

LGEA Presentation
Chatham Township
Volunteer Fire Department

October 10, 2023

New Jersey's
Clean Energy Program

Lighting the way to New Jersey's Clean Energy Future



INTRODUCTIONS

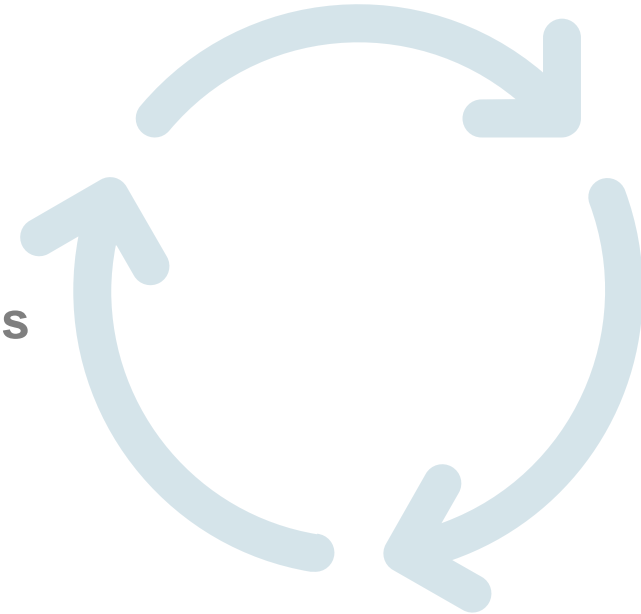
- *Chatham Township Volunteer Fire Dept.*
 - Richard Gentles - President
 - Matt Chase – Chief
 - John Armstrong – Secretary
- *NJ Clean Energy Program*
 - Sarah Walters – LGEA Project Manager
 - Nick Nocco – LGEA Auditor
 - Sara Neiss – LGEA Project Auditor
 - Amanda Muench – LGEA Account Manager

AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified & other recommendations
- Energy Savings Improvement Program (ESIP)
- Energy Efficiency Incentive Programs
- Questions regarding the draft audit report
- Next steps for Chatham Township Vol. Fire Department

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

Utility Consumption:

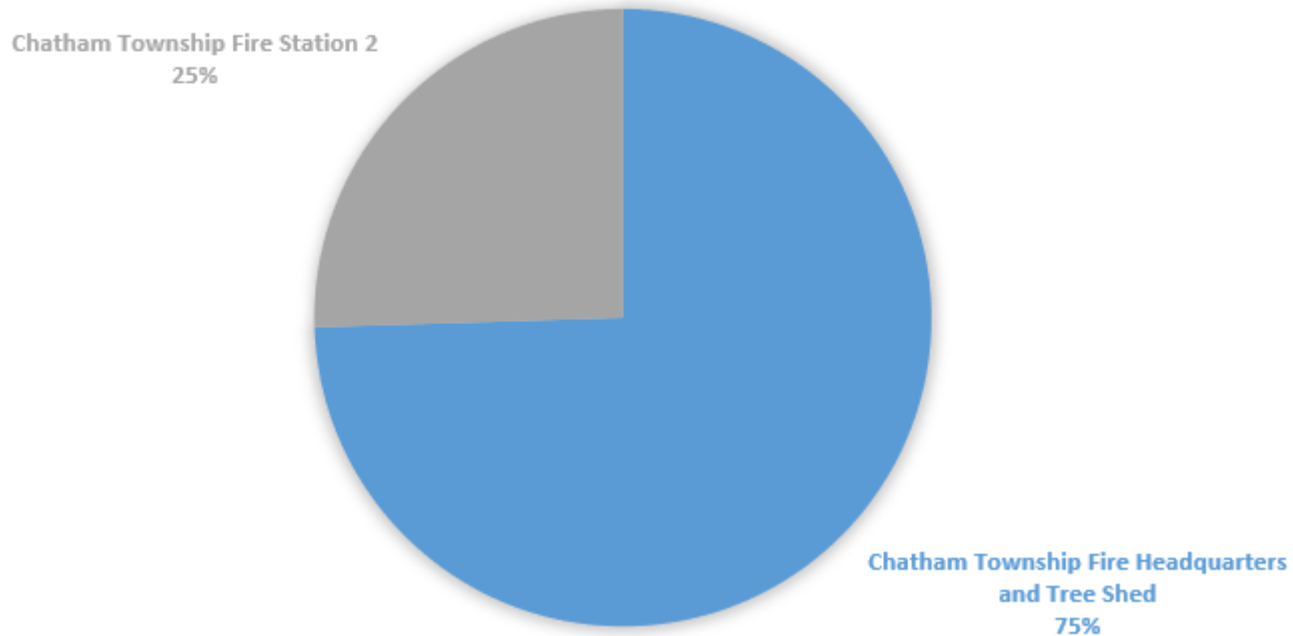
- Electric Consumption and Costs
- Natural Gas Consumption and Costs

