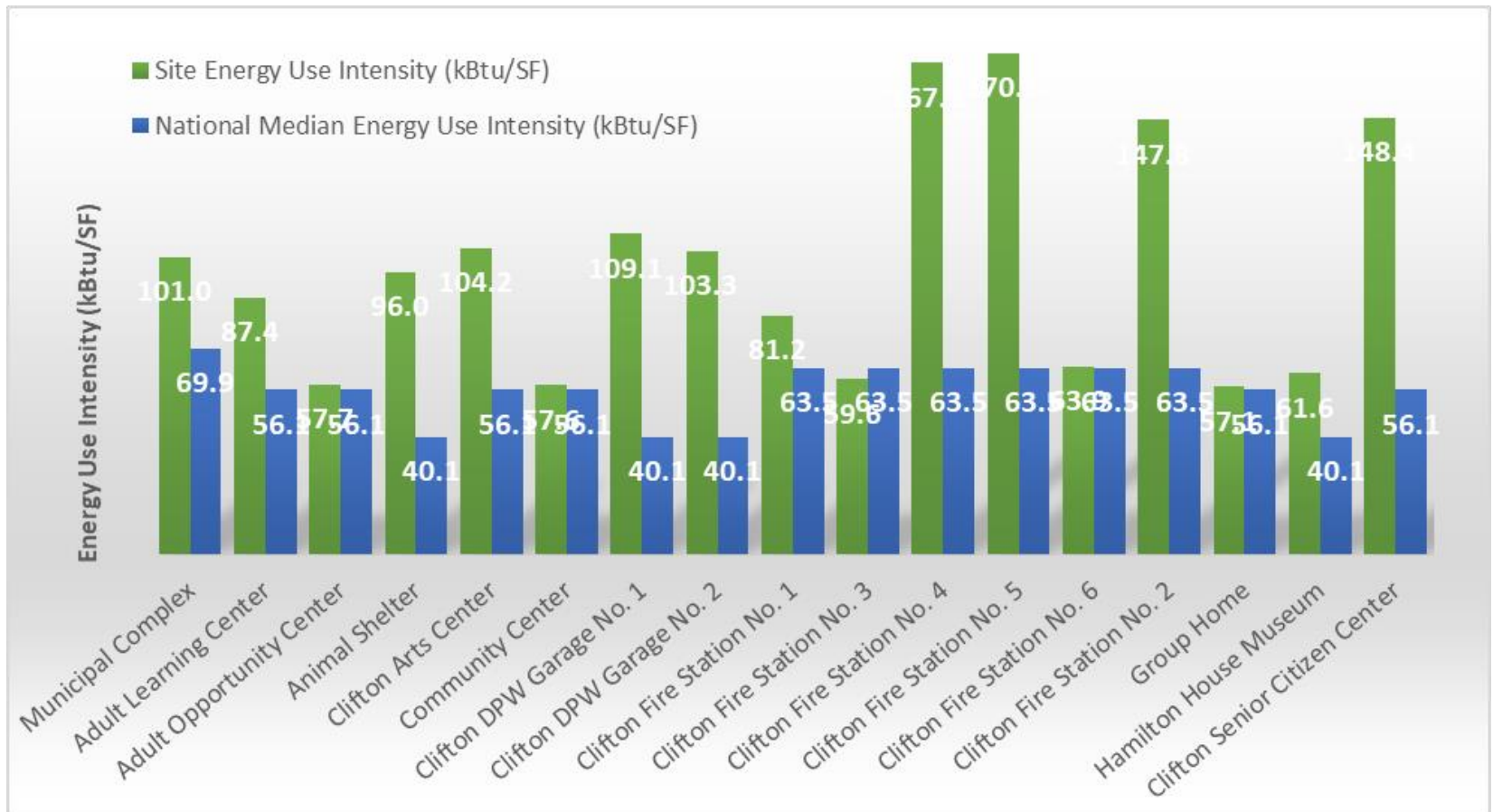
\_\_\_\_\_  
(\_\_\_\_\_)\_\_\_\_\_  
\_\_\_\_\_



Professional Engineer or Registered Architect Stamp (if applicable)

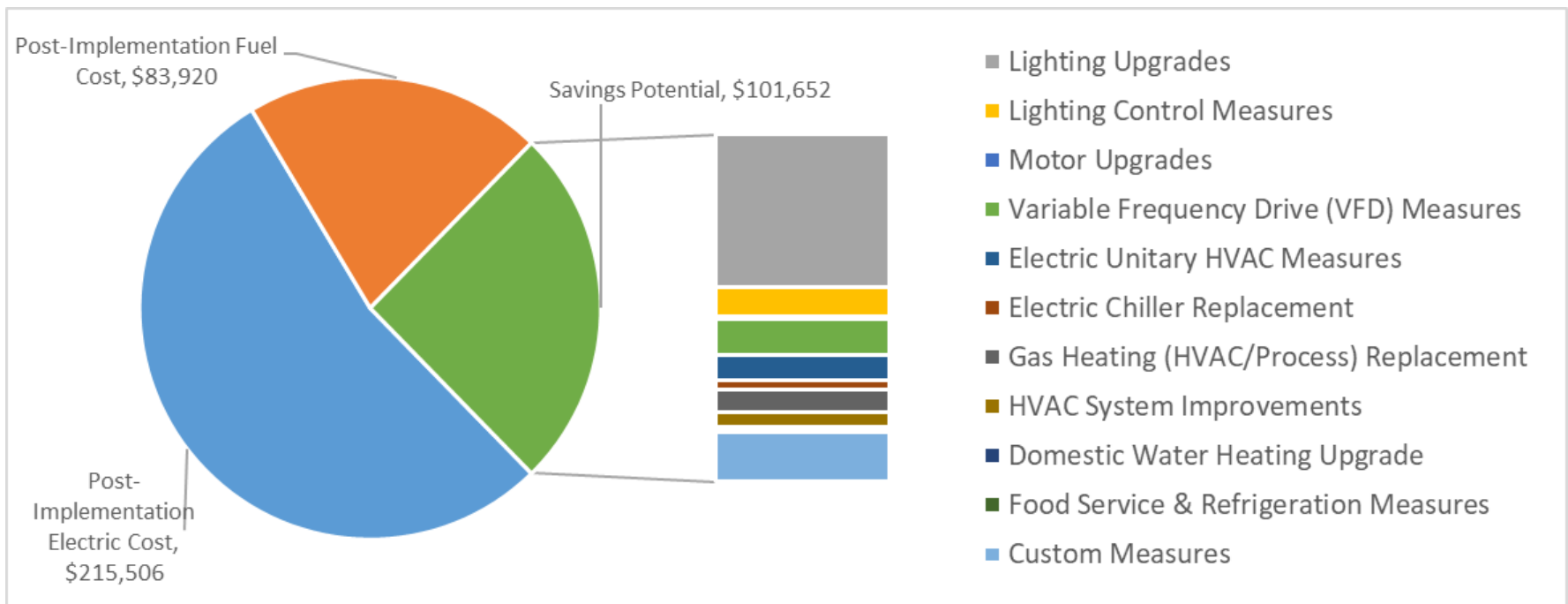
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

# BENCHMARKING



# ALL OPPORTUNITIES

## Savings Potential



# ALL OPPORTUNITIES

#	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>326,728</b>	<b>61.0</b>	<b>-36.2</b>	<b>\$44,895</b>	<b>\$339,967</b>	<b>\$107,502</b>	<b>\$232,465</b>	<b>5.2</b>	<b>324,775</b>
ECM 1	Install LED Fixtures	190,587	13.3	-10.0	\$25,454	\$279,924	\$82,600	\$197,324	7.8	190,750
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,046	4.5	-0.9	\$1,022	\$7,874	\$2,058	\$5,816	5.7	6,991
ECM 3	Retrofit Fixtures with LED Lamps	128,962	43.2	-25.3	\$18,402	\$52,096	\$22,844	\$29,252	1.6	126,905
ECM 4	Install LED Exit Signs	132	0.0	0.0	\$17	\$72	\$0	\$72	4.2	130
<b>Lighting Control Measures</b>		<b>62,170</b>	<b>15.4</b>	<b>-12.9</b>	<b>\$8,467</b>	<b>\$95,830</b>	<b>\$22,415</b>	<b>\$73,415</b>	<b>8.7</b>	<b>61,096</b>
ECM 5	Install Occupancy Sensor Lighting Controls	55,276	14.3	-11.5	\$7,544	\$83,230	\$17,080	\$66,150	8.8	54,313
ECM 6	Install Daylight Dimming/Photocell Controls	352	0.0	0.0	\$49	\$450	\$0	\$450	9.1	349
ECM 7	Install High/Low Lighting Controls	6,543	1.2	-1.3	\$874	\$12,150	\$5,335	\$6,815	7.8	6,433
<b>Motor Upgrades</b>		<b>4,937</b>	<b>0.6</b>	<b>0.0</b>	<b>\$652</b>	<b>\$10,598</b>	<b>\$0</b>	<b>\$10,598</b>	<b>16.2</b>	<b>4,972</b>
ECM 8	Premium Efficiency Motors	4,937	0.6	0.0	\$652	\$10,598	\$0	\$10,598	16.2	4,972
<b>Variable Frequency Drive (VFD) Measures</b>		<b>69,141</b>	<b>21.3</b>	<b>53.4</b>	<b>\$10,408</b>	<b>\$91,807</b>	<b>\$21,900</b>	<b>\$69,907</b>	<b>6.7</b>	<b>75,873</b>
ECM 9	Install VFDs on Constant Volume (CV) Fans	45,300	13.6	0.0	\$6,741	\$51,304	\$8,600	\$42,704	6.3	45,616
ECM 10	Install VFDs on Chilled Water Pumps	4,088	3.9	0.0	\$540	\$10,750	\$4,400	\$6,350	11.8	4,116
ECM 11	Install VFDs on Heating Water Pumps	16,398	3.9	0.0	\$2,167	\$26,578	\$8,800	\$17,778	8.2	16,513
ECM 12	Install VFDs on Kitchen Hood Fan Motors	3,356	0.0	53.4	\$960	\$3,175	\$100	\$3,075	3.2	9,628
<b>Electric Unitary HVAC Measures</b>		<b>58,094</b>	<b>29.0</b>	<b>0.0</b>	<b>\$7,771</b>	<b>\$306,551</b>	<b>\$28,125</b>	<b>\$278,426</b>	<b>35.8</b>	<b>58,501</b>
ECM 13	Install High Efficiency Air Conditioning Units	57,167	28.8	0.0	\$7,643	\$304,015	\$27,849	\$276,166	36.1	57,566
ECM 14	Install High Efficiency Heat Pumps	928	0.2	0.0	\$127	\$2,536	\$276	\$2,260	17.8	934
<b>Electric Chiller Replacement</b>		<b>19,378</b>	<b>20.7</b>	<b>0.0</b>	<b>\$2,561</b>	<b>\$106,648</b>	<b>\$22,500</b>	<b>\$84,148</b>	<b>32.9</b>	<b>19,514</b>
ECM 15	Install High Efficiency Chillers	19,378	20.7	0.0	\$2,561	\$106,648	\$22,500	\$84,148	32.9	19,514

