



# Energy Audit Report

REPORT DATE: March 17, 2025

## PROPERTY INFORMATION:

Public Works Facility  
50 Public Works Way  
Bar Harbor, Hancock County, Maine 04609

## PROJECT INFORMATION:

AEI Project No. 498448  
Site Assessment Date: October 2, 2014

## 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



March 17, 2025

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

**Subject:**     **Energy Audit Report**  
Public Works Facility  
50 Public Works Way  
Bar Harbor, Maine 04609  
AEI Project No. 498448

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](mailto:bmorgan@aeiconsultants.com).

Sincerely,

A handwritten signature in black ink that reads "Brian Morgan". The signature is written in a cursive style with a prominent initial "B" and a long, sweeping tail.

Brian Morgan  
Business Development Manager  
AEI Consultants

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## 1.0 CERTIFICATION/DISCLAIMER

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AEI has completed an Energy Audit for the Property located at 50 Public Works Way, Bar Harbor, Hancock County, Maine (the "Property"). AEI visited the site on October 2, 2014.

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

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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 50 Public Works Way, Bar Harbor, Hancock County, Maine (the "Property").

### 2.1 PURPOSE AND SCOPE

AEI has comprehensively analyzed the Property to identify possible areas where Energy and Water may be conserved. The areas considered include HVAC equipment, lighting, domestic water heating, appliances, fenestration, insulation, roofing, bathroom fixtures, and miscellaneous equipment.

#### Utility Analysis

AEI has performed a comprehensive utility analysis to determine the buildings' Energy and Water consumption. The study utilizes at least 12 months of utility bills. Energy and water consumption baselines were determined by observing peak loads during the year.

#### Energy Audit Process

Where possible, in addition to the Site Survey, AEI has utilized construction drawings, interviews, and maintenance records to determine the energy performance of the building and its associated mechanical, electrical, and HVAC equipment.

#### Accuracy of Analysis

AEI utilized spreadsheet calculations to estimate savings based on the actual conditions of the facility and its energy-consuming equipment. Simple payback is calculated by dividing the new equipment's total labor and material cost by the yearly cost savings. 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 Energy Efficiency Measures.

#### Current Energy Code

The energy codes adopted by at the time of this report are the 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 is for the purpose of evaluating the subject Property in connection with securing mortgage financing and has no other purpose. This report may not be relied upon by any other person or entity without the written consent of AEI either verbally or in writing. 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	963,914	kBtu
Current Building Energy Cost	\$24,953	\$\$\$
Proposed Energy Savings	222,106	kBtu
Proposed Energy Cost Savings	\$7,012	\$
Energy Savings	23.0%	%
Energy Cost Savings	28.1%	%
Investment for EEM's	\$83,582	\$
Payback for Investments	11.9	Years
Site Energy Use		
Current Electric Site Energy	60,305	kWh
Proposed Electric Savings	23,086	kWh
Proposed Electric Savings	38.3%	%
Current Fuel Oil Site Energy	1,635	Gallons
Proposed Fuel Oil Savings	1,635	Gallons
Proposed Fuel Oil Savings	100.0%	%
Current Propane Site Energy	5,811	Gallons
Proposed Propane Savings	-908	Gallons
Proposed Propane Savings	-15.6%	%
Site Energy Use Intensity		
Total Building Area	28,960	SF
Current Site Energy Use Intensity	33.3	kBtu/SF
Proposed Site Energy Use Intensity	25.6	kBtu/SF
Source Energy Use Intensity		
Current Source Energy Use Intensity	38.4	kBtu/SF
Proposed Source Energy Use Intensity	22.9	kBtu/SF
Site Greenhouse Gas Emissions		
Current Site GHG Emissions	73.94	MTCO <sub>2</sub> e/Yr
Proposed Site GHG Emissions	56.79	MTCO <sub>2</sub> e/Yr

## 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), investment simple payback, savings to investment ratio (SIR), and return on investment (ROI) 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 Savings to Investment Ratio less than 1.0 (or a negative Return on Investment) are not included in this table.

### Energy And Water Efficiency Measures (EWEM) Summary

EWEM #	Energy And Water Efficiency Measures (EWEM) Summary Description	Total Initial Cost (\$)	Electric Savings (kWh)	Fuel Oil Savings (Gal)	Propane Savings	Annual Utility Cost Savings (\$)	Simple Pay Back (Years)	Expected Useful Life (Years)	% Energy Savings	Projected GHG Emissions Reduction MTCO <sub>2e</sub>	kBTU Savings	Incremental Cost (\$)	Incremental Pay Back (Years)
1	Replace existing 83% efficient #2 Fuel Oil unit heaters in the Bus Garage with new 95% efficient LP Gas Propane-fired unit heaters	\$7,890	0	1,635	-2,136	\$326	24.2	15	3.2%	4.5	31,002	\$2,812	8.6
2	Replace existing 90% efficient Propane hot water boiler in the Main Highway Dept Building with a new 97% efficient Propane hot water boiler	\$64,540	0	0	1,018	\$2,810	23.0	25	9.7%	5.8	93,190	\$13,884	4.9
3	Retrofit 173 Interior Lighting Fixtures with 515 DLC Certified LED Lamps	\$4,435	19,909	0	0	\$2,990	1.5	10	7.0%	4.9	67,932	\$0	0.0
4	Replace Exterior Lighting Fixtures with Bi-Level LED Lighting Fixtures	\$4,138	4,417	0	0	\$663	6.2	25	1.6%	1.1	15,072	\$0	0.0
5	Replace 1 Existing Indirect Propane-fired Water Heater with 1 Hybrid Heat Pump Water Heater (HPWH) with a minimum UEF of 3.75.	\$2,579	-1,241	0	209	\$223	11.6	15	1.5%	0.9	14,910	\$0	0.0
Totals =		\$83,582	23,086	1,635	-908	\$7,012	11.9	n/a	23.0%	17.2	222,106	\$16,696	2.4

## 3.0 BACKGROUND

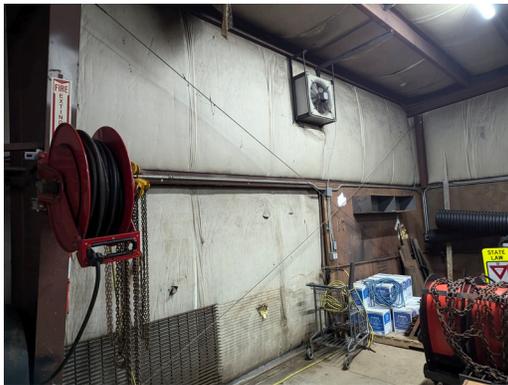
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### 3.1 GENERAL PROPERTY DESCRIPTION

The Public Works facilities are comprised of the Main Highway Department Building located at 50 Public Works Way, the Highway Department Bus Garage at 144 LedgeLawn Ave, and the Highway Department Salt Shed located at 151 LedgeLawn Ave. All three buildings are located commercial areas of Bar Harbor, Maine.

The Main Highway Department Building has a gross building area of 21,360 square feet and was constructed in 2014. The Salt Shed was constructed in 2014 and has a gross building area of approximately 5,000 square feet. The Bus Garage was constructed in 1976 and has a gross building area of approximately 2,600 square feet. The total gross square footage of the combined facilities is approximately 28,960 square feet.

The site contact was Travis Smith; phone: (207)-288-4681.



Bus Garage Interior



Highway Department Facility Exterior



Salt Shed Exterior



Salt Shed Interior



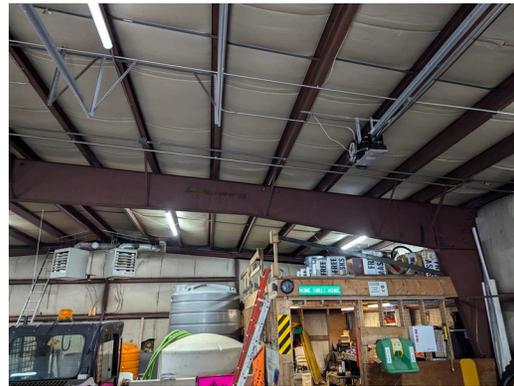
Storage Shed



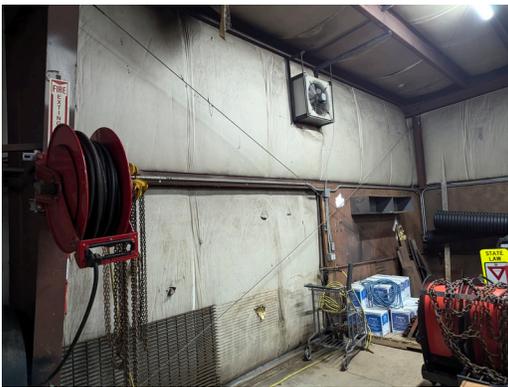
Salt Shed Interior



Bus Garage Interior



Bus Garage Interior



Bus Garage Interior Building Shell



Bus Garage Interior



Bus Garage Exterior Shell



Bus Garage Exterior Shell



Bus Garage Exterior Shell



Bus Garage Interior

### 3.2 EXISTING ENERGY AND WATER EFFICIENCY MEASURES

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

1. One 91% Efficient 302 MBH Propane Bosch domestic hot water boiler in Bus Garage
2. LED Lighting
3. Heat Recovery Ventilator
4. Double glazed windows

### 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
Main Highway Dept Building	20	7:30AM - 4PM	Closed	Closed				
Bus Garage	2	7:30AM - 4PM	Closed	Closed				