Sites Visited/Analyzed

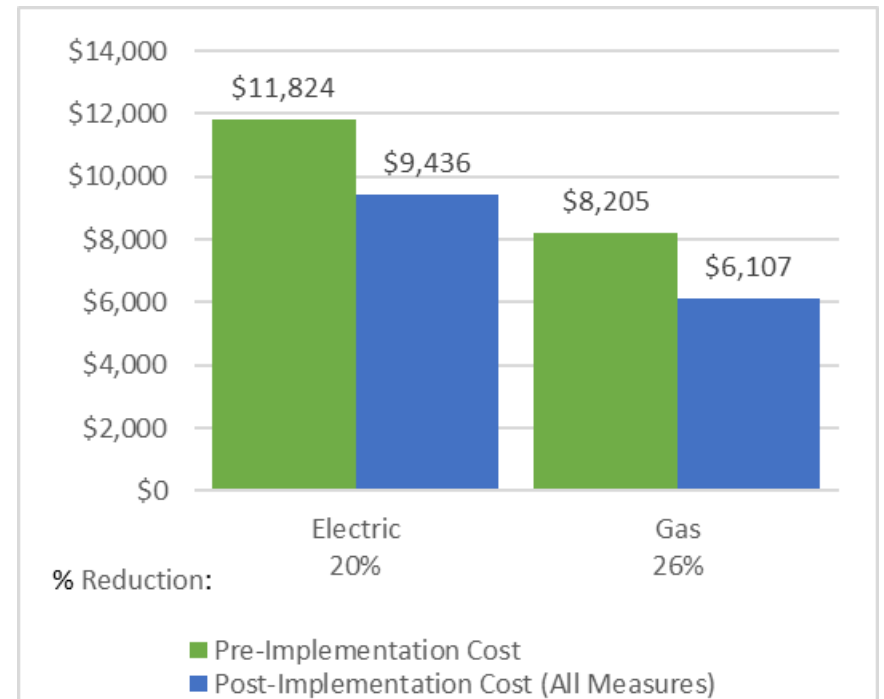
- Fire HQ
- Tree Shed
- Fire Station 2

UTILITY BREAKOUT


Percent of Total Annual Energy Costs



Pre & Post Implementation Cost



BENCHMARKING



ENERGY STAR® Statement of Energy Performance

N/A **Chatham Township Station No. 2**

Primary Property Type: Fire Station
Gross Floor Area (ft²): 5,000
Built: 2010

For Year Ending: January 31, 2023
Date Generated: August 11, 2023

ENERGY STAR® Score¹

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		
Property Address Chatham Township Station No. 2 172 Southern Boulevard Chatham, New Jersey 07928	Property Owner Chatham Township Volunteer Fire Department 495 River Road Chatham, NJ 07928 (862) 206-9418	Primary Contact Matthew Chase 495 River Road Chatham, NJ 07928 (862) 206-9418 chief@ctfd.org
Property ID: 26964171		
Energy Consumption and Energy Use Intensity (EUI)		
Site EUI 41.5 kBtu/ft²	Annual Energy by Fuel Electricity (kBtu) 77,511 (37%) Natural Gas (kBtu) 129,786 (63%)	National Median Comparison National Median Site EUI (kBtu/ft²) 73.3 National Median Source EUI (kBtu/ft²) 124.9 % Diff from National Median Source EUI -43%
Source EUI 70.7 kBtu/ft²	Annual Emissions Total (Location-Based) GHG Emissions (Metric Tons CO2e/year) 14	

Site EUI
41.5 kBtu/ft²

Source EUI
70.7 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	73.3
National Median Source EUI (kBtu/ft²)	124.9
% Diff from National Median Source EUI	-43%

Annual Emissions

Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	14
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Site Name	ENERGY STAR® Score
Fire HQ & Tree Shed	N/A
Fire Station 2	N/A

