



Energy Audit Report

REPORT DATE: November 5, 2024

PROPERTY INFORMATION:

Town Hall
93 Cottage Street
Bar Harbor, Hancock County, Maine 04609

PROJECT INFORMATION:

AEI Project No. 498445
Site Assessment Date: October 14, 2024

PREPARED FOR:

Town of Bar Harbor
93 Cottage Street
Bar Harbor, Maine 04609

PREPARED BY:

AEI Consultants - Corporate Headquarters
2500 Camino Diablo
Walnut Creek, California 94597



November 5, 2024

James Smith
Town of Bar Harbor
93 Cottage Street
Bar Harbor, Maine 04609

Subject: Energy Audit Report
Town Hall
93 Cottage Street
Bar Harbor, Maine 04609
AEI Project No. 498445

Dear James Smith:

AEI Consultants is pleased to provide the *Energy Audit Report* of the above referenced property. This assessment was authorized and performed in accordance with the scope of services engaged.

We appreciate the opportunity to provide services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (201) 332-1844 or bmorgan@aeiconsultants.com.

Sincerely,

A handwritten signature in black ink that reads "Brian Morgan". The signature is written in a cursive, flowing style.

Brian Morgan
Business Development Manager
AEI Consultants

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1.0 CERTIFICATION/DISCLAIMER

AEI has completed an Energy Audit for the Property located at 93 Cottage Street, Bar Harbor, Hancock County, Maine (the "Property"). AEI visited the site on October 14, 2024.

The energy conservation opportunities contained in this report have been reviewed for technical accuracy. The reader is reminded that energy savings ultimately depend on variable factors including occupant behavior, weather, and quality of installation. Estimated installation costs are based on a variety of sources, including our own experience at similar facilities, our own pricing research using local contractors and vendors, and cost handbooks such as those produced by RS Means. The cost estimates represent the best judgment of the auditors for the proposed action. The Owner is encouraged to confirm these cost estimates independently since actual installed costs can vary widely for a particular installation. AEI does not guarantee installed cost estimates and shall in no event be liable should actual installed costs vary from the estimated costs herein.

AEI does not guarantee the costs savings estimated in this report. AEI shall in no event be liable should the actual energy savings vary from the savings estimated herein.

AEI certifies that it has no undisclosed interest in the Property and that AEI's employment and compensation are not contingent upon the findings or estimated costs to remedy any deficiencies due to deferred maintenance and any noted component or system replacements.

2.0 EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Town of Bar Harbor to conduct an ASHRAE Level II Energy Audit, in conformance with the scope and limitations of ASHRAE *Procedures for Commercial Building Energy Audits*, Second Edition (2011), ANSI/ASHRAE/ACCA Standard 211-2018, *Standard for Commercial Building Energy Audits* for the Property located at 93 Cottage Street, Bar Harbor, Hancock County, Maine (the "Property").

2.1 PURPOSE AND SCOPE

AEI has performed a comprehensive analysis of the Property to identify possible areas where Energy and Water may be conserved. The areas being considered include HVAC equipment, lighting, domestic water heating, appliances, fenestrations, insulation, roofing, bathroom fixtures, and miscellaneous equipment.

Utility Analysis

AEI has performed a comprehensive utility analysis to determine the Energy and Water consumption of the buildings. The analysis utilizes at least 12 months of common area utility bills and as many tenant utility bills as possible. By observing peak loads during the year, a baseline for energy and water consumption can be determined.

Energy Audit Process

Where possible, in addition to the Site Survey, AEI has utilized construction drawings, interviews, repair records, etc. to determine the actual current efficiency of the Property's building envelopes and equipment.

Accuracy of Analysis

AEI used spreadsheet calculations that base estimated savings on the as-built facility and energy consuming equipment's current operating condition. The simple payback calculations are based on the labor and material cost of the new equipment divided by the cost savings per year. AEI shall not be responsible for equipment that may not reach the end of its useful life or costs more to operate than noted in the EEMs.

Current Energy Code

The energy code adopted by Maine at the time of this report is 2015 International Energy Conservation Code (2015 IECC) and ASHRAE 90.1-2013 for Commercial construction.

2.2 SIGNIFICANT ASSUMPTIONS

The following assumptions are made by AEI in this report. AEI relied on information derived from secondary sources including governmental agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, and personal interviews. AEI has reviewed and evaluated the thoroughness and reliability of the information derived from secondary sources including government agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, or personal interviews.

It appears that all information obtained from outside sources and reviewed for this assessment is thorough and reliable. However, AEI cannot guarantee the thoroughness or reliability of this information.

2.3 LIMITATIONS

Available information has been analyzed using currently accepted assessment techniques and it is believed that the inferences made are reasonably representative of the Property. AEI makes no warranty, expressed or implied, except that the services have been performed in accordance with generally accepted industry practices applicable at the time and location of the study.

Responses received from local government agencies or other secondary sources of information after the issuance of this report may change certain facts, findings, conclusions, or circumstances to the report. A change in any fact, circumstance, or industry-accepted procedure upon which this report was based may adversely affect the findings, conclusions, and recommendations expressed in this report.

2.4 RELIANCE

All reports, both verbal and written, are for the benefit of Town of Bar Harbor. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of AEI. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with AEI granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against AEI, its officers, employees, vendors, successors or assigns.

Reliance is provided in accordance with Town of Bar Harbor and AEI's contract and Terms and Conditions dated August 28, 2024. The limitation of liability defined in the contracted terms is the aggregate limit of AEI's liability to the client and all relying parties.

2.5 FINANCIAL ANALYSIS DEFINITIONS

Simple Payback = The estimated installation cost divided by the calculated annual cost avoidance.

EUL = Estimated Useful Life of components and systems as determined by manufacturers, ASHRAE, HUD, Fannie Mae, Freddie Mac and other authorities.

SIR = Savings to Investment Ratio; $(EUL \times \text{Annual Savings}) \div \text{Initial Cost}$

ROI = Return on Investment; $(EUL \times \text{Annual Savings} - \text{Initial Cost}) \div \text{Initial Cost}$

IRR = Internal Rate of Return; the annual yield from a project, usually expressed as a percentage of the total amount invested; the compound rate of interest which, when used to discount cash flows, will result in zero net savings. If the IRR is greater than the investor's stated discount rate, the measure is considered beneficial.

NPV = Net Present Value; The value (the gain minus the cost) of an investment in today's dollars over some specified time period. If the investment has a positive NPV, it is generally considered to be beneficial.

2.6 SUMMARY OF BUILDING PERFORMANCE

The following table summarizes the current and proposed building performance with the recommended Energy and Water Efficiency Measures (EWEMs) described in the following section.

EWEM Summary Table		
Current Building Energy Usage	1,222,575	kBtu
Current Building Energy Cost	\$31,290	\$\$\$
Proposed Energy Savings	219,292	kBtu
Proposed Energy Cost Savings	\$5,634	\$
Energy Savings	17.9%	%
Energy Cost Savings	18.0%	%
Investment for EEM's	\$46,354	\$
Payback for Investments (without water savings)	8.2	Years
Payback for Investments (including water savings)	7.7	Years
Site Energy Use		
Current Electric Site Energy	108,857	kWh
Proposed Electric Savings	19,888	kWh
Proposed Electric Savings	18.3%	%
Current Fuel Oil Site Energy	6,097	Gallons
Proposed Fuel Oil Savings	1,085	Gallons
Proposed Fuel Oil Savings	17.8%	%
Site Energy Use Intensity		
Total Building Area	26,304	SF
Current Site Energy Use Intensity	46.5	kBtu/SF
Proposed Site Energy Use Intensity	38.1	kBtu/SF
Source Energy Use Intensity		
Current Source Energy Use Intensity	72.2	kBtu/SF
Proposed Source Energy Use Intensity	59.2	kBtu/SF
Site Greenhouse Gas Emissions		
Current Site GHG Emissions	88.76	MTCO ₂ e/Yr
Proposed Site GHG Emissions	72.84	MTCO ₂ e/Yr

Water and Sewer Usage		
Current Usage	36	kGal
Current Cost	\$1,699	\$
Proposed Savings in kGal	8	kGal
Cost Per kGal	\$46.69	\$
Proposed Cost Savings	\$391	\$
Percent Water and Cost Savings	23.0%	%

2.7 RECOMMENDED ENERGY AND WATER EFFICIENCY MEASURES (EWEM)

The following recommended EWEMs have been analyzed using calculations based on occupant usage, localized climate conditions, HVAC and ventilation operating hours, and lighting hours. The HVAC operating hours are approximations and may vary depending on the severity of the weather. Water consumption is based on the number of occupants and assumed running times for water consuming devices. The EWEM table shows the initial investment cost, energy and water consumption and cost savings, estimated equipment expected useful life (EUL), and investment simple payback for each EWEM. The utility cost increase over the life of the EWEMs implemented was not considered as a factor in the financial analysis for each measure. Any analyzed EWEMs with a simple payback longer than the equipment EUL are not included in this table.

Energy And Water Efficiency Measures (EWEM) Summary

EWEM #	Energy And Water Efficiency Measures (EWEM) Summary Description	Initial Cost (\$)	Electric Savings (kWh)	Fuel Oil Savings (Gal)	Water/ Sewer Savings (kGal)	Annual Utility Cost Savings (\$)	Simple Pay Back (Years)	Expected Useful Life (Years)	% Energy Savings	% Water Savings	Projected GHG Emissions Reduction MTCO2e	Energy Savings (kBTU)	Energy Savings with HPWH & 87% Boiler (kBTU)	Projected GHG Emissions Reduction MTCO2e
1	Replace 2 Existing Kitchen Faucet Aerators With 1.0 GPM Low Flow Aerators. Aerator housings must bear 1.0 GPM manufacturer flow ratings.	\$33	139	0	2	\$95	0.3	10	0.0%	4.5%	0.03	474	126	0.01
2	Replace refrigerant suction line insulation on 4 mini split condensing units located on roof.	\$60	268	0	0	\$36	1.7	10	0.1%	0.0%	0.07	913	913	0.02
3	Replace 4 Existing Bathroom Faucet Aerators With 1.0 GPM WaterSense Labeled Low Flow Aerators. Aerator housings must bear 1.0 GPM manufacturer flow ratings.	\$67	350	0	4	\$238	0.3	10	0.1%	11.3%	0.09	1,194	316	0.02
4	Add R-5.4 insulation to 50 LF of 1 inch diameter domestic hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values.	\$384	1,182	0	0	\$157	2.4	15	0.3%	0.0%	0.29	4,033	1,068	0.08
5	Replace 4 Existing Toilets with WaterSense Labeled Low Flow 1.28 GPF Single Flush Toilets, American-Standard-Reliant-2-Piece-1-28-GPF-Single-Flush Toilet-with-Slow-Close-Seat-in-White-33321285-020/301379290, or equivalent.	\$1,041	0	0	3	\$122	8.5	20	0.0%	7.2%	0.00	0	0	0.00
6	Add R-5.4 insulation to 200 LF of 1 inch diameter building hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values.	\$1,536	0	396	0	\$1,093	1.4	15	4.5%	0.0%	4.03	54,878	51,094	4.03
7	Retrofit 56 Exterior Site and Common Area Lighting Fixtures with 158 DLC Certified LED Lamps	\$2,706	12,173	0	0	\$1,617	1.7	10	3.4%	0.0%	2.98	41,536	41,536	0.79
8	Replace 1 Existing Electric Water Heater with 1 Hybrid Heat Pump Water Heater (HPWH) with a minimum UEF of 3.4. Note that the hybrid water heater must be installed where minimum of 1,000 cubic feet of open space with ambient temperatures of no less than 50°F is provided for the heat pump to operate properly.	\$3,300	3,226	0	0	\$428	7.7	15	0.9%	0.0%	0.79	11,008	11,008	0.21
9	Increase 8,768 SF of Attic Insulation to R-60 by adding approximately 13 inches of Blown-In Insulation to top floor attic space.	\$12,994	2,550	223	0	\$955	13.6	50	3.2%	0.0%	2.90	39,633	39,633	2.44
10	Replace (1) existing 81% efficient Fuel Oil hot water boiler with (1) new 87% efficient Fuel Oil hot water boiler	\$24,233	0	465	0	\$1,161	18.9	25	5.3%	0.0%	4.31	64,432	64,432	4.31
Totals =		\$46,354	19,888	1,085	8	\$5,902	7.9	n/a	17.8%	23.0%	15.92	218,102	210,126	11.91

2.8 ENERGY AND WATER EFFICIENCY MEASURES NOT RECOMMENDED

The following EWEMs were analyzed but not included in the recommended EWEM list due to one or more unsatisfactory financial analysis metrics. This would include any EWEM with a simple payback longer than the equipment EUL. For EWEM #11, the propane cost used in the analysis was estimated at \$3.00/gallon based on local average rates found online. EWEM #11 could be a viable option if the cost per gallon of Propane is around \$0.74/gallon cheaper than #2 Fuel Oil assuming a 97% efficient propane boiler. EWEM #12 does not appear to be a viable opportunity due to the lower performance of the heat pumps in the colder climate. This measure would require several additional heat pump units in order to match the peak heat output of the existing #2 Fuel Oil boilers which increases the investment cost to a point where the payback is beyond the EUL of the new equipment.

Energy And Water Efficiency Measures (EWEM) Evaluated But Not Recommended

Measures examined but not included because of unfavorable SIR and ROI, further study recommended												
EWEM #	Description of Measures Evaluated but Not Recommended	Initial Cost	Electric Svgs kWh	Fuel Oil Savings (Gal)	Propane Savings (Gal)	Annual Utility \$ Svgs	Simple Pay Back (Years)	EUL	Owner % Energy Savings	Owner % Water Savings	Projected GHG Emissions Reduction MTCO _{2e}	Energy Reduction (kBtu)
11	Replace (1) existing 81% efficient Fuel Oil hot water boiler with (1) new 97% efficient Propane hot water boiler	\$29,079	0	6,097.00	-7,707	\$300	97.0	25	11.4%	0.0%	17.8	139,288
12	Replace (1) existing 81% efficient Fuel Oil hot water boiler with (6) new 250% efficient Electric cold weather air to water heat pumps	\$218,093	-80,186	6,097	0	\$6,171	35.3	25	46.7%	0.0%	42.4	570,829

3.0 BACKGROUND

3.1 GENERAL PROPERTY DESCRIPTION

The Property is a parcel totaling approximately 0.82 acres and is located at 93 Cottage Street in a commercial area of Bar Harbor, Maine. The Property is improved with 1 two-story office building with a basement. The gross building area of the Property is 26,304 square feet. The Property was originally developed in 1911.



Building Entry



Building Exterior 1



Building Exterior 2



Building Exterior 3

3.2 EXISTING ENERGY AND WATER EFFICIENCY MEASURES

The following existing energy and water efficiency improvements were observed at the Property:

1. High efficiency multi-zone VRF heat pump systems
2. High efficiency single zone mini split system air conditioners and heat pumps
3. LED lighting in select areas of the building
4. Double glazed windows and doors

3.3 SPACE TYPE AND USAGE SCHEDULES

The following table lists the space types, estimated number of occupants, and typical occupied hours of operation per week.

Space	# of Occupants	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Office	44 (estimated)	8:30 am - 5:00 pm	closed	closed				

3.3.1 SPACE TYPE BREAKDOWN

The following table shows the space type and the gross square footage per space type

Space Type	Total Area (SF)
Office	26,304

4.0 UTILITY ANALYSIS

The following utility analysis covers the period of May 2023 to April 2024 and is based on bills obtained from the property owner. Both the electric and fuel oil utilities have been converted to a common unit (kBtu) so that the total energy can be examined to project an Energy Use and Cost Intensity for the Property. The Energy Use Intensity (EUI) can then be used to compare the Property against similar properties to determine how efficiently the Property is being operated.