# ALL OPPORTUNITIES (CONT.)

#	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>326,728</b>	<b>61.0</b>	<b>-36.2</b>	<b>\$44,895</b>	<b>\$339,967</b>	<b>\$107,502</b>	<b>\$232,465</b>	<b>5.2</b>	<b>324,775</b>
<b>Gas Heating (HVAC/Process) Replacement</b>		<b>0</b>	<b>0.0</b>	<b>730.6</b>	<b>\$6,544</b>	<b>\$235,793</b>	<b>\$42,773</b>	<b>\$193,020</b>	<b>29.5</b>	<b>85,544</b>
ECM 16	Install High Efficiency Hot Water Boilers	0	0.0	292.3	\$2,441	\$91,351	\$16,973	\$74,378	30.5	34,230
ECM 17	Install High Efficiency Furnaces	0	0.0	114.3	\$947	\$38,613	\$7,200	\$31,413	33.2	13,378
ECM 18	Install Infrared Heaters	0	0.0	324.0	\$3,155	\$105,829	\$18,600	\$87,229	27.6	37,936
<b>HVAC System Improvements</b>		<b>13,370</b>	<b>0.0</b>	<b>242.1</b>	<b>\$4,357</b>	<b>\$13,426</b>	<b>\$3,002</b>	<b>\$10,424</b>	<b>2.4</b>	<b>41,813</b>
ECM 19	Install Programmable Thermostats	1,903	0.0	16.0	\$407	\$330	\$0	\$330	0.8	3,791
ECM 20	Install Occupancy-Controlled Thermostats	10,524	0.0	137.9	\$3,001	\$4,055	\$2,550	\$1,505	0.5	26,743
ECM 21	Implement Demand Control Ventilation (DCV)	943	0.0	35.2	\$444	\$8,157	\$0	\$8,157	18.4	5,072
ECM 22	Install Pipe Insulation	0	0.0	53.0	\$505	\$885	\$452	\$433	0.9	6,207
<b>Domestic Water Heating Upgrade</b>		<b>667</b>	<b>0.0</b>	<b>23.7</b>	<b>\$303</b>	<b>\$1,953</b>	<b>\$951</b>	<b>\$1,002</b>	<b>3.3</b>	<b>3,445</b>
ECM 23	Install Tankless Water Heater	0	0.0	3.6	\$33	\$1,602	\$600	\$1,002	30.7	425
ECM 24	Install Low-Flow DHW Devices	667	0.0	20.1	\$271	\$351	\$351	\$0	0.0	3,020
<b>Food Service &amp; Refrigeration Measures</b>		<b>9,611</b>	<b>1.1</b>	<b>0.0</b>	<b>\$1,357</b>	<b>\$1,610</b>	<b>\$600</b>	<b>\$1,010</b>	<b>0.7</b>	<b>9,678</b>
ECM 25	Vending Machine Control	9,611	1.1	0.0	\$1,357	\$1,610	\$600	\$1,010	0.7	9,678
<b>Custom Measures</b>		<b>0</b>	<b>0.0</b>	<b>1,665.0</b>	<b>\$14,337</b>	<b>\$269,656</b>	<b>\$0</b>	<b>\$269,656</b>	<b>18.8</b>	<b>194,950</b>
ECM 26	Building Envelope Improvements	0	0.0	1,665.0	\$14,337	\$269,656	\$0	\$269,656	18.8	194,950
<b>TOTALS</b>		<b>564,097</b>	<b>149.2</b>	<b>2,665.7</b>	<b>\$101,652</b>	<b>\$1,473,839</b>	<b>\$249,769</b>	<b>\$1,224,070</b>	<b>12.0</b>	<b>880,160</b>

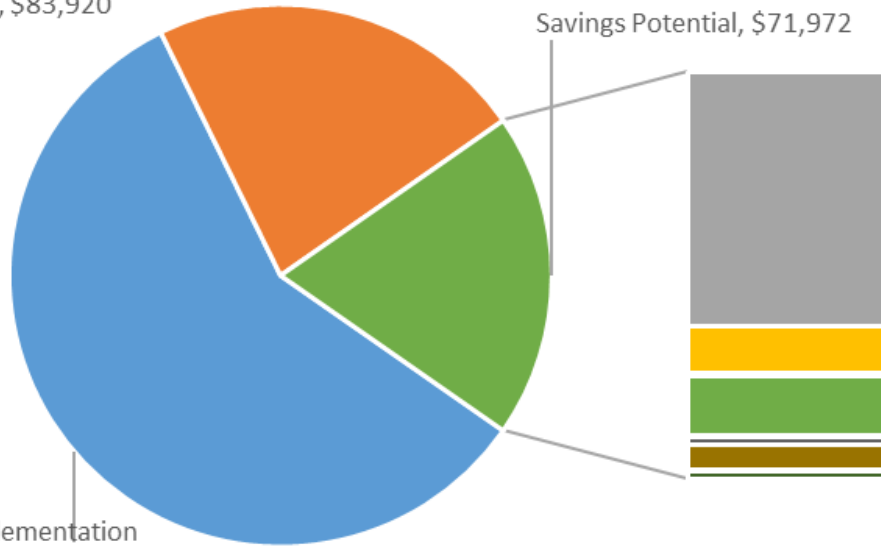
# COST EFFECTIVE OPPORTUNITIES

## Savings Potential

Post-Implementation Fuel Cost, \$83,920

Post-Implementation Electric Cost, \$215,506

Savings Potential, \$71,972



- Lighting Upgrades
- 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

# COST EFFECTIVE OPPORTUNITIES

#	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>326,719</b>	<b>61.0</b>	<b>-36.2</b>	<b>\$44,894</b>	<b>\$339,936</b>	<b>\$107,496</b>	<b>\$232,440</b>	<b>5.2</b>	<b>324,766</b>
ECM 1	Install LED Fixtures	190,587	13.3	-10.0	\$25,454	\$279,924	\$82,600	\$197,324	7.8	190,750
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	7,046	4.5	-0.9	\$1,022	\$7,874	\$2,058	\$5,816	5.7	6,991
ECM 3	Retrofit Fixtures with LED Lamps	128,953	43.2	-25.3	\$18,401	\$52,066	\$22,838	\$29,228	1.6	126,896
ECM 4	Install LED Exit Signs	132	0.0	0.0	\$17	\$72	\$0	\$72	4.2	130
ECM 0	Install LED Refrigerated Case Lighting	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
<b>Lighting Control Measures</b>		<b>61,065</b>	<b>14.8</b>	<b>-12.7</b>	<b>\$8,260</b>	<b>\$89,433</b>	<b>\$21,365</b>	<b>\$68,068</b>	<b>8.2</b>	<b>60,010</b>
ECM 5	Install Occupancy Sensor Lighting Controls	54,481	13.7	-11.4	\$7,384	\$78,408	\$16,450	\$61,958	8.4	53,533
ECM 6	Install Daylight Dimming/PhotoCell Controls	352	0.0	0.0	\$49	\$450	\$0	\$450	9.1	349
ECM 7	Install High/Low Lighting Controls	6,231	1.1	-1.3	\$826	\$10,575	\$4,915	\$5,660	6.8	6,127
<b>Motor Upgrades</b>		<b>4,937</b>	<b>0.6</b>	<b>0.0</b>	<b>\$652</b>	<b>\$10,598</b>	<b>\$0</b>	<b>\$10,598</b>	<b>16.2</b>	<b>4,972</b>
ECM 8	Premium Efficiency Motors	4,937	0.6	0.0	\$652	\$10,598	\$0	\$10,598	16.2	4,972
<b>Variable Frequency Drive (VFD) Measures</b>		<b>69,141</b>	<b>21.3</b>	<b>53.4</b>	<b>\$10,408</b>	<b>\$91,807</b>	<b>\$21,900</b>	<b>\$69,907</b>	<b>6.7</b>	<b>75,873</b>
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ECM 11	Install VFDs on Heating Water Pumps	16,398	3.9	0.0	\$2,167	\$26,578	\$8,800	\$17,778	8.2	16,513
ECM 12	Install VFDs on Kitchen Hood Fan Motors	3,356	0.0	53.4	\$960	\$3,175	\$100	\$3,075	3.2	9,628
<b>Electric Unitary HVAC Measures</b>		<b>2,814</b>	<b>1.0</b>	<b>0.0</b>	<b>\$388</b>	<b>\$6,618</b>	<b>\$644</b>	<b>\$5,974</b>	<b>15.4</b>	<b>2,834</b>
ECM 13	Install High Efficiency Air Conditioning Units	1,886	0.8	0.0	\$261	\$4,081	\$368	\$3,713	14.2	1,900
ECM 14	Install High Efficiency Heat Pumps	928	0.2	0.0	\$127	\$2,536	\$276	\$2,260	17.8	934
<b>Electric Chiller Replacement</b>		<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>0.0</b>	<b>0</b>
ECM 15	Install High Efficiency Chillers	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0