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: _____

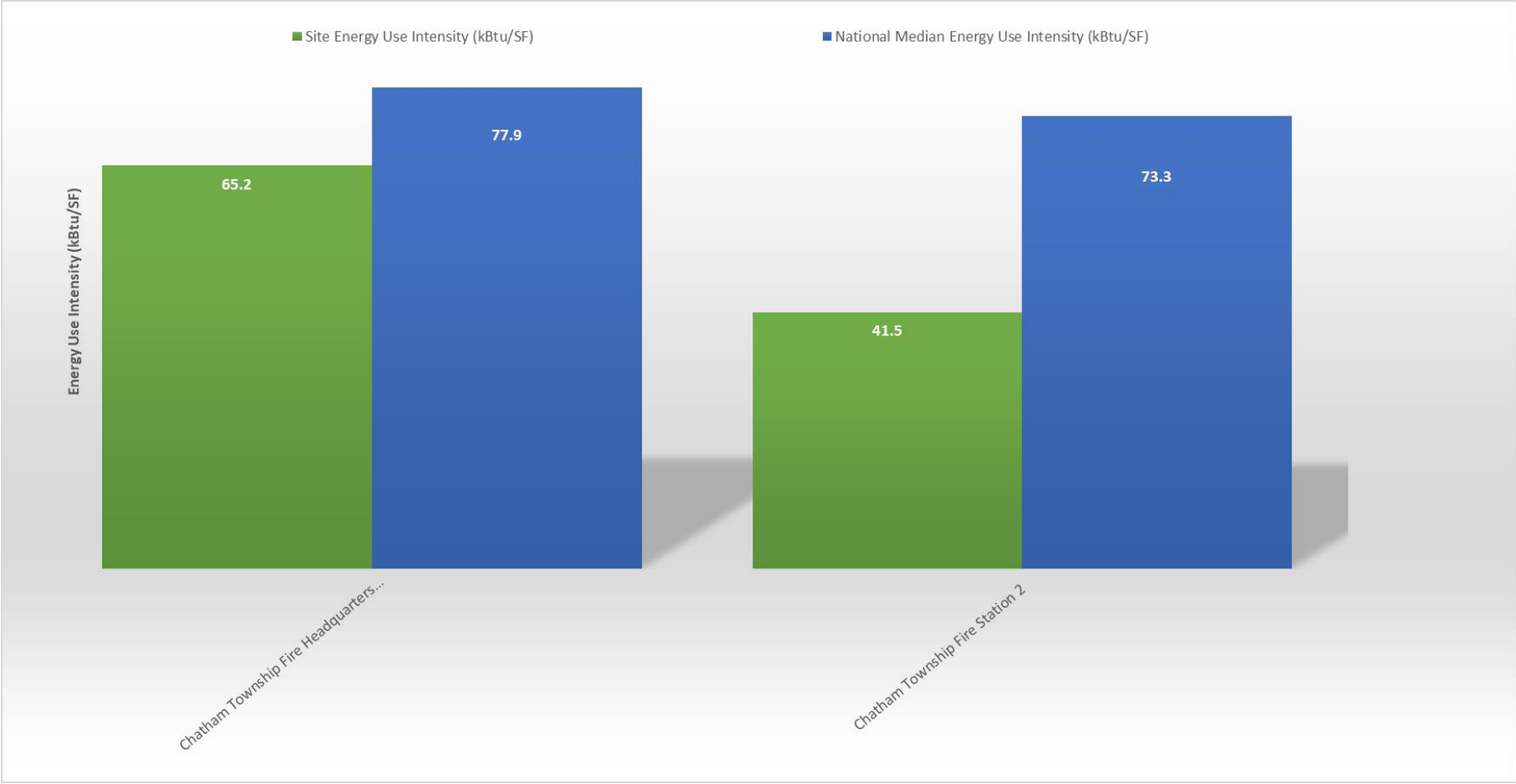
Licensed Professional

New Jersey's Clean Energy Program - LGEA
 900 ROUTE 9 NORTH
 SUITE 404
 WOODBRIDGE, NJ 07095