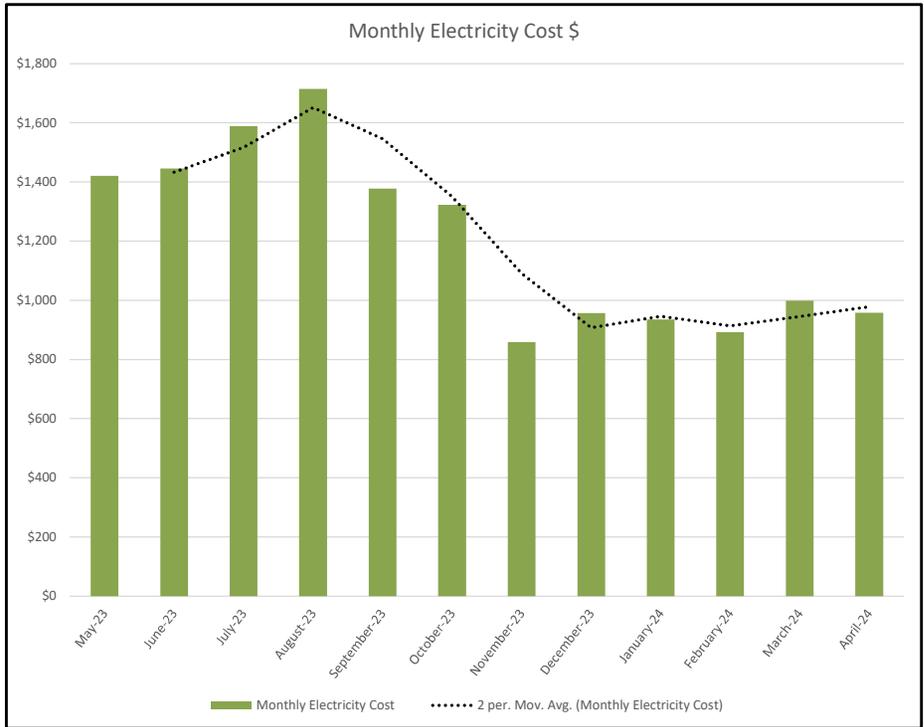
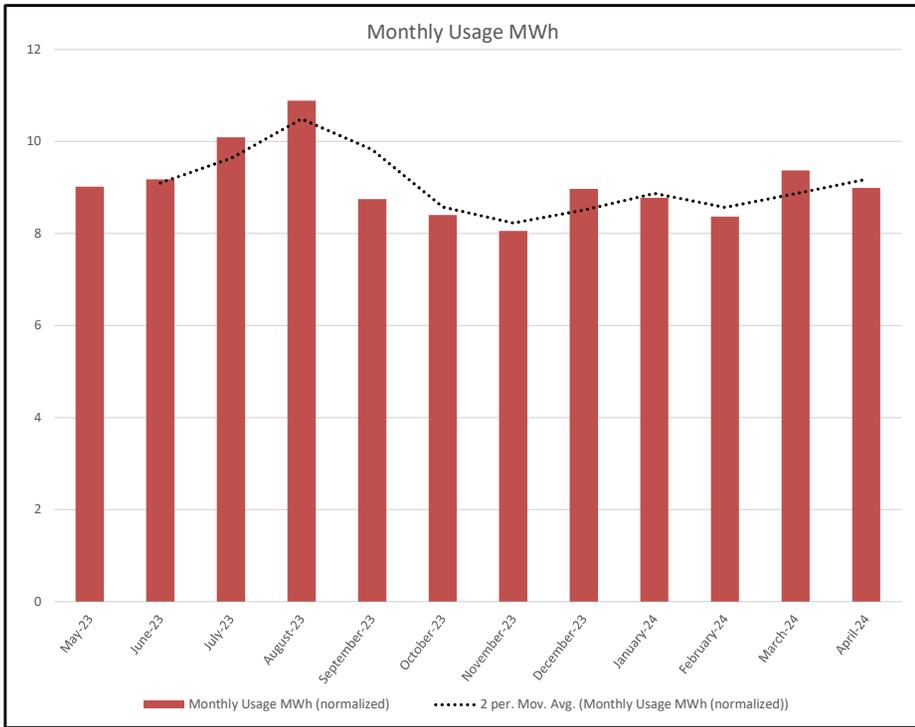
4.1 UTILITY PROVIDERS

Utility Type	Utility Provider Name
Electricity	Constellation NewEnergy
Fuel Oil	No Frills Oil
Water / Sewer	Town of Bar Harbor

4.1.1 ELECTRICITY

The chart below shows the monthly consumption and cost of electricity for the Property. The cost per kWh is calculated in the fourth column. The bottom row shows the annual electrical energy consumption and cost for the Property.

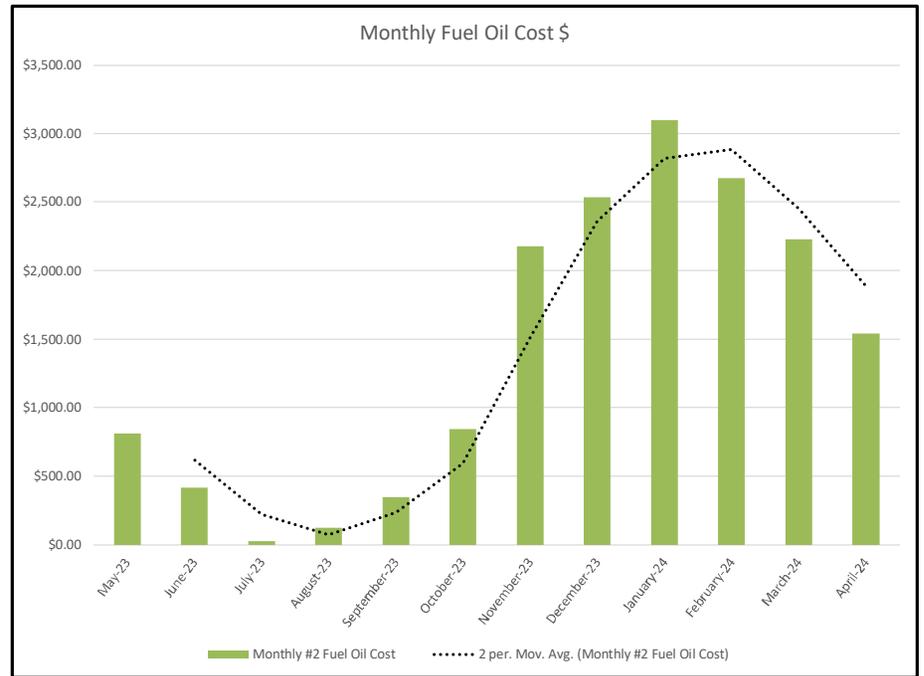
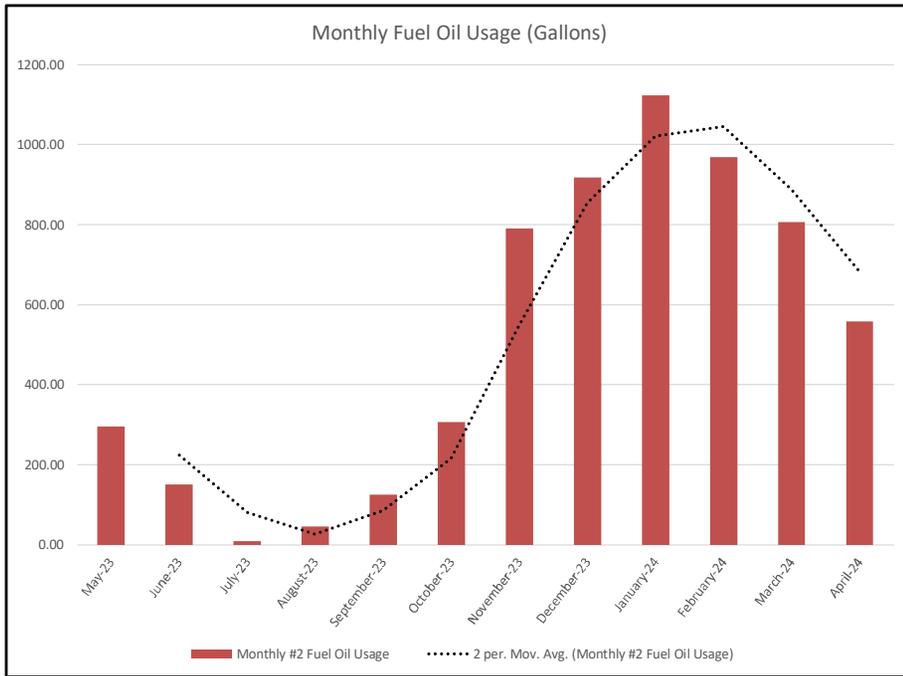
Billing Month & Year	Monthly Electricity Usage (kWh)	Monthly Electricity Cost	Cost per kWh	kBTU Usage (kWh x 3.41)
May-23	9,022	\$1,420	\$0.16	30,783
June-23	9,180	\$1,445	\$0.16	31,322
July-23	10,092	\$1,589	\$0.16	34,434
August-23	10,889	\$1,714	\$0.16	37,153
September-23	8,753	\$1,378	\$0.16	29,865
October-23	8,404	\$1,323	\$0.16	28,674
November-23	8,052	\$858	\$0.11	27,473
December-23	8,968	\$956	\$0.11	30,599
January-24	8,775	\$935	\$0.11	29,940
February-24	8,365	\$892	\$0.11	28,541
March-24	9,369	\$999	\$0.11	31,967
April-24	8,988	\$958	\$0.11	30,667
Annual Electricity Usage & Cost:	108,857	\$14,468	\$0.13	371,420



4.1.2 FUEL OIL

The chart below shows the monthly consumption and cost of the #2 Fuel Oil for the Property. Fuel deliveries have been weather normalized by heating degree days to produce the fuel consumption baseline shown below. The cost per Gal is calculated in the fourth column. The bottom row shows the annual Fuel Oil consumption and cost for the Property.

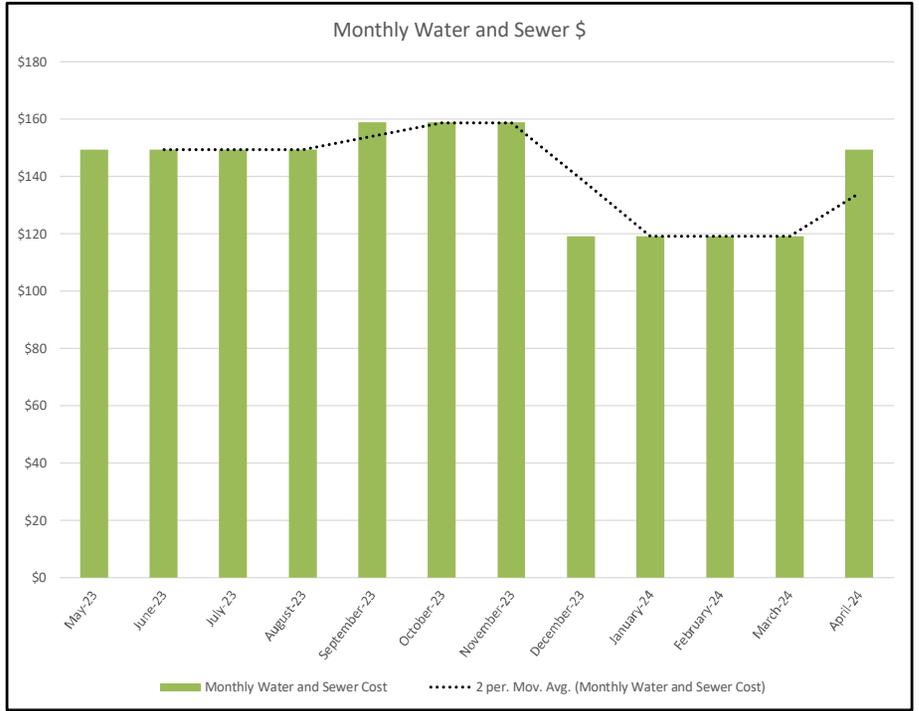
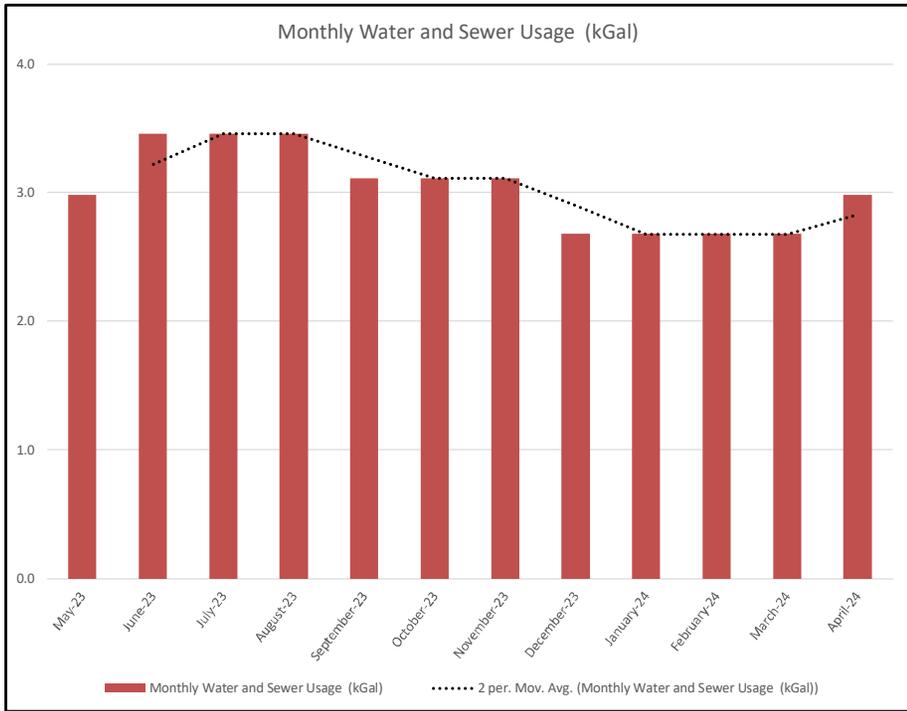
Billing Month & Year	Monthly Fuel Oil Cost	Monthly Fuel Oil Usage (Gal)	Cost per Gal	kBTU Usage (Gal x 138,874)
May-23	295	\$813	\$2.76	41,157
June-23	151	\$417	\$2.76	21,087
July-23	9	\$26	\$2.76	1,314
August-23	46	\$126	\$2.76	6,372
September-23	125	\$345	\$2.76	17,467
October-23	306	\$845	\$2.76	42,744
November-23	790	\$2,179	\$2.76	110,244
December-23	918	\$2,533	\$2.76	128,157
January-24	1,123	\$3,098	\$2.76	156,768
February-24	969	\$2,673	\$2.76	135,235
March-24	807	\$2,226	\$2.76	112,636
April-24	559	\$1,541	\$2.76	77,975
Annual #2 Fuel Oil Usage (Gal) and Cost:	6,097	\$16,822	\$2.76	851,155



4.1.3 WATER AND SEWER

The chart below shows the monthly consumption and cost of the water and sewer for the Property. Water consumption is billed every three or four months. The data shown below has been prorated per month and converted to kGal from the billing units of CF. The cost per kGal is calculated in the far-right column. The bottom row shows the annual water and sewer consumption and cost for the Property.

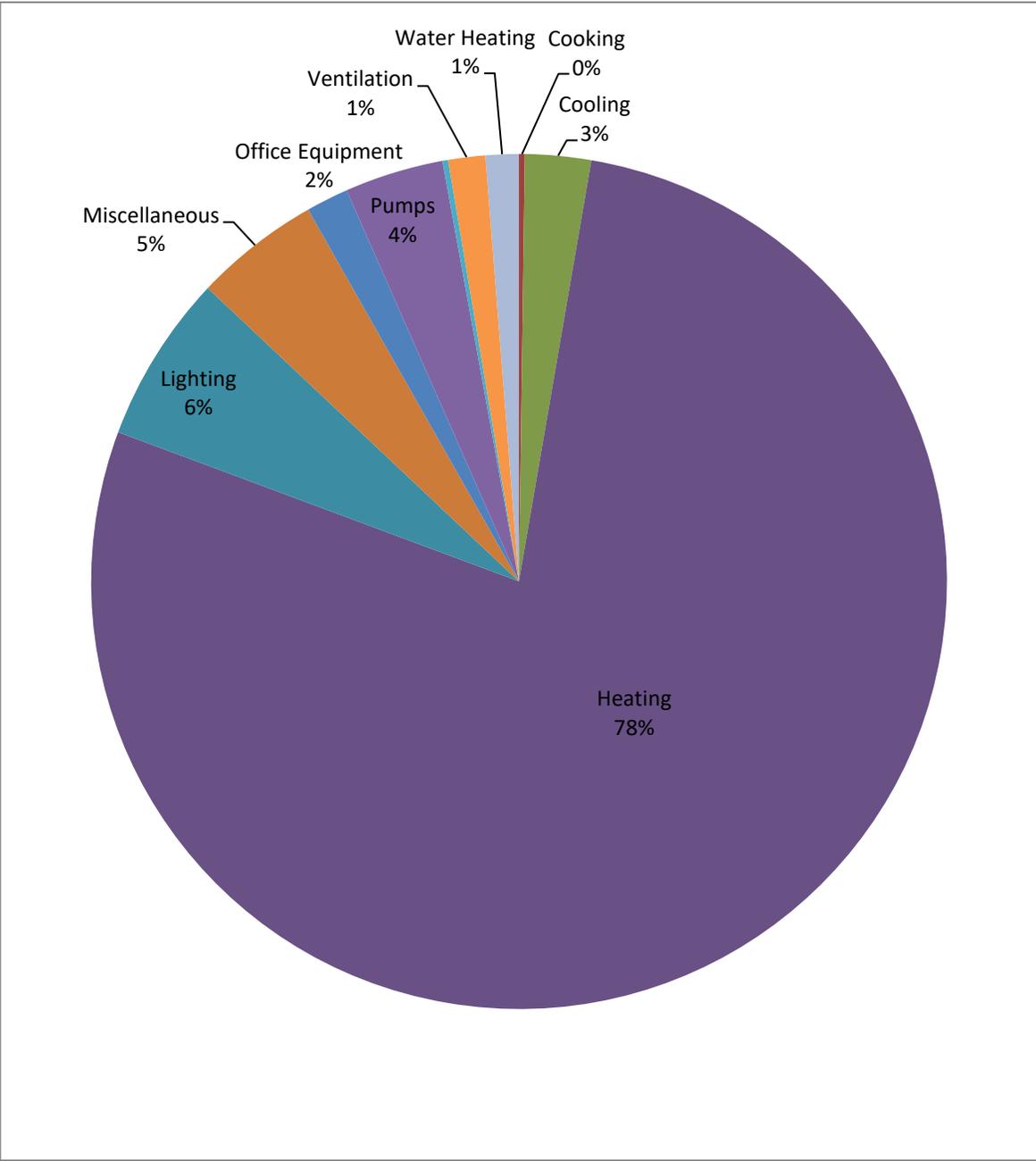
Billing Month & Year	Monthly Water and Sewer Usage (kGal)	Monthly Water and Sewer Cost	Cost per kGal
May-23	3.0	\$149	\$50.10
June-23	3.5	\$149	\$43.16
July-23	3.5	\$149	\$43.16
August-23	3.5	\$149	\$43.16
September-23	3.1	\$159	\$51.05
October-23	3.1	\$159	\$51.05
November-23	3.1	\$159	\$51.05
December-23	2.7	\$119	\$44.46
January-24	2.7	\$119	\$44.46
February-24	2.7	\$119	\$44.46
March-24	2.7	\$119	\$44.46
April-24	3.0	\$149	\$50.10
Annual Water and Sewer Usage & Cost:	36.4	\$1,699	\$46.69



4.2 ENERGY END USE ANALYSIS

The following table shows the estimated end use analysis for all energy utilities on the Property.