# COST EFFECTIVE OPPORTUNITIES

#	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>Gas Heating (HVAC/Process) Replacement</b>		<b>0</b>	<b>0.0</b>	<b>122.4</b>	<b>\$1,385</b>	<b>\$22,195</b>	<b>\$5,444</b>	<b>\$16,751</b>	<b>12.1</b>	<b>14,326</b>
ECM 16	Install High Efficiency Hot Water Boilers	0	0.0	74.4	\$623	\$12,242	\$2,244	\$9,998	16.0	8,706
ECM 17	Install High Efficiency Furnaces	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 18	Install Infrared Heaters	0	0.0	48.0	\$762	\$9,954	\$3,200	\$6,754	8.9	5,620
<b>HVAC System Improvements</b>		<b>13,370</b>	<b>0.0</b>	<b>242.1</b>	<b>\$4,357</b>	<b>\$13,426</b>	<b>\$3,002</b>	<b>\$10,424</b>	<b>2.4</b>	<b>41,813</b>
ECM 19	Install Programmable Thermostats	1,903	0.0	16.0	\$407	\$330	\$0	\$330	0.8	3,791
ECM 20	Install Occupancy-Controlled Thermostats	10,524	0.0	137.9	\$3,001	\$4,055	\$2,550	\$1,505	0.5	26,743
ECM 21	Implement Demand Control Ventilation (DCV)	943	0.0	35.2	\$444	\$8,157	\$0	\$8,157	18.4	5,072
ECM 22	Install Pipe Insulation	0	0.0	53.0	\$505	\$885	\$452	\$433	0.9	6,207
<b>Domestic Water Heating Upgrade</b>		<b>667</b>	<b>0.0</b>	<b>20.1</b>	<b>\$271</b>	<b>\$351</b>	<b>\$351</b>	<b>\$0</b>	<b>0.0</b>	<b>3,020</b>
ECM 23	Install Tankless Water Heater	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 24	Install Low-Flow DHW Devices	667	0.0	20.1	\$271	\$351	\$351	\$0	0.0	3,020
<b>Food Service &amp; Refrigeration Measures</b>		<b>9,611</b>	<b>1.1</b>	<b>0.0</b>	<b>\$1,357</b>	<b>\$1,610</b>	<b>\$600</b>	<b>\$1,010</b>	<b>0.7</b>	<b>9,678</b>
ECM 25	Vending Machine Control	9,611	1.1	0.0	\$1,357	\$1,610	\$600	\$1,010	0.7	9,678
<b>TOTALS</b>		<b>488,324</b>	<b>99.8</b>	<b>389.1</b>	<b>\$71,972</b>	<b>\$575,975</b>	<b>\$160,802</b>	<b>\$415,172</b>	<b>5.8</b>	<b>537,292</b>



# CLIFTON OVERVIEW

## Top Savings Potential

Site Name	Cost Savings Potential
Clifton Senior Citizen Center	42%
Clifton DPW Garage No. 2	41%
Adult Opportunity Center	35%
Clifton Community Recreation Center	28%
Municipal Complex	28%
Group Home	25%
Clifton DPW Garage No. 1	22%
Clifton Fire Station No. 3	18%
Clifton Fire Station No. 2	18%
Adult Learning Center	18%
Clifton Fire Station No. 6	14%
Clifton Fire Station No. 1	14%
Clifton Fire Station No. 5	10%
Clifton Fire Station No. 4	9%
Hamilton House Museum	6%
Clifton Arts Center	3%
Animal Shelter	3%

## Quickest Payback

Site Name	Simple Payback (yrs)
Adult Opportunity Center	1.6
Hamilton House Museum	3.4
Clifton Community Recreation Center	3.6
Clifton Fire Station No. 3	3.8
Group Home	4.1
Adult Learning Center	4.5
Clifton Arts Center	5.1
Clifton Fire Station No. 1	8.4
Clifton Fire Station No. 6	8.7
Clifton DPW Garage No. 1	8.7
Animal Shelter	9.4
Clifton Fire Station No. 4	10.3
Clifton Fire Station No. 5	10.4
Clifton Fire Station No. 2	11.0
Municipal Complex	12.4
Clifton Senior Citizen Center	12.6
Clifton DPW Garage No. 2	17.4

# COMMUNITY REC. CENTER

#	Energy Conservation Measure	Cost Effective?	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>12,750</b>	<b>4.4</b>	<b>-2</b>	<b>\$1,841</b>	<b>\$6,277</b>	<b>\$3,228</b>	<b>\$3,049</b>	<b>1.7</b>	<b>12,563</b>
ECM 1	Install LED Fixtures	Yes	155	0.0	0	\$23	\$465	\$200	\$265	11.7	157
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	274	0.1	0	\$39	\$170	\$40	\$130	3.3	269
ECM 3	Retrofit Fixtures with LED Lamps	Yes	12,321	4.3	-2	\$1,779	\$5,642	\$2,988	\$2,654	1.5	12,137
<b>Lighting Control Measures</b>			<b>3,150</b>	<b>1.2</b>	<b>-1</b>	<b>\$454</b>	<b>\$6,005</b>	<b>\$1,050</b>	<b>\$4,955</b>	<b>10.9</b>	<b>3,097</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	2,873	1.1	-1	\$414	\$5,130	\$840	\$4,290	10.4	2,822
ECM 5	Install Daylight Dimming/Photocell Controls	Yes	124	0.0	0	\$18	\$200	\$0	\$200	11.0	125
ECM 6	Install High/Low Lighting Controls	No	153	0.1	0	\$22	\$675	\$210	\$465	21.1	150
<b>Variable Frequency Drive (VFD) Measures</b>			<b>8,293</b>	<b>2.2</b>	<b>0</b>	<b>\$1,213</b>	<b>\$4,761</b>	<b>\$2,000</b>	<b>\$2,761</b>	<b>2.3</b>	<b>8,351</b>
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	8,293	2.2	0	\$1,213	\$4,761	\$2,000	\$2,761	2.3	8,351
<b>Electric Unitary HVAC Measures</b>			<b>1,758</b>	<b>1.4</b>	<b>0</b>	<b>\$257</b>	<b>\$6,711</b>	<b>\$736</b>	<b>\$5,975</b>	<b>23.2</b>	<b>1,770</b>
ECM 8	Install High Efficiency Air Conditioning Units	No	1,758	1.4	0	\$257	\$6,711	\$736	\$5,975	23.2	1,770
<b>HVAC System Improvements</b>			<b>4,070</b>	<b>0.0</b>	<b>25</b>	<b>\$848</b>	<b>\$314</b>	<b>\$174</b>	<b>\$140</b>	<b>0.2</b>	<b>7,044</b>
ECM 9	Install Occupancy-Controlled Thermostats	Yes	4,070	0.0	10	\$693	\$239	\$150	\$89	0.1	5,236
ECM 10	Install Pipe Insulation	Yes	0	0.0	15	\$155	\$75	\$24	\$51	0.3	1,807
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>2</b>	<b>\$19</b>	<b>\$29</b>	<b>\$29</b>	<b>\$0</b>	<b>0.0</b>	<b>222</b>
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$19	\$29	\$29	\$0	0.0	222
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>28,111</b>	<b>7.8</b>	<b>24</b>	<b>\$4,353</b>	<b>\$16,711</b>	<b>\$6,271</b>	<b>\$10,440</b>	<b>2.4</b>	<b>31,126</b>
<b>TOTALS (ALL MEASURES)</b>			<b>30,022</b>	<b>9.3</b>	<b>24</b>	<b>\$4,632</b>	<b>\$24,096</b>	<b>\$7,217</b>	<b>\$16,880</b>	<b>3.6</b>	<b>33,047</b>

# FIRE STATION #3

#	Energy Conservation Measure	Cost Effective?	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>			9	0.0	0	\$1	\$30	\$6	\$24	19.4	9
ECM 1	Retrofit Fixtures with LED Lamps	No	9	0.0	0	\$1	\$30	\$6	\$24	19.4	9
<b>Lighting Control Measures</b>			5,224	0.7	-1	\$724	\$4,417	\$1,485	\$2,932	4.0	5,130
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	4,529	0.6	-1	\$628	\$3,742	\$910	\$2,832	4.5	4,448
ECM 3	Install High/Low Lighting Controls	Yes	695	0.1	0	\$96	\$675	\$575	\$100	1.0	682
<b>Variable Frequency Drive (VFD) Measures</b>			8,087	1.2	0	\$1,136	\$6,569	\$500	\$6,069	5.3	8,143
ECM 4	Install VFDs on Constant Volume (CV) Fans	Yes	8,087	1.2	0	\$1,136	\$6,569	\$500	\$6,069	5.3	8,143
<b>Gas Heating (HVAC/Process) Replacement</b>			0	0.0	24	\$210	\$2,942	\$2,000	\$942	4.5	2,810
ECM 5	Install Infrared Heaters	Yes	0	0.0	24	\$210	\$2,942	\$2,000	\$942	4.5	2,810
<b>HVAC System Improvements</b>			1,903	0.0	32	\$545	\$1,074	\$470	\$604	1.1	5,638
ECM 6	Install Programmable Thermostats	Yes	1,903	0.0	16	\$407	\$330	\$0	\$330	0.8	3,791
ECM 7	Install Occupancy-Controlled Thermostats	Yes	0	0.0	14	\$119	\$716	\$450	\$266	2.2	1,591
ECM 8	Install Pipe Insulation	Yes	0	0.0	2	\$19	\$29	\$20	\$9	0.5	257
<b>Food Service &amp; Refrigeration Measures</b>			1,612	0.2	0	\$226	\$230	\$100	\$130	0.6	1,623
ECM 9	Vending Machine Control	Yes	1,612	0.2	0	\$226	\$230	\$100	\$130	0.6	1,623
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			16,826	2.0	55	\$2,841	\$15,232	\$4,555	\$10,677	3.8	23,345
<b>TOTALS (ALL MEASURES)</b>			16,835	2.0	55	\$2,842	\$15,262	\$4,561	\$10,701	3.8	23,354

# FIRE STATION #1

#	Energy Conservation Measure	Cost Effective?	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 Control Measures</b>			<b>1,421</b>	<b>0.1</b>	<b>0</b>	<b>\$196</b>	<b>\$1,698</b>	<b>\$350</b>	<b>\$1,348</b>	<b>6.9</b>	<b>1,396</b>
ECM 1	Install Occupancy Sensor Lighting Controls	Yes	1,421	0.1	0	\$196	\$1,698	\$350	\$1,348	6.9	1,396
<b>Variable Frequency Drive (VFD) Measures</b>			<b>2,033</b>	<b>0.3</b>	<b>0</b>	<b>\$284</b>	<b>\$3,010</b>	<b>\$150</b>	<b>\$2,860</b>	<b>10.1</b>	<b>2,047</b>
ECM 2	Install VFDs on Constant Volume (CV) Fans	Yes	2,033	0.3	0	\$284	\$3,010	\$150	\$2,860	10.1	2,047
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>12</b>	<b>\$108</b>	<b>\$2,942</b>	<b>\$1,000</b>	<b>\$1,942</b>	<b>18.0</b>	<b>1,405</b>
ECM 3	Install Infrared Heaters	No	0	0.0	12	\$108	\$2,942	\$1,000	\$1,942	18.0	1,405
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>1</b>	<b>\$10</b>	<b>\$23</b>	<b>\$8</b>	<b>\$15</b>	<b>1.5</b>	<b>133</b>
ECM 4	Install Pipe Insulation	Yes	0	0.0	1	\$10	\$23	\$8	\$15	1.5	133
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>6</b>	<b>\$50</b>	<b>\$1,616</b>	<b>\$614</b>	<b>\$1,002</b>	<b>20.1</b>	<b>647</b>
ECM 5	Install Tankless Water Heater	No	0	0.0	4	\$33	\$1,602	\$600	\$1,002	30.7	425
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$17	\$14	\$14	\$0	0.0	222
<b>Food Service &amp; Refrigeration Measures</b>			<b>1,612</b>	<b>0.2</b>	<b>0</b>	<b>\$225</b>	<b>\$230</b>	<b>\$100</b>	<b>\$130</b>	<b>0.6</b>	<b>1,623</b>
ECM 7	Vending Machine Control	Yes	1,612	0.2	0	\$225	\$230	\$100	\$130	0.6	1,623
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>5,066</b>	<b>0.6</b>	<b>3</b>	<b>\$733</b>	<b>\$4,976</b>	<b>\$622</b>	<b>\$4,353</b>	<b>5.9</b>	<b>5,421</b>
<b>TOTALS (ALL MEASURES)</b>			<b>5,066</b>	<b>0.6</b>	<b>18</b>	<b>\$874</b>	<b>\$9,519</b>	<b>\$2,222</b>	<b>\$7,297</b>	<b>8.4</b>	<b>7,251</b>