 732-855-2864
 benchmarking@trcsolutions.com

Professional Engineer or Registered Architect Stamp (if applicable)

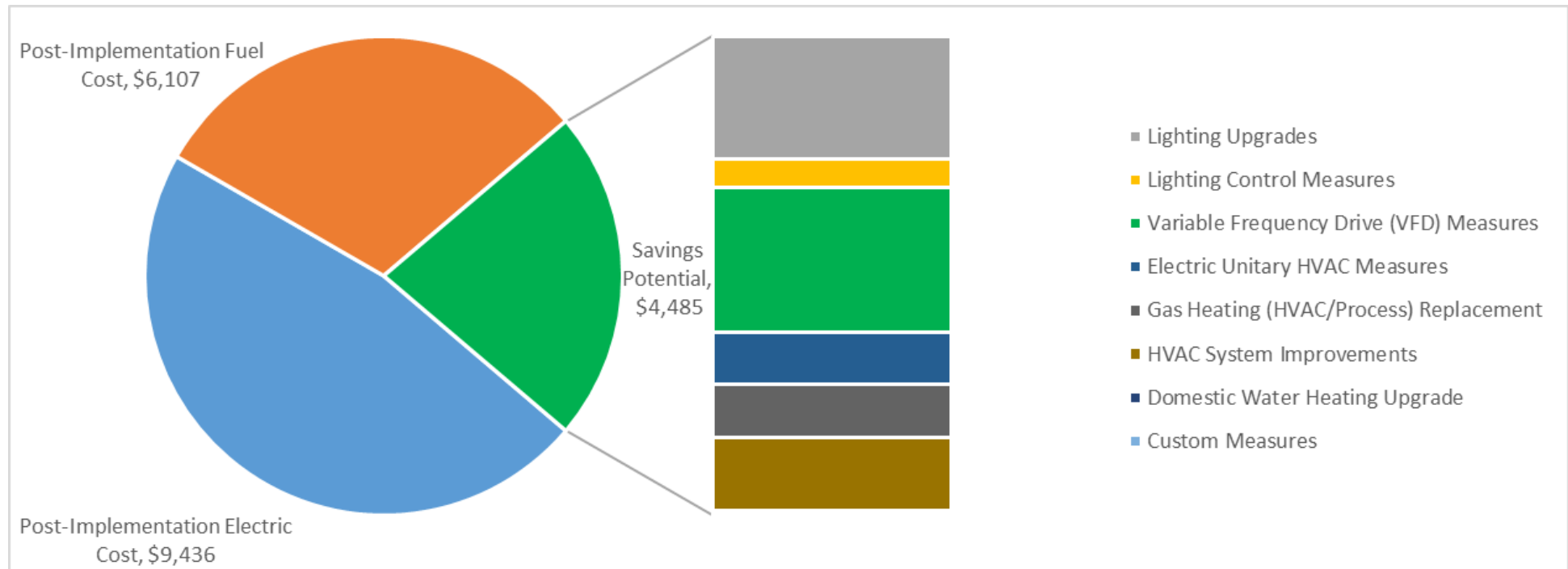
ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