## 4.0 UTILITY ANALYSIS

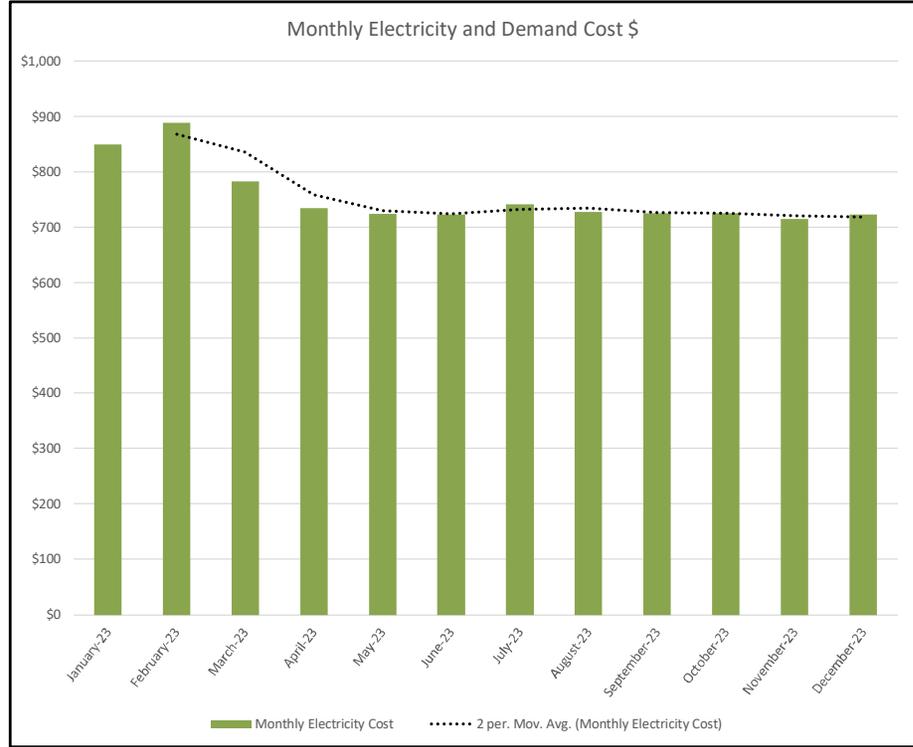
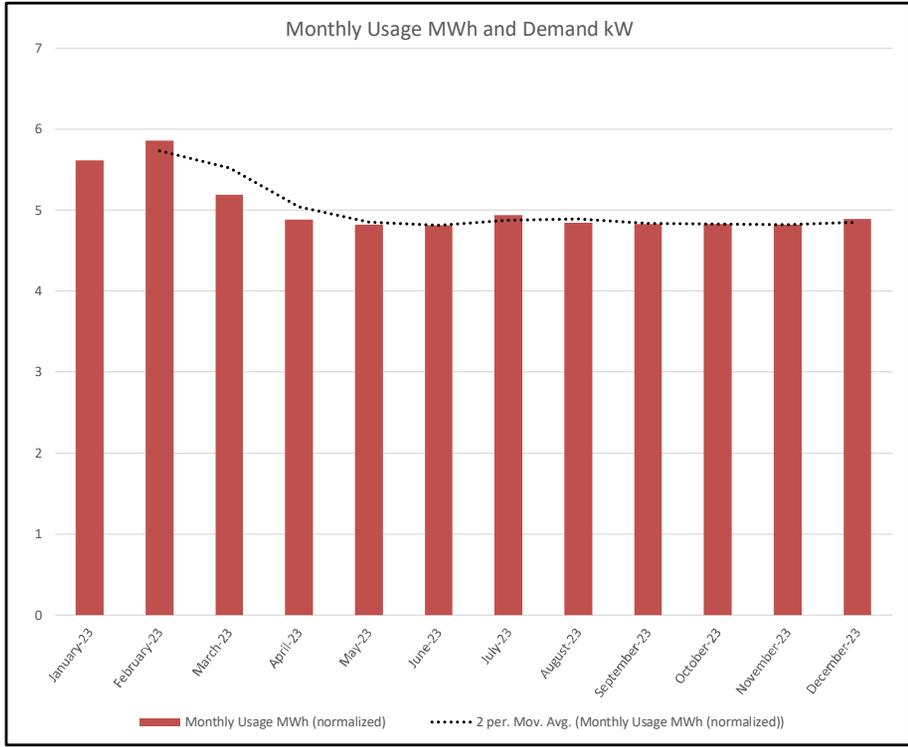
### 4.1 UTILITY PROVIDERS

Utility Type	Utility Provider Name
Electricity	Constellation NewEnergy
Propane	No Frills Energy
Fuel Oil	No Frills Oil
Water	Town of Bar Harbor
Sewage Disposal/Treatment	Town of Bar Harbor

#### 4.1.1 ELECTRICITY

The following utility analysis covers the period of January 2023 to December 2023 and is based on bills obtained from the property owner. Monthly consumption and cost of electricity were only provided for the Bus Garage and Salt Shed. Consumption and cost data were not provided for the Main Highway Department Building; therefore, the electrical energy usage was estimated for this facility. The estimated combined electrical consumption and cost of the three buildings is shown below. The cost per kWh is calculated in the fourth column. The bottom row shows the annual electrical energy consumption and cost.

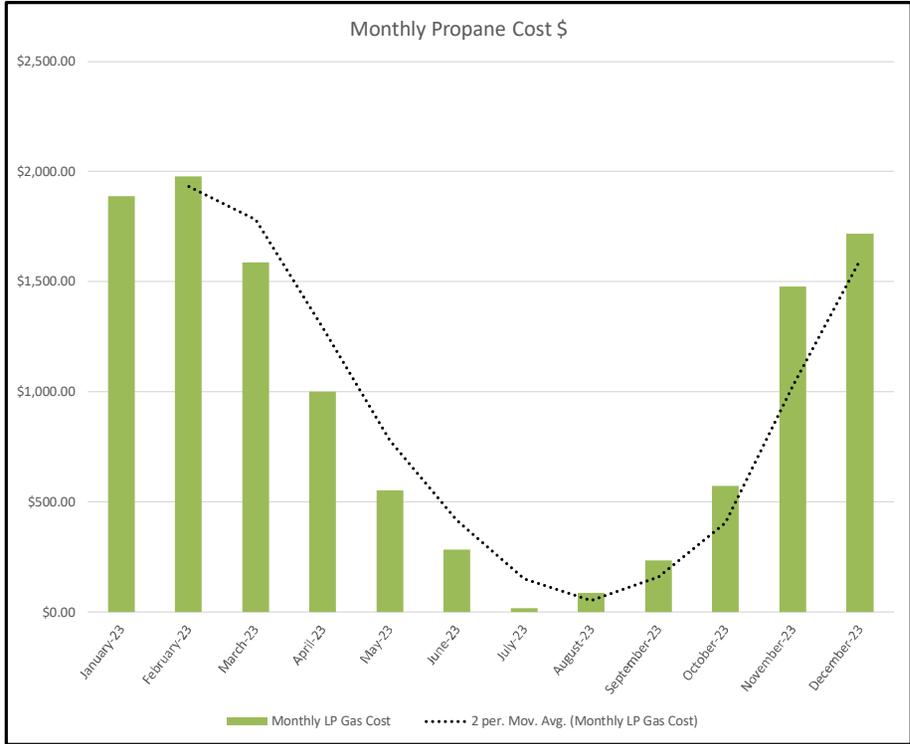
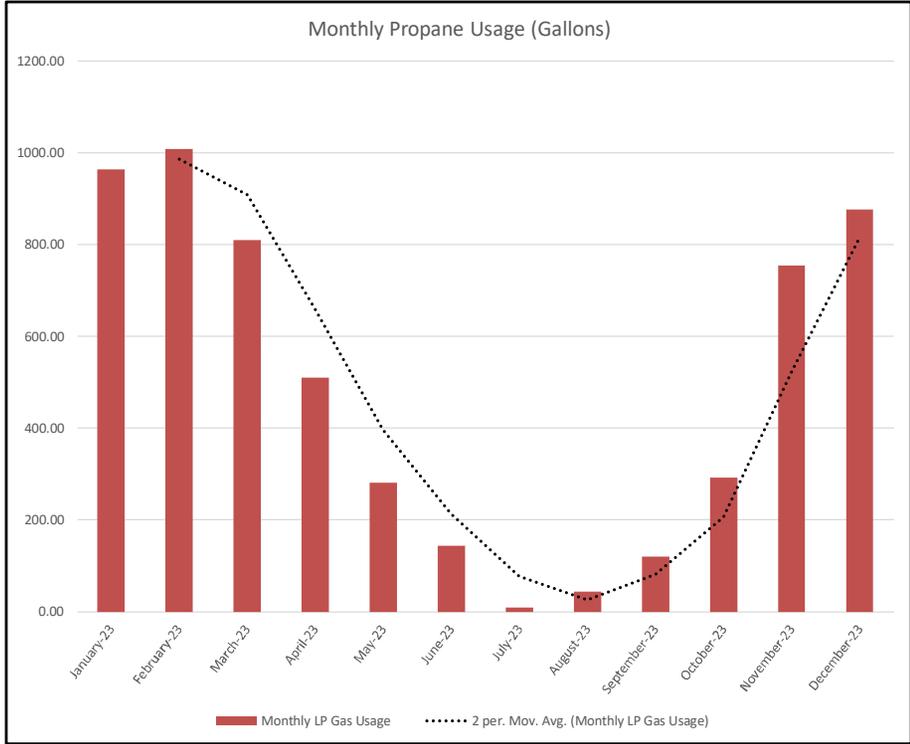
Billing Month & Year	Monthly Electricity Usage (kWh)	Monthly Electricity Cost	Cost per kWh	kBTU Usage (kWh x 3.41)
January-23	5,613	\$849	\$0.15	19,150
February-23	5,858	\$888	\$0.15	19,986
March-23	5,187	\$782	\$0.15	17,697
April-23	4,885	\$735	\$0.15	16,668
May-23	4,820	\$724	\$0.15	16,447
June-23	4,810	\$723	\$0.15	16,413
July-23	4,936	\$741	\$0.15	16,840
August-23	4,840	\$727	\$0.15	16,514
September-23	4,829	\$725	\$0.15	16,477
October-23	4,824	\$725	\$0.15	16,459
November-23	4,817	\$715	\$0.15	16,434
December-23	4,888	\$722	\$0.15	16,676
Annual Electricity Usage & Cost:	60,305	\$9,056	\$0.15	205,760



#### 4.1.2 LP GAS

The chart below shows the monthly consumption and cost of the liquefied petroleum (LP) gas for the Property. The cost per Gal is calculated in the fourth column. The bottom row shows the annual LP gas consumption and cost for the Property.

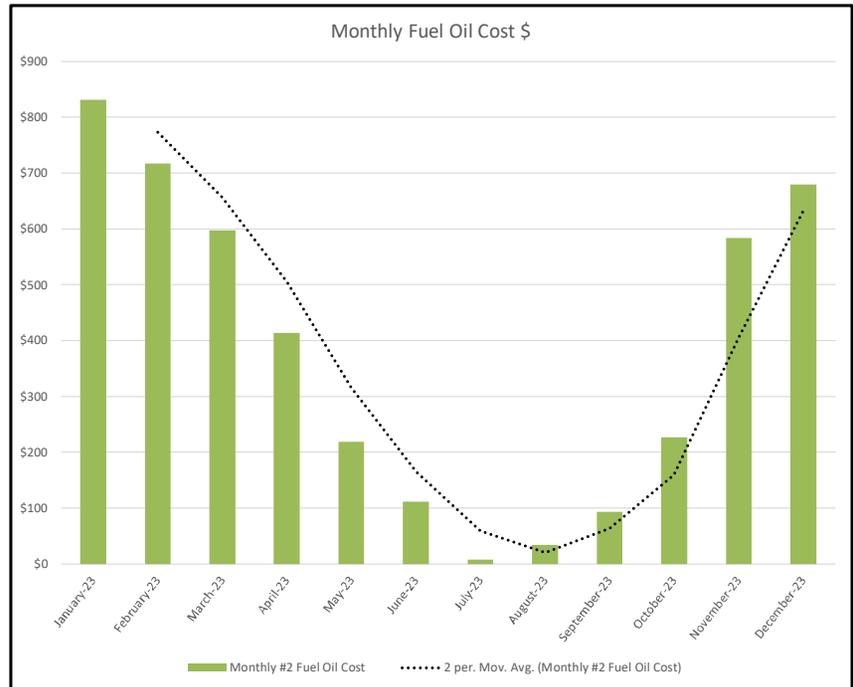
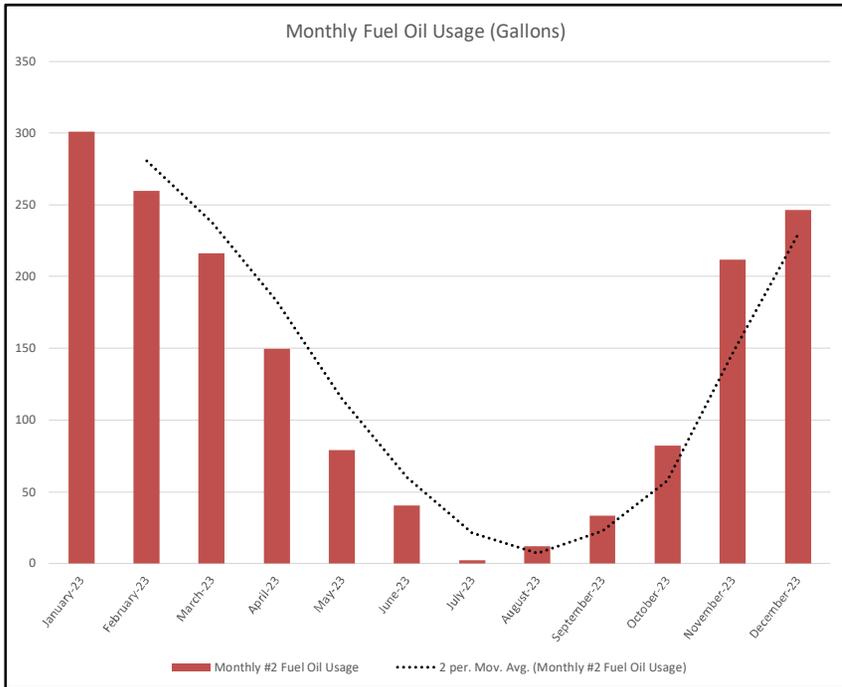
Billing Month & Year	Monthly LP Gas Usage (Gal)	Monthly LP Gas Cost	Cost per Gal	kBTU Usage (Gal x 91.5)
January-23	964	\$1,888	\$1.96	88,188
February-23	1,008	\$1,976	\$1.96	92,267
March-23	809	\$1,585	\$1.96	74,035
April-23	510	\$1,000	\$1.96	46,700
May-23	281	\$551	\$1.96	25,746
June-23	144	\$282	\$1.96	13,191
July-23	9	\$18	\$1.96	822
August-23	44	\$85	\$1.96	3,986
September-23	119	\$234	\$1.96	10,927
October-23	292	\$573	\$1.96	26,739
November-23	754	\$1,477	\$1.96	68,964
December-23	876	\$1,717	\$1.96	80,170
Annual LP Gas Delivery (Gal) and Cost:	5,811	\$11,387	\$1.96	531,734