Combined Fuel End-Use Breakdown



4.3 ENERGY & WATER BENCHMARKING

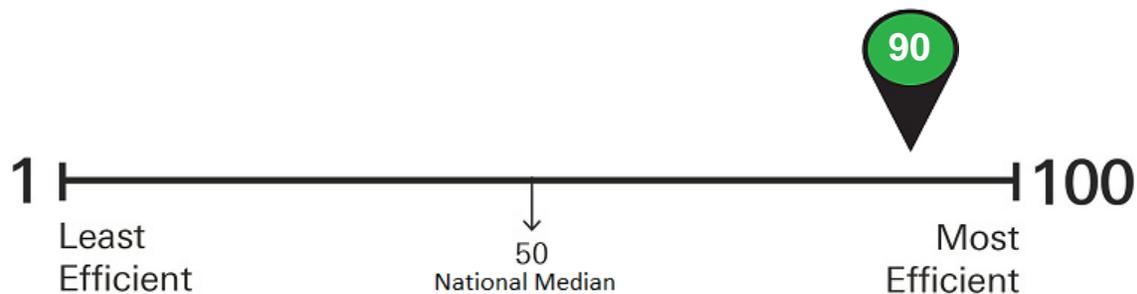
The owner provided whole Property aggregate utility data from the utility company. The aggregate site energy and water usage was input into Energy Star Portfolio Manager to produce a baseline year Energy Performance Scorecard. The EUI of 46.1 kBTU/SF shown in the Energy Star Scorecard is slightly different than the EUI of 46.5 kBTU/SF shown in the table in section 2.6 due to a minor variation in the BTU conversion factor used for #2 Fuel Oil between Energy Star Portfolio Manager and AEI's energy analysis tool set.

ENERGY STAR[®] Energy Performance Scorecard

90
out of 100

Bar Harbor Town Hall

For Year Ending	April 30, 2024
Property Address	93 Cottage St Bar Harbor, Maine 04609
Primary Function	Office
Gross Floor Area (ft ²)	26,304
Year built	1911
Energy Use per sq. ft.*	46.1 kBtu



What is the ENERGY STAR Score?

The ENERGY STAR score rates commercial building's energy performance relative to similar buildings nationwide. Expressed as a number on a simple 1-100 scale, the score rates performance on a percentile basis: a building with a score of 50 performs better than 50% of its peers. Higher scores mean better energy efficiency, resulting in less energy use and fewer greenhouse gas emissions. If a 1-100 score for a specific building type has not been developed, Site Energy Use Intensity (EUI) will be displayed on this scorecard.

Learn more at:

energystar.gov/scorecard

*Site energy use

5.0 BUILDING SYSTEMS

5.1 ENVELOPE

The following table shows the building envelope components that were observed at the Property.

Building Component	Description	Condition
Exterior Cladding	Unpainted brick /masonry	Good
Roof	Flat, rubber membrane	Good
Windows	Wood-framed, double pane glazing with a thermal break	Good
Exterior Doors	Double pane	Good
Attic Insulation	Blown in cellulose	Improvement opportunity

5.2 LIGHTING

The following tables provide an inventory of observed lighting fixtures, lamp type, and wattage.

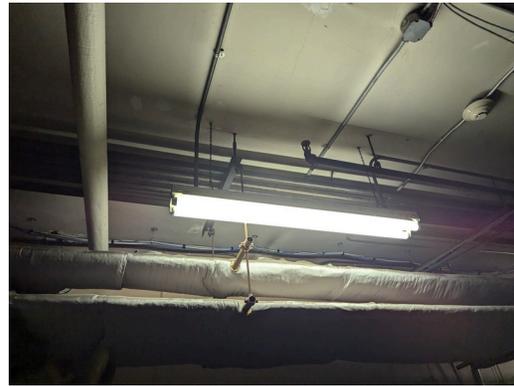
Lighting Audit

Area of Building	Existing Fixture	Total # Fixures	Bulbs Per Fixture	Total # of Bulbs	LED Equivalent Wattage	Current kWh Usage	kWh Usage w/ LED	kWh Saved Per Year	Cost Per kWh	Current Annual Op Cost	Annual Cost Using LEDs	Savings	Cost to Install Lighting	Pay back
Basement	2B 34W 4' T12 Electronic	12	2	24	17	3574	1787	1787	0.13	\$475	\$238	\$238	\$447	1.9
File Storage	2B 34W 4' T12 Electronic	6	2	12	17	1273	636	636	0.13	\$169	\$85	\$85	\$223	2.6
Hallways	2B 34W 4' T12 Electronic	2	2	4	17	1191	596	596	0.13	\$158	\$79	\$79	\$74	0.9
Offices	2B 34W 4' T12 Electronic	2	2	4	17	596	298	298	0.13	\$79	\$40	\$40	\$74	1.9
Council Chambers	4B 32W 4' T8	11	4	44	11	6167	2120	4047	0.13	\$820	\$282	\$538	\$379	0.7
Top Floor Gym	2B 60W 8' T12 Electronic	6	2	12	36	3154	1892	1261	0.13	\$419	\$251	\$168	\$660	3.9
Top Floor Gym	4B 34W 4' T12 Electronic	6	4	24	17	3574	1787	1787	0.13	\$475	\$238	\$238	\$447	1.9
Top Floor Gym	2B 34W 4' T12 Electronic	3	2	6	17	894	447	447	0.13	\$119	\$59	\$59	\$112	1.9
Conference Room	4B 17W 2' T8	6	4	24	8	1787	841	946	0.13	\$238	\$112	\$126	\$255	2.0
Conference Room	2B 32W 4' T8	2	2	4	11	561	193	368	0.13	\$75	\$26	\$49	\$34	0.7
						22,770	10,597	12,173		\$ 3,026	\$ 1,408	\$ 1,618	\$ 2,707	1.67

Lighting Photographs



Globe lighting



4ft T12 light fixture



Fluorescent light ballast



Basement lighting

5.3 BUILDING MECHANICAL SYSTEMS

The HVAC systems consist of (2) central 81% efficient #2 fuel oil fired hot water boilers that serve perimeter hot water radiators throughout the building. Additional mini-split system heat pumps and VRF heat pumps provide further heating and cooling to the spaces. The mini-splits and VRF units are each controlled by a digital thermostat.

Domestic hot water is produced by (1) electric resistance 40-gallon tank water heater.

Building Mechanical System Photographs



VRF outdoor unit



VRF Outdoor Unit #2



VRF Indoor Unit



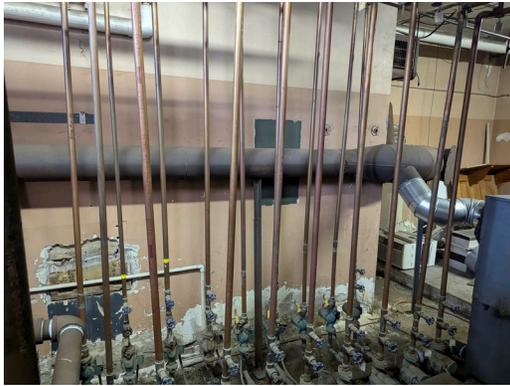
Mini Split System outdoor unit



Mini Split System Indoor Coil



Oil Fired Boiler Burner



Uninsulated building hot water piping



Uninsulated building hot water piping 2



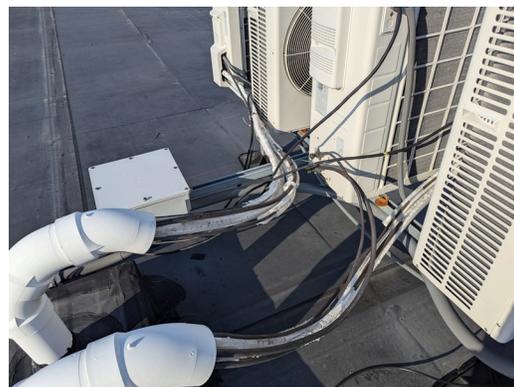
Electric domestic water heater



Uninsulated DHW piping



Mini split system roof mounted units



Deteriorated refrigerant line insulation

5.4 APPLIANCES

Each breakroom contains a refrigerator and microwave with one breakroom containing a free-standing electric range. The systems are replaced on an as needed basis.

The following table provides the details of the typical appliances observed in the tenant spaces.

Appliance Photographs



Break room Kitchen



Mini refrigerator



Mini refrigerator #2

5.5 LAUNDRY EQUIPMENT

There are no central laundry systems on the Property.

HVAC & Mechanical Equipment

Number	Location or Unit Address	Equipment Description	Manufacturer	Model #	Serial #	YEAR of Manufacture	EUL	RUL	Quantity	Heating Fuel	Heating Output Capacity	Heating Efficiency (AFUE, TE, COP, HSPF)	Efficiency Unit of Measure	Cooling Type	Cooling Capacity (Tons)	Efficiency (SEER, EER, Etc.)	Efficiency Unit of Measure
1	Basement	Hot Water Boiler serving baseboards	Weil McLain	578	1	2014	30	20	2	#2 Fuel Oil	453	71%	TE	n/a	n/a	n/a	n/a
2	Outdoor	Mini Split Air Conditioner	Daikin	RK30NMVJU	G002566	2019	15	10	1	n/a	n/a	n/a	n/a	DX	2.6	17.5	SEER
3	Outdoor	VRF Heat Pump Outdoor Unit	Daikin	RXYQ120TTJU	150425951	2015	15	6	1	Electric	129 MBH	3.8	COP	DX	9.5	13.2	EER
4	Outdoor	VRF Heat Pump Outdoor Unit	Sanyo	CHDX99053	0001383	2008	15	-1	1	Electric	107.5 MBH	14.3	EER	DX	8	12.1	EER
5	Outdoor	Mini Split Heat Pump	Samsung	AJ020BXS2CH	none visible	2023	15	14	1	Electric	22 MBH	10	HSPF	DX	1.75	18	SEER
6	Roof	Mini Split Air Conditioner	Mitsubishi	MUY-D36NA	0002531T	2010	15	1	3	n/a	n/a	n/a	n/a	DX	2.9	15.1	SEER
7	Roof	Mini Split Air Conditioner	Mitsubishi	MUY-GE12NA	not visible	2010	15	1	1	n/a	n/a	n/a	n/a	DX	1	12.5	EER

Domestic Water Heating

Number	Location or Unit Address	Residential or Commercial (central)?	Manufacturer	Model #	Serial #	YEAR of Manufacture	EUL	RUL	Quantity	Fuel (electric, natural gas, etc.)	Input Capacity	Input Units of Measure (kW, BTUH, MBH)	Storage Capacity (Gal)	Efficiency (TE, AFUE, Energy Factor, etc.)
1	Basement	Standard Tank	State	ES640DORS	1346A030875	2013	10	-1	1	Electric	4.5	kW	40	0.92

Refrigerators

Number	Location	Manufacturer	Model	Serial #	YEAR of Manufacture	EUL	RUL	Quantity	Cubic Foot Capacities	Freezer Location	Ice Maker?	Door Seal Condition	Annual Usage (kWh)	Energy Star?
1	Breakroom	Tramontina	80901/100	2012017121900400	2017	10	3	1	3.2			Good		No
2	Breakroom	Sears	Coldspot			10	0	1	7			Fair		No

6.0 RECOMMENDED EWEMS

The Recommended EWEMs table found at the beginning of the report identifies the measures that should be considered for further evaluation or implementation. This section describes each Recommended EWEM in further detail.

6.1 Low-Cost EWEMs

AEI has identified (4) low-cost EWEMs for this Property. This includes recommended measures for which the total individual cost is less than or equal to \$1,000.

EWEM #1 - NEW WATERSENSE LOW FLOW KITCHEN FAUCET AERATORS

The existing kitchen faucet aerators were measured to have an average flow rate of 1.8 GPM. Recommend replacing 2 existing kitchen faucet aerators with new WaterSense labeled 1.0 GPM aerators. Aerator housings must bear a 1.0 GPM manufacturer flow rating. With new lower flow aerators, less water will be consumed as well as less energy required for hot water.

Total estimated cost including labor and material: \$33

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: Minimal; Installation should take less than 5 minutes per faucet.

EWEM #2 - NEW REFRIGERANT LINE INSULATION ON (4) ROOFTOP MINI SPLIT SYSTEMS

The existing refrigerant line insulation on the four rooftop mini split system condensing units has deteriorated. Recommend replacing the insulation to ensure optimal efficiency of the units.

Total estimated cost including labor and material: \$60

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: None

EWEM #3 - NEW WATERSENSE LOW FLOW BATHROOM FAUCET AERATORS

The existing bathroom faucet aerators were measured to have an average flow rate of 1.5 GPM. Recommend replacing 4 existing bathroom faucet aerators with new WaterSense labeled 1.0 GPM aerators. Aerator housings must bear a 1.0 GPM manufacturer flow rating. With new lower flow aerators, less water will be consumed as well as less energy required for hot water.

Total estimated cost including labor and material: \$67

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: Minimal; Installation should take less than 5 minutes per faucet.

EWEM #4 - NEW DOMESTIC WATER HEATER PIPE INSULATION

The water piping at the domestic water heater is currently uninsulated which causes heat loss to the surrounding environment. Insulating the piping will extend the cooling-down period, reducing loads on cooling equipment. It will also allow the piping to heat up more quickly during periods of use. Recommend adding add R-5.4 insulation to 50 linear feet of 1 inch diameter domestic hot water piping including flexible connectors, tees, and valves.

Total estimated cost including labor and material: \$384

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: None

6.2 CAPITAL COST EWEMS

AEI has identified (6) capital cost EWEMs for this Property. This includes recommended measures for which the total individual cost is greater than \$1,000.

EWEM #5 - NEW WATERSENSE LOW FLUSH TOILETS

The existing toilets were measured to have an average flush volume of 1.4 GPF. Recommend replacing 4 existing toilets with new WaterSense labeled 1.28 GPF toilets. Toilets must bear a 1.28 GPF manufacturer flush rating. With new lower flush toilets, less water will be consumed per flush saving on water usage and associated costs.

Total estimated cost including labor and material: \$1,041

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure:

- Efficiency Maine may offer water conservation incentives for commercial properties
- Consider investigating available water conservation grants for municipal facilities

More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: Minimal; Installation should take less than 30 minutes per toilet

EWEM #6 - NEW BUILDING HOT WATER PIPE INSULATION

The hot water piping serving each radiator zone is currently uninsulated which causes heat loss to the surrounding environment. Insulating the piping will extend the cooling-down period, reducing loads on cooling equipment. It will also allow the piping to heat up more quickly during periods of use. Recommend adding add R-5.4 insulation to 200 linear feet of 1 inch diameter domestic hot water piping including flexible connectors, tees, and valves.