BENCHMARKING



ALL OPPORTUNITIES

Savings Potential



ALL OPPORTUNITIES

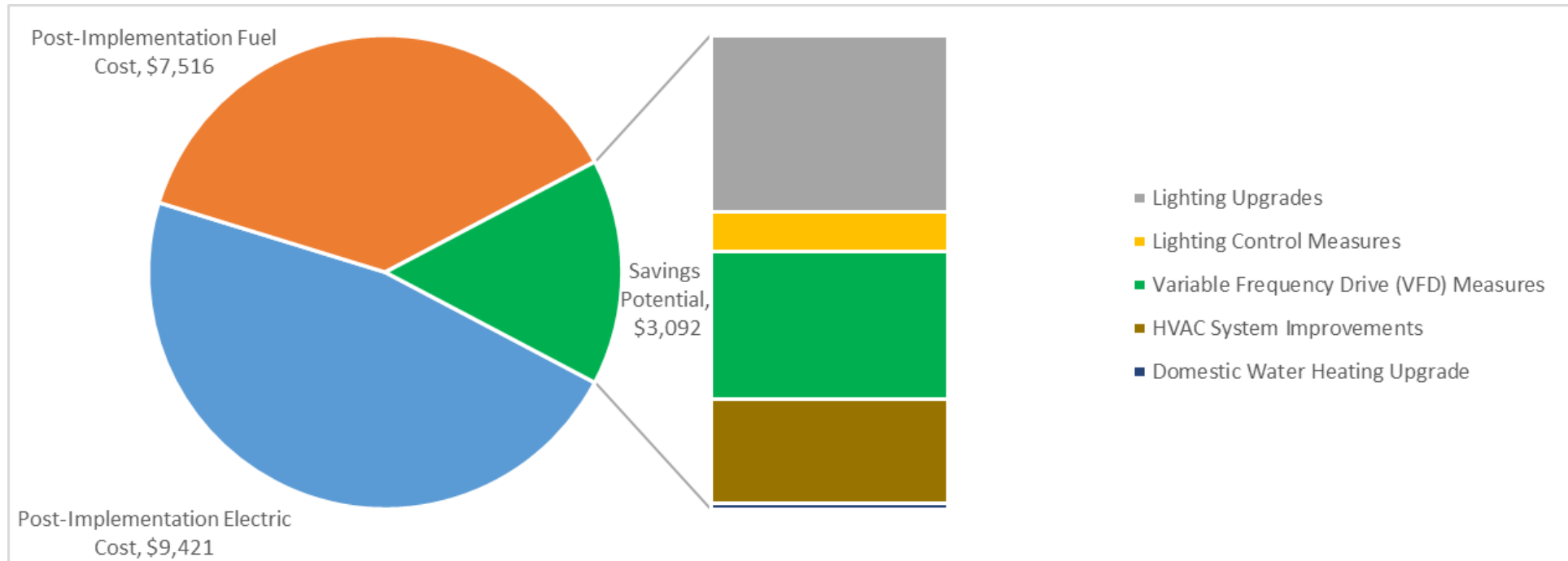
#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		8,268	3.6	-1.3	\$1,150	\$9,415	\$1,544	\$7,871	6.8	8,178
ECM 1	Install LED Fixtures	2,151	0.0	0.0	\$304	\$3,206	\$455	\$2,751	9.0	2,166
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	71	0.1	0.0	\$10	\$259	\$24	\$235	23.5	70
ECM 3	Retrofit Fixtures with LED Lamps	6,045	3.5	-1.2	\$835	\$5,950	\$1,065	\$4,885	5.8	5,942
Lighting Control Measures		1,898	0.7	-0.4	\$264	\$3,164	\$1,200	\$1,964	7.4	1,864
ECM 4	Install Occupancy Sensor Lighting Controls	686	0.4	-0.1	\$96	\$1,814	\$255	\$1,559	16.2	674
ECM 5	Install High/Low Lighting Controls	1,212	0.3	-0.3	\$168	\$1,350	\$945	\$405	2.4	1,191
Variable Frequency Drive (VFD) Measures		9,586	5.1	0.0	\$1,354	\$28,648	\$1,500	\$27,148	20.0	9,653
ECM 6	Install VFDs on Constant Volume (CV) Fans	2,761	1.9	0.0	\$395	\$15,558	\$325	\$15,233	38.6	2,780
ECM 7	Install VFDs on Process Blowers	6,825	3.2	0.0	\$959	\$13,090	\$1,175	\$11,915	12.4	6,873
Unitary HVAC Measures		3,438	4.3	0.0	\$492	\$28,491	\$1,383	\$27,109	55.1	3,462
ECM 8	Install High Efficiency Air Conditioning Units	3,438	4.3	0.0	\$492	\$28,491	\$1,383	\$27,109	55.1	3,462
Gas Heating (HVAC/Process) Replacement		0	0.0	36.9	\$500	\$17,542	\$0	\$17,542	35.1	4,321
ECM 9	Install High Efficiency Unit Heaters	0	0.0	36.9	\$500	\$17,542	\$0	\$17,542	35.1	4,321
HVAC System Improvements		0	0.0	48.7	\$681	\$1,326	\$172	\$1,155	1.7	5,703
ECM 10	Install Pipe Insulation	0	0.0	48.7	\$681	\$1,326	\$172	\$1,155	1.7	5,703
Domestic Water Heating Upgrade		0	0.0	2.8	\$39	\$86	\$37	\$49	1.3	331
ECM 11	Install Low-Flow DHW Devices	0	0.0	2.8	\$39	\$86	\$37	\$49	1.3	331
Custom Measures		-6,222	0.0	66.0	\$5	\$2,383	\$0	\$2,383	476.6	1,462
ECM 12	Replace Gas Fired Water Heater with Heat Pump Water Heater	-6,222	0.0	66.0	\$5	\$2,383	\$0	\$2,383	476.6	1,462
TOTALS		16,968	13.6	152.8	\$4,485	\$91,056	\$5,835	\$85,221	19.0	34,974