# FIRE STATION #2

#	Energy Conservation Measure	Cost Effective?	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>1,335</b>	<b>0.3</b>	<b>0</b>	<b>\$195</b>	<b>\$258</b>	<b>\$66</b>	<b>\$192</b>	<b>1.0</b>	<b>1,311</b>
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	835	0.2	0	\$122	\$206	\$60	\$146	1.2	820
ECM 2	Retrofit Fixtures with LED Lamps	Yes	500	0.1	0	\$73	\$52	\$6	\$46	0.6	491
<b>Lighting Control Measures</b>			<b>2,955</b>	<b>0.6</b>	<b>-1</b>	<b>\$432</b>	<b>\$2,534</b>	<b>\$870</b>	<b>\$1,664</b>	<b>3.9</b>	<b>2,902</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,863	0.5	-1	\$418	\$2,084	\$420	\$1,664	4.0	2,811
ECM 4	Install High/Low Lighting Controls	Yes	92	0.0	0	\$13	\$450	\$450	\$0	0.0	90
<b>Variable Frequency Drive (VFD) Measures</b>			<b>3,537</b>	<b>0.7</b>	<b>0</b>	<b>\$523</b>	<b>\$6,472</b>	<b>\$300</b>	<b>\$6,172</b>	<b>11.8</b>	<b>3,562</b>
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	3,537	0.7	0	\$523	\$6,472	\$300	\$6,172	11.8	3,562
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>51</b>	<b>\$448</b>	<b>\$12,610</b>	<b>\$3,000</b>	<b>\$9,610</b>	<b>21.5</b>	<b>5,916</b>
ECM 6	Install High Efficiency Hot Water Boilers	No	0	0.0	39	\$341	\$9,668	\$2,000	\$7,668	22.5	4,511
ECM 7	Install Infrared Heaters	No	0	0.0	12	\$106	\$2,942	\$1,000	\$1,942	18.3	1,405
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>1</b>	<b>\$8</b>	<b>\$14</b>	<b>\$14</b>	<b>\$0</b>	<b>0.0</b>	<b>111</b>
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$8	\$14	\$14	\$0	0.0	111
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>7,827</b>	<b>1.6</b>	<b>0</b>	<b>\$1,158</b>	<b>\$9,278</b>	<b>\$1,250</b>	<b>\$8,027</b>	<b>6.9</b>	<b>7,886</b>
<b>TOTALS (ALL MEASURES)</b>			<b>7,827</b>	<b>1.6</b>	<b>51</b>	<b>\$1,606</b>	<b>\$21,887</b>	<b>\$4,250</b>	<b>\$17,637</b>	<b>11.0</b>	<b>13,802</b>

# FIRE STATION #6

#	Energy Conservation Measure	Cost Effective?	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>275</b>	<b>0.1</b>	<b>0</b>	<b>\$37</b>	<b>\$128</b>	<b>\$70</b>	<b>\$58</b>	<b>1.6</b>	<b>270</b>
ECM 1	Retrofit Fixtures with LED Lamps	Yes	275	0.1	0	\$37	\$128	\$70	\$58	1.6	270
<b>Lighting Control Measures</b>			<b>1,900</b>	<b>0.4</b>	<b>0</b>	<b>\$257</b>	<b>\$3,184</b>	<b>\$935</b>	<b>\$2,249</b>	<b>8.8</b>	<b>1,866</b>
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	847	0.3	0	\$115	\$2,084	\$360	\$1,724	15.0	832
ECM 3	Install Daylight Dimming/Photocell Controls	Yes	188	0.0	0	\$25	\$200	\$0	\$200	7.9	185
ECM 4	Install High/Low Lighting Controls	Yes	864	0.1	0	\$117	\$900	\$575	\$325	2.8	849
<b>Variable Frequency Drive (VFD) Measures</b>			<b>8,401</b>	<b>1.3</b>	<b>0</b>	<b>\$1,152</b>	<b>\$7,203</b>	<b>\$550</b>	<b>\$6,653</b>	<b>5.8</b>	<b>8,460</b>
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	8,401	1.3	0	\$1,152	\$7,203	\$550	\$6,653	5.8	8,460
<b>Electric Unitary HVAC Measures</b>			<b>1,622</b>	<b>0.5</b>	<b>0</b>	<b>\$222</b>	<b>\$3,625</b>	<b>\$276</b>	<b>\$3,349</b>	<b>15.1</b>	<b>1,633</b>
ECM 6	Install High Efficiency Air Conditioning Units	Yes	694	0.2	0	\$95	\$1,089	\$0	\$1,089	11.4	699
ECM 7	Install High Efficiency Heat Pumps	Yes	928	0.2	0	\$127	\$2,536	\$276	\$2,260	17.8	934
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>36</b>	<b>\$322</b>	<b>\$9,382</b>	<b>\$2,600</b>	<b>\$6,782</b>	<b>21.1</b>	<b>4,215</b>
ECM 8	Install Infrared Heaters	No	0	0.0	36	\$322	\$9,382	\$2,600	\$6,782	21.1	4,215
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>2</b>	<b>\$17</b>	<b>\$239</b>	<b>\$150</b>	<b>\$89</b>	<b>5.2</b>	<b>223</b>
ECM 9	Install Occupancy-Controlled Thermostats	Yes	0	0.0	2	\$17	\$239	\$150	\$89	5.2	223
<b>Food Service &amp; Refrigeration Measures</b>			<b>1,612</b>	<b>0.2</b>	<b>0</b>	<b>\$221</b>	<b>\$230</b>	<b>\$100</b>	<b>\$130</b>	<b>0.6</b>	<b>1,623</b>
ECM 10	Vending Machine Control	Yes	1,612	0.2	0	\$221	\$230	\$100	\$130	0.6	1,623
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>13,810</b>	<b>2.4</b>	<b>1</b>	<b>\$1,906</b>	<b>\$14,609</b>	<b>\$2,081</b>	<b>\$12,528</b>	<b>6.6</b>	<b>14,074</b>
<b>TOTALS (ALL MEASURES)</b>			<b>13,810</b>	<b>2.4</b>	<b>37</b>	<b>\$2,228</b>	<b>\$23,990</b>	<b>\$4,681</b>	<b>\$19,309</b>	<b>8.7</b>	<b>18,290</b>

# FIRE STATION #5

#	Energy Conservation Measure	Cost Effective?	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>79</b>	<b>0.0</b>	<b>0</b>	<b>\$11</b>	<b>\$34</b>	<b>\$4</b>	<b>\$30</b>	<b>2.8</b>	<b>77</b>
ECM 1	Retrofit Fixtures with LED Lamps	Yes	79	0.0	0	\$11	\$34	\$4	\$30	2.8	77
<b>Lighting Control Measures</b>			<b>3,293</b>	<b>0.3</b>	<b>-1</b>	<b>\$452</b>	<b>\$2,958</b>	<b>\$350</b>	<b>\$2,608</b>	<b>5.8</b>	<b>3,234</b>
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	2,975	0.3	-1	\$408	\$2,508	\$350	\$2,158	5.3	2,921
ECM 3	Install High/Low Lighting Controls	Yes	319	0.0	0	\$44	\$450	\$0	\$450	10.3	313
<b>Electric Unitary HVAC Measures</b>			<b>1,192</b>	<b>0.5</b>	<b>0</b>	<b>\$166</b>	<b>\$2,992</b>	<b>\$368</b>	<b>\$2,624</b>	<b>15.8</b>	<b>1,200</b>
ECM 4	Install High Efficiency Air Conditioning Units	Yes	1,192	0.5	0	\$166	\$2,992	\$368	\$2,624	15.8	1,200
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>74</b>	<b>\$623</b>	<b>\$12,242</b>	<b>\$2,244</b>	<b>\$9,998</b>	<b>16.0</b>	<b>8,706</b>
ECM 5	Install High Efficiency Hot Water Boilers	Yes	0	0.0	74	\$623	\$12,242	\$2,244	\$9,998	16.0	8,706
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>1</b>	<b>\$8</b>	<b>\$14</b>	<b>\$14</b>	<b>\$0</b>	<b>0.0</b>	<b>111</b>
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$8	\$14	\$14	\$0	0.0	111
<b>Food Service &amp; Refrigeration Measures</b>			<b>1,612</b>	<b>0.2</b>	<b>0</b>	<b>\$224</b>	<b>\$230</b>	<b>\$100</b>	<b>\$130</b>	<b>0.6</b>	<b>1,623</b>
ECM 7	Vending Machine Control	Yes	1,612	0.2	0	\$224	\$230	\$100	\$130	0.6	1,623
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>6,176</b>	<b>1.1</b>	<b>75</b>	<b>\$1,483</b>	<b>\$18,471</b>	<b>\$3,080</b>	<b>\$15,391</b>	<b>10.4</b>	<b>14,952</b>
<b>TOTALS (ALL MEASURES)</b>			<b>6,176</b>	<b>1.1</b>	<b>75</b>	<b>\$1,483</b>	<b>\$18,471</b>	<b>\$3,080</b>	<b>\$15,391</b>	<b>10.4</b>	<b>14,952</b>