#### 4.1.3 FUEL OIL

The chart below shows the monthly consumption and cost of the #2 Fuel Oil for the Property. 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)
January-24	301	\$831	\$2.76	41,703
February-24	260	\$717	\$2.76	35,975
March-24	216	\$597	\$2.76	29,963
April-24	150	\$413	\$2.76	20,743
May-23	79	\$218	\$2.76	10,948
June-23	41	\$112	\$2.76	5,609
July-23	3	\$7	\$2.76	350
August-23	12	\$34	\$2.76	1,695
September-23	34	\$93	\$2.76	4,646
October-23	82	\$227	\$2.76	11,370
November-23	212	\$584	\$2.76	29,326
December-23	246	\$679	\$2.76	34,092
Annual #2 Fuel Oil Delivery (Gal) and Cost:	1,635	\$4,510	\$2.76	226,420



#### 4.1.4 WATER AND SEWER

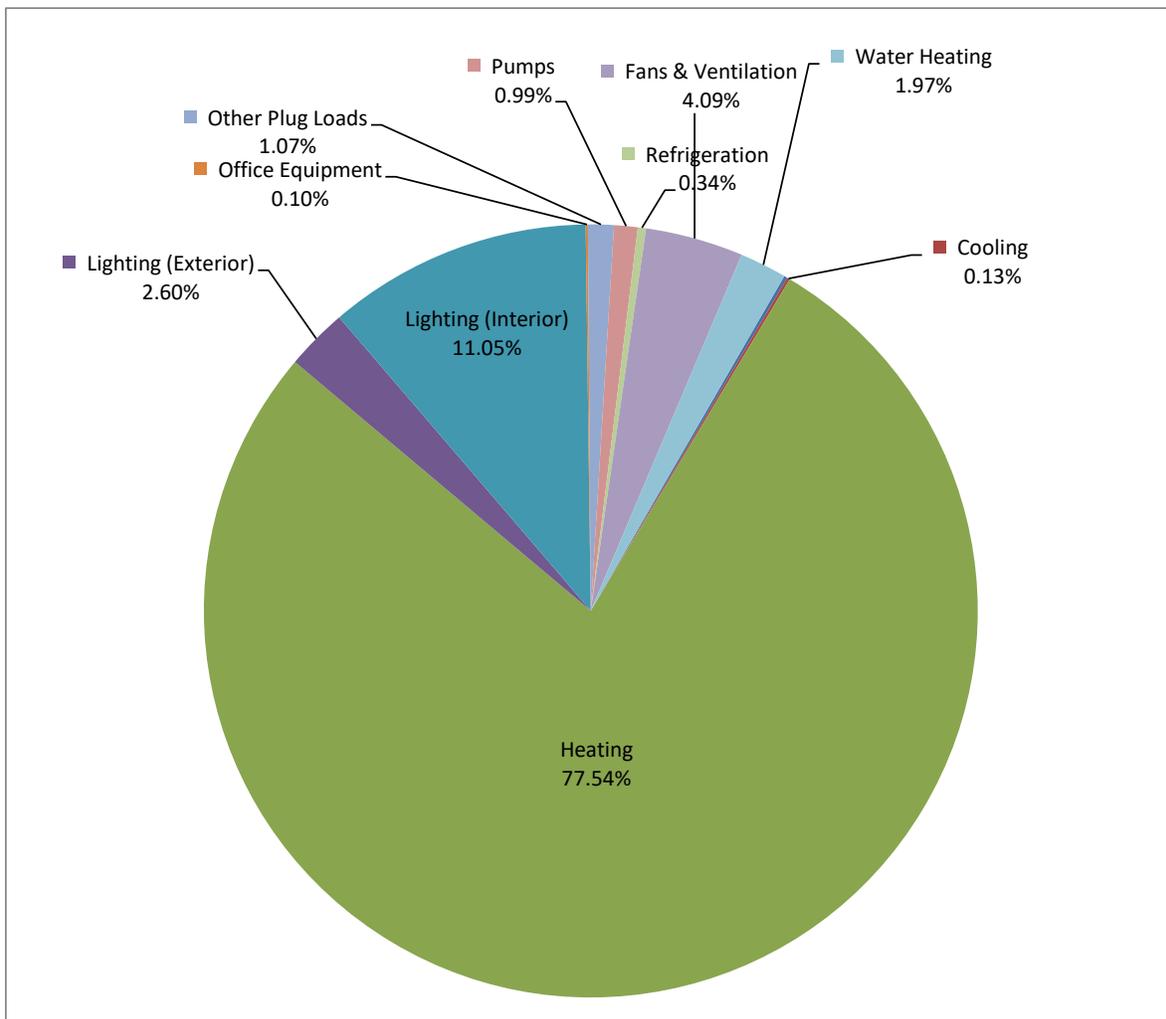
Water consumption data was not provided for these facilities; therefore it is not included in this report.

#### 4.2 ENERGY END USE ANALYSIS

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

Input Energy Units				Combined Energy Use	
End Use	kWh	Gallons (Propane)	Gallons (#2 Fuel Oil)	kBtu	%
Cooking	383	-	-	1,305	0%
Cooling	358	-	-	1,221	0%
Heating	2,402	5,604	1,635	747,392	78%
Lighting (Exterior)	7,345	-	-	25,063	3%
Lighting (Interior)	31,216	-	-	106,513	11%
Office Equipment	277	-	-	944	0%
Other Plug Loads	3,029	-	-	10,336	1%
Pumps	2,789	-	-	9,516	1%
Refrigeration	964	-	-	3,288	0%
Fans & Ventilation	11,542	-	-	39,385	4%
Water Heating	-	207	-	18,959	2%
				-	0%
<b>Total Estimated</b>	<b>60,305</b>	<b>5,811</b>	<b>1,635</b>	<b>963,922</b>	<b>100%</b>
<b>Historical Billing</b>	<b>60,305</b>	<b>5,811</b>	<b>1,635</b>	<b>963,922</b>	
<b>Percent of Actual</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	
<b>Total per sqft</b>	<b>2.1</b>	<b>0.2</b>	<b>0.1</b>	<b>33.3</b>	

\*Electricity data was not provided for the Main Highway Department Building. Usage shown here is the estimated consumption for all three facilities.



### 4.3 ENERGY & WATER BENCHMARKING

Electricity consumption for the Main Highway Dept Facility was estimated due to owner not providing actual utility data; therefore, the facility was not benchmarked against other similar facilities in Energy Star Portfolio Manager.

## 5.0 BUILDING SYSTEMS

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### 5.1 ENVELOPE

The following table shows the building envelope components that were observed at the Property. The salt shed has a concrete block and slab on grade foundation with wood timber framing and metal siding exterior.

Building Component	Main Highway Dept Building and Garage	Bus Garage	Salt Shed
Foundation	Slab-on-grade	Slab-on-grade	Slab-on-grade and concrete block
Framing	Steel Framed	Steel Framed	Wood Framed
Exterior Cladding	Metal Facade	Metal Facade	Metal Facade
Roof	Metal Roof	Metal Roof	Metal Roof
Windows	Double-pane, vinyl frame	None	None
Exterior Doors	Insulated Metal	Insulated Metal	Roll-Up Metal
Roof Insulation	Fiberglass batts	Fiberglass batts	None

### 5.2 LIGHTING

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

## Lighting Audit (Common Area)

Area of Building	Existing Fixture	Total # Fixtures	Lamps Per Fixture	Total # of Lamps	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
Lobby	3B 32W 4' T8	11	3	33	11	2,334	802	1,532	\$0.14	\$316	\$109	\$208	\$284	1.4
Meeting Room	3B 32W 4' T8	6	3	18	11	1,273	438	835	\$0.14	\$173	\$59	\$113	\$155	1.4
Bathrooms	3B 32W 4' T8	2	3	6	11	150	51	98	\$0.14	\$20	\$7	\$13	\$52	3.9
Hallways	3B 32W 4' T8	24	3	72	11	5,092	1,750	3,342	\$0.14	\$690	\$237	\$453	\$621	1.4
Offices	3B 32W 4' T8	26	3	78	11	5,516	1,896	3,620	\$0.14	\$748	\$257	\$491	\$672	1.4
Breakroom	3B 32W 4' T8	12	3	36	11	2,546	875	1,671	\$0.14	\$345	\$119	\$227	\$310	1.4
Equipment Rooms	3B 32W 4' T8	14	3	42	11	1,485	511	975	\$0.14	\$201	\$69	\$132	\$362	2.7
Locker Rooms	3B 32W 4' T8	22	3	66	11	1,647	566	1,081	\$0.14	\$223	\$77	\$147	\$569	3.9
Locker Rooms	1B 13W CFL	2	1	2	8	20	12	8	\$0.14	\$3	\$2	\$1	\$13	12.5
Mechanical Room	3B 32W 4' T8	5	3	15	11	125	43	82	\$0.14	\$17	\$6	\$11	\$129	11.6
Janitors Closet	3B 32W 4' T8	1	3	3	11	50	17	33	\$0.14	\$7	\$2	\$4	\$26	5.8
Storage Room	3B 32W 4' T8	6	3	18	11	150	51	98	\$0.14	\$20	\$7	\$13	\$155	11.6
Garage	3B 32W 4' T8	42	3	126	11	9,959	3,423	6,536	\$0.14	\$1,350	\$464	\$886	\$1,086	1.2
Salt Shed Interior	1B 75W LED	4	1	4	0	403	0	0	\$0.14	\$55	\$0	\$0	\$0	-
Bus Garage Interior	1B 14W LED	16	1	16	0	466	0	0	\$0.14	\$63	\$0	\$0	\$0	-
						31,216	10,437	19,910		\$4,233	\$1,415	\$2,700	\$4,435	1.6