Total estimated cost including labor and material: \$1,536

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: None

EWEM #7 - RETROFIT LIGHTING WITH ENERGY STAR CERTIFIED LEDs

The existing inefficient lighting in the site and common areas consists of fluorescent tube lamps. Recommend retrofitting 56 common area light fixtures with new Energy Star certified LED fixtures or lamps. LED lighting technology offers a much higher lumen per watt; consequently, for the same hours of operation, LED lights will consume much less energy than the existing older technology light fixtures at an equivalent light output.

Total estimated cost including labor and material: \$2,706

Estimated O&M savings: There may be some additional O&M savings due to the longer expected life of the LED lamps

Operational changes of staff required to support the measure: None

Available Rebates or Incentives:

- Efficiency Maine offers the 2025 Discounted Screw-In LEDs Program. This program provides discounted screw-in LEDs at retailers and distributors across the state. While this program focuses on screw-in bulbs, it is worth investigating whether any common area fixtures can utilize these discounted bulbs.
- Efficiency Maine offers the 2025 Commercial and Industrial (C&I) Custom Program - Electric Projects. This program is for electrical energy efficiency projects that result in at least 36,000 kWh of annual reductions in grid-supplied energy. If the total project savings meet the minimum requirements, this project may qualify for custom incentives. Performing a detailed energy savings calculation to determine eligibility is highly recommended.
- This project may also qualify for the 2025 Commercial and Industrial (C&I) Custom Program - Electric Projects because this program funds electrical energy efficiency projects.
- It is advised to review the Program Opportunity Notice (guidelines and project application) found on the Efficiency Maine website.

More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: Minimal; This work will occur in common areas and on the site during normal business hours.

EWEM #8 - NEW HEAT PUMP WATER HEATER

Recommend replacing the existing electric resistance domestic water heater in the basement with a new heat pump water heater with a minimum UEF of 3.4. Heat pump water heaters are much more efficient than standard electric resistance water heater thereby using significantly less energy to produce an equivalent amount of hot water.

Total estimated cost including labor and material: \$3,300

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure:

- **Federal Tax Credit:** This project may qualify for a federal tax credit of 30% of the project cost, up to a maximum credit of \$2,000. It is recommended to consult with a tax professional to ensure eligibility and proper documentation.
- Based on the 2025 Water Heating Solutions from Efficiency Maine, this project could qualify for rebates on the heat pump water heater and potential ECM circulator pump rebates if the installation requires a new circulator pump.
 - Efficiency Maine offers incentives for both Light and Heavy Duty Commercial Heat Pump Water Heaters.

- Depending on its size, the new water heater will fall into one of those categories, and the respective incentives are listed in the provided information.
 - Efficiency Maine also offers incentives on ECM circulator pumps.
-
- It is advised to review the Program Opportunity Notice (guidelines and project application) found on the Efficiency Maine website.
 - Working with an Efficiency Maine Qualified Partner is highly recommended to maximize any potential incentives.

More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation Impact to Occupants: The installation will require coordination between the facility management and the contractor to minimize downtime of domestic hot water service. To reduce disruption, it is recommended to schedule the installation during off-peak hot water demand periods.

EWEM #9 - IMPROVED ATTIC INSULATION R-VALUE

The existing attic insulation was estimated to have a thermal resistance of around R-19. Recommend improving 8,768 square feet of attic insulation to R-60 by adding approximately 13 inches of blown-in insulation to the attic floor space. The increased attic insulation reduces the rate of heat transfer between the unconditioned attic space and the conditioned interior space of the adjacent apartments thus decreasing the heating and cooling costs in those conditioned areas.

Total estimated cost including labor and material: \$12,994

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available rebates or incentives for this measure: This project may qualify for a federal tax credit incentive of 30% of project cost up to a max credit of \$1,200. More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: Minor impact to areas with interior attic access. There may be some noise on the top floor from workers in attic and from insulation blowing equipment.

EWEM #10 - NEW HIGHER EFFICIENCY FUEL OIL BOILER

Recommend replacing (1) existing 521 MBH #2 fuel oil fired boiler with (1) new high efficiency fuel oil boilers. The selected boilers should be at least 87% efficient, if available. The full-fire heating capacity of the boilers should match the existing boilers. The installing contractor may recalculate the boiler size based on increased efficiency and output. The higher thermal

efficiency of a new condensing boiler will provide the same heat output with less fuel input compared to a standard efficiency boiler, thereby saving on fuel consumption and associated costs.

Total estimated cost including labor and material: \$24,233

Estimated O&M savings: None

Operational changes of staff required to support the measure: None

Available Rebates or Incentives:

- Federal tax credit incentive of 30% of project cost up to a max credit of \$600.
- Based on the 2025 Commercial Heating, Ventilation, and Air Conditioning (HVAC) Solutions from Efficiency Maine, this project could qualify for rebates on the propane unit heater itself, as well as potential boiler control and ancillary equipment rebates.
 - Efficiency Maine offers incentives for Commercial Boilers, Furnaces, and Commercial Boiler Controls and Ancillary Equipment (retrofit only).
- It is advised to review the Program Opportunity Notice (guidelines and project application) found on the Efficiency Maine website.
- It is highly recommended that you work with an Efficiency Maine Qualified Partner to maximize potential incentives.

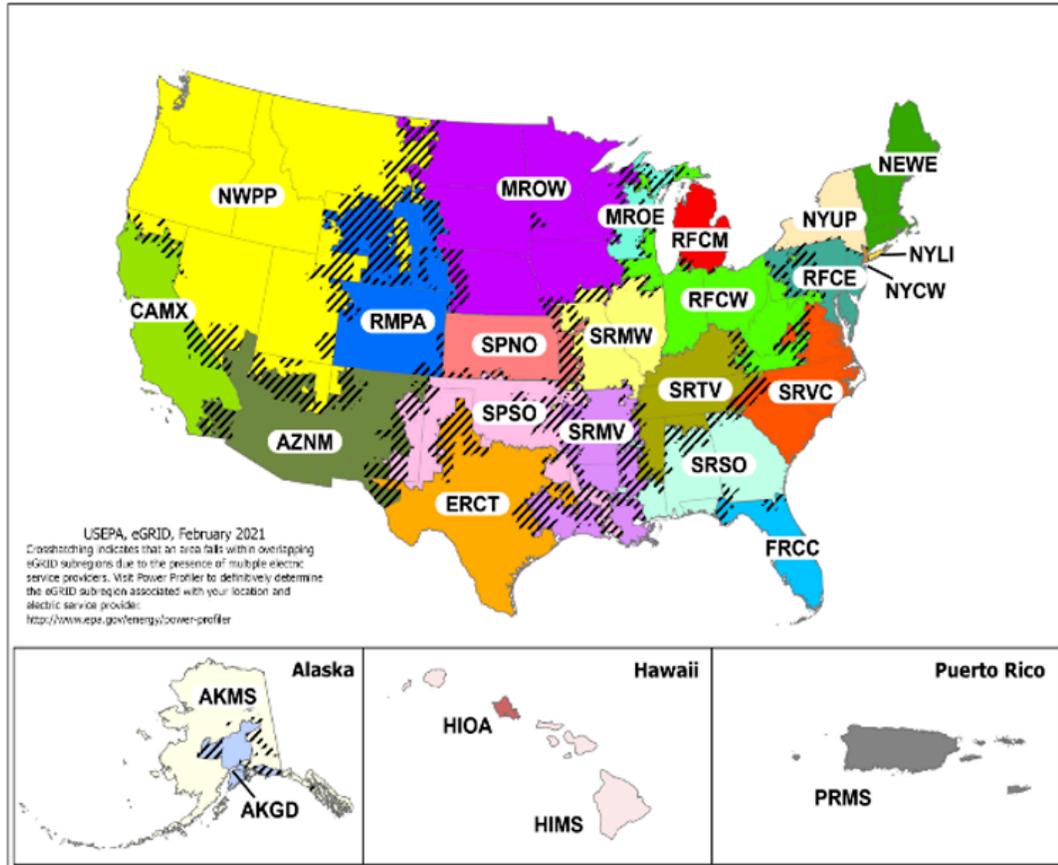
More information about available incentives and funding opportunities can be found in Section 8.1 State Level Incentives .

Implementation impact to occupants: The Town and installing contractor will need to coordinate the installation to minimize the downtime of heating hot water to the building.

7.0 GHG EMISSIONS ANALYSIS

7.1 EGRID SUBREGIONS

A map of the the eGRID subregions and the equivalent CO₂ emissions factor used in the GHG emissions analysis calculations are shown below.

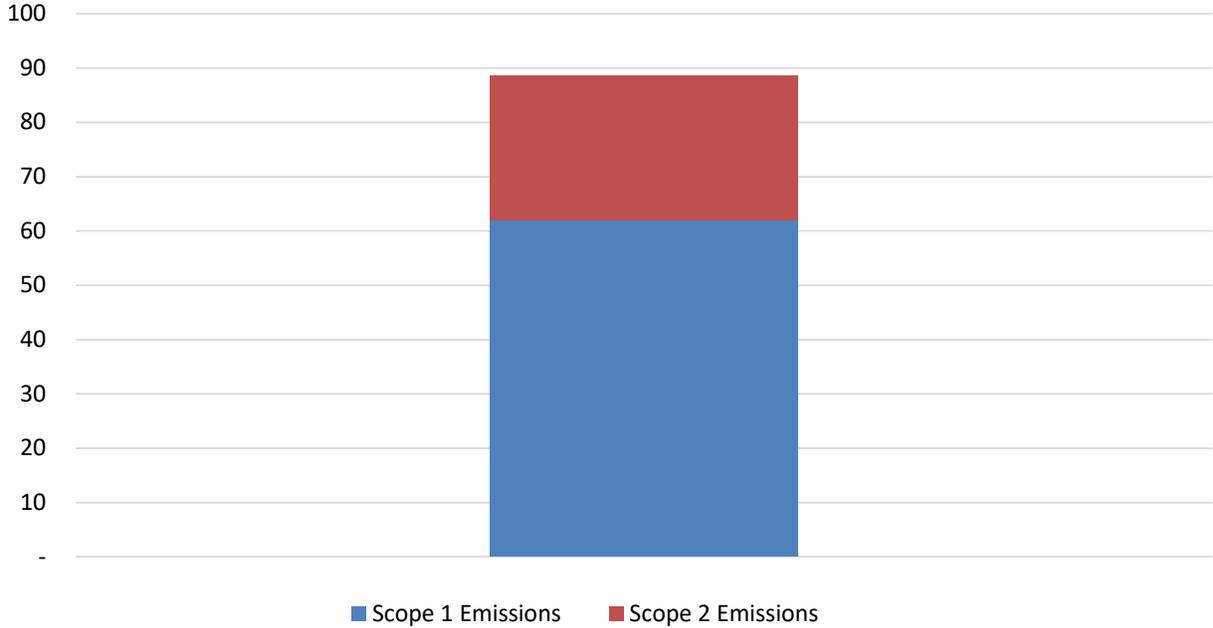


eGRID Subregion Name	eGRID Acronym	CO ₂ e Emissions Factor (lb/MWh)
NPCC New England	NEWE	541.131
National Average	N/A	775.2

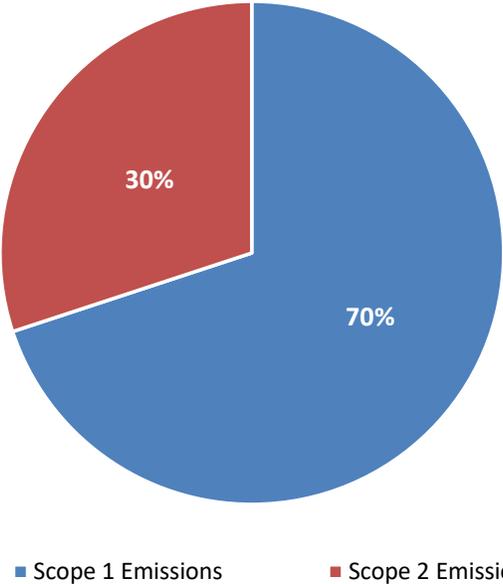
7.2 BASELINE SCOPE 1 AND SCOPE 2 GHG EMISSIONS

The following charts show the existing Scope 1 and Scope 2 emissions calculated for the Property using the above equivalent CO₂ emissions factor for the applicable region.

Baseline Scope 1 and Scope 2 Emissions (MTCO₂e/yr)



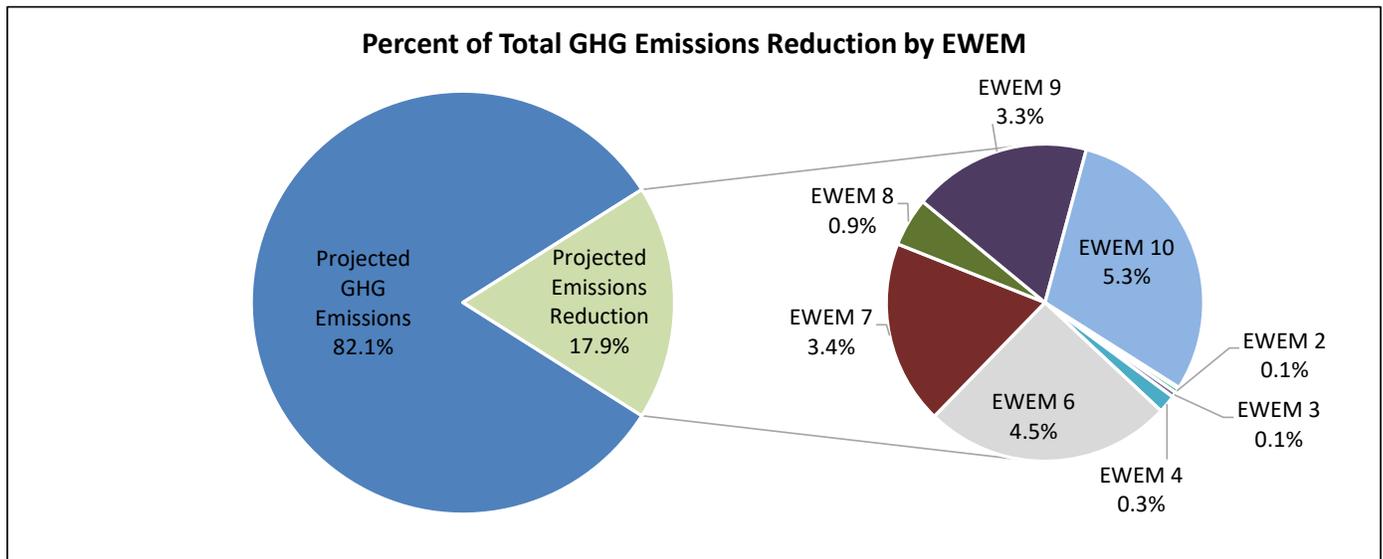
Baseline Scope 1 and Scope 2 Emissions (%)



7.3 GHG EMISSIONS REDUCTION PER EWEM

The following table and chart show the equivalent CO₂ emissions reduction per EWEM.

EWEM #	Energy And Water Efficiency Measures (EWEM) Summary Description	Projected GHG Emissions (MTCO2e)	Emissions Reduction (MTCO2e)	Emissions Reduction (%)
Baseline	Current GHG emissions	88.76		
EWEM 1	Replace 2 Existing Kitchen Faucet Aerators With 1.0 GPM Low Flow Aerators. Aerator housings must bear 1.0 GPM manufacturer flow ratings.	72.84	0.03	0.0%
EWEM 2	Replace refrigerant suction line insulation on 4 mini split condensing units located on roof.		0.07	0.1%
EWEM 3	Replace 4 Existing Bathroom Faucet Aerators With 1.0 GPM WaterSense Labeled Low Flow Aerators. Aerator housings must bear 1.0 GPM manufacturer flow ratings.		0.09	0.1%
EWEM 4	Add R-5.4 insulation to 50 LF of 1 inch diameter domestic hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values.		0.29	0.3%
EWEM 5	Replace 4 Existing Toilets with WaterSense Labeled Low Flow 1.28 GPF Single Flush Toilets, American-Standard-Reliant-2-Piece-1-28-GPF-Single-Flush Toilet-with-Slow-Close-Seat-in-White-3332128S-020/301379290, or equivalent.		0.00	0.0%
EWEM 6	Add R-5.4 insulation to 200 LF of 1 inch diameter building hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values.		4.03	4.5%
EWEM 7	Retrofit 56 Exterior Site and Common Area Lighting Fixtures with 158 DLC Certified LED Lamps		2.98	3.4%
EWEM 8	Replace 1 Existing Electric Water Heater with 1 Hybrid Heat Pump Water Heater (HPWH) with a minimum UEF of 3.4. Note that the hybrid water heater must be installed where minimum of 1,000 cubic feet of open space with ambient temperatures of no less than 50°F is provided for the heat pump to operate properly.		0.79	0.9%
EWEM 9	Increase 8,768 SF of Attic Insulation to R-60 by adding approximately 13 inches of Blown-In Insulation to top floor attic space.		2.90	3.3%
EWEM 10	Replace (1) existing 81% efficient Fuel Oil hot water boiler with (1) new 87% efficient Fuel Oil hot water boiler		4.74	5.3%
Total	Projected GHG emissions and reduction from baseline	72.84	15.92	17.9%



8.0 FINANCIAL INCENTIVES

The following section will identify available incentives across the country and how they may or may not apply to the property and the recommendations made in this report. AEI will provide a summary of available energy efficiency incentives. The best resource to stay current on active energy efficiency incentives is at: dsireusa.org.