# FIRE STATION #4

#	Energy Conservation Measure	Cost Effective?	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>305</b>	<b>0.0</b>	<b>0</b>	<b>\$48</b>	<b>\$52</b>	<b>\$18</b>	<b>\$34</b>	<b>0.7</b>	<b>300</b>
ECM 1	Retrofit Fixtures with LED Lamps	Yes	305	0.0	0	\$48	\$52	\$18	\$34	0.7	300
<b>Lighting Control Measures</b>			<b>2,795</b>	<b>0.3</b>	<b>-1</b>	<b>\$438</b>	<b>\$3,157</b>	<b>\$630</b>	<b>\$2,527</b>	<b>5.8</b>	<b>2,745</b>
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	2,745	0.3	-1	\$430	\$2,932	\$630	\$2,302	5.4	2,696
ECM 3	Install High/Low Lighting Controls	No	50	0.0	0	\$8	\$225	\$0	\$225	28.9	49
<b>Variable Frequency Drive (VFD) Measures</b>			<b>6,897</b>	<b>5.7</b>	<b>0</b>	<b>\$1,092</b>	<b>\$10,750</b>	<b>\$4,400</b>	<b>\$6,350</b>	<b>5.8</b>	<b>6,945</b>
ECM 4	Install VFDs on Constant Volume (CV) Fans	Yes	6,897	5.7	0	\$1,092	\$10,750	\$4,400	\$6,350	5.8	6,945
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>62</b>	<b>\$523</b>	<b>\$19,021</b>	<b>\$3,620</b>	<b>\$15,401</b>	<b>29.4</b>	<b>7,218</b>
ECM 5	Install High Efficiency Hot Water Boilers	No	0	0.0	38	\$319	\$13,202	\$2,420	\$10,782	33.8	4,407
ECM 6	Install Infrared Heaters	No	0	0.0	24	\$204	\$5,820	\$1,200	\$4,620	22.7	2,810
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>1</b>	<b>\$12</b>	<b>\$22</b>	<b>\$22</b>	<b>\$0</b>	<b>0.0</b>	<b>167</b>
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$12	\$22	\$22	\$0	0.0	167
<b>Food Service &amp; Refrigeration Measures</b>			<b>1,612</b>	<b>0.2</b>	<b>0</b>	<b>\$255</b>	<b>\$230</b>	<b>\$100</b>	<b>\$130</b>	<b>0.5</b>	<b>1,623</b>
ECM 8	Vending Machine Control	Yes	1,612	0.2	0	\$255	\$230	\$100	\$130	0.5	1,623
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>11,558</b>	<b>6.3</b>	<b>1</b>	<b>\$1,837</b>	<b>\$13,985</b>	<b>\$5,170</b>	<b>\$8,816</b>	<b>4.8</b>	<b>11,730</b>
<b>TOTALS (ALL MEASURES)</b>			<b>11,608</b>	<b>6.3</b>	<b>62</b>	<b>\$2,368</b>	<b>\$33,232</b>	<b>\$8,790</b>	<b>\$24,442</b>	<b>10.3</b>	<b>18,996</b>



# CITY HALL COMPLEX

#	Energy Conservation Measure	Cost Effective?	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>216,015</b>	<b>28.2</b>	<b>-18</b>	<b>\$28,395</b>	<b>\$184,737</b>	<b>\$48,978</b>	<b>\$135,759</b>	<b>4.8</b>	<b>215,397</b>
ECM 1	Install LED Fixtures	Yes	130,221	0.9	0	\$17,206	\$148,059	\$32,100	\$115,959	6.7	131,118
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,743	2.2	0	\$227	\$3,264	\$980	\$2,284	10.0	1,711
ECM 3	Retrofit Fixtures with LED Lamps	Yes	83,918	25.0	-18	\$10,945	\$33,342	\$15,898	\$17,444	1.6	82,438
ECM 4	Install LED Exit Signs	Yes	132	0.0	0	\$17	\$72	\$0	\$72	4.2	130
<b>Lighting Control Measures</b>			<b>24,932</b>	<b>7.6</b>	<b>-5</b>	<b>\$3,251</b>	<b>\$45,071</b>	<b>\$10,075</b>	<b>\$34,996</b>	<b>10.8</b>	<b>24,488</b>
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	21,152	6.8	-4	\$2,758	\$37,646	\$7,250	\$30,396	11.0	20,776
ECM 6	Install High/Low Lighting Controls	Yes	3,780	0.8	-1	\$493	\$7,425	\$2,825	\$4,600	9.3	3,712
<b>Motor Upgrades</b>			<b>4,937</b>	<b>0.6</b>	<b>0</b>	<b>\$652</b>	<b>\$10,598</b>	<b>\$0</b>	<b>\$10,598</b>	<b>16.2</b>	<b>4,972</b>
ECM 7	Premium Efficiency Motors	Yes	4,937	0.6	0	\$652	\$10,598	\$0	\$10,598	16.2	4,972
<b>Variable Frequency Drive (VFD) Measures</b>			<b>20,486</b>	<b>7.8</b>	<b>0</b>	<b>\$2,707</b>	<b>\$37,328</b>	<b>\$13,200</b>	<b>\$24,128</b>	<b>8.9</b>	<b>20,629</b>
ECM 8	Install VFDs on Chilled Water Pumps	Yes	4,088	3.9	0	\$540	\$10,750	\$4,400	\$6,350	11.8	4,116
ECM 9	Install VFDs on Heating Water Pumps	Yes	16,398	3.9	0	\$2,167	\$26,578	\$8,800	\$17,778	8.2	16,513
<b>Electric Unitary HVAC Measures</b>			<b>49,525</b>	<b>23.0</b>	<b>0</b>	<b>\$6,544</b>	<b>\$235,930</b>	<b>\$22,006</b>	<b>\$213,924</b>	<b>32.7</b>	<b>49,871</b>
ECM 10	Install High Efficiency Air Conditioning Units	No	49,525	23.0	0	\$6,544	\$235,930	\$22,006	\$213,924	32.7	49,871

# CITY HALL COMPLEX (CONT.)

#	Energy Conservation Measure	Cost Effective?	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>Electric Chiller Replacement</b>			<b>19,378</b>	<b>20.7</b>	<b>0</b>	<b>\$2,561</b>	<b>\$106,648</b>	<b>\$22,500</b>	<b>\$84,148</b>	<b>32.9</b>	<b>19,514</b>
ECM 11	Install High Efficiency Chillers	No	19,378	20.7	0	\$2,561	\$106,648	\$22,500	\$84,148	32.9	19,514
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>246</b>	<b>\$2,362</b>	<b>\$92,076</b>	<b>\$16,309</b>	<b>\$75,767</b>	<b>32.1</b>	<b>28,772</b>
ECM 12	Install High Efficiency Hot Water Boilers	No	0	0.0	142	\$1,157	\$56,240	\$10,309	\$45,931	39.7	16,606
ECM 13	Install High Efficiency Furnaces	No	0	0.0	80	\$652	\$28,825	\$4,800	\$24,025	36.8	9,355
ECM 14	Install Infrared Heaters	Yes	0	0.0	24	\$552	\$7,012	\$1,200	\$5,812	10.5	2,810
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>8</b>	<b>\$63</b>	<b>\$86</b>	<b>\$48</b>	<b>\$38</b>	<b>0.6</b>	<b>902</b>
ECM 15	Install Pipe Insulation	Yes	0	0.0	8	\$63	\$86	\$48	\$38	0.6	902
<b>Domestic Water Heating Upgrade</b>			<b>139</b>	<b>0.0</b>	<b>9</b>	<b>\$88</b>	<b>\$136</b>	<b>\$136</b>	<b>\$0</b>	<b>0.0</b>	<b>1,140</b>
ECM 16	Install Low-Flow DHW Devices	Yes	139	0.0	9	\$88	\$136	\$136	\$0	0.0	1,140
<b>Food Service &amp; Refrigeration Measures</b>			<b>1,551</b>	<b>0.2</b>	<b>0</b>	<b>\$205</b>	<b>\$460</b>	<b>\$100</b>	<b>\$360</b>	<b>1.8</b>	<b>1,562</b>
ECM 17	Vending Machine Control	Yes	1,551	0.2	0	\$205	\$460	\$100	\$360	1.8	1,562
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>268,061</b>	<b>44.4</b>	<b>17</b>	<b>\$35,914</b>	<b>\$285,428</b>	<b>\$73,737</b>	<b>\$211,691</b>	<b>5.9</b>	<b>271,901</b>
<b>TOTALS (ALL MEASURES)</b>			<b>336,964</b>	<b>88.1</b>	<b>239</b>	<b>\$46,828</b>	<b>\$713,071</b>	<b>\$133,352</b>	<b>\$579,718</b>	<b>12.4</b>	<b>367,247</b>

# SENIOR CITIZEN CENTER

#	Energy Conservation Measure	Cost Effective?	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>17,557</b>	<b>4.6</b>	<b>-4</b>	<b>\$2,591</b>	<b>\$18,665</b>	<b>\$7,212</b>	<b>\$11,453</b>	<b>4.4</b>	<b>17,242</b>
ECM 1	Install LED Fixtures	Yes	17,421	4.6	-4	\$2,571	\$18,597	\$7,200	\$11,397	4.4	17,108
ECM 2	Retrofit Fixtures with LED Lamps	Yes	136	0.0	0	\$20	\$68	\$12	\$56	2.8	134
<b>Lighting Control Measures</b>			<b>2,190</b>	<b>0.6</b>	<b>0</b>	<b>\$323</b>	<b>\$6,750</b>	<b>\$1,680</b>	<b>\$5,070</b>	<b>15.7</b>	<b>2,151</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	2,190	0.6	0	\$323	\$6,750	\$1,680	\$5,070	15.7	2,151
<b>Variable Frequency Drive (VFD) Measures</b>			<b>10,281</b>	<b>1.8</b>	<b>53</b>	<b>\$1,994</b>	<b>\$12,958</b>	<b>\$700</b>	<b>\$12,258</b>	<b>6.1</b>	<b>16,601</b>
ECM 4	Install VFDs on Constant Volume (CV) Fans	Yes	6,925	1.8	0	\$1,034	\$9,783	\$600	\$9,183	8.9	6,973
ECM 5	Install VFDs on Kitchen Hood Fan Motors	Yes	3,356	0.0	53	\$960	\$3,175	\$100	\$3,075	3.2	9,628
<b>Electric Unitary HVAC Measures</b>			<b>3,099</b>	<b>3.1</b>	<b>0</b>	<b>\$463</b>	<b>\$53,463</b>	<b>\$4,380</b>	<b>\$49,083</b>	<b>106.0</b>	<b>3,121</b>
ECM 6	Install High Efficiency Air Conditioning Units	No	3,099	3.1	0	\$463	\$53,463	\$4,380	\$49,083	106.0	3,121
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>34</b>	<b>\$295</b>	<b>\$9,788</b>	<b>\$2,400</b>	<b>\$7,388</b>	<b>25.0</b>	<b>4,023</b>
ECM 7	Install High Efficiency Furnaces	No	0	0.0	34	\$295	\$9,788	\$2,400	\$7,388	25.0	4,023
<b>HVAC System Improvements</b>			<b>5,084</b>	<b>0.0</b>	<b>113</b>	<b>\$1,727</b>	<b>\$8,872</b>	<b>\$450</b>	<b>\$8,422</b>	<b>4.9</b>	<b>18,299</b>
ECM 8	Install Occupancy-Controlled Thermostats	Yes	4,141	0.0	77	\$1,283	\$716	\$450	\$266	0.2	13,227
ECM 9	Implement Demand Control Ventilation (DCV)	Yes	943	0.0	35	\$444	\$8,157	\$0	\$8,157	18.4	5,072
<b>Domestic Water Heating Upgrade</b>			<b>111</b>	<b>0.0</b>	<b>0</b>	<b>\$17</b>	<b>\$29</b>	<b>\$29</b>	<b>\$0</b>	<b>0.0</b>	<b>112</b>
ECM 10	Install Low-Flow DHW Devices	Yes	111	0.0	0	\$17	\$29	\$29	\$0	0.0	112
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>35,224</b>	<b>7.0</b>	<b>162</b>	<b>\$6,652</b>	<b>\$47,274</b>	<b>\$10,071</b>	<b>\$37,204</b>	<b>5.6</b>	<b>54,405</b>
<b>TOTALS (ALL MEASURES)</b>			<b>38,323</b>	<b>10.1</b>	<b>196</b>	<b>\$7,410</b>	<b>\$110,525</b>	<b>\$16,851</b>	<b>\$93,675</b>	<b>12.6</b>	<b>61,548</b>