## Exterior Lighting Audit

Area of Building	Existing Fixture	Total # Fixtures	Lamps Per Fixture	Total # of Lamps	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 Bi-Level Fixtures	Pay back
Garage Exterior	1B 40W LED	2	1	2	40	250	125	125	\$0.14	\$34	\$17	\$17	\$259	15.3
Salt Shed Exterior	1B 250W Metal Halide	2	1	2	80	2,190	350	1,840	\$0.14	\$297	\$48	\$249	\$259	1.0
Salt Shed Exterior	1B 40W LED	3	1	3	40	526	263	263	\$0.14	\$71	\$36	\$36	\$388	10.9
Bus Garage Exterior	1B 40W LED	1	1	1	40	175	88	88	\$0.14	\$24	\$12	\$12	\$129	10.9
Storage Shed Exterior	1B 40W LED	24	1	24	40	4,205	2,102	2,102	\$0.14	\$570	\$285	\$285	\$3,103	10.9
						7,345	2,928	4,417		\$ 996	\$ 397	\$ 599	\$ 4,138	6.9

## Lighting Photographs



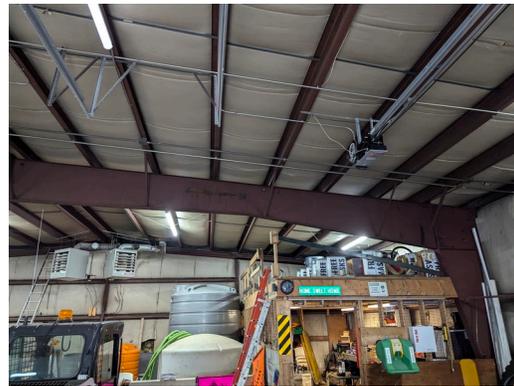
Highway Department Facility Interior Linear Fluorescent Fixture



Salt Shed Interior



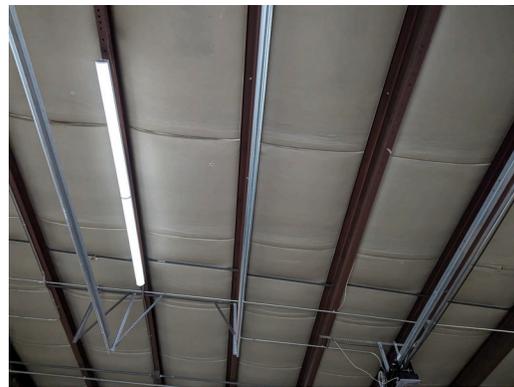
Bus Garage Exterior LED Lighting Fixture



Bus Garage Interior



Bus Garage Exterior LED Lighting Fixture



Bus Garage Interior Lighting

### 5.3 BUILDING MECHANICAL SYSTEMS

The heating system for the Main Highway Department Facility consists of a wood pellet-fired hot water boiler as the primary heat source with a 91% efficient condensing hot water boiler as a backup. The boilers provide hot water to the in-floor radiant heating system. A heat

recovery ventilator manages exhaust air and ventilation air for the building and operates when the building is occupied. Individual through-the-wall packaged terminal air-conditioning (PTAC) units provide supplementary cooling for select spaces.

Domestic water is produced by a Amtrol heat exchanger fed by the building's hydronic system.

The Salt Shed is not heated or cooled.

The Bus Garage contains two Fuel Oil #2 unit heaters. At the time of the site visit, only one was functioning.

### Building Mechanical System Photographs



Fuel Oil #2 Unit Heater



Highway Department Facility PTAC Unit



Highway Department Facility Electronic Thermostat



Highway Department Facility Hydronic Unit Heater



Highway Department Facility Indirect Water Heater



Highway Department Facility PTAC unit

#### 5.4 APPLIANCES

The Public Works Facility kitchen contains a refrigerator with a side freezer, a microwave, a toaster, and a free-standing electric range.

#### Appliance Photographs



Highway Department Facility Refrigerator



Highway Department Facility Kitchen Appliances

## 6.0 RECOMMENDED EWEMS

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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 No/Low-Cost EWEMS

AEI has identified *zero* no-cost/low-cost EWEMs for this Property. This includes recommended measures for which the total individual cost is less than or equal to \$1,000.

### 6.2 CAPITAL COST EWEMS

AEI has identified five (5) capital cost EWEMs for this Property. This includes recommended measures for which the total individual cost is greater than \$1,000.

#### **EWEM #1 - REPLACE EXISTING FUEL OIL #2 UNIT HEATERS IN THE BUS GARAGE WITH A SINGLE CONDENSING PROPANE UNIT HEATER**

##### **Existing Condition:**

The facility currently utilizes two heating systems: a propane boiler and a wood pellet boiler. The existing propane boiler has recently failed and requires replacement. The wood pellet boiler has experienced frequent operational issues. It is also recommended for replacement due to reliability concerns and maintenance demands.

This measure recommends replacing the existing fuel oil #2 unit heaters in the Bus Garage, one of which has failed, with a single high-efficiency condensing propane unit heater. The existing fuel oil heaters are at or beyond their expected useful life. They operate at lower efficiencies than modern condensing propane units.

Condensing propane unit heaters offer significantly higher thermal efficiencies by recovering latent heat from the flue gases, which results in substantial fuel savings compared to traditional fuel oil heaters. Additionally, transitioning to a single, adequately sized unit heater can improve heating distribution and control within the Bus Garage.

A professional HVAC contractor should calculate heat load to determine the appropriate size and capacity of the new condensing propane unit heater to ensure optimal heating performance and prevent over sizing or under sizing of the equipment.

##### **Incremental Cost Analysis:**

A replacement is necessary since the existing fuel oil unit heaters are at or beyond their expected useful life. Therefore, the payback period for this measure should be calculated based on the incremental cost of installing the high-efficiency condensing propane unit heater versus replacing the existing units with standard-efficiency fuel oil heaters.

- **Estimated Cost of Condensing Propane Unit Heater: \$7,890**
- **Estimated Cost of Standard Efficiency Fuel Oil Unit Heaters: \$5,078**
- **Incremental Cost: \$7,890 - \$5,078 = \$2,812**

**Estimated Annual Savings: \$326**

**Simple Payback Period (based on incremental cost):**  $\$2,812 / \$326 =$  approximately 8.6 years

**Benefits:**

- **Significant Energy Savings:** Reduced fuel consumption due to higher thermal efficiency of condensing propane.
- **Reduced Operating Costs:** Lower fuel bills due to reduced energy consumption.
- **Improved Heating Performance:** Consistent and even heating distribution.
- **Reduced Maintenance:** Modern condensing propane unit heaters require less maintenance than older fuel oil units.
- **Environmental Benefits:** Reduced greenhouse gas emissions compared to fuel oil combustion.

**Total Estimated Cost (including labor and materials):** \$7,890

**Estimated Annual Operational & Maintenance (O&M) Savings:** O&M savings may result from reduced maintenance requirements of the new unit.

**Operational Changes for Staff:** None required.

**Implementation Impact to Occupants:** The installation will require coordination between the facility management and the contractor to minimize heating downtime in the Bus Garage. It is recommended that the installation be scheduled during off-peak usage periods.

**Available Rebates or Incentives:**

- 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](#).

**EWEM #2 - REPLACE THE EXISTING 800 MBH BOILER SYSTEM IN THE PUBLIC WORKS FACILITY WITH A NEW HIGH-EFFICIENCY PROPANE CONDENSING BOILER**

**Existing Condition:**

The facility currently utilizes two heating systems: a wood pellet boiler that acts as the primary heating source and a propane boiler that operates as a supplementary heating source. The existing propane boiler has recently failed and requires replacement. The wood pellet boiler has experienced frequent operational issues. It is also recommended for replacement due to reliability concerns and maintenance demands.

#### **Description:**

This measure recommends replacing the 800 MBH boiler system with a new, high-efficiency propane condensing boiler. If available, the selected boiler should achieve a minimum thermal efficiency of 96% to maximize fuel savings. The full-fire heating capacity of the new boiler should match or exceed the existing boiler's capacity to ensure adequate heating performance.

A qualified HVAC contractor should perform a comprehensive heat load calculation to verify the appropriate boiler size for the building. This calculation will account for the improved efficiency and potential output of the new condensing boiler, ensuring optimal performance and preventing oversizing or undersizing.

Condensing boilers operate at significantly higher thermal efficiencies than traditional non-condensing boilers by recovering latent heat from the flue gases, which would otherwise be wasted. This process substantially reduces fuel consumption, leading to significant cost savings over the boiler's lifespan.

#### **Incremental Cost Analysis:**

Since one of the existing boilers has failed and the other is unreliable, a replacement is necessary. Therefore, the payback period for this measure should be calculated based on the incremental cost of installing the high-efficiency condensing propane boiler versus replacing the failed boiler with a standard efficiency propane boiler.

- **Estimated Cost of Condensing Propane Boiler:** \$64,540
- **Estimated Cost of Standard Efficiency Propane Boiler Replacement:** \$50,656 (\$64,540 - \$13,884)
- **Incremental Cost:** \$64,540 - \$50,656 = \$13,884

**Estimated Annual Savings:** \$2,781

**Simple Payback Period (based on incremental cost):** \$13,884 / \$2,810 = approximately 4.9 years

#### **Benefits:**

- **Increased Energy Efficiency:** Achieves a minimum of 96% thermal efficiency, resulting in significant fuel savings.
- **Reduced Operating Costs:** Lower fuel consumption translates to reduced energy bills.
- **Improved Heating Performance:** Provides reliable and consistent heating throughout the building.
- **Reduced Environmental Impact:** Lower fuel consumption reduces greenhouse gas emissions.

**Total Estimated Cost (including labor and materials):** \$64,540

**Estimated Annual Operational & Maintenance (O&M) Savings:** None required.

**Operational Changes for Staff:** None required.

**Implementation Impact to Occupants:** To minimize boiler downtime, coordinate between the facility management and the installing contractor. It is recommended that the installation be scheduled during off-peak heating periods to reduce disruption.

**Available Rebates or Incentives:** Based on the 2025 Commercial Heating, Ventilation, and Air Conditioning (HVAC) Solutions from Efficiency Maine, this project could qualify for rebates on boiler control and ancillary equipment. Working with an Efficiency Maine Qualified Partner is highly recommended to maximize potential incentives. Efficiency Maine offers incentives for Commercial Boilers, Furnaces, Commercial Boiler Controls, and Ancillary Equipment (retrofit only). Efficiency Maine also reserves the right to require pre-approval for projects with incentives of 5,000\$ or more.

- 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](#).

### **EWEM #3 - RETROFIT COMMON AREA LIGHTING WITH ENERGY STAR CERTIFIED LEDs**

This measure recommends retrofitting 173 existing common area light fixtures containing 515 fluorescent tube lamps with new Energy Star-certified LED fixtures or lamps. The current fluorescent lighting system exhibits inefficient energy consumption and can be significantly improved by transitioning to modern LED technology.

LED lighting offers a significantly higher lumen-per-watt ratio than traditional fluorescent lighting. LED fixtures consume considerably less energy for the same light output, which results in substantial energy savings. Additionally, LED lamps have a significantly longer lifespan, reducing the frequency of replacements and associated maintenance costs.

The retrofit should prioritize Energy Star-certified LED products to ensure optimal energy efficiency and product quality. The selection of LED fixtures or lamps should be based on the existing fixture types and the desired light output, color temperature, and distribution to maintain or improve the existing lighting quality.