8.1 STATE LEVEL INCENTIVES

2025 Technical Assistance

(Existing Buildings)

Administrator: Efficiency Maine

Apply Services

IncentiFind can connect you to our expert who can explain why this incentive may be right for your project.

Description

Efficiency Maine offers incentives for Technical Assistance Studies to those customers that have already identified a project but need additional outside assistance to move it forward. Customers are guided through the process of developing the energy savings analyses and project cost estimates necessary for our Custom Program application. Efficiency Maine may provide up to 50% of the cost of an approved Technical Assistance Study up to \$20,000.

Eligible Scope

Efficiency Maine's Commercial and Industrial (C&I) Custom Program provides funding for Technical Assistance (TA) Studies to help program participants lay the necessary groundwork for project investment. The Program incentive is 50% of the approved TA Study cost up to \$25,000. Eligible TA Studies include investment-grade analysis of large and more complex projects, as well as development of systems designs and preparation of construction bid documents for targeted measures. Additionally, Efficiency Maine will support interconnection applications and studies required for battery projects that are applying for an incentive through the Energy Storage System (ESS) Program Opportunity Notice

Funded TA Studies must focus on complex projects that require engineering to proceed, and that are found likely to be eligible for Custom Program or ESS Program funding. All award decisions will be made by Efficiency Maine based on a review of potential project eligibility, alignment with Program goals, and a preliminary cost effectiveness screening. Examples of potentially eligible studies include: custom process improvement upgrades, large or complex beneficial electrification or HVAC projects, and battery system designs.

[C&I Custom Program Technical Assistance guidelines](#)

Estimated Funds

Min Funds

Varies by Project.

Max Funds

- Efficiency Maine may provide 50% of the cost of an approved Technical Assistance Study up to \$25,000.
- \$200,000 is being initially allocated to this program for the remainder of the 2024 fiscal year (July 1, 2023 through June 30, 2024).

Next Steps

1. The customer and/or TA Provider provide Efficiency Maine preliminary estimates of measure costs and energy impacts in order to determine cost effectiveness. These preliminary estimates could also come from an Efficiency Maine scoping audit.
2. If cost effectiveness found positive, customer and TA Provider submit a TA Study application.
3. Coordinate a TA Study kick off meeting between the customer, TA Provider, and Efficiency Maine in order to clearly define the study scope, and agreed upon deliverables.
4. The Efficiency Maine representative reviews the TA Study application package and, if applicable, recommends award of the TA incentive to the Efficiency Maine Program Manager. The Efficiency Maine representative communicates the final decision to the customer and the TA Provider.
5. The customer authorizes the TA Provider to proceed with the study. The Efficiency Maine representative remains engaged with the process to address questions and provide input, guidance, and assistance as necessary. The TA provider must inform Efficiency Maine of any changes in the TA Study scope of work as soon as they are known.
6. Once the TA Study is complete, it is submitted to Efficiency Maine for review.
7. Efficiency Maine reviews the study to confirm the agreed-upon deliverables are completed.
8. Efficiency Maine requests clarification or elaboration, if appropriate.
9. Efficiency Maine issues TA incentive award.

2025 Commercial and Industrial (C&I) Custom Program - Thermal Projects

(Existing Buildings)

Administrator: Efficiency Maine

Apply Services

IncentiFind can help you APPLY to this incentive. Our fee is 30% of the total rebate value.

Description

Maine businesses, nonprofits, institutions, and governments are eligible for funding for a variety of thermal energy efficiency projects through Efficiency Maine's Commercial and Industrial (C&I) Custom Program. Funding is available for thermal projects that involve a measure (or set of measures) that reduces the consumption of natural gas, oil, biomass, and other fuels.

Awarded projects have included heat recovery measures, boiler upgrades and controls, and HVAC controls. For a list of previously awarded custom projects, [click here](#).

Eligible Scope

Eligible Projects

- A measure (or set of such measures) at a single facility or campus that reduces inefficient energy use (or increases efficient energy use), leading to fuel savings related to producing thermal energy for end uses such as heating, steam production and hot water.
- Projects must save a minimum of 400 MMBtu annually (4,000 therms of piped natural gas).

Ineligible Projects

- Measures that are eligible for [Efficiency Maine's C&I Prescriptive Incentive Program](#).
- Projects that have a benefit-to-cost ratio less than 1, as per Efficiency Maine's Total benefit-cost test.
- Projects that have a simple payback of under one year (after factoring in the Efficiency Maine incentive).
- Projects that involve measures required by state or federal law or local building or energy codes, or projects that are deemed by Efficiency Maine to represent standard industry practice measures.
- Projects for which the customer (or its affiliate) has made binding commitments to proceed prior to the official award of funding under the Custom Program.
- Measures that rely solely on human behavior changes or facility maintenance.
- Feasibility studies.
- Fundraising seed money for projects to be completed and funded subsequently.

Estimated Funds

Min Funds

Varies by project.

Max Funds

- Funding levels will range from a minimum of \$5,000 to a maximum of \$1,000,000 per facility up to 50% of the total project costs.
- Incentive awards are capped based on the magnitude of the validated annual reduction in grid-supplied energy (kWh/year) and/or fuel savings (MMBtu/year). Incentives will not exceed \$0.30 per kWh of validated annual reduction in grid supplied electricity plus \$25 per MMBtu of annual fuel savings.

Next Steps

1. To get started, review the [Thermal Project Application Cover Sheet](#), and [Program Opportunity Notice](#) (guidelines and project application).

2025 Lighting Solutions

Lighting can be a significant operating expense in existing buildings. Maine businesses can reduce lighting expenses by upgrading to high-efficiency fixtures and installing lighting controls. Lighting control technologies allow building managers to carefully tailor lighting conditions to the requirements of specific spaces. These upgrades can also enhance productivity and improve aesthetics. Efficiency Maine also incentivizes high-efficiency screw-in LEDs at participating distributors across Maine. [Click here](#) to learn more about the Discounted Screw-in LED Program.

Eligible Scope

Solutions

Interior LED Lighting

- LED Retrofit Kits
- New LED Fixtures
- Refrigerated Case Fixtures and Controls
- Lighting Controls

Exterior LED Lighting

- LED Retrofit Kits
- New LED Fixture

Distributor Pathway Interior Lighting

- High/Low Bay Lamps (Mogul Screw Base)
- Tubular Lamps: T-8 • T8 U-Bend • T-5 • T-5HO replacement

Distributor Pathway Exterior Lighting

- Outdoor LED Mogul Screw-Base Replacement Lamp

Estimated Funds

Min Funds

Varies by Project

Max Funds

Incentives

Interior LED Lighting

- \$0.28 per kWh of first year savings up to 65% of measure cost

Exterior LED Lighting

- \$0.28 per kWh of first year savings up to 65% of measure cost

Small Business LED Lighting

- 75% of total measure cost for qualifying interior and exterior lighting
- Small business customers must have an electric account labeled “Small General Service” (SGS), “General Service” (GS), or “Medium General Service” (MGS) with an average monthly electrical demand under 50kW
- [Click here](#) for more information on small businesses

Distributor Pathway Interior Lighting

- Incentive depends on the specific distributor
- [Click here](#) to find a participating distributor

Distributor Pathway Exterior Lighting

- Incentive depends on the specific distributor
- [Click here](#) to find a participating distributor

Next Steps

1. Work with an Efficiency Maine Qualified Partner to install high-efficiency lighting. [Click here](#) to find a Qualified Partner working near you. or If you work with a contractor that is not yet a Qualified Partner, urge your contractor to find out more information [here](#).
2. Efficiency Maine reserves the right to require pre-approval for any Program application proposing an incentive of **\$5,000 or more**.
3. As part of the project approval process, you will accept the C&I Prescriptive Program’s [Terms and Conditions](#).

2025 Water Heating Solutions

Maine businesses can reduce water heating costs by upgrading to high-efficiency water heating systems. Efficiency Maine offers incentives for heat pump water heaters and ECM circulator pumps. These upgrades can reduce water heating costs and provide hot water when you need it.

Eligible Scope

Eligible Equipment

Light Duty Commercial Heat Pump Water Heaters

- Light duty heat pumps can be used for small commercial or residential facilities that have some hot water demand. These typically have a tank with up to 50 gallon storage capacity.
- Tens of thousands of Mainers own these heat pump water heaters. They're popular because they produce lots of hot water, can save more than \$5,000 over their 10-year life, and help to dehumidify.

Heavy Duty Commercial Heat Pump Water Heaters

- Heavy duty commercial heat pump water heaters can offer hot water needs for commercial settings, including hospitals, hotels, motels, multifamily buildings, long-term care facilities, and offices.

ECM Circulator Pumps

- Businesses can reduce electric costs with the installation of ECM circulator pumps. Forced hot water (“hydronic”) heating systems use circulator pumps to move heated water from boilers to radiators and back. These pumps run whenever a thermostat calls for heat. Traditional circulator pumps run at one fixed speed and use some electricity to magnetize their rotor. Electronically commutated motor (ECM) circulator pumps can modulate their speed and use permanent magnet motors that don't require any electricity to have magnetic properties. ECM circulator pumps cost less to buy and less to operate than traditional circulator pumps.
- [Click here](#) to learn more about this technology and [click here](#) to find a participating distributor.

Estimated Funds

Min Funds

Varies by equipment type.

Max Funds

Incentives

Light Duty Commercial Heat Pump Water Heaters

- [Click here](#) for information on incentives for light duty heat pump water heaters.

Heavy Duty Commercial Heat Pump Water Heaters

- See the table below for information on incentives for both retrofit and new construction projects.
- Incentives are limited to hospitals, hotels, motels, multifamily buildings, long-term care facilities, and offices.

Heat Pump Water Heater Integrated Storage || Minimum Qualifying Efficiency Criteria || Incentive Amount

- 80 gallons || ENERGY STAR® || \$1,800 per unit
- 120 gallons || ENERGY STAR® || \$3,000 per unit
- Split-system with minimum of 80 gallons || ENERGY STAR® || \$3,000 per unit

ECM Circulator Pumps

- [Click here](#) for information on incentives for ECM circulator pumps.

Next Steps

1. [Click here](#) to find a Qualified Partner working near you. If you work with a contractor that is not yet a Qualified Partner, urge your contractor to find out more information [here](#).

2025 Commercial Heating, Ventilation, and Air Conditioning (HVAC) Solutions

Businesses can save money, increase equipment reliability, and create more comfortable and productive workplaces by making energy-efficient choices when installing, renovating, or replacing HVAC equipment. By upgrading to an efficient electric HVAC system, a business can move towards beneficial electrification, or the transition of electric systems in a way that reduces overall emissions and energy costs.

Incentives for these HVAC systems are designed to encourage the installation of primary whole building heating and cooling systems. Installing electric heat pump equipment can help a business's operating systems become fossil fuel free.

[Click here](#) for more information on incentives for HVAC solutions.

Eligible Scope

Eligible Equipment

Heat Pump Solutions

- Mini-Split Heat Pumps (Air-to-Air) Heat Pump Rooftop Units (RTUs)
- Packaged Terminal Heat Pumps
- Vertical Packaged Terminal Heat Pumps
- Variable Refrigerant Flow (VRF) Systems
- Water Source Heat Pumps

Other Electric HVAC Solutions

- Demand Control Ventilation
- Electronically Commutated Motor (ECM) Circulator Pumps
- Energy Recovery Ventilator (ERV) Systems
- Variable-Frequency Drive (VFD) Systems

Propane and Natural Gas Solutions

- Biomass Boilers and Furnaces
- Commercial Boilers and Furnaces
- Commercial Boiler Controls and Ancillary Equipment (retrofit only)**

Estimated Funds

Min Funds

Varies by equipment type.

Max Funds

Heat Pump Incentives

Mini-Split Heat Pumps

- Single-zone - \$1,000
- Single-zone air source heat pumps

Small Business Mini-Split Heat Pump Retrofits

- Single-zone - \$1,400
- Single-zone air source heat pumps
- [Click here](#) for more information on eligibility.

Multifamily Mini-Split Heat Pumps

- 1 to 3 Zones: \$6.00/sq. ft.

Variable Refrigerant Flow (VRF) Systems

- \$8.00/sq. ft. single-phase without heat recovery
- \$10.00/sq. ft. without heat recovery
- \$12.00/sq. ft. with heat recovery

Heat Pump Rooftop Units (RTUs)

- 60 to <= 120 MBH: \$168 per MBH
- 121 to <= 450 MBH: \$125 per MBH

Packaged Terminal Heat Pumps

- < 7,000 Btu/h: \$430 per unit
- >= 7,000 Btu/h and =15,000: \$450 per unit
- > 15,000 Btu/h: \$480 per unit

Vertical Packaged Terminal Heat Pumps

- < 7,000 Btu/h: \$700 per unit
- >= 7,000 Btu/h and =15,000: \$850 per unit
- > 15,000 Btu/h: \$1,000 per unit

Other Electric HVAC Incentives

ECM Circulator Pumps

- ECM Circulator Pump Instant Discount: \$100
- [Click here](#) for more information.

Energy Recovery Ventilator (ERV) Systems

- Sensible heat recovery = 55% to< 65% - \$1.50/CFM
- Sensible heat recovery = 65% to< 75% - \$1.75/CFM
- Sensible heat recovery = 75% to< 85% - \$2.00/CFM
- Sensible heat recovery = 85% - \$2.25/CFM

Variable-Frequency Drive (VFD) Systems

- \$400 - \$2,300 per unit (incentive varies by system horsepower)

Biomass Boilers and Furnaces

- [Click here](#) for information on incentives for these systems.

Next Steps

1. Work with an Efficiency Maine Qualified Partner to install high-efficiency cooling solutions. [Click here](#) to find a Qualified Partner working near you. Or If you work with a contractor that is not yet a Qualified Partner, urge your contractor to find out more information [here](#).
2. Efficiency Maine reserves the right to require pre-approval for any Program application proposing an incentive of **\$5,000 or more**.
3. As part of the project approval process, you will accept the C&I Prescriptive Program's [Terms and Conditions](#).

2025 Discounted Screw-In LEDs Program

(Existing Buildings)

Administrator: [Efficiency Maine](#)

Description

Efficiency Maine discounts screw-in LEDs at retailers and distributors across the state. There's no paperwork for customers to file and no waiting for rebate checks.

Eligible Scope

Eligibility

- All customers are eligible as long as the bulbs are installed in Maine.
- Customers buying more than 20 bulbs at a retail location need to ask for a bulk-purchase waiver.
- Customers buying from a distributor must provide a Maine installation address as well as other information.
- Bulbs purchased from a distributor may be subject to inspection.
- It is not necessary to work with a registered contractor.
- Discounts are available on LEDs of various bulb shapes, bases, and wattages.
- Eligible products include A-line bulbs, spotlights, floodlights, and candelabra bulbs.

Resources

- [Find a participating retailer](#)
- [Find participating distributors](#)
- [Learn about business incentives for other types of lighting](#)
- [Learn more about screw-in bulbs](#)

- [Read Retail LED Upgrade Case Studies](#)

Estimated Funds

Min Funds

Incentive depends on the specific distributor.

Max Funds

Incentive depends on the specific distributor.

Next Steps

1. Discounts are available on LEDs of various bulb shapes, bases, and wattages.
 - > To find a participating retailer, [click here](#).
 - > To find a participating distributor, [click here](#).
 - > To find the best prices on retail bulbs, [click here](#).

2025 Commercial and Industrial (C&I) Custom Program - Electric Projects

(Existing Buildings)

[Administrator: Efficiency Maine](#)

Apply Services

IncentiFind can help you APPLY to this incentive. Our fee is 30% of the total rebate value.

Description

Maine businesses, nonprofits, institutions and governments are eligible for funding for electrical energy efficiency projects through Efficiency Maine's Commercial and Industrial (C&I) Custom Program.

Eligible Scope

Maine businesses, nonprofits, institutions and governments are eligible for funding for electrical energy efficiency projects through Efficiency Maine's Commercial and Industrial (C&I) Custom Program.