# ARTS CENTER

#	Energy Conservation Measure	Cost Effective?	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>1,286</b>	<b>1.4</b>	<b>0</b>	<b>\$197</b>	<b>\$1,698</b>	<b>\$860</b>	<b>\$838</b>	<b>4.2</b>	<b>1,263</b>
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,286	1.4	0	\$197	\$1,698	\$860	\$838	4.2	1,263
<b>Lighting Control Measures</b>			<b>273</b>	<b>0.3</b>	<b>0</b>	<b>\$42</b>	<b>\$540</b>	<b>\$140</b>	<b>\$400</b>	<b>9.6</b>	<b>268</b>
ECM 2	Install Occupancy Sensor Lighting Controls	Yes	273	0.3	0	\$42	\$540	\$140	\$400	9.6	268
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>3</b>	<b>\$29</b>	<b>\$302</b>	<b>\$168</b>	<b>\$134</b>	<b>4.6</b>	<b>386</b>
ECM 3	Install Pipe Insulation	Yes	0	0.0	3	\$29	\$302	\$168	\$134	4.6	386
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>1,558</b>	<b>1.7</b>	<b>3</b>	<b>\$268</b>	<b>\$2,540</b>	<b>\$1,168</b>	<b>\$1,372</b>	<b>5.1</b>	<b>1,916</b>
<b>TOTALS (ALL MEASURES)</b>			<b>1,558</b>	<b>1.7</b>	<b>3</b>	<b>\$268</b>	<b>\$2,540</b>	<b>\$1,168</b>	<b>\$1,372</b>	<b>5.1</b>	<b>1,916</b>



# HAMILTON HOUSE MUSEUM

#	Energy Conservation Measure	Cost Effective?	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>3,581</b>	<b>2.7</b>	<b>0</b>	<b>\$522</b>	<b>\$2,349</b>	<b>\$458</b>	<b>\$1,891</b>	<b>3.6</b>	<b>3,606</b>
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	279	0.3	0	\$41	\$730	\$170	\$560	13.8	281
ECM 2	Retrofit Fixtures with LED Lamps	Yes	3,302	2.3	0	\$481	\$1,619	\$288	\$1,331	2.8	3,325
<b>Lighting Control Measures</b>			<b>39</b>	<b>0.0</b>	<b>0</b>	<b>\$6</b>	<b>\$50</b>	<b>\$0</b>	<b>\$50</b>	<b>8.7</b>	<b>40</b>
ECM 3	Install Photocell Controls	Yes	39	0.0	0	\$6	\$50	\$0	\$50	8.7	40
<b>Domestic Water Heating Upgrade</b>			<b>278</b>	<b>0.0</b>	<b>0</b>	<b>\$40</b>	<b>\$14</b>	<b>\$14</b>	<b>\$0</b>	<b>0.0</b>	<b>280</b>
ECM 4	Install Low-Flow DHW Devices	Yes	278	0.0	0	\$40	\$14	\$14	\$0	0.0	280
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>3,899</b>	<b>2.7</b>	<b>0</b>	<b>\$568</b>	<b>\$2,414</b>	<b>\$472</b>	<b>\$1,941</b>	<b>3.4</b>	<b>3,926</b>
<b>TOTALS (ALL MEASURES)</b>			<b>3,899</b>	<b>2.7</b>	<b>0</b>	<b>\$568</b>	<b>\$2,414</b>	<b>\$472</b>	<b>\$1,941</b>	<b>3.4</b>	<b>3,926</b>

# DPW GARAGE #2

#	Energy Conservation Measure	Cost Effective?	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>42,911</b>	<b>7.9</b>	<b>-8</b>	<b>\$5,586</b>	<b>\$108,623</b>	<b>\$41,992</b>	<b>\$66,631</b>	<b>11.9</b>	<b>42,236</b>
ECM 1	Install LED Fixtures	Yes	33,525	6.0	-6	\$4,367	\$105,155	\$40,100	\$65,055	14.9	33,037
ECM 2	Retrofit Fixtures with LED Lamps	Yes	9,386	1.9	-2	\$1,219	\$3,468	\$1,892	\$1,576	1.3	9,199
<b>Lighting Control Measures</b>			<b>11,173</b>	<b>2.3</b>	<b>-2</b>	<b>\$1,452</b>	<b>\$11,399</b>	<b>\$3,240</b>	<b>\$8,159</b>	<b>5.6</b>	<b>10,959</b>
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	10,692	2.3	-2	\$1,388	\$10,724	\$2,750	\$7,974	5.7	10,479
ECM 4	Install High/Low Lighting Controls	Yes	482	0.0	0	\$63	\$675	\$490	\$185	2.9	481
<b>Electric Unitary HVAC Measures</b>			<b>899</b>	<b>0.5</b>	<b>0</b>	<b>\$118</b>	<b>\$3,830</b>	<b>\$359</b>	<b>\$3,470</b>	<b>29.3</b>	<b>905</b>
ECM 5	Install High Efficiency Air Conditioning Units	No	899	0.5	0	\$118	\$3,830	\$359	\$3,470	29.3	905
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>144</b>	<b>\$1,240</b>	<b>\$56,092</b>	<b>\$7,200</b>	<b>\$48,892</b>	<b>39.4</b>	<b>16,861</b>
ECM 6	Install Infrared Heaters	No	0	0.0	144	\$1,240	\$56,092	\$7,200	\$48,892	39.4	16,861
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>3</b>	<b>\$24</b>	<b>\$58</b>	<b>\$20</b>	<b>\$38</b>	<b>1.5</b>	<b>332</b>
ECM 7	Install Pipe Insulation	Yes	0	0.0	3	\$24	\$58	\$20	\$38	1.5	332
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>2</b>	<b>\$16</b>	<b>\$29</b>	<b>\$29</b>	<b>\$0</b>	<b>0.0</b>	<b>222</b>
ECM 8	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$16	\$29	\$29	\$0	0.0	222
<b>Custom Measures</b>			<b>0</b>	<b>0.0</b>	<b>1,665</b>	<b>\$14,337</b>	<b>\$269,656</b>	<b>\$0</b>	<b>\$269,656</b>	<b>18.8</b>	<b>194,950</b>
ECM 9	Building Envelope Improvements	No	0	0.0	1,665	\$14,337	\$269,656	\$0	\$269,656	18.8	194,950
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>54,084</b>	<b>10.2</b>	<b>-6</b>	<b>\$7,078</b>	<b>\$120,108</b>	<b>\$45,281</b>	<b>\$74,827</b>	<b>10.6</b>	<b>53,750</b>
<b>TOTALS (ALL MEASURES)</b>			<b>54,983</b>	<b>10.7</b>	<b>1,803</b>	<b>\$22,774</b>	<b>\$449,686</b>	<b>\$52,840</b>	<b>\$396,846</b>	<b>17.4</b>	<b>266,466</b>

# DPW GARAGE #1

#	Energy Conservation Measure	Cost Effective?	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>12,922</b>	<b>2.7</b>	<b>0</b>	<b>\$1,777</b>	<b>\$7,738</b>	<b>\$2,946</b>	<b>\$4,792</b>	<b>2.7</b>	<b>13,012</b>
ECM 1	Install LED Fixtures	Yes	8,964	1.9	0	\$1,233	\$6,199	\$2,400	\$3,799	3.1	9,026
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,566	0.5	0	\$353	\$1,158	\$360	\$798	2.3	2,584
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,392	0.3	0	\$191	\$380	\$186	\$194	1.0	1,402
<b>Lighting Control Measures</b>			<b>1,921</b>	<b>0.4</b>	<b>0</b>	<b>\$264</b>	<b>\$2,570</b>	<b>\$770</b>	<b>\$1,800</b>	<b>6.8</b>	<b>1,934</b>
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,921	0.4	0	\$264	\$2,570	\$770	\$1,800	6.8	1,934
<b>Gas Heating (HVAC/Process) Replacement</b>			<b>0</b>	<b>0.0</b>	<b>48</b>	<b>\$413</b>	<b>\$18,697</b>	<b>\$2,400</b>	<b>\$16,297</b>	<b>39.5</b>	<b>5,620</b>
ECM 5	Install Infrared Heaters	No	0	0.0	48	\$413	\$18,697	\$2,400	\$16,297	39.5	5,620
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>22</b>	<b>\$193</b>	<b>\$954</b>	<b>\$600</b>	<b>\$354</b>	<b>1.8</b>	<b>2,621</b>
ECM 6	Install Occupancy-Controlled Thermostats	Yes	0	0.0	22	\$193	\$954	\$600	\$354	1.8	2,621
<b>Domestic Water Heating Upgrade</b>			<b>139</b>	<b>0.0</b>	<b>0</b>	<b>\$19</b>	<b>\$7</b>	<b>\$7</b>	<b>\$0</b>	<b>0.0</b>	<b>140</b>
ECM 7	Install Low-Flow DHW Devices	Yes	139	0.0	0	\$19	\$7	\$7	\$0	0.0	140
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>14,982</b>	<b>3.1</b>	<b>22</b>	<b>\$2,253</b>	<b>\$11,269</b>	<b>\$4,323</b>	<b>\$6,946</b>	<b>3.1</b>	<b>17,707</b>
<b>TOTALS (ALL MEASURES)</b>			<b>14,982</b>	<b>3.1</b>	<b>70</b>	<b>\$2,666</b>	<b>\$29,966</b>	<b>\$6,723</b>	<b>\$23,243</b>	<b>8.7</b>	<b>23,328</b>