#### **Benefits:**

- **Significant Energy Savings:** Reduced electricity consumption due to the higher lumen-per-watt efficiency of LEDs.
- **Reduced Operating Costs:** Maintenance costs will be reduced due to the longer LED lifespans, leading to less frequent replacement intervals.
- **Improved Lighting Quality:** Consistent light output, improved color rendering, and reduced flicker.

- **Extended Lifespan:** LEDs offer a significantly longer lifespan than fluorescent lamps, minimizing replacement frequency.
- **Reduced Environmental Impact:** Lower energy consumption translates to reduced greenhouse gas emissions.

**Total Estimated Cost (including labor and materials):** \$4,435

**Estimated Annual Operational & Maintenance (O&M) Savings:** The extended lifespan of LED lamps will significantly reduce replacement and maintenance costs over time.

**Operational Changes for Staff:** None required.

**Implementation Impact to Occupants:** The retrofit will occur in common areas and on-site during regular business hours. Minimal disruption to occupants is expected.

**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](#).

#### **EWEM #4 - RETROFIT EXTERIOR LIGHTING WITH ENERGY STAR CERTIFIED LEDs**

This measure recommends retrofitting 32 existing exterior light fixtures with new Energy Star certified LED fixtures or lamps. The current exterior lighting system likely utilizes outdated and inefficient lighting technology, resulting in excessive energy consumption and increased maintenance requirements. Transitioning to modern LED lighting will significantly improve energy efficiency and reduce operational costs.

LED lighting offers a significantly higher lumen-per-watt ratio than traditional exterior lighting technologies, such as high-pressure sodium or metal halide. This means that LED fixtures consume considerably less energy for the same light output, resulting in substantial energy

savings. Additionally, LED lamps have a significantly longer lifespan, reducing the frequency of replacements and associated maintenance costs, which is particularly beneficial for hard-to-reach exterior fixtures.

The retrofit should prioritize Energy Star certified LED products designed for outdoor applications to ensure optimal energy efficiency, weather resistance, and product quality. The selection of LED fixtures or lamps should be based on the existing fixture types, the desired light output, color temperature, and distribution to maintain or improve the existing lighting quality, while also considering safety and security requirements.

#### **Benefits:**

- **Significant Energy Savings:** Reduced electricity consumption due to higher lumen-per-watt efficiency of LEDs.
- **Reduced Operating Costs:** Lower energy bills and reduced maintenance costs due to longer LED lifespan.
- **Improved Lighting Quality:** Consistent light output, improved color rendering, and reduced light pollution.
- **Extended Lifespan:** LEDs offer a significantly longer lifespan than traditional exterior lighting, minimizing replacement frequency.
- **Enhanced Safety and Security:** Improved light distribution and color rendering can enhance visibility and security.
- **Reduced Environmental Impact:** Lower energy consumption translates into reduced greenhouse gas emissions.

**Total Estimated Cost (including labor and materials):** \$4,138

**Estimated Annual Operational & Maintenance (O&M) Savings:** The extended lifespan of LED lamps will significantly reduce replacement and maintenance costs over time, especially for exterior fixtures that may be difficult to access.

**Operational Changes for Staff:** None required.

**Implementation Impact to Occupants:** The retrofit will occur during normal business hours in exterior areas. Minimal disruption to occupants is expected.

#### **Available Rebates or Incentives:**

- Efficiency Maine offers the 2025 Discounted Screw-In LEDs Program. This program offers discounted screw-in LEDs at retailers and distributors across the state. While this program focuses on screw-in bulbs, it is worth investigating if any of the exterior 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. It is highly recommended that a detailed energy savings calculation be performed to determine eligibility.

- 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](#).

#### **EWEM #5 - REPLACE THE EXISTING INDIRECT-FIRED DOMESTIC WATER HEATER WITH A NEW HEAT PUMP WATER HEATER**

##### **Description:**

This measure recommends replacing the existing indirect-fired domestic water heater with a new, high-efficiency heat pump water heater (HPWH) with a minimum Uniform Energy Factor (UEF) of 3.75. While utilizing boiler heat, the current indirect-fired water heater can be significantly improved by transitioning to a dedicated HPWH, which offers superior energy efficiency and reduced operational costs.

Heat pump water heaters extract heat from the surrounding air and transfer it to the water rather than directly heating it with electric resistance or fossil fuels. This process produces significantly higher energy efficiency than traditional water heaters, leading to substantial energy savings. The UEF rating of 3.75 indicates a highly efficient unit, ensuring optimal performance and reduced energy consumption.

The new HPWH should be sized appropriately to meet the building's hot water demand. A professional plumbing contractor should perform a load calculation to determine the correct capacity and ensure adequate hot water supply.

##### **Benefits:**

- **Significant Energy Savings:** Reduced electricity consumption due to the high efficiency of heat pump technology.
- **Reduced Operating Costs:** Lower energy bills due to reduced energy consumption.
- **Environmental Benefits:** Reduced greenhouse gas emissions compared to traditional water heaters.
- **Improved Efficiency:** A UEF rating of 3.75 indicates a highly efficient unit.

**Total Estimated Cost (including labor and materials):** \$2,579

**Estimated Annual Operational & Maintenance (O&M) Savings:** None.

**Operational Changes for Staff:** None required.

**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.

### Available Rebates or Incentives:

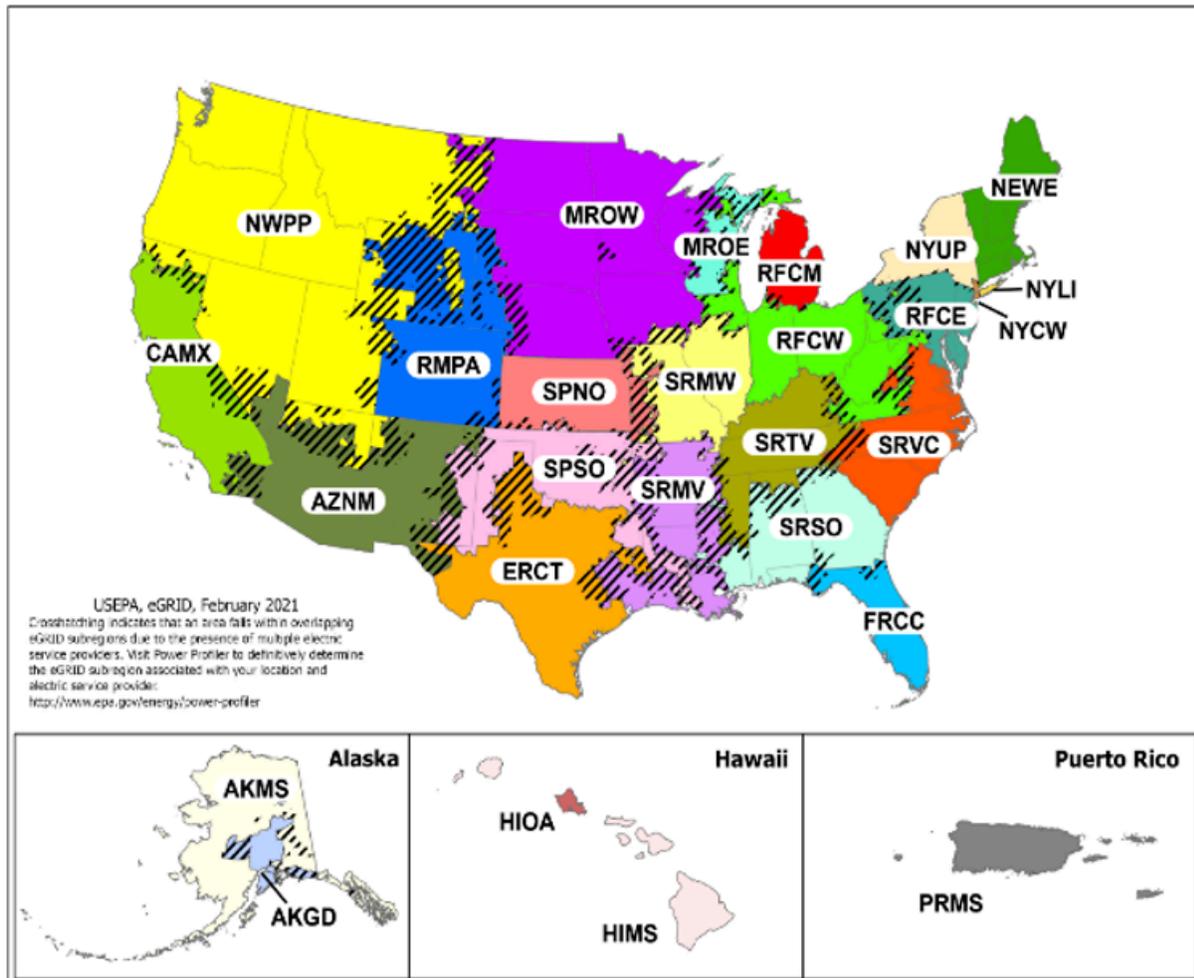
- **Federal Tax Credit:** This project qualifies for a federal tax credit of 30% of the project cost, up to a maximum credit of \$2,000. It is recommended to consult with a tax professional to ensure eligibility and proper documentation.
- Based on the 2025 Water Heating Solutions from Efficiency Maine, 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](#).

## 7.0 GHG EMISSIONS ANALYSIS

### 7.1 EGRID SUBREGIONS

A map of the the eGRID subregions and the equivalent CO<sub>2</sub> emissions factor used in the GHG emissions analysis calculations are shown below.

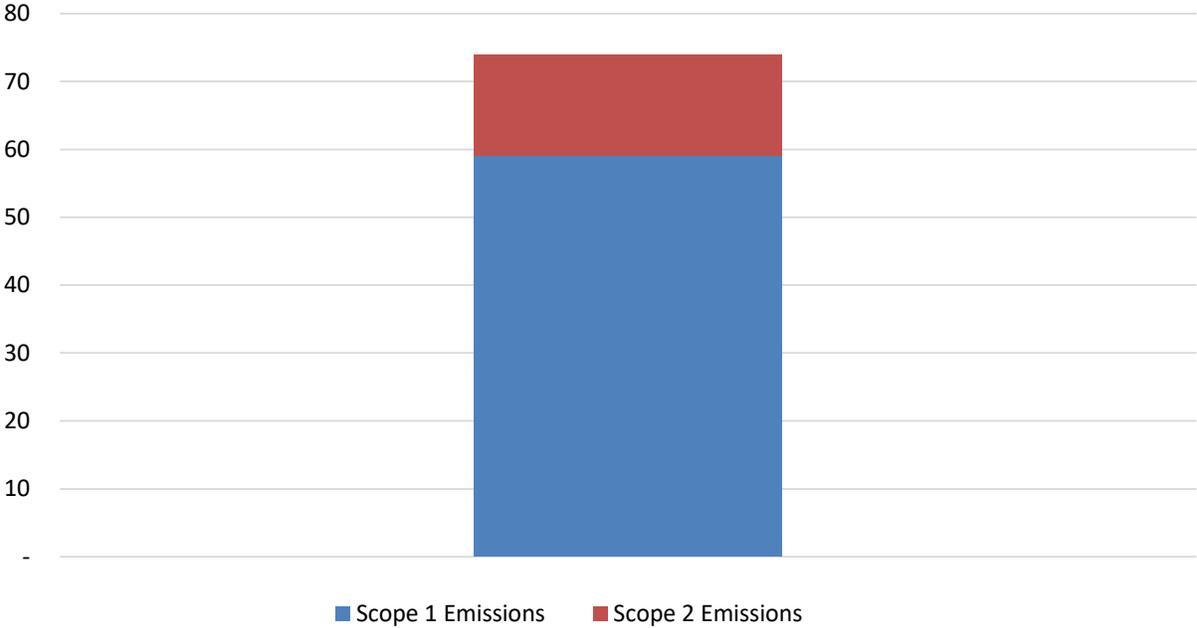


eGRID Subregion Name	eGRID Acronym	CO <sub>2</sub> e Emissions Factor (lb/MWh)
NPCC New England	NEWE	541.1
National Average	N/A	775.2