Awarded projects include process improvements, HVAC controls, installation of VFDs on motors, chiller and refrigeration enhancements, and pump upgrades. For a list of previously awarded custom projects, [click here](#).

Eligible Projects

- A measure (or set of measures) at a single facility or campus that increases the end-use electrical efficiency, resulting in at least 36,000 kWh of annual reductions in grid-supplied energy when compared to a baseline.

Ineligible Projects

- Measures that are eligible for Efficiency Maine’s C&I Prescriptive Incentive Program. This includes the majority of lighting measures, with a few specific exceptions.
- Projects that have a benefit-to-cost ratio less than 1, as per Efficiency Maine’s benefit-cost test.
- Projects that have a simple payback under one year (after factoring in the Efficiency Maine incentive).
- Projects that involve measures required by state or federal law or local building or energy codes, or are deemed by Efficiency Maine to be standard industry practice measures.
- Projects for which the customer (or its affiliate) has made binding commitments to proceed prior to the official award of funding under this Custom Program.
- Measures that rely solely on human behavior changes or facility maintenance.
- Projects for customers that do not have an account with a Maine electric utility.
- Feasibility studies.
- Power quality, power factor, and power conditioning projects.
- Projects that do not result in an overall kWh use reduction. An exception is made for measures that are intended to expand facility use or production and will result in an overall kWh use reduction when compared to an alternative code-compliant, baseline alternative.
- Fundraising seed money for projects to be completed and funded subsequently.

Custom Program’s Terms and Conditions

Program Opportunity Notice (guidelines and project application).

Estimated Funds

Min Funds

Varies by project.

Max Funds

Funding Overview

- Funding levels will range from a minimum of \$10,000 to a maximum of \$1,000,000 per facility up to 50% of the total project costs.
- Projects with an estimated incentive over \$200,000 will require a formal contract with the Efficiency Maine Trust.
- Projects with an estimated incentive below \$200,000 require that participants agree to the Custom Program’s Terms and Conditions.
- For retrofits of existing equipment, applicants must provide a minimum 50% cost share for the project.

- Incentive awards are capped based on the magnitude of the validated annual reduction in grid-supplied energy (kWh/year). Incentives will not exceed \$0.28 per kWh of validated annual reduction in grid supplied energy.
- Efficiency Maine will consider new applications until the available program funding is exhausted.

Next Steps

1. To get started, review the [Electric Project Application Cover Sheet](#) and review the [Program Opportunity Notice](#) (guidelines and project application).

2025 Commercial and Industrial (C&I) Custom Program - Energy Storage System Projects

(Existing Buildings)

Administrator: Efficiency Maine

Apply Services

IncentiFind can connect you to our expert who can explain why this incentive may be right for your project.

Description

Efficiency Maine's Energy Storage System (ESS) Program Opportunity Notice (PON) offers performance based incentives for the deployment of energy storage systems during summer peak demand conditions.

All demand metered customers (commercial, nonprofits, institutions and government) are eligible to participate.

Eligible Scope

Efficiency Maine's Energy Storage System (ESS) Program Opportunity Notice (PON) offers performance based incentives for the deployment of energy storage systems during summer peak demand conditions.

All demand metered customers (commercial, nonprofits, institutions and government) are eligible to participate.

Eligible Projects

Eligible projects must be interconnected behind the facility utility meter and must be located in Maine with a Maine electric utility account. Awarded incentives will be based on the amount of facility electric load (kW) that the proposed system can reduce during summer peak demand hours. Additionally, awarded systems must:

- Be approved by the Trust prior to installation.
- Be at least 20 kW.
- Maintain a minimum 80% round-trip efficiency.

- Be able to collect and transmit 15-minute interval data.
- Carry a 10-year manufacturer warranty.
- Be UL-listed or certified by another nationally recognized testing lab.

Ineligible Projects

- Systems configured for grid export.
- Participants without the required interval metering and data transmission capability.
- Facilities not located in Maine or served by a Maine electric utility.
- Residential and small business customers.

Estimated Funds

Min Funds

Varies by project.

Max Funds

Funding Overview

Incentives awarded through this PON will be paid each fall for 5 years following an annual evaluation of the project's performance. Additionally, incentives will be subject to the following limitations:

- \$200 per kW of validated reduction in grid supplied power.
- Incentives will be on average load reduction achieved for fifteen (15) dispatches during summer peak demand conditions.
- Incentive awards will be at least \$4,000 and not more than \$600,000 per year, per project, for 5 years.
- All projects awarded will require a formal contract with Efficiency Maine.

Next Steps

1. Check your eligibility.
2. To get started, please review the [Program Opportunity Notice](#) (application guidelines, award criteria, and limitations).

2025 Commercial and Industrial (C&I) Custom Program - Custom Distributed Generation Projects

(Existing Buildings)

Administrator: Efficiency Maine

Apply Services

IncentiFind can help you APPLY to this incentive. Our fee is 30% of the total rebate value.

Description

Maine businesses, nonprofits, institutions and governments are eligible for funding for distributed generation projects through Efficiency Maine's Commercial and Industrial (C&I) Custom Program. Distributed generation projects are behind-the-meter generation projects that reduce the consumption of grid-supplied electricity and meet Efficiency Maine's cost-benefit analysis.

Combined heat & power (CHP) projects are the most common type of distributed generation project completed through the C&I Custom Program.

Eligible Scope

Maine businesses, nonprofits, institutions and governments are eligible for funding for distributed generation projects through Efficiency Maine's Commercial and Industrial (C&I) Custom Program. Distributed generation projects are behind-the-meter generation projects that reduce the consumption of grid-supplied electricity and meet Efficiency Maine's cost-benefit analysis.

Combined heat & power (CHP) projects are the most common type of distributed generation project completed through the C&I Custom Program.

Eligible Projects

- A distributed generation project that reduces on-site electricity consumption from the grid.
- A distributed generation project must have an operating efficiency of 60% or greater.
- The project must result in kWh reductions of at least 36,000 kWh annually
- The project also must include a meter dedicated to providing 15-minute interval energy data to Efficiency Maine.

Ineligible Projects

- Projects that have a benefit-to-cost ratio less than 1, as per Efficiency Maine's benefit-cost test.
- Projects that have a simple payback under one year (after factoring in the Efficiency Maine incentive).
- Projects that export electricity to the grid (net metering) or to other customers.
- Projects for which the customer (or its affiliate) has made binding commitments to proceed prior to the official award of funding under this Custom Program.
- Projects for customers that do not have an account with a Maine electric utility.
- Feasibility studies.
- Power quality, power factor, and power conditioning projects.
- Fundraising seed money for projects to be completed and funded subsequently.

Estimated Funds

Min Funds

Varies by project.

Max Funds

Funding Overview

- Funding levels will range from a minimum of \$10,000 to a maximum of \$1,000,000 per facility up to 50% of the total project costs.
- Projects of all sizes will require a formal contract with the Efficiency Maine Trust.
- Applicants must provide a minimum 50% cost share for the project.
- Incentive awards are capped based on the magnitude of the validated annual reduction in grid-supplied energy (kWh/year). Incentives will not exceed \$0.28 per kWh of validated annual reduction in grid-supplied energy.
- Efficiency Maine will consider new applications until the available program funding is exhausted.

Next Steps

1. Check your eligibility.
2. To get started, please review the following:
[Distributed Generation Project Application Cover Sheet](#)
[Program Opportunity Notice](#) (project application and guidelines)
[Distributed Generation Technical Analysis Checklist](#) for those projects involving a Technical Assistance (TA) study
[Distributed Generation Project Application Checklist](#)

8.2 FEDERAL INCENTIVES

179D - Energy Efficient Commercial Buildings Deduction

Section 179D of the U.S. Internal Revenue Code provides a tax deduction for investments in energy-efficient improvements made to commercial buildings. The provision is designed to incentivize property owners and tenants to enhance the energy performance of their properties, thereby promoting energy conservation and reducing utility costs. The deduction can be claimed by the owner of the commercial building or, if they are not the taxpayer, the tenant who makes the qualifying improvements. The deduction applies to improvements made to buildings used for commercial purposes, including retail spaces, office buildings, and industrial facilities. The deduction is allowed under Internal Revenue Code (IRC) Section 179D. It was expanded under the Inflation Reduction Act of 2022.

1. Types of Improvements:

- The interior lighting systems, the heating, cooling, ventilation, and hot water systems, or the building envelope

- It must be certified as being installed as part of a plan to reduce the total annual energy and power costs for the above systems by 25% or more in comparison to a reference building meeting the minimum requirements of ASHRAE Reference Standard 90.1.

2. Amount of Deduction

- The cost of the installed property, or;
- The savings per square foot calculated as:
 - \$0.50 per square foot for a building with 25% energy savings
 - **Plus \$0.02** per square foot for each percentage point of energy savings above 25%
 - **Up to** a maximum of \$1.00 per square foot for a building with 50% energy savings
- Expenses deducted in the prior 3 years (4 years for an allocated deduction) reduce the maximum deduction before computing the current-year deduction.
- Prevailing wage and apprenticeship bonus: Beginning in 2023, if local prevailing wages are paid and apprenticeship requirements are met, an increased maximum deduction applies. The maximum amount increases to **5 times** the savings per square foot amount.

3. Certification Process:

- **Qualified Professional:** A certification must be provided by a qualified professional confirming that the improvements meet the required energy savings.
- **Documentation:** Detailed documentation and calculations are required to substantiate the claim, including energy modeling and performance testing.

4. Benefits:

- **Tax Savings:** The deduction can significantly reduce a business's tax liability, offering a financial incentive to invest in energy-efficient upgrades.
- **Operational Savings:** Beyond tax benefits, energy-efficient improvements often lead to reduced utility bills and lower operational costs.

5. Legislative Context:

- **Expiration and Extensions:** Now that the IRC 179D provision is permanent, there is an inflation adjustment for the deduction for property placed in service after December 31, 2020.

6. What can the property do?

- AEI can connect the property with partners qualified to complete 179D certification if requested.

2025 National Electric Vehicle Infrastructure (NEVI) Formula Program

(Existing Buildings)

Administrator: U.S. Department of Energy

Apply Services

IncentiFind can connect you to our expert who can explain why this incentive may be right for your project.

Description

The U.S. Department of Transportation's (DOT) Federal Highway Administration (FHWA) NEVI Formula Program will provide funding to states to strategically deploy electric vehicle (EV) charging stations and to establish an interconnected network to facilitate data collection, access, and reliability.

Eligible Scope

The NEVI Formula Program will provide funding to states to strategically deploy electric vehicle (EV) charging stations and to establish an interconnected network to facilitate data collection, access, and reliability.

Eligibility:

- EV charging stations must be non-proprietary, allow for open-access payment methods, be publicly available or available to authorized commercial motor vehicle operators from more than one company, and be located along designated FHWA Alternative Fuel Corridors (AFCs).
- If a state and DOT determine that all AFCs in the state have been fully developed, then the state can propose alternative public locations and roads for EV charging station installation.

FHWA must distribute the NEVI Program Formula Program funds made available each fiscal year (FY) through FY 2026, so that each state receives an amount equal to the state FHWA funding formula determined by 23 U.S. Code 104

Project Eligibility:

- NEVI Formula Program funds are restricted to projects that are directly related to EV charging infrastructure that is open to the public or to authorized commercial motor vehicle (see 23 CFR 658.5) operators from more than one company.
- Publicly accessible means the equipment is available to the public without restriction. A station that is not maintained or restricts access only to customers, tenants, employees, or other consumers is not publicly accessible.
- Please note that while hydrogen, propane, and natural gas fueling infrastructure are not eligible under the NEVI Formula Program, these additional fuels are eligible under the Corridor Charging Grants and the Community Charging Grants (23 U.S.C. § 151).
- Paragraph (2) under the Highway Infrastructure Program heading in title VIII of division J of BIL.

NEVI Formula Program Q&A

The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance

For additional information, see the [FHWA NEVI](#) website and the [Joint Office](#) website.

Estimated Funds

Min Funds

Varies by project

Max Funds

Funding is available for up to 80% of eligible project costs, including:

- The acquisition, installation, and network connection of EV charging stations to facilitate data collection, access, and reliability;
- Proper operation and maintenance of EV charging stations; and,
- Long-term EV charging station data sharing.

Next Steps

1. To receive funding, states must submit plans FHWA and the [Joint Office of Energy and Transportation](#) for review and public posting annually, describing how the state intends to distribute NEVI funds.

2025 Electric Vehicle (EV) Charging Reliability Grants

(New Construction)

Administrator: U.S. Department of Energy

Apply Services

IncentiFind can help you APPLY to this Incentive. Our fee is 30% of the incentive value.

Description

The U.S. Department of Transportation's (DOT) Federal Highway Administration (FHWA) EV Charger Reliability and Accessibility Accelerator offers funding for the repair and replacement of existing, non-operational publicly accessible Level 2 and direct current fast charging (DCFC) stations.

Eligible Scope

Eligible applicants include State departments of transportation and local governments.

For more information, see the DOT FHWA EV Charger [Reliability and Accessibility Accelerator website](#).

Reference [Public Law 117-58](#)

Estimated Funds

Min Funds

Varies by Project

Max Funds

Funding is available for up to 80% of eligible project costs.

Next Steps

1. For more information, see the DOT FHWA EV Charger [Reliability and Accessibility Accelerator website](#).

2025 Community Alternative Fuel Infrastructure Grants

(Existing Buildings)

Administrator: U.S. Department of Transportation

Apply Services

IncentiFind can help you APPLY to this incentive. Our fee is 30% of the total incentive received.

Description

The U.S. Department of Transportation (DOT) shall establish a competitive grant program to fill gaps in publicly accessible electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure in community locations, such as a parking facilities, public schools, public parks, or along public roads.

Eligible Scope

Eligibility

The U.S. Department of Transportation (DOT) shall establish a competitive grant program to fill gaps in publicly accessible electric vehicle charging and hydrogen, propane, and natural gas fueling infrastructure in community locations, such as a parking facilities, public schools, public parks, or along public roads.

Funding of up to 80% of project costs will be available for both development-phase planning activities and the acquisition and installation of charging or alternative fueling infrastructure. Five percent of the grant fund awarded may be used for educational and community engagement activities to develop and implement education programs through partnerships with schools, community organizations, and vehicle dealerships to support the use of zero-emission vehicles and associated infrastructure.

DOT must prioritize projects that expand access to charging and alternative fueling infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with limited parking space or a high ratio of multi-unit dwellings to single-family homes. Eligible entities include states, metropolitan planning organizations, local governments, political subdivisions, and tribal governments. Additional funding eligibility and considerations will apply.

Estimated Funds

Min Funds

Varies by Project.

Max Funds

Funding of up to 80% of project costs will be available for both development-phase planning activities and the acquisition and installation of charging or alternative fueling infrastructure.

Next Steps

1. For more information, please contact 866.835.5322.

2025 Clean Renewable Energy Bonds (CREBs)

(Existing Buildings)

Administrator: U.S. Internal Revenue Service (IRS)

Apply Services

IncentiFind can connect you to our expert who can explain why this incentive may be right for your project.

Description

The Clean Renewable Energy Bonds (CREBs) Federal Loan Program is a Tribal Government, Municipal Utility, Rural Electric Cooperative, Local Government, and State Government program for those who have energy efficient improvements made with the following: Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Municipal Solid Waste, Hydrokinetic Power, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal, Solar Thermal Electric, and Photovoltaic.

Eligible Scope

The Clean Renewable Energy Bonds (CREBs) Federal Loan Program is for:

- Tribal Government,
- Municipal Utility,
- Rural Electric Cooperative,
- Local Government, and
- State Governments

The program is eligible for the above entities if they have or plan have energy efficient improvements made with the following:

- Landfill Gas,
- Wind,
- Biomass,
- Hydroelectric,
- Geothermal Electric,
- Municipal Solid Waste,
- Hydrokinetic Power,
- Anaerobic Digestion,
- Tidal Energy,
- Wave Energy,
- Ocean Thermal, -Solar Thermal Electric, and
- Photovoltaic (PV).

For more details use the following links and contact below:

- http://www.irs.gov/irb/2007-14_IRB/ar17.html
- <https://www.treasurydirect.gov/GA-SL/SLGS/selectCREBDate.htm>
- <https://www.treasurydirect.gov/GA-SL/SLGS/selectQTCDDate.htm>
- <http://www.ustreas.gov/press/releases/tg333.htm>

Estimated Funds

Min Funds

Varies by project

Max Funds

Varies by project

Next Steps

1. **Contact for more information:**
Public Information - IRS
U.S. Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, DC 20224
Phone: (800) 829-1040
Web Site: <http://www.irs.gov>

8.3 LOAN PROGRAMS

C-PACE (Commercial Property Assessed Clean Energy)

C-PACE (Commercial Property Assessed Clean Energy) is a financing program that helps commercial property owners fund energy-efficient and renewable energy improvements to their buildings. Through C-PACE, property owners can access long-term financing for upgrades like solar panels, energy-efficient HVAC systems, lighting, and water conservation measures.