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

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

COST EFFECTIVE OPPORTUNITIES

Savings Potential



COST EFFECTIVE OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		8,268	3.6	-1.3	\$1,150	\$9,415	\$1,544	\$7,871	6.8	8,178
ECM 1	Install LED Fixtures	2,151	0.0	0.0	\$304	\$3,206	\$455	\$2,751	9.0	2,166
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	71	0.1	0.0	\$10	\$259	\$24	\$235	23.5	70
ECM 3	Retrofit Fixtures with LED Lamps	6,045	3.5	-1.2	\$835	\$5,950	\$1,065	\$4,885	5.8	5,942
Lighting Control Measures		1,889	0.6	-0.4	\$262	\$3,048	\$1,180	\$1,868	7.1	1,855
ECM 4	Install Occupancy Sensor Lighting Controls	676	0.4	-0.1	\$95	\$1,698	\$235	\$1,463	15.4	664
ECM 5	Install High/Low Lighting Controls	1,212	0.3	-0.3	\$168	\$1,350	\$945	\$405	2.4	1,191
Variable Frequency Drive (VFD) Measures		6,825	3.2	0.0	\$959	\$13,090	\$1,175	\$11,915	12.4	6,873
ECM 6	Install VFDs on Constant Volume (CV) Fans	0	0.0	0.0	\$0	\$0	\$0	\$0	0.0	0
ECM 7	Install VFDs on Process Blowers	6,825	3.2	0.0	\$959	\$13,090	\$1,175	\$11,915	12.4	6,873
HVAC System Improvements		0	0.0	48.7	\$681	\$1,326	\$172	\$1,155	1.7	5,703
ECM 10	Install Pipe Insulation	0	0.0	48.7	\$681	\$1,326	\$172	\$1,155	1.7	5,703
Domestic Water Heating Upgrade		0	0.0	2.8	\$39	\$86	\$37	\$49	1.3	331
ECM 11	Install Low-Flow DHW Devices	0	0.0	2.8	\$39	\$86	\$37	\$49	1.3	331
TOTALS		16,981	7.4	49.9	\$3,092	\$26,965	\$4,107	\$22,858	7.4	22,939