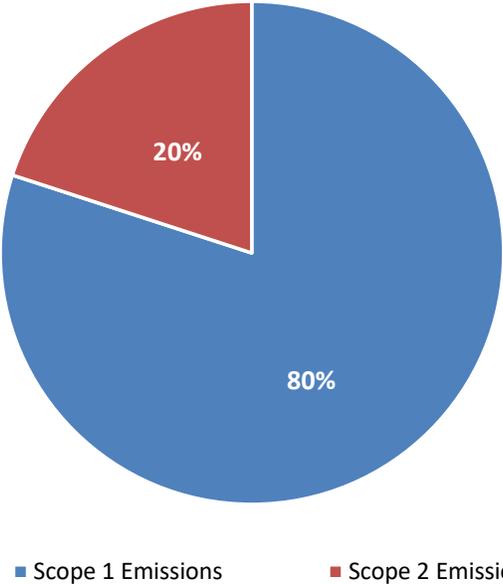
### 7.2 BASELINE SCOPE 1 AND SCOPE 2 GHG EMISSIONS

The following charts show the existing Scope 1 and Scope 2 emissions calculated for the Property using the above equivalent CO<sub>2</sub> emissions factor for the applicable region.

**Baseline Scope 1 and Scope 2 Emissions (MTCO<sub>2</sub>e/yr)**



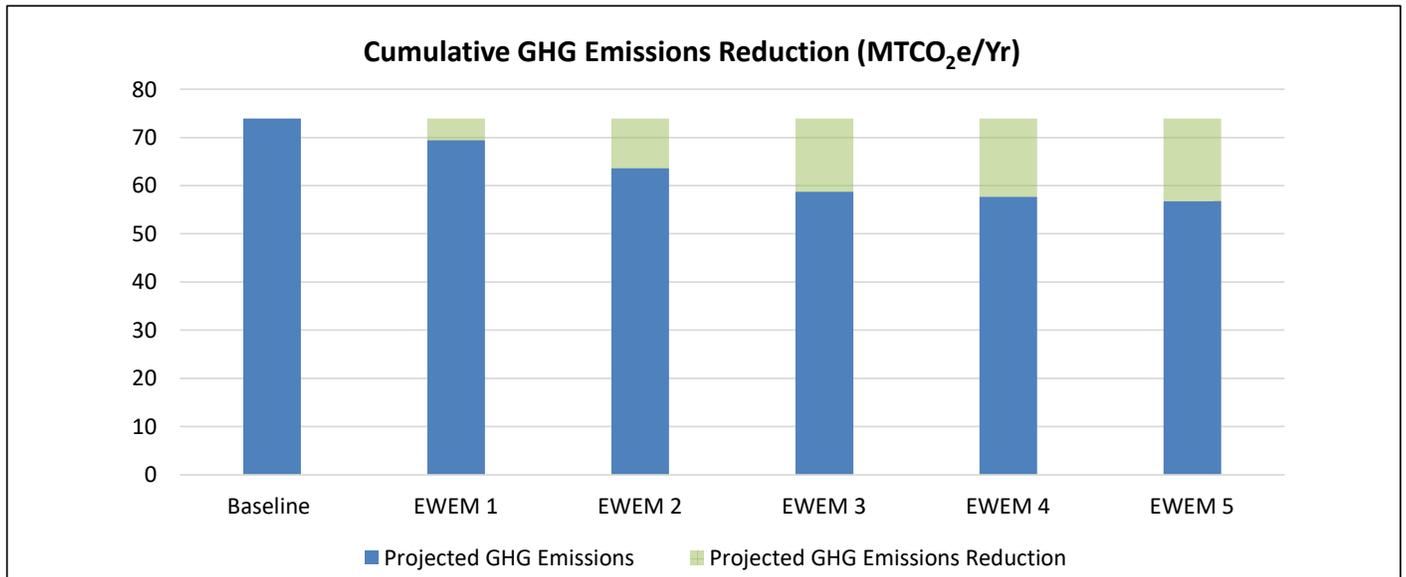
**Baseline Scope 1 and Scope 2 Emissions (%)**



### 7.3 GHG EMISSIONS REDUCTION PER EWEM

The following table and chart show the equivalent CO<sub>2</sub> emissions reduction per EWEM and the cumulative reduction of the combined EWEMs. The cumulative reduction chart assumes each EWEM will be implemented.

EWEM #	Energy And Water Efficiency Measures (EWEM) Summary Description	Projected GHG Emissions (MTCO <sub>2</sub> e)	Emissions Reduction (MTCO <sub>2</sub> e)	Emissions Reduction (%)
Baseline	Current GHG emissions	73.94		
EWEM 1	Replace existing 83% efficient #2 Fuel Oil unit heaters in the Bus Garage with new 95% efficient LP Gas Propane-fired unit heaters		4.54	6.1%
EWEM 2	Replace existing 90% efficient Propane hot water boiler in the Main Highway Dept Building with a new 97% efficient Propane hot water boiler		5.77	7.8%
EWEM 3	Retrofit 173 Interior Lighting Fixtures with 515 DLC Certified LED Lamps		4.88	6.6%
EWEM 4	Replace Exterior Lighting Fixtures with Bi-Level LED Lighting Fixtures		1.08	1.5%
EWEM 5	Replace 1 Existing Indirect Propane-fired Water Heater with 1 Hybrid Heat Pump Water Heater (HPWH) with a minimum UEF of 3.75.		0.88	1.2%
<b>Total</b>	<b>Projected GHG emissions and reduction from baseline</b>	<b>56.79</b>	<b>17.16</b>	<b>23.2%</b>



## 8.0 FINANCIAL INCENTIVES

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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](http://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](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

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AEI Consultants performed this ASHRAE Level II Energy Audit for the Property located at 50 Public Works Way, 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:



Joshua Martin  
Report Author

Reviewed By:



Craig Burcham, CEM  
Senior Author



Joshua Martin  
Site Assessor

# APPENDIX A

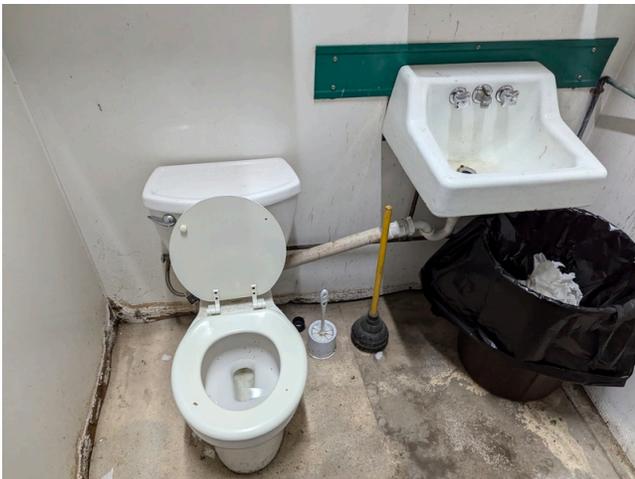
## PROPERTY PHOTOGRAPHS



1. Fuel Oil #2 Unit Heater



2. Bus Garage Interior



3. Bus Garage Bathroom



4. Highway Department Facility Urinal



5. Highway Department Facility Toilet



6. Highway Department Facility Exterior



7. Highway Department Facility PTAC Unit



8. Highway Department Facility Refrigerator



9. Highway Department Facility Showerhead



10. Highway Department Facility Electronic Thermostat



11. Highway Department Facility Toilet



12. Highway Department Facility Interior Linear Fluorescent Fixture



13. Highway Department Facility Kitchen Appliances



14. Salt Shed Exterior



15. Salt Shed Interior



16. Highway Department Facility Hydronic Unit Heater



17. Highway Department Facility Indirect Water Heater



18. Highway Department Facility PTAC unit



19. Storage Shed



20. Salt Shed Interior



21. Bus Garage Exterior LED Lighting Fixture



22. Bus Garage Interior



23. Bus Garage Interior



24. Bus Garage Interior Building Shell



25. Bus Garage Bathroom



26. Bus Garage Interior



27. Bus Garage Exterior Shell



28. Bus Garage Exterior Shell



29. Bus Garage Exterior Shell



30. Bus Garage Exterior LED Lighting Fixture



31. Bus Garage Interior



32. Bus Garage Interior Lighting

**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](http://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

## Boiler Replacement

Replace existing 83% efficient #2 Fuel Oil unit heaters with new 96% efficient LP Gas Propane-fired unit heaters

Quantity of Existing Boilers	1	Each
Annual Heating Hours	2,728	Hours
Percent of Heating Hours that Boiler Runs	47%	
Existing Boiler Input Energy Source	Fuel Oil	
Current Boiler Efficiency	83%	
Existing Boiler Input Capacity	175	MBH
Actual Heat Output Capacity with Existing Boiler	145	MBH
Total Annual Energy Input of Existing Boiler (BTUs)	226,447,500	BTUs
Total Annual Energy Input of Existing Boiler (Natural Gas)	0	Therms
Total Annual Energy Input of Existing Boiler (Electrical)	0	kWh
Total Annual Energy Input of Existing Boiler (Fuel Oil)	1,635	Gallons
Total Annual Energy Input of Existing Boiler (Propane)	0	Gallons
New Boiler Input Energy Source	LP Gas	
New Boiler Efficiency	96%	
New Boiler Input Required to Match Existing Boiler Capacity	151	MBH
Total Annual Energy Input of New Boiler (BTUs)	195,445,759	BTUs
Total Annual Energy Input of New Boiler (Natural Gas)	0	Therms
Total Annual Energy Input of New Boiler (Electrical)	0	kWh
Total Annual Energy Input of New Boiler (Propane)	2,136	Gallons
Cost Per Natural Gas Therm	\$0.00	per Therm
Cost Per Electrical kWh	\$0.14	per kWh
Cost Per Fuel Oil per Gallon	\$2.76	per Gallon
Cost Per Propane Gallon	\$1.96	per Gallon
Existing Fuel Oil Equipment Operating Cost:	\$4,510.96	
Proposed Propane Equipment Operating Cost:	\$4,185.32	
Operating Cost Savings	\$325.65	
Fuel Oil Cost Savings	\$4,511	\$
Propane Cost Savings	-\$4,185	\$
Total Cost Savings	\$326	\$
Number of Boiler(s) to Replace with High Efficiency:	1	Each
Output Capacity of Replacement High Efficiency Boiler(s):	145,080	MBH
Total Cost to Replace w/ 96% Efficient Boiler	\$7,890	Dollars
Total Cost to Replace Existing Boiler in Kind	\$5,078	Dollars
Incremental Replacement Cost for 96% Efficient Boiler	\$2,812	Dollars
Payback for High Efficiency Boiler if Existing is Relatively New	24.2	Years
Payback for High Efficiency Boiler if Existing is at end of EUL	8.6	Years

## Boiler Replacement

Replace existing 80% efficient Propane hot water boiler with a new 97% efficient Propane hot water boiler