The unique feature of C-PACE is that the financing is repaid through a property tax assessment, which is tied to the property rather than the owner. This allows for longer repayment terms and can often result in positive cash flow for property owners, as the energy savings from the upgrades can exceed the cost of the financing.

C-PACE programs are available in many states in the U.S., and they aim to promote environmental sustainability while helping businesses lower energy costs.

C-PACE is not available everywhere and is administered by independent programs in each state.

The State of Maine offers a C-PACE program.

This program can be used to finance recommendations made in this report and can also include energy/water audit costs.

Energy Savings Performance Contracting (ESPC)

ESPC is a financing mechanism that enables organizations to implement energy efficiency improvements without upfront capital costs. The ESPC process includes the following:

1. **Partnership with an Energy Service Company (ESCO):** The organization partners with an ESCO, which conducts an energy audit to identify potential energy-saving projects, such as lighting upgrades, HVAC improvements, or renewable energy installations.
2. **Project Financing:** The ESCO typically arranges financing for the project, so the organization doesn't need to invest its own funds. The project is paid for over time through the energy savings it generates.

3. **Guaranteed Savings:** The ESCO guarantees that the energy savings will be sufficient to cover the project costs. If the savings fall short, the ESCO is responsible for making up the difference.
4. **Implementation and Monitoring:** The ESCO manages the project from start to finish, including design, installation, and maintenance. The ESCO also monitors the energy performance to ensure that savings are realized as expected.
5. **Contract Duration:** ESPC contracts typically last several years, during which the energy savings are used to pay off the project costs. After the contract period, the organization benefits from reduced energy costs without additional payments.

Overall, ESPC allows organizations to improve energy efficiency, reduce utility costs, and minimize environmental impact without needing upfront capital, while transferring the performance risk to the ESCO.

AEI is not an ESCO and does not offer this program as a service.

9.0 SIGNATURES OF PARTICIPATING PROFESSIONALS

AEI Consultants performed this ASHRAE Level II Energy Audit for the Property located at 93 Cottage Street, Bar Harbor, Hancock County, Maine, in conformance with the scope and limitations of ASHRAE *Procedures for Commercial Building Energy Audits, Second Edition*, ANSI/ASHRAE/ACCA Standard 211-2018, *Standard for Commercial Building Energy Audits*.

Prepared By:



Craig Burcham, CEM
Report Author

Reviewed By:



Thomas Lapoint
Senior Author



Joshua Martin
Site Assessor

APPENDIX A

PROPERTY PHOTOGRAPHS



1. Building Entry



2. Building Exterior 1



3. Building Exterior 2



4. Building Exterior 3



5. Exterior Door



6. Windows



7. Wood Framed Double Pane Window



8. Roof



9. Attic Insulation



10. Office Equipment



11. LED lighting



12. VRF outdoor unit



13. VRF Outdoor Unit 2



14. VRF Indoor Unit



15. Mini split system outdoor unit



16. Split System Indoor Coil



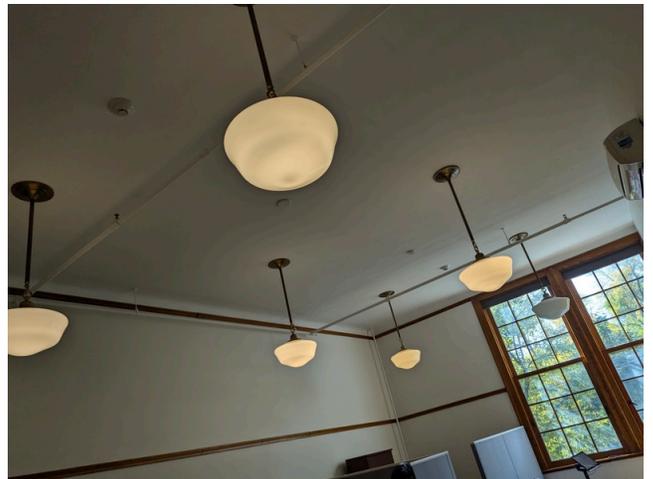
17. Breakroom Kitchen



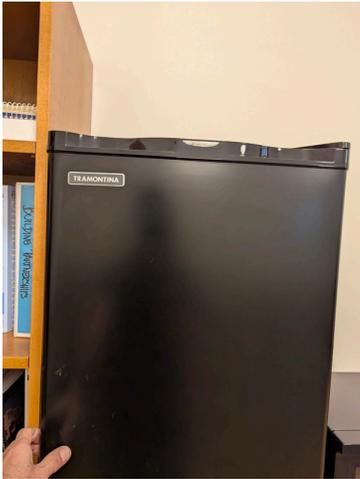
18. Kitchen Aerator



19. Digital Thermostats



20. Globe Lighting



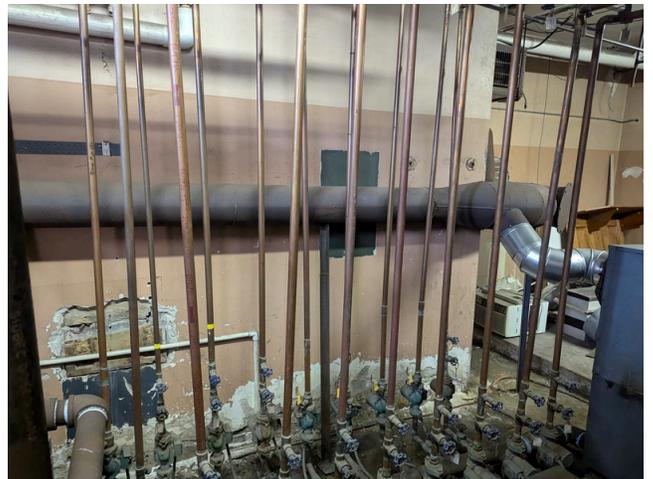
21. Mini refrigerator



22. Oil Fired Boiler Burner



23. Oil Fired Boiler Burner 2



24. Uninsulated building hot water piping



25. Uninsulated building hot water piping 2



26. Hot water pump control



27. Hot water pump



28. Hot water boiler



29. 4ft light fixture



30. Light ballast



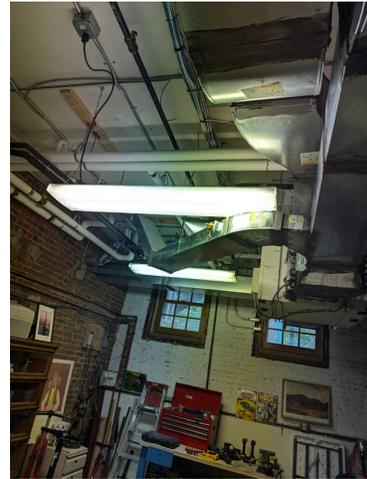
31. Fuel oil tanks



32. Electric domestic water heater



33. DHW uninsulated pipe



34. Basement AHU



35. Digital and Analog thermostats



36. Unit heater



37. Mini split system indoor unit



38. Mini refrigerator 2



39. Damaged refrigerant line insulation



40. Mini split system outdoor units



41. Stairwell with radiator

APPENDIX B

SUPPORTING DOCUMENTATION

ABBREVIATIONS AND ACRONYMS

AC	Air Conditioning	kBTU	Kilo-British Thermal Unit
AEI	AEI Consultants	kGal	Kilogallons
ALTA	American Land Title Association	kW	Kilowatt
APN	Assessor's Parcel Number	kWh	Kilowatt hour
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers	LED	Light Emitting Diode
BTU	British Thermal Unit	M	Model
CH	Clubhouse	MBH	1,000 BTUs/hour
DHW	Domestic Hot Water	O	Occupied
ECM	Energy Conservation Measure	OFC	Office
EEM	Energy Efficiency Measures	OSHA	Occupational Safety and Health Administration
EUI	Energy Use Intensity	PCA	Property Condition Assessment
EUL	Estimated Useful Life	PCR	Property Condition Report
EWEM	Energy and Water Efficiency Measures	ROI	Return On Investment
F	Fahrenheit	RP	Responsible Party
FCU	Fan Coil Unit	SEDI	Statement of Energy Design Intent
Gal	Gallon	SF	Square Footage/Square Feet
GFA	Gross Floor Area	SIR	Savings to Investment Ratio
GPF	Gallons Per Flush	SP	Subject Property
GPM	Gallons Per Minute	SEP	Statement of Energy Performance
HUD	Department of Housing and Urban Development	V	Vacant
HVAC	Heating, Ventilation and Air Conditioning	ZAR	Zoning Analysis Report

ASHRAE Equipment Life Expectancy chart

ASHRAE is the industry organization that sets the standards and guidelines for most all HVAC-R equipment.
For additional info about ASHRAE the website is www.ashrae.org .

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
Air conditioners		Air terminals		Air-cooled condensers	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or Split Package	15	Induction and fan coil units	20	Insulation	
Commercial through-the wall	15	VAV and double-duct boxes	20	Molded Blanket	20 24
Water-cooled package	15	Air washers	17	Pumps	
Heat Pumps		Ductwork	30	Base-mounted	20
Residential air-to-air	15	Dampers	20	Pipe-mounted	10
Commercial air-to-air	15	Fans		Sump and well	10
Commercial water-to-air	19	Centrifugal	25	Condensate	15
Roof-top air conditioners		Axial	20	Reciprocating engines	20
Single-zone	15	Propeller	15	Steam turbines	30
Multi-zone	15	Ventilating roof-mounted	20	Electric motors	18
Boilers, hot water (steam)		Coils		Motor starters	17
Steel water-tube	24 (30)	DX, water, or steam	20	Electric transformers	30
Steel fire-tube	25 (25)	Electric	15	Controls	
Cast iron	35 (30)	Heat Exchangers		Pneumatic	20
Electric	15	Shell-and-tube	24	Electric	16
Burners	21	Reciprocating compressors	20	Electronic	15
Furnaces		Packaged chillers		Valve actuators	
Gas- or oil-fired	18	Reciprocating	20	Hydraulic	15
Unit heaters		Centrifugal	23	Pneumatic	20
Gas or electric	13	Absorption	23	Self-contained	10
Hot water or steam	20	Cooling towers			
Radiant Heaters		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		

APPENDIX C

EWEM CALCULATION WORKSHEETS

Kitchen Faucet Aerators

Replace 2 Existing Kitchen Faucet Aerators With 1.0 GPM Low Flow Aerators.
Aerator housings must bear 1.0 GPM manufacturer flow ratings.

Total Number of Aerators To Be Replaced	2	
No. of Occupants Using Kitchen	11	
No. of Days Kitchen used per year	250	
Estimated Time Per Sink Use	1.0	Mins
GPM of Existing Aerator	1.8	GPM
GPM of Proposed Aerator *	1.0	GPM

**(Federal Law Requires all new Aerators to have a max flow rate of 2.5 GPM)*

Water & Energy Savings Calculations

Annual Water Savings	2	kGal
Domestic Water Heater Efficiency	92.0%	
Average Hot Water Temperature (F)	120	Deg F
<i>Assuming an average 55°F water supply temp year round</i>		
Annual Water Heater Energy Consumption: <i>(Assuming 92 % Water Heater Efficiency)</i>	477	kBTU
Annual Water Heater Energy Savings:	139	kWh

Cost Savings Calculations

(Insert Tariff Rate For Hot Water Heater Fuel Only)

Electrical Tariff (\$/Kwh)	\$0.133	\$\$
Gas Tariff (\$/Therms)	\$0.000	\$\$
Water Tariff (\$/1000 Gal)	\$46.692	\$\$
#2 Fuel Oil Cost (\$/Gal)	\$2.759	
Annual Cost Savings In Form of Water	\$77	\$\$
Annual Energy Savings From Water Heater	\$18	\$\$
Estimated Total Annual Cost Savings	\$95	\$\$

Estimated Installation Costs

Cost Per Aerator	\$16.75	
Estimated Total Installation Cost	\$34	\$\$

Simple Payback Period	0.4	Years
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Bathroom Faucet Aerators

Replace 4 Existing Bathroom Faucet Aerators With 1.0 GPM WaterSense Labeled Low Flow Aerators. Aerator housings must bear 1.0 GPM manufacturer flow ratings.

Total Number of Aerators To Be Replaced	4	
No. of Occupants	44	
No. of Days Sink used per year	250	
Estimated Time Per Sink Use/Day	1.0	Mins
GPM of Existing Aerator	1.5	GPM
GPM of Proposed Aerator *	1.0	GPM

**(Federal Law limits all new Aerators to a max flow rate of 2.2 GPM)*

Water & Energy Savings Calculations

Annual Water Savings <i>(Assuming 1 shower/day/person for 365 days a year)</i>	4	kGal
Domestic Water Heater Efficiency	92.0%	
Average Hot Water Temperature (F) <i>Assuming an average 55.2641148112231°F water supply temp year round</i>	120	Deg F
Annual Water Heater Energy Consumption: <i>(Assuming 92 % Water Heater Efficiency)</i>	1193	Kbtu
Annual Water Heater Energy Savings:	350	kWh

Cost Savings Calculations

(Insert Tariff Rate For Hot Water Heater Fuel Only)

Electrical Tariff (\$/Kwh)	\$0.133	\$\$
Gas Tariff (\$/Therms)	\$0.000	\$\$
Water Tariff (\$/1000 Gal)	\$46.692	\$\$
#2 Fuel Oil (\$/Gal)	\$2.759	\$\$
Annual Cost Savings In Form of Water	\$192	\$\$
Annual Energy Savings From Water Heater	\$47	\$\$
Estimated Total Annual Cost Savings	\$238	\$\$

Estimated Installation Costs

Cost Per Aerator	\$16.750	
Estimated Total Installation Cost	\$67	\$\$

Simple Payback Period	0.3	Years
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Improved Attic Insulation

Increase 8,768SF of Attic Insulation to R-60 by adding approximately 13 inches of Blown-In Insulation to top floor attic space. Includes installation of wind wash baffles if not existent.

$$\text{Seasonal Heat Loss (BTU's)} = (\text{Area} \times (\text{HDD} + \text{CDD}) \times 24) / \text{R}$$

Current thickness of Insulation	6	Inches
Cost of Gallon Fuel Oil	\$2.76	\$\$\$
Cost of kWh	\$0.13	\$\$\$
Building Attic Area (Sq Ft)	8,768	SF
HDD	6,866	
CDD	569	
Existing R	19	
Proposed R	60	
Increase in Blown in Insulation Thickness	13	Inches

Heating (Hydronic baseboard)

Current HVAC Energy Loss x Correction factor	45,626,088	BTU
Proposed HVAC Energy Loss x Correction factor	14,448,261	BTU
Savings in BTU's	31,177,827	BTU
Equivalent Savings	223	
Cost Savings	\$616	\$\$\$

Heating with Heat Pump

What is the average nominal capacity in tons?	9.00	tons
Estimated kW/ton	0.92	kW/ton
COP	3.82	
kWh Savings x Correction factor	1,793	kWh
Heat Pump Cost Savings	\$238	\$\$\$

Cooling

Current Cooling Energy Loss x Correction factor	3,783,789	BTU
Proposed Cooling Energy Loss x Correction factor	1,198,200	BTU
Savings	2,585,589	BTU
Equivalent in kWh	758	kWh
	\$101	\$\$\$

Total Savings in kWh	2,551	kWh
Total savings in Gallons of Fuel Oil	223	Gallons
Total Cost Savings	\$955	\$\$\$

Approximate Cost to Blow in Insulation	\$12,994
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Payback 13.60 Years

DWH Piping Insulation

Add R-5.4 insulation to 50 LF of 1 inch diameter domestic hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values. There are offsetting interactive effects for heating and cooling systems.

Electric Cost Per kWh	\$0.133	\$/kWh
Pipe Material Type	Copper	
Outside Diameter of Pipe	1	Inches
Length of Pipe	50	Feet
Surface Area in Sq Ft	13.09	Sq Feet
Insulation Thickness	0.803	Inches
R-Value of Original Piping	0	
R-Value of Insulation	5.4	
New R-Value of Piping	5.4	
Temperature of Hot Water	120	Deg. F
Room Temperature (Average)	70.00	Deg. F
Delta Temperature	50	Deg. F
Annual hours of Operation	730	Hrs.
Original Heat Energy Loss Btu	4,777,839	Btu
Heat Loss w/ Added Insulation	744,743	Btu
Energy Savings w/ Added Insulation	4,033,095	Btu
Energy Savings kWh	1,182	kWh
Annual Cost Savings kWh	\$157	\$\$\$
Cost per linear foot of insulation	\$7.68	Each
Total Cost to Insulate Pipe	\$384	
Payback	2.44	Years

Building Hot Water Piping Insulation

Add R-5.4 insulation to 200 LF of 1 inch diameter building hot water piping, including flexible connectors, tees, and valves. ARMAFLEX 3/4 - inch wall thickness or equivalent insulation values. There are offsetting interactive effects for heating and cooling systems.