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

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

FIRE HEADQUARTERS & TREE SHED

#	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 ₂ e Emissions Reduction (lbs)
Lighting Upgrades			5,093	1.8	-1	\$718	\$6,697	\$804	\$5,893	8.2	5,041
ECM 1	Install LED Fixtures	Yes	1,464	0.0	0	\$210	\$2,761	\$300	\$2,461	11.7	1,475
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	71	0.1	0	\$10	\$259	\$24	\$235	23.5	70
ECM 3	Retrofit Fixtures with LED Lamps	Yes	3,557	1.7	-1	\$499	\$3,677	\$480	\$3,197	6.4	3,496
Lighting Control Measures			1,420	0.4	0	\$199	\$2,148	\$375	\$1,773	8.9	1,394
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	676	0.4	0	\$95	\$1,698	\$235	\$1,463	15.4	664
ECM 5	Install High/Low Lighting Controls	Yes	743	0.1	0	\$104	\$450	\$140	\$310	3.0	730
Variable Frequency Drive (VFD) Measures			6,036	3.4	0	\$863	\$20,586	\$1,225	\$19,361	22.4	6,078
ECM 6	Install VFDs on Constant Volume (CV) Fans	No	2,761	1.9	0	\$395	\$15,558	\$325	\$15,233	38.6	2,780
ECM 7	Install VFDs and CO sensing on Truck Bay Exhaust System	Yes	3,275	1.5	0	\$468	\$5,028	\$900	\$4,128	8.8	3,298
Unitary HVAC Measures			3,438	4.3	0	\$492	\$28,491	\$1,383	\$27,109	55.1	3,462
ECM 8	Install High Efficiency Air Conditioning Units	No	3,438	4.3	0	\$492	\$28,491	\$1,383	\$27,109	55.1	3,462
Gas Heating (HVAC/Process) Replacement			0	0.0	37	\$500	\$17,542	\$0	\$17,542	35.1	4,321
ECM 9	Install High Efficiency Unit Heaters	No	0	0.0	37	\$500	\$17,542	\$0	\$17,542	35.1	4,321
HVAC System Improvements			0	0.0	32	\$433	\$891	\$114	\$777	1.8	3,738
ECM 10	Install Pipe Insulation	Yes	0	0.0	32	\$433	\$891	\$114	\$777	1.8	3,738
Domestic Water Heating Upgrade			0	0.0	2	\$30	\$57	\$24	\$33	1.1	255
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	2	\$30	\$57	\$24	\$33	1.1	255
Custom Measures			-6,222	0.0	66	\$5	\$2,383	\$0	\$2,383	476.6	1,462
ECM 12	Replace Gas Fired Water Heater with Heat Pump Water Heater	No	-6,222	0.0	66	\$5	\$2,383	\$0	\$2,383	476.6	1,462
TOTALS (COST EFFECTIVE MEASURES)			9,787	3.7	33	\$1,848	\$14,821	\$2,216	\$12,605	6.8	13,726
TOTALS (ALL MEASURES)			9,764	9.9	136	\$3,240	\$78,796	\$3,924	\$74,872	23.1	25,751

* - 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).