Quantity of Existing Boilers	2	Each
Annual Heating Hours	2,728	Hours
Percent of Heating Hours that Boiler Runs	92%	
Existing Boiler Input Energy Source	Propane	
Minimum Code Required Efficiency	80.0%	
Current Boiler Efficiency	80.0%	
Existing Boiler Average Input Capacity	444	MBH
Actual Heat Output Capacity with Existing Boiler	355	MBH
Total Annual Energy Input of Existing Boiler (BTUs)	531,733,950	BTUs
Total Annual Energy Input of Existing Boiler (Propane)	5,811	Gallons
New Boiler Input Energy Source	Propane	
New Boiler Efficiency	97%	
New Boiler Input Required to Match Existing Boiler Capacity	366	MBH
Total Annual Energy Input of New Boiler (BTUs)	438,543,464	BTUs
Total Annual Energy Input of Minimum Efficiency Boiler (BTUs)	531,733,950	MBH
Total Annual Energy Input of New Boiler (Electrical)	0	kWh
Total Annual Energy Input of Min Efficiency Boiler (Propane)	5,811	Gallons
Total Annual Energy Input of New Boiler (Propane)	4,793	Gallons
Cost Per Propane Gallon	\$2.76	per Gallon
Propane Savings over Minimum Efficiency Boiler	1,018	Gallons
Propane Savings over Existing Boiler	1,018	Gallons
Propane Cost Savings over Minimum Efficiency	\$2,810	\$
Propane Cost Savings over Existing	\$2,810	\$
Total Cost Savings	\$2,810	\$
Number of Boiler(s) to Replace with High Efficiency:	1	Each
Output Capacity of Replacement High Efficiency Boiler(s):	366	MBH
Total Cost to Replace w/ 97% Efficient Boiler	\$64,540	Dollars
Total Cost to Replace Existing Boiler in Kind	\$50,656	Dollars
Incremental Replacement Cost for 97% Efficient Boiler	\$13,884	Dollars
Payback for High Efficiency Boiler over Existing Boiler	23.0	Years
Payback for High Efficiency Boiler over Minimum Efficiency Boiler	4.9	Years

## Interior Lighting Audit

Area of Building	Existing Fixture	Total # Fixtures	Lamps Per Fixture	Total # of Lamps	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
Lobby	3B 32W 4' T8	11	3	33	11	2,334	802	1,532	\$0.14	\$317	\$109	\$208	\$284	1.4
Meeting Room	3B 32W 4' T8	6	3	18	11	1,273	438	835	\$0.14	\$173	\$59	\$113	\$155	1.4
Bathrooms	3B 32W 4' T8	2	3	6	11	150	51	98	\$0.14	\$20	\$7	\$13	\$52	3.9
Hallways	3B 32W 4' T8	24	3	72	11	5,092	1,750	3,342	\$0.14	\$691	\$237	\$453	\$621	1.4
Offices	3B 32W 4' T8	26	3	78	11	5,516	1,896	3,620	\$0.14	\$748	\$257	\$491	\$672	1.4
Breakroom	3B 32W 4' T8	12	3	36	11	2,546	875	1,671	\$0.14	\$345	\$119	\$227	\$310	1.4
Equipment Rooms	3B 32W 4' T8	14	3	42	11	1,485	511	975	\$0.14	\$201	\$69	\$132	\$362	2.7
Locker Rooms	3B 32W 4' T8	22	3	66	11	1,647	566	1,081	\$0.14	\$223	\$77	\$147	\$569	3.9
Locker Rooms	1B 13W CFL	2	1	2	8	20	12	8	\$0.14	\$3	\$2	\$1	\$13	12.5
Mechanical Room	3B 32W 4' T8	5	3	15	11	125	43	82	\$0.14	\$17	\$6	\$11	\$129	11.6
Janitors Closet	3B 32W 4' T8	1	3	3	11	50	17	33	\$0.14	\$7	\$2	\$4	\$26	5.8
Storage Room	3B 32W 4' T8	6	3	18	11	150	51	98	\$0.14	\$20	\$7	\$13	\$155	11.6
Garage	3B 32W 4' T8	42	3	126	11	9,959	3,423	6,536	\$0.14	\$1,351	\$464	\$887	\$1,086	1.2
Salt Shed Interior	1B 75W LED	4	1	4	0	403	0	0	\$0.14	\$55	\$0	\$0	\$0	-
Bus Garage Interior	1B 14W LED	16	1	16	0	466	0	0	\$0.14	\$63	\$0	\$0	\$0	-
						31,216	10,437	19,910		\$4,234	\$1,416	\$2,701	\$4,435	1.6

## Exterior Lighting Audit

Area of Building	Existing Fixture	Total # Fixtures	Lamps Per Fixture	Total # of Lamps	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 Bi-Level Fixtures	Pay back
Garage Exterior	1B 40W LED	2	1	2	40	250	125	125	\$0.14	\$34	\$17	\$17	\$259	15.3
Salt Shed Exterior	1B 250W Metal Halide	2	1	2	80	2,190	350	1,840	\$0.14	\$297	\$48	\$250	\$259	1.0
Salt Shed Exterior	1B 40W LED	3	1	3	40	526	263	263	\$0.14	\$71	\$36	\$36	\$388	10.9
Bus Garage Exterior	1B 40W LED	1	1	1	40	175	88	88	\$0.14	\$24	\$12	\$12	\$129	10.9
Storage Shed Exterior	1B 40W LED	24	1	24	40	4,205	2,102	2,102	\$0.14	\$570	\$285	\$285	\$3,103	10.9
						7,345	2,928	4,417		\$ 996	\$ 397	\$ 599	\$ 4,138	6.9

**REPLACE EXISTING GAS WATER HEATER WITH HEAT PUMP WATER**

Replace 1 Existing Propane Water Heater with 1 Hybrid Heat Pump Water Heater with 1 (HPWH) with a minimum UEF of 3.75.

Quantity of Existing Water Heaters	<b>1</b>	Each
Annual Gallons of Hot Water Consumed	<b>25,939</b>	
Existing Gas DWH Efficiency	<b>90%</b>	
DHW Delta T	<b>79.7</b>	°F
Annual Energy Consumed by DWH	<b>19,143</b>	kBTU/Year
Annual Energy Consumed by DWH	<b>209</b>	Gallons/Year
Quantity of Heat Pump Water Heaters	<b>1</b>	Each
Select Desired HPWH From the List	<b>XE80T10HS45**</b>	
HPWH COP	<b>4.07</b>	
Annual kWh Consumed with HPWHs	<b>1,241</b>	kWh/Year
Energy Saving by using Heat Pump	<b>14,910</b>	kBTU/Year
Energy Cost Per kWh	<b>\$0.136</b>	\$\$\$/kWh
Energy Cost Per Gallon	<b>\$1.96</b>	\$\$\$/Therm
Approximate Cost for One HPWH	<b>\$2,029</b>	Dollars
Demo and Installation Labor	<b>\$550</b>	
Cost Avoidance Per Year with HPWH	<b>\$242</b>	
Total Cost for New HPWH	<b>\$2,579</b>	Dollars
Payback	<b>10.7</b>	Years

# APPENDIX D

## EWEM PRODUCT BROCHURES



# Unitary Heating Products

GAS | STEAM/HOT WATER | OIL | ELECTRIC



## Table of Contents



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	Effinity® Gas-Fired Separated Combustion Unit Heaters 8		Gas-Fired Blower Unit Heaters 10
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## EASY TO USE • INEXPENSIVE TO INSTALL • EXCELLENT IN-SERVICE ECONOMY

Power-Exhausted unit heaters are certified for residential, commercial and industrial use. Installation is seamless with a lightweight design in addition to knockouts with quick access to gas and electricity. These units are designed to be vented both vertically and horizontally with the smallest diameter vent pipe possible.

- All models feature 82% minimal efficiency for fuel savings
- Made in the USA
- Permanently lubricated motor for trouble-free dependability
- Uses natural or propane gas, field convertible from natural to propane gas
- External gas connections
- Standard power exhaust simplifies sidewall or roof venting with small-diameter vent pipe
- 100% shut-off with continuous retry to allow for safe ignition in the event the unit doesn't light on the first try
- Installation made easy with knockouts for quick access to gas and electricity
- Full 10-year warranty on heat exchanger

## PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
HD	30	30,000	24,600	44	505
	45	45,000	36,900	46	720
	60	60,000	49,200	45	990
	75	75,000	61,500	48	1,160
	100	100,000	82,000	50	1,490
	125	125,000	102,500	47	1,980
PDP, PTP	150	150,000	123,000	51 - 53	2,140 - 2,180
	175	175,000	143,000	48 - 51	2,550 - 2,725
	200	200,000	164,000	52	2,870
	250	250,000	205,000	47 - 50	3,700 - 3,995
	300	300,000	246,000	50	4,460 - 4,545
	350	350,000	287,000	50 - 53	4,870 - 5,280
	400	400,000	328,000	51 - 54	5,440 - 5,995

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-189

### MODEL PDP Expands on the size range of the Hot Dawg® Series:

- Available in 7 model sizes from 150,000 to 400,000 Btu/hr
- Airflow range 2,140 to 5,595 CFM
- Power exhaust can rotate 180-degrees, allowing the unit to be vented vertically or horizontally
- Commercial Certified



### MODEL PTP

- Available in 7 model sizes from 150,000 to 400,000 Btu/hr
- Airflow range 2,140 to 5,595 CFM
- The stainless steel heat exchanger is standard on all units, extending the life of your PTP investment
- Commercial Certified only



### MODEL HD

- Available in 6 model sizes from 30,000 to 125,000 Btu/hr
- Airflow range 505 to 1,980 CFM
- Finger-proof fan guards\*
- Right- or left-hand controls available on 30-75 models by rotating unit 180 degrees
- Low-profile, lightweight design easily installs 1" from ceiling with only two angle brackets\*
- Residential and Commercial Certified

\*Standard on HD 30-75; accessory for HD 100-125.



## EFFICIENT THERMAL HEATING • LIGHTWEIGHT DESIGN • EASY INSTALLATION

Gas-Fired Separated Combustion unit heaters pulls 100% of the combustion air from outside, making this unit ideal for workspaces such as woodshops or garages where paint or flammable materials are used regularly. The fresh air supply reduces the common concerns about performance and durability that can come when working in a dusty or particulate laden environment.

- All models feature 82% minimal efficiency for fuel savings
- Made in the USA
- Permanently-lubricated motor for trouble-free dependability
- A sealed compartment protects the combination gas valve, ignition control, manifold, and burner from the environment
- Combustion air is brought in from outside the heated area eliminating the need to use contaminated indoor air for combustion
- Uses natural or propane gas, field convertible from natural to propane gas
- External gas connections
- Standard power exhaust simplifies sidewall or roof venting with small-diameter vent pipe
- Installation made easy with knockouts for quick access to gas and electricity
- Full 10-year warranty on heat exchanger



### MODEL HDS

- Available in 6 model sizes from 30,000 to 125,000 Btu/hr
- Airflow range 505 to 1,980 CFM
- Finger-proof fan guards\*
- Right- or left-hand controls available on 30-75 models by rotating unit 180°
- Low-profile, lightweight design easily installs 1" from ceiling with only two angle brackets\*
- Residential and Commercial Certified

\*Standard on HDS 30-75; accessory for HDS 100-125.