# ADULT OPPORTUNITY CENTER

#	Energy Conservation Measure	Cost Effective?	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>			8,459	3.2	-1	\$1,921	\$2,342	\$98	\$2,244	1.2	8,363
ECM 1	Retrofit Fixtures with LED Lamps	Yes	8,459	3.2	-1	\$1,921	\$2,342	\$98	\$2,244	1.2	8,363
<b>Lighting Control Measures</b>			335	0.2	0	\$76	\$1,890	\$210	\$1,680	22.1	329
ECM 2	Install Occupancy Sensor Lighting Controls	No	335	0.2	0	\$76	\$1,890	\$210	\$1,680	22.1	329
<b>HVAC System Improvements</b>			1,604	0.0	22	\$600	\$860	\$530	\$330	0.5	4,198
ECM 3	Install Occupancy-Controlled Thermostats	Yes	1,604	0.0	13	\$504	\$716	\$450	\$266	0.5	3,133
ECM 4	Install Pipe Insulation	Yes	0	0.0	9	\$96	\$144	\$80	\$64	0.7	1,065
<b>Domestic Water Heating Upgrade</b>			0	0.0	1	\$15	\$22	\$22	\$0	0.0	167
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$15	\$22	\$22	\$0	0.0	167
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			10,062	3.2	22	\$2,536	\$3,224	\$650	\$2,574	1.0	12,727
<b>TOTALS (ALL MEASURES)</b>			10,398	3.3	22	\$2,612	\$5,114	\$860	\$4,254	1.6	13,057



# GROUP HOME

#	Energy Conservation Measure	Cost Effective?	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>7,163</b>	<b>4.0</b>	<b>-1</b>	<b>\$1,304</b>	<b>\$5,796</b>	<b>\$1,200</b>	<b>\$4,596</b>	<b>3.5</b>	<b>7,082</b>
ECM 1	Install LED Fixtures	Yes	301	0.0	0	\$55	\$1,449	\$600	\$849	15.3	303
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	1,186	1.0	0	\$215	\$2,144	\$408	\$1,736	8.1	1,165
ECM 3	Retrofit Fixtures with LED Lamps	Yes	5,675	3.0	-1	\$1,034	\$2,203	\$192	\$2,011	1.9	5,614
<b>Lighting Control Measures</b>			<b>336</b>	<b>0.2</b>	<b>0</b>	<b>\$61</b>	<b>\$1,691</b>	<b>\$350</b>	<b>\$1,341</b>	<b>22.0</b>	<b>330</b>
ECM 4	Install Occupancy Sensor Lighting Controls	No	286	0.2	0	\$52	\$1,466	\$350	\$1,116	21.5	281
ECM 5	Install High/Low Lighting Controls	No	50	0.0	0	\$9	\$225	\$0	\$225	24.7	49
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>10</b>	<b>\$98</b>	<b>\$131</b>	<b>\$64</b>	<b>\$67</b>	<b>0.7</b>	<b>1,184</b>
ECM 6	Install Pipe Insulation	Yes	0	0.0	10	\$98	\$131	\$64	\$67	0.7	1,184
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>0</b>	<b>\$5</b>	<b>\$7</b>	<b>\$7</b>	<b>\$0</b>	<b>0.0</b>	<b>56</b>
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	0	\$5	\$7	\$7	\$0	0.0	56
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>7,163</b>	<b>4.0</b>	<b>9</b>	<b>\$1,407</b>	<b>\$5,934</b>	<b>\$1,271</b>	<b>\$4,663</b>	<b>3.3</b>	<b>8,322</b>
<b>TOTALS (ALL MEASURES)</b>			<b>7,499</b>	<b>4.3</b>	<b>9</b>	<b>\$1,468</b>	<b>\$7,625</b>	<b>\$1,621</b>	<b>\$6,004</b>	<b>4.1</b>	<b>8,653</b>

# ADULT LEARNING CENTER

#	Energy Conservation Measure	Cost Effective?	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>1,326</b>	<b>1.0</b>	<b>0</b>	<b>\$357</b>	<b>\$501</b>	<b>\$42</b>	<b>\$459</b>	<b>1.3</b>	<b>1,302</b>
ECM 1	Retrofit Fixtures with LED Lamps	Yes	1,326	1.0	0	\$357	\$501	\$42	\$459	1.3	1,302
<b>Lighting Control Measures</b>			<b>50</b>	<b>0.0</b>	<b>0</b>	<b>\$14</b>	<b>\$656</b>	<b>\$0</b>	<b>\$656</b>	<b>48.2</b>	<b>50</b>
ECM 2	Install Occupancy Sensor Lighting Controls	No	50	0.0	0	\$14	\$656	\$0	\$656	48.2	50
<b>Variable Frequency Drive (VFD) Measures</b>			<b>1,128</b>	<b>0.3</b>	<b>0</b>	<b>\$306</b>	<b>\$2,756</b>	<b>\$100</b>	<b>\$2,656</b>	<b>8.7</b>	<b>1,135</b>
ECM 3	Install VFDs on Constant Volume (CV) Fans	Yes	1,128	0.3	0	\$306	\$2,756	\$100	\$2,656	8.7	1,135
<b>HVAC System Improvements</b>			<b>708</b>	<b>0.0</b>	<b>0</b>	<b>\$192</b>	<b>\$477</b>	<b>\$300</b>	<b>\$177</b>	<b>0.9</b>	<b>713</b>
ECM 4	Install Occupancy-Controlled Thermostats	Yes	708	0.0	0	\$192	\$477	\$300	\$177	0.9	713
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>0</b>	<b>\$5</b>	<b>\$7</b>	<b>\$7</b>	<b>\$0</b>	<b>0.0</b>	<b>56</b>
ECM 5	Install Low-Flow DHW Devices	Yes	0	0.0	0	\$5	\$7	\$7	\$0	0.0	56
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>3,162</b>	<b>1.4</b>	<b>0</b>	<b>\$861</b>	<b>\$3,742</b>	<b>\$449</b>	<b>\$3,292</b>	<b>3.8</b>	<b>3,206</b>
<b>TOTALS (ALL MEASURES)</b>			<b>3,212</b>	<b>1.4</b>	<b>0</b>	<b>\$874</b>	<b>\$4,398</b>	<b>\$449</b>	<b>\$3,948</b>	<b>4.5</b>	<b>3,256</b>

# ANIMAL SHELTER

#	Energy Conservation Measure	Cost Effective?	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>756</b>	<b>0.5</b>	<b>0</b>	<b>\$112</b>	<b>\$738</b>	<b>\$324</b>	<b>\$414</b>	<b>3.7</b>	<b>742</b>
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	163	0.1	0	\$24	\$202	\$40	\$162	6.7	160
ECM 2	Retrofit Fixtures with LED Lamps	Yes	592	0.4	0	\$88	\$536	\$284	\$252	2.9	582
<b>Lighting Control Measures</b>			<b>181</b>	<b>0.1</b>	<b>0</b>	<b>\$27</b>	<b>\$1,260</b>	<b>\$280</b>	<b>\$980</b>	<b>36.5</b>	<b>177</b>
ECM 3	Install Occupancy Sensor Lighting Controls	No	122	0.1	0	\$18	\$810	\$70	\$740	40.6	120
ECM 4	Install High/Low Lighting Controls	No	58	0.0	0	\$9	\$450	\$210	\$240	27.7	57
<b>HVAC System Improvements</b>			<b>0</b>	<b>0.0</b>	<b>1</b>	<b>\$10</b>	<b>\$36</b>	<b>\$20</b>	<b>\$16</b>	<b>1.6</b>	<b>139</b>
ECM 5	Install Pipe Insulation	Yes	0	0.0	1	\$10	\$36	\$20	\$16	1.6	139
<b>Domestic Water Heating Upgrade</b>			<b>0</b>	<b>0.0</b>	<b>0</b>	<b>\$1</b>	<b>\$7</b>	<b>\$7</b>	<b>\$0</b>	<b>0.0</b>	<b>15</b>
ECM 6	Install Low-Flow DHW Devices	Yes	0	0.0	0	\$1	\$7	\$7	\$0	0.0	15
<b>TOTALS (COST EFFECTIVE MEASURES)</b>			<b>756</b>	<b>0.5</b>	<b>1</b>	<b>\$124</b>	<b>\$781</b>	<b>\$351</b>	<b>\$430</b>	<b>3.5</b>	<b>896</b>
<b>TOTALS (ALL MEASURES)</b>			<b>936</b>	<b>0.6</b>	<b>1</b>	<b>\$151</b>	<b>\$2,041</b>	<b>\$631</b>	<b>\$1,410</b>	<b>9.4</b>	<b>1,073</b>

# 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***



# MEASURES FOR FUTURE CONSIDERATION

- Window Replacements
- High Speed Insulated Overhead Doors
- Upgrade to a High Efficiency Heat Pump System
- Building Envelope Improvements
- Ozone Laundry System  
(CAOC Group Home)
- Retro-Commissioning & Electric Sub Metering  
(Municipal Complex)
- Heating System Redesign by Installing Infrared Heaters in the garage  
(Fire Station #5)
- Controls for Make up air unit serving the Police Firing Range  
(Fire Station #4)

# CLEAN ENERGY PROGRAM PORTFOLIO

## ELIGIBLE SECTORS →

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

## INCENTIVE PROGRAMS →

### Equipment Rebates:

- **SmartStart**
- **Customer Tailored Energy Efficiency Pilot (CTEEP)**
- **Direct Install**
- Large Energy Users

### Whole Buildings:

- **Pay for Performance**

### Energy Generation:

- Combined Heat and Power – Fuel Cells

## OTHER PROGRAMS →

### Renewable Energy Generation:

- **Community Solar**



# SOLAR ENERGY GENERATION POTENTIAL

	City Hall Complex
<i>Potential:</i>	<b>HIGH</b>
<i>System Potential: (kW)</i>	181
<i>Electric Generation: (kWh per year)</i>	215,638
<i>Displaced Cost: (per year)</i>	\$28,490