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 M&L Cost (\$)	Estimated Incentive (\$)*	Estimated Net M&L Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades			3,175	1.8	-1	\$431	\$2,718	\$740	\$1,978	4.6	3,137
ECM 1	Install LED Fixtures	Yes	686	0.0	0	\$95	\$444	\$155	\$289	3.0	691
ECM 2	Retrofit Fixtures with LED Lamps	Yes	2,488	1.8	-1	\$336	\$2,274	\$585	\$1,689	5.0	2,445
Lighting Control Measures			479	0.2	0	\$65	\$1,016	\$825	\$191	3.0	470
ECM 3	Install Occupancy Sensor Lighting Controls	No	10	0.0	0	\$1	\$116	\$20	\$96	73.2	10
ECM 4	Install High/Low Lighting Controls	Yes	469	0.2	0	\$63	\$900	\$805	\$95	1.5	460
Variable Frequency Drive (VFD) Measures			3,550	1.6	0	\$491	\$8,062	\$275	\$7,787	15.9	3,575
ECM 5	Install VFDs and CO Sensing on Truck Bay Exhaust System	Yes	3,550	1.6	0	\$491	\$8,062	\$275	\$7,787	15.9	3,575
HVAC System Improvements			0	0.0	17	\$248	\$436	\$58	\$378	1.5	1,965
ECM 6	Install Pipe Insulation	Yes	0	0.0	17	\$248	\$436	\$58	\$378	1.5	1,965
Domestic Water Heating Upgrade			0	0.0	1	\$10	\$29	\$13	\$16	1.7	76
ECM 7	Install Low-Flow DHW Devices	Yes	0	0.0	1	\$10	\$29	\$13	\$16	1.7	76
TOTALS (COST EFFECTIVE MEASURES)			7,194	3.6	17	\$1,243	\$12,144	\$1,891	\$10,254	8.2	9,213
TOTALS (ALL MEASURES)			7,204	3.6	17	\$1,245	\$12,260	\$1,911	\$10,350	8.3	9,223

* - 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 practices by building

EV CHARGING STATION POTENTIAL

NJCleanEnergy.com/EV

Know your EV Charging Stations



LEVEL 1



4-6 miles/hour
Replenish Rate



7-30 hours for full charge

Approximate time to charge a battery*

CHARGE
110/120V

LEVEL 2



10-20 miles/hour
Replenish Rate



2-10 hours for full charge

Approximate time to charge a battery*

CHARGE
208/240V

DIRECT CURRENT (DC) FAST CHARGING*



120-200 miles/hour
Replenish Rate



20-90 minutes for full charge

Approximate time to charge a battery*

CHARGE
480V or 208V

*dependent on the size of the battery

	Chatham Twp Vol. Fire Dept.
Potential:	Medium



C&I ENERGY EFFICIENCY PROGRAMS

NJCleanEnergy.com

LOCAL
GOVERNMENT
CUSTOMERS

COMMERCIAL &
INSTITUTIONAL
CUSTOMERS

LARGE
ENERGY
CUSTOMERS

EXISTING BUILDINGS

MEASUREMENT & AUDITS

FREE Energy Audits



RETROFITS

Prescriptive & Custom Rebates

Direct Install

Engineered Solutions

And more from
your local utility!



Incentives up
to \$4 million
for eligible projects



NEW CONSTRUCTION

Prescriptive & Custom
Rebates for New
Construction and
Gut Rehabs

Pay for Performance
incentives for
buildings over
50,000 sq. ft.



DISTRIBUTED ENERGY RESOURCES

Combined Heat & Power
and Fuel Cell Installation
Incentives

Microgrid Development

Battery Storage

Muni EV Fleets



Key:

Programs run by investor-owned utility companies



Programs run by NJCEP



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:

- 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

ENERGY MANAGEMENT :

- 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

JCP&L

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THANK YOU