Fuel Oil Cost Per Gallon	\$2.76	\$/Gallon
Pipe Material Type	Copper	
Outside Diameter of Pipe	1	Inches
Length of Pipe	200	Feet
Surface Area in Sq Ft	52.36	Sq Feet
Insulation Thickness	0.803	Inches
R-Value of Original Piping	0	
R-Value of Insulation	5.4	
New R-Value of Piping	5.4	
Temperature of Hot Water	165	Deg. F
Room Temperature (Average)	70.00	Deg. F
Delta Temperature	95	Deg. F
Annual hours of Operation	1,317	Hrs.
Original Heat Energy Loss Btu	65,528,491	Btu
Heat Loss w/ Added Insulation	10,214,223	Btu
Energy Savings w/ Added Insulation	55,314,268	Btu
Energy Savings Gallons of Fuel Oil	396	Gallons
Annual Cost Savings Gallons of Fuel Oil	\$1,093	\$\$\$
Cost per linear foot of insulation	\$7.68	Each
Total Cost to Insulate Pipe	\$1,536	
Payback	1.41	Years

Low Flush Volume Toilets

Replace 4 Existing Toilets with WaterSense Labeled Low Flow 1.28 GPF Single Flush Toilets, American-Standard-Reliant-2-Piece-1-28-GPF-Single-Flush Toilet-with-Slow-Close-Seat-in-White-3332128S-020/301379290, or equivalent.

Total Population

Number of Water Closets To Be Replaced

Number of Occupied Days Per Year

Existing Gallons Per Flush Ratings For Water Closet Flushes GPF

GPF of Proposed Low Flow Water Closet GPF

Average flushes per day per individual = 5

Estimated number of flushes per day/individual

Water Saving Calculations

Water Savings By The Use of Low Flow Toilet Flushes/Day kgal

Cost Savings Calculations

Enter Water Tariff Rate (\$/1000Gal) \$\$

Annual Estimated Cost Savings From Water \$\$

Estimated Cost of Retrofit

Material and Labor Cost Per Toilet \$\$

Cost For Replacing Toilet with Low Flow Fixture \$\$

Simple Pay Back Period Yrs

REPLACE EXISTING WATER HEATER WITH HEAT PUMP WATER HEATER

Replace 1 Existing Electric Water Heater with 1 Hybrid Heat Pump Water Heater with 1 (HPWH) with a minimum UEF of 3.4. Note that the hybrid water heater must be installed where minimum of 1,000 cubic feet of open space with ambient temperatures of no less than 50°F is provided for the heat pump to operate properly. The unit must also be located where there is more than six feet of vertical clearance to accommodate the tank and noise from the heat pump will not be an issue.

Quantity of Existing Water Heaters	1	Each
Hours per Day Water Heater Runs	2	
Hours Per Year Water Heater Runs	500	Hours
Energy Input Capacity of Existing Electric Water Heater	4,500	Watts
Annual kWh Consumed with Electric Water Heater	4,492.1	kWh/Year
Percent of Time Resistance Coils Run in HPWH	0.25	
Hours per Year Resistance Coils Run in HPWH	125.0	
Hours per Year Heat Pump Runs	375.0	
Heat Pump Water Heater UEF	3.4	UEF
Annual kWh Consumed with Heat Pump Water Heater	1,266	kWh/Year
Energy Saving by using Heat Pump	3,226	kWh/Year
Cost Per kWh	\$0.13	\$\$\$ /kWh
Approximate Cost for One Heat Pump Water Heater Installed	\$2,750	Dollars
Demo and Installation Labor for One Heat Pump Water Heater	\$550	
Cost Avoidance Per Year with Heat Pump Water Heaters	\$429	
Total Cost for All New HPWHs	\$3,300	Dollars
Payback	7.7	Years

INPUTS & Assumptions			
Gross Building Area:	26,304 Sq. Ft.		
Total Building Electricity Consumpton:	108,857 kWh/yr		
Heating Electricity Consumption:	29,943 kWh/year		
Electric Heating Efficiency:	2.00		
Electricity Rate:	\$.133 /kWh		
Electric CO2e Emissions Factor (lb/MWh)	540.48 lb/MWh		
Total Building Propane Consumption:			
Propane Heating Consumption:	0 Gal		
Propane Heating Efficiency:	97.0%		
Propane Rate:	\$2.14		
Total Building Fuel Oil Consumption:	6,097.0 Gal		
Fuel Oil Heating Consumption:	6,097 Gal		
Fuel Oil Heating Efficiency:	81%		
Fuel Oil Rate:	\$2.76		
Propane	Fuel Oil #2	Electricity	
91.5 kBtu/Gal	138.5 kBtu/Gal	3.41214 kBtu/kWh	
Propane	Fuel Oil #2	Electricity	
62.87 kg/MMBtu	73.96 kg/MMBtu	71.85 kg/MMBtu	
Propane	Fuel Oil #2	Electricity (kWh)	
Energy Rates:	\$2.14/ Gal	\$2.76/ Gal	\$0.133/ kWh
Total Building Consumption:	0 Gal	6,097 Gal	108,857 kWh
Total Building Consumption:	kBtu	844,435 kBtu	371,435 kBtu
Heating Consumption:	0 Gal	6,097 Gal	29,943 kWh
Heating Consumption:	0,000 kBtu	844,435 kBtu	102,170 kBtu
Existing Heating Efficiency:	97.0%	81.0%	2.00

Heating				
Energy Source	Propane	Fuel Oil #2	Electricity	
Units	Gallons	Gallons	kWh	
Avg. Efficiency (% or COP)	97.0%	81.0%	2.00	
Rate (\$/Unit)	\$2.14/ Gal	\$2.76/ Gal	\$0.13/ kWh	
Heating Cost Rate (\$/kBtu)	\$0.02416/kBtu	\$0.02460/kBtu	\$0.019/kBtu	
Scope I GHG Emissions (kg/kBtu)	0.06 kg/kBtu	0.07 kg/kBtu		
Scope I GHG Emissions (kg/MMBtu)	62.87 kg/MMBtu	73.96 kg/MMBtu		
Scope II GHG Emissions (kg/kBtu)			0.036	
Scope II GHG Emissions (kg/MMBtu)			35.92	
Heating Consumption		6,097 Gal	29,943 kWh	Totals
Heating Consumption (kBtu)	0,000 kBtu	844,435 kBtu	102,170 kBtu	946,604 kBtu
Heating Cost (\$)	\$0	\$20,775	\$3,980	\$24,754.61
Heating GHG Emissions (MTCO2e)	0.00	62.45	7.34	69.80
Total Consumption (kBtu)	0,000 kBtu	844,435 kBtu	371,435 kBtu	1,215,870 kBtu
Total Cost (\$)	\$0.00	\$16,827.72	\$14,467.92	\$31,295.64
Total GHG Emissions (MTCO2e)	0.0000	62.45	26.687	89.14
EUI	0.00	32.10	14.12	46.2

Heating							Expected Performance Range for Bar Harbor Climate							
Energy Source	Propane	Fuel Oil #2	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity
Units	Gallons	Gallons	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh
Avg. Efficiency (% or COP)	97.0%	87.0%	1	1.500	1.750	2.284	2.5	2.7	3	3.5	3.59	4	4.3	4.5
Rate (\$/Unit)	\$2.14/ Gal	\$2.76/ Gal	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh	\$0.13/ kWh
Heating Cost Rate (\$/kBtu)	\$0.0242	\$0.0229	\$0.039/kBtu	\$0.026/kBtu	\$0.02226/kBtu	\$0.017/kBtu	\$0.016/kBtu	\$0.014/kBtu	\$0.013/kBtu	\$0.011/kBtu	\$0.011/kBtu	\$0.010/kBtu	\$0.009/kBtu	\$0.00866
Scope I GHG Emissions (kG/kBtu)	0.06287	0.07396												
Scope I GHG Emissions (kG/MMBtu)	62.87	73.96												
Scope II GHG Emissions (kG/kBtu)			0.072	0.048	0.041	0.031	0.029	0.027	0.024	0.021	0.020	0.018	0.017	0.016
Scope II GHG Emissions (kG/MMBtu)			71.85	47.90	41.06	31.46	28.74	26.61	23.95	20.53	20.01	17.96	16.71	15.97
Heating Consumption	7,707 Gal	5,677 Gallons	118,635 kWh	39,924 kWh	34,221 kWh	26,220 kWh	23,954 kWh	22,180 kWh	19,962 kWh	17,110 kWh	16,681 kWh	14,972 kWh	13,927 kWh	13,308 kWh
Heating Consumption (kBtu)	705,146 kBtu	786,198 kBtu	404,798 kBtu	136,226 kBtu	116,765 kBtu	89,466 kBtu	81,736 kBtu	75,681 kBtu	68,113 kBtu	58,383 kBtu	56,919 kBtu	51,085 kBtu	47,521 kBtu	45,409 kBtu
Heating Cost (\$)	\$16,527.86	\$15,667.19	\$15,767	\$5,306	\$4,548	\$3,485	\$3,184	\$2,948	\$2,653	\$2,274	\$2,217	\$1,990	\$1,851	\$1,769
Heating GHG Emissions (MTCO2e)	44.33	58.15	14.68	9.79	8.39	6.43	5.87	5.44	4.89	4.19	4.09	3.67	3.41	3.26
Total Consumption (kBtu)	705,146 kBtu	786,198 kBtu	674,063 kBtu	405,492 kBtu	386,031 kBtu	358,731 kBtu	351,001 kBtu	344,947 kBtu	337,379 kBtu	327,648 kBtu	326,185 kBtu	320,350 kBtu	316,786 kBtu	314,674 kBtu
Total Cost (\$)	\$16,527.86	\$15,667.19	\$26,255.70	\$15,794.47	\$15,036.44	\$13,973.08	\$13,671.99	\$13,436.16	\$13,141.37	\$12,762.35	\$12,705.34	\$12,478.09	\$12,339.27	\$12,257.00
Total GHG Emissions (MTCO2e)	44.33	58.15	48.43	29.13	27.74	25.77	25.22	24.78	24.24	23.54	23.44	23.02	22.76	22.61
EUI Reduction Over Baseline	5.30	2.21	-11.505	-1.295	-0.555	0.483	0.777	1.007	1.295	1.665	1.720	1.942	2.078	2.158

Replace existing 81% efficient Fuel Oil hot water boiler with a new 97% efficient Propane hot water boiler

Quantity of Existing Boilers	1	Each
Annual Heating Hours	2,728	Hours
Percent of Heating Hours that Boiler Runs	48%	
Existing Boiler Input Energy Source	Fuel Oil	
Current Boiler Efficiency	81%	
Existing Boiler Input Capacity	641	MBH
Actual Heat Output Capacity with Existing Boiler	519	MBH
Total Annual Energy Input of Existing Boiler (BTUs)	844,434,500	BTUs
Total Annual Energy Input of Existing Boiler (Fuel Oil)	6,097	Gallons
New Boiler Input Energy Source	Propane	
New Boiler Efficiency	97%	
New Boiler Input Required to Match Existing Boiler Output Capacity	535	MBH
Total Annual Energy Input of New Boiler (BTUs)	705,146,335	BTUs
Total Annual Energy Input of New Boiler (Fuel Oil)	0	Gallons
Total Annual Energy Input of New Boiler (Propane)	7,707	Gallons
Cost Per Fuel Oil Gallon	\$2.76	per Gallon
Cost Per Propane Gallon	\$2.145	per Gallon
Fuel Oil Savings	6,097	Gallons
Propane Savings	-7,707	Gallons
Fuel Oil Cost Savings	\$16,828	\$
Propane Cost Savings	-\$16,528	\$
Total Cost Savings	\$300	\$
Number of Boiler(s) to Replace with High Efficiency:	1	Each
Output Capacity of Replacement High Efficiency Boiler(s):	519	MBH
Total Cost to Replace w/ 97% Efficient Boiler	\$29,079	Dollars
Total Cost to Replace Existing Boiler in Kind	\$21,809	Dollars
Incremental Replacement Cost for 97% Efficient Boiler	\$7,270	Dollars
Payback for High Efficiency Boiler if Existing is Relatively New	96.98	Years
Payback for High Efficiency Boiler if Existing is at end of EUL	24.24	Years

APPENDIX D

PROJECT TEAM



Joshua D. Martin

Senior Energy Engineer

EDUCATION

- Bachelor of Science in Mechanical Engineering with a Minor in Mathematical Sciences - Clemson University, 2009

CERTIFICATIONS

- Certified Energy Manager - Association of Energy Engineers, 2023
- Engineer In Training - South Carolina Board of Professional Engineers, 2009

SUMMARY OF PROFESSIONAL EXPERIENCE

Mr. Joshua D. Martin is a Senior Energy Engineer in the energy services division, distinguished as a Certified Energy Manager (C.E.M.) and Engineer in Training (E.I.T.). His robust background includes over 12 years of experience in energy efficiency engineering, project management, building commissioning, and sustainability consulting. Throughout his career, he has specialized in commercial building energy consulting, executing energy audits, conducting site visits, and identifying energy conservation measures (ECMs) across various sectors, including residential, commercial, multi-family, industrial, MUSH (Municipal, University, School, and Hospital), and agricultural.

Mr. Martin is passionate about helping clients accomplish their sustainability goals, qualify for green loan programs, and satisfy local building code requirements. More recently, Mr. Martin has worked with clients to help them achieve their greenhouse gas reduction goals through decarbonization and electrification studies.

PROJECT EXPERIENCE

Project experience for Mr. Martin includes:

- Project Management
- 50+ Multifamily Building Energy Efficiency Audits
- Fannie Mae and Freddy Mac Green Up program compliance
- Indoor Air Quality Measurement and Compliance for ASHRAE 62.1
- ASHRAE Level I & II Energy Audits for Commercial, Agricultural, and Industrial Facilities
- Building Commissioning and Retro-commissioning for Commercial and Industrial Facilities
- Energy Star Certifications for Residential and Commercial Facilities
- Measurement and Verification of Energy Efficiency Projects
- Energy Efficiency and Sustainability Consulting
- Greenhouse Gas Reduction Studies
- Energy Modeling
- Data Analysis

Mr. Martin has worked in the energy efficiency and sustainability services field since 2011. He is committed to advancing products, services, and ideas that reduce environmental impact and promote sustainability. He believes in contributing to a greener future without compromising resources for future generations.



Craig Burcham

Senior Engineer, Energy Services

EDUCATION

- Master of Business Administration, East Carolina University
- Bachelor of Science - Mechanical Engineering, Louisiana Tech University

CERTIFICATIONS

- Certified Energy Manager - Association of Energy Engineers - 20086
- Arkansas Licensed Professional Engineer - 22152
- South Carolina Licensed Professional Engineer - 39645

SUMMARY OF PROFESSIONAL EXPERIENCE

Mr. Burcham provides expertise in energy efficiency evaluations in several markets including industrial, commercial, and residential properties. He has more than ten years of experience developing guaranteed energy saving performance contracting projects for clients throughout the Southeast and Midwest United States. He also has three years of experience with large utility energy efficiency program execution as well as four years of experience performing single family residential pre-sale home inspections and energy assessments.

PROJECT EXPERIENCE

Project experience for Mr. Burcham includes:

- Lead developer on 18 performance contracting projects, \$90M in total project value
- 100+ ASHRAE Level 1, 2, 3 Energy Audits
- 1000+ single family residential home inspections and energy assessments



Thomas LaPoint, M.S.

Vice President, Energy Services

EDUCATION

- MS - Environmental Management and Sustainability, St. Edward's University
- BA - Liberal Arts and Engineering Studies, Environmental Studies Minor, Cal Poly - San Luis Obispo

CERTIFICATIONS

- LEED Accredited Professional - Operations + Maintenance
- Building Performance Institute - Multifamily Building Analyst
- Certified Energy Manager - Association of Energy Engineers
- Certified Green Point Rater - Build It Green

SUMMARY OF PROFESSIONAL EXPERIENCE

Mr. LaPoint is a National Client Manager in the energy services industry. His experience includes over 10 years in energy efficiency/sustainability project management and four years in the construction industry.

PROJECT EXPERIENCE

Project experience for Mr. LaPoint includes:

- 300+ Multifamily Building Energy Efficiency Audits
- Fannie Mae and Freddy Mac Green Up program compliance
- More than 6 years of experience in multifamily assessments including numerous assignments for Freddie Mac, HUD, and Fannie Mae execution
- Energy Star Portfolio Manager Certifications and Benchmarking
- NY Local Law 97 Compliance
- Fannie Mae Solar PV Module
- HUD Utility Allowance Calculations
- Phase I Environmental Site Assessments

Mr. LaPoint has worked in the energy services field since 2013.