## Community Solar Energy Pilot Program:

<http://www.NJCleanEnergy.com/CommunitySolar>



# RECOMMENDED NJCEP INCENTIVES PER BUILDING

City of Clifton	Pay For Performance	Direct Install	SmartStart	CTEEP
Community Recreation Center		X	X	X
Fire Stations #1 – 6		X	X	X
City Hall Complex	X	X	X	X
Senior Citizen Center		X	X	X
Arts Center		X	X	X
Hamilton House Museum		X	X	X
DPW Garages #1 & #2		X	X	X
Adult Opportunity Center		X	X	X
Group Home		X	X	X
Adult Learning Center		X	X	X
Animal Shelter		X	X	X



# PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



**What is P4P:** Comprehensive, whole-building approach to saving energy in existing or new facilities.

**Qualifications:** Annual peak demand 200 kW+ in the previous year for existing buildings

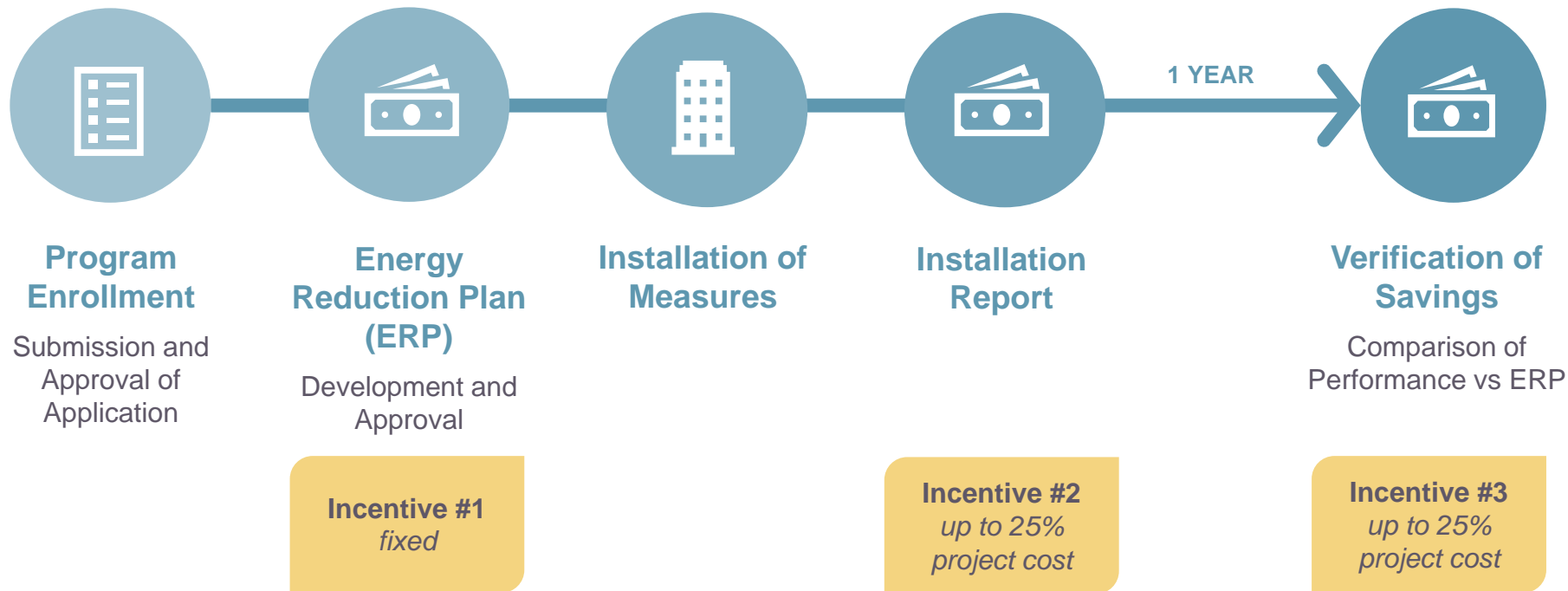
**About:** Customer choose from a network of pre-approved *Participating Partners*

**Incentives:**

- Incentives paid in *three* installments
  - Up to \$2MM per project( (\$4MM entity cap/year)
    - \$1 million for electric measures
    - \$1 million for gas measures
  - Up to 50% of project cost (or 80% for UEZ/OZ/Local Govt./ K-12 Public Schools) up to \$2MM per project / \$4MM per entity annually

# PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



# DIRECT INSTALL

NJCleanEnergy.com/DI



**What is DI:** Turn-key retrofit program to replace outdated and inefficient equipment, including lighting, HVAC, refrigeration, etc.

**Qualifications:** Average electric peak demand <200 kW in the previous 12 months

**About:**

- Pre-approved participating contractors provide support and process paperwork
- Incentives paid directly to the contractor
- Fast project turnaround time (4-6 months)

**Incentives:**

- \$125,000 incentive funding per project/building (\$250K UEZ/OZ/Local Govt./K-12 Public Schools), or
- \$250,000 entity cap (\$4MM UEZ/OZ/Local Govt./K-12 Public Schools)

# DIRECT INSTALL

[NJCleanEnergy.com/DI](http://NJCleanEnergy.com/DI)

Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), Local Governments, and K-12 public schools:

## INCENTIVE FUNDING

Up to **80%** of installed cost is paid directly to the contractor

## CUSTOMER

20% of installed cost

All other eligible facilities:

## INCENTIVE FUNDING

Up to **70%** of installed cost is paid directly to the contractor

## CUSTOMER

30% of installed cost



# DIRECT INSTALL

NJCleanEnergy.com/DI

## Participating Contractor

**Lime Energy**

Chris Fornicola

732-427-7278

[chris.fornicola@lime-energy.com](mailto:chris.fornicola@lime-energy.com)



# SMARTSTART

NJCleanEnergy.com/SSB

**What is SSB:** Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement

**Qualifications:**

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

## About:

- Prescriptive and custom designed measures
- Pre-approval required only for lighting projects with incentives >\$100,000 and all custom projects
- For measures not requiring pre-approval, applications must be submitted to the program within one year of purchase.

## Incentives:

- Prescriptive: \$500,000 cap for each electric or gas account
- Custom, lesser of the following:
  - \$0.16/kWh and/or \$1.60/Therm saved annually
  - 50% of incremental installed cost
  - Buy-down to 1 year payback based on incremental cost and savings



# SMARTSTART

NJCleanEnergy.com/SSB

## Prescriptive Incentives

- Lighting & Lighting Controls
- Packaged HVAC
- Boilers & Water Heaters
- Chillers
- VFD's
- Food Service
- Refrigeration

Prescriptive Only:

**DOUBLE  
INCENTIVES FOR  
OZ/UEZ/ LOCAL  
GOVT./K-12 PUBLIC  
SCHOOLS**

## Custom Incentives

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms
- Project pre and post inspection required



# CUSTOMER TAILORED ENERGY EFFICIENCY PILOT

[NJCleanEnergy.com/CTEEP](http://NJCleanEnergy.com/CTEEP)

**What is CTEEP:** A streamlined/single application process for participants submitting multiple different technology types.

**Qualifications:**

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

**About:**

- On site assistance available
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

**Incentives:**

- \$250,000 fiscal year entity cap
- Technical assistance incentives for custom project evaluation (up to \$10K)

**SAME INCENTIVE  
VALUES AS  
SMARTSTART**

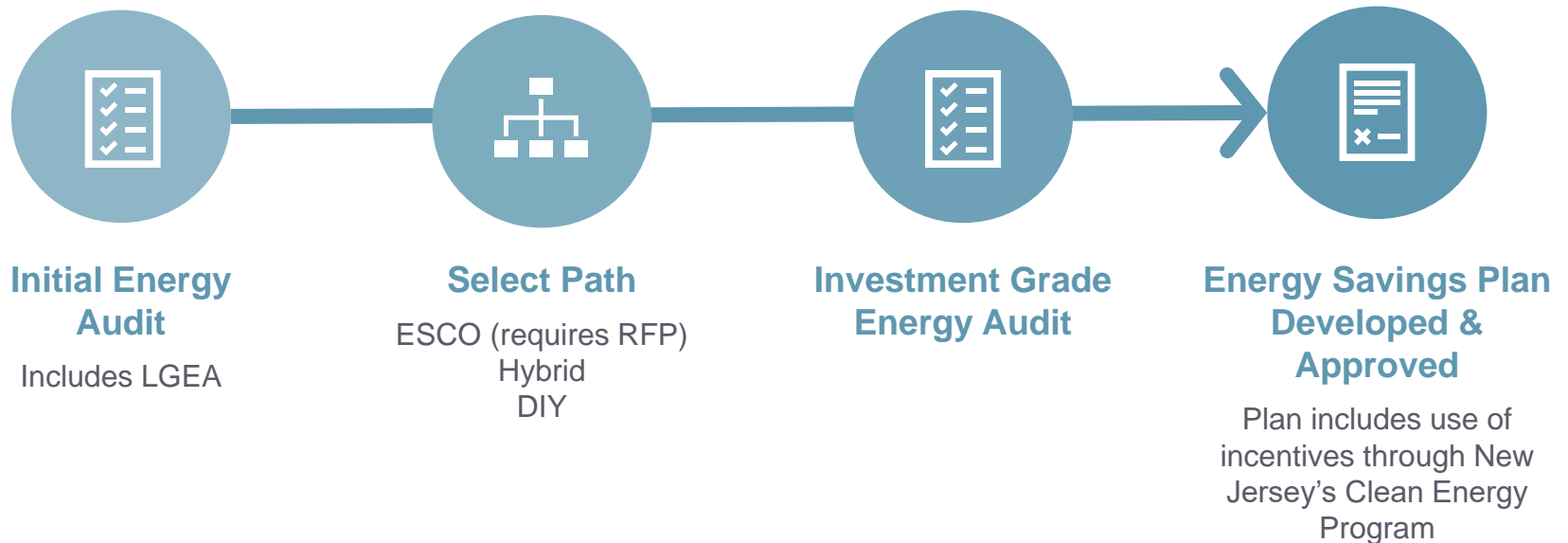


# FINANCING MECHANISM: ESIP

## ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the BPU
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract
- Requires NO new bonding and is outside of capital budget
- Does not count as debt or require voter approval

# FINANCING MECHANISM: ESIP



# ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

## FOR MORE INFORMATION

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# QUESTIONS