### MODEL PTS

- Available in 7 model sizes from 150,000 to 400,000 Btu/hr
- Airflow range 2,140 to 5,595 CFM
- The aluminized steel heat exchanger is standard on all units, extending the life of your PTS investment
- Commercial Certified only



### PERFORMANCE DATA ① ②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
HDS	30	30,000	24,600	44	505
	45	45,000	36,900	46	720
	60	60,000	49,200	45	990
	75	75,000	61,500	48	1,160
	100	100,000	82,000	50	1,490
	125	125,000	102,500	47	1,980
PTS	150	150,000	123,000	53	2,140
	175	175,000	143,500	48	2,725
	200	200,000	164,000	52	2,870
	250	250,000	205,000	47	3,995
	300	300,000	246,000	50	4,545
	350	350,000	287,000	50	5,280
	400	400,000	328,000	51	5,995

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-170

## MAXIMIZE EFFICIENCY • GREENER SOLUTION • AMERICAN-MADE QUALITY

Effinity® unit heaters are the most efficient gas-fired, condensing unit heater in North America. All models are equipped with a Modine Controls System offering the capabilities to connect to an existing Building Management Systems (BMS). The controls are compatible with major Building Management Systems such as BACnet MS/TP or IP and LonWorks.

- Available in 10 model sizes from 55,000 to 310,000 Btu/hr
- Airflow range 1,097 to 5,400 CFM
- Up to 97% efficient with all models offering a minimum of 93% efficiency
- Blowers available for more robust air distribution\*
- Can be vented as either two-pipe or concentric vent system with 3" and 4" PVC
- Energy saving controls monitors the temperature and automatically disables the gas or turns it back on as the temperature increases/decreases

\*Only available on models PTC215, PTC260 and PTC310.

## OPTIONAL FEATURES

- Condensate pump, mounting kit and a pH neutralizing kit
- Stainless steel primary heat exchanger
- GFCI surge protection adaptor plug for service
- 30-, 60- and 90-degree air deflector hoods
- Variety of room thermostats
- Two-point mounting kit
- Horizontal and vertical concentric vent kits
- Finger-proof fan guard
- Conversion kits for natural gas and propane, including high-altitude kits



MODEL PTC



## PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
PTC	55	55,000	51,150	43	1,097
	65	65,000	60,450	49	1,141
	85	80,000	79,050	44	1,650
	110	110,000	102,300	54	1,750
	135	135,000	125,550	54	2,160
	155	155,000	144,150	51	2,600
	180	180,000	167,400	51	3,020
	215	215,000	199,950	48	3,865
	260	260,000	241,800	49	4,585
	310	310,000	288,300	49	5,400

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-170

## ANNUAL FUEL COST SAVINGS ①②

Design Heat Load (Btu/hr)	Estimated Annual Savings Against Other Equipment				
	Gravity Vented		Power Vented		
	120,000	280,000	120,000	280,000	
Annual Heat Load Hours	500	\$306	\$713	\$136	\$318
	1,000	\$611	\$1,427	\$273	\$637
	1,500	\$917	\$2,140	\$409	\$955
	2,000	\$1,223	\$2,583	\$546	\$1,274
	2,500	\$1,529	\$3,567	\$682	\$1,592
	3,000	\$1,834	\$4,280	\$819	\$1,911
	3,500	\$2,140	\$4,993	\$955	\$2,229

① Based on natural gas rate of \$1.10/therm. Actual realized savings can vary significantly based on a number of changing factors including, but not limited to, fuel prices, climate, building use or construction, etc.  
 ② Compares 93% efficient against 65% seasonally efficient gravity vented and 78% seasonal efficient power vented.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-170

## NOISE REDUCTION • CORROSION RESISTANT • EASY TO INSTALL

Gas-fired blower unit heaters are designed for both heating and ventilating and certified for residential, commercial, and industrial use. All models can be equipped with blowers, including the Hot Dawg® low-profile residential garage heaters and the Effinity®. In fact, the Effinity® is the only high-efficiency gas-fired unit heater in North America with this option available. Units are mounted remotely and ducted in warm air, protecting from corrosion. With the ability to duct blower units, in addition to the blower fans, noise level is brought to a minimum.

- Made in the USA
- Permanently-lubricated motor for trouble-free dependability
- Ducting air in from adjacent spaces for ventilation
- Uses natural or propane gas, field convertible from natural to propane gas
- External gas connections
- Standard power exhaust simplifies sidewall or roof venting with small-diameter vent pipe
- Installation made easy with knockouts for quick access to gas and electricity
- Full 10-year warranty on heat exchanger



### MODEL HDC/HDB

- Available in 5 model sizes from 60,000 to 125,000 Btu/hr
- Airflow range 635 to 1,111 CFM
- 82% minimal efficiency for fuel savings
- Lightweight design easily installs 1" from ceiling with only two angle brackets\*
- Residential and Commercial Certified

Note: Model HDC is a separated combustion unit

\*Standard on HDC 30-75; accessory for HDC 100-125.



### MODEL BTC

- Available in 3 model sizes from 215,000 to 310,000 Btu/hr
- Airflow range 2,645 to 6,674 CFM
- 82% minimal efficiency for fuel savings
- Compatible with major Building Management Systems such as BACnet MS/TP or IP and LonWorks
- Commercial Certified



### MODEL BTS/BTP

- Available in 7 model sizes from 150,000 to 400,000 Btu/hr
- Airflow range 1,587 to 7,407 CFM
- 82% minimal efficiency for fuel savings
- Compatible with major Building Management Systems such as BACnet MS/TP or IP and LonWorks\*
- Commercial Certified

Note: Model BTS is a separated combustion unit

\*Accessory for BTS and BTP models.



## SEPARATED COMBUSTION HDC AND BTS BLOWER MODELS PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
HDC	60	60,000	49,200	40 - 70	635 - 1,111
	75	75,000	61,500	40 - 70	794 - 1,389
	100	100,000	82,000	35 - 65	1,140 - 2,116
	125	125,000	102,500	45 - 75	1,235 - 2,058
BTS	150	150,000	123,000	40 - 70	1,587 - 2,778
	175	175,000	143,500	40 - 70	1,852 - 3,241
	200	200,000	164,000	40 - 70	2,116 - 3,704
	250	250,000	205,000	40 - 70	2,646 - 4,630
	300	300,000	246,000	40 - 70	3,175 - 5,556
	350	350,000	287,000	40 - 70	3,704 - 6,481
	400	400,000	328,000	40 - 70	4,233 - 7,407

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-175

## SEPARATED COMBUSTION BTC BLOWER MODELS PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
BTC	215	215,000	199,950	40 - 70	2,645 - 4,628
	260	260,000	241,800	40 - 70	3,198 - 5,597
	310	310,000	288,300	40 - 70	3,813 - 6,674

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-170

## POWER-EXHAUSTED HDB AND BDP BLOWER MODELS PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
HDB	60	60,000	49,200	40 - 70	635 - 1,111
	75	75,000	61,500	40 - 70	794 - 1,389
	100	100,000	82,000	35 - 65	1,140 - 2,116
	125	125,000	102,500	45 - 75	1,235 - 2,058
BDP	150	150,000	123,000	40 - 70	1,587 - 2,778
	175	175,000	143,500	40 - 70	1,852 - 3,241
	200	200,000	164,000	40 - 70	2,116 - 3,704
	250	250,000	205,000	40 - 70	2,646 - 4,630
	300	300,000	246,000	40 - 70	3,175 - 5,556
	350	350,000	287,000	40 - 70	3,704 - 6,481
	400	400,000	328,000	40 - 70	4,233 - 6,584

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-189

## POWER-EXHAUSTED BTP BLOWER MODEL PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range
BTP	150	150,000	123,000	40 - 70	1,587 - 2,778
	175	175,000	143,500	40 - 70	1,852 - 3,241
	200	200,000	164,000	40 - 70	2,116 - 3,704
	250	250,000	205,000	40 - 70	2,646 - 4,630
	300	300,000	246,000	40 - 70	3,175 - 5,556
	350	350,000	287,000	40 - 70	3,704 - 6,481
	400	400,000	328,000	40 - 70	4,233 - 7,407

① Ratings are shown for elevations up to 2,000 feet.  
 ② Units approved for use in California by CEC.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 6-189

## LOW-PROFILE DESIGN • FLEXIBLE MOUNTING OPTIONS • SIZE ACCESS PIPING

Hot Dawg® H<sub>2</sub>O is the only low-profile residentially-certified hot water heater in North America. Available in two sizes, the Hot Dawg® H<sub>2</sub>O offers a one of a kind heating solution for your garage or workshop, as well as commercial, industrial and institutional applications. With side access piping and all moving parts enclosed, this unit has the versatility to be mounted vertically or horizontally and is designed to work wherever you need it.

- Available in 2 model sizes from 11,900 to 46,000 Btu/hr
- Low-profile design with flexible mounting options (parallel, perpendicular or recessed between joints) allows for horizontal or vertical air delivery
- Easy, versatile installation options due to the electrical and piping connections ability to easily be reversed in the field
- No external parts - twin centrifugal blowers keep all moving parts inside the cabinet
- The side panel air inlet opening has factory-installed figure guards
- Includes two mounting brackets with vibration isolators to reduce noise and vibration
- The internal coil can handle water pressures up to 150 PSI and temperature up to 200°F
- Constructed of heavy gauge steel for long-lasting durability

## PERFORMANCE DATA ①②

Model	Model Size	CFM Range	GPM	WPD (ft. Water)	Entering Water Temperature (60°F Entering Air Temperature)									
					120°F		140°F		160°F		180°F		200°F	
					Btu/hr	WTD	Btu/hr	WTD	Btu/hr	WTD	Btu/hr	WTD	Btu/hr	WTD
HHD	30	405	1	0.6	11,900	25	15,800	33	19,800	41	23,700	49	27,700	58
			2	2.2	15,500	16	20,600	22	25,800	27	30,900	32	36,100	38
			3	4.7	17,200	12	22,900	16	28,600	20	34,400	24	41,100	28
			4	7.9	18,200	10	24,200	13	30,300	16	36,300	19	42,400	22
			5	12	19,600	8	26,100	11	32,600	14	39,200	16	45,700	19
	45	425	1	0.6	11,900	25	15,900	33	19,900	41	23,900	50	27,900	58
			2	2.2	15,600	16	20,700	22	25,900	27	31,100	33	36,300	38
			3	4.7	17,300	12	23,000	16	28,800	20	34,600	24	40,300	28
			4	7.9	18,300	10	24,400	13	30,500	16	36,600	19	42,700	22
			5	12	19,700	8	26,300	11	32,800	14	39,400	16	46,000	19
45	710	1	0.6	17,200	36	22,900	48	28,600	60	34,400	72	40,100	84	
		2	2.2	22,400	23	29,900	31	37,300	39	44,800	47	52,300	55	
		3	4.7	24,900	17	33,200	23	41,500	29	49,800	35	58,100	40	
		4	7.9	26,400	14	35,100	18	43,900	23	52,700	27	61,500	32	
		5	12	28,400	12	37,800	16	47,300	20	56,800	24	66,300	28	

① For conditions other than shown above, please refer to the Modine Breeze® AccuSpec program for detailed performance data.  
 ② Allowable water temperature range is 100°F to 200°F. Allowable indoor air temperature range is 40°F to 100°F. If temperatures below freezing are expected, provisions should be made to either drain the unit heater coil or utilize a continually circulating glycol solution.

For complete technical information and specifications reference catalog 1-115

## SMALL FOOTPRINT • EFFICIENT HEATING • QUIET OPERATION

Unlike other hydronic unit heaters on the market, the Lodronic™ low-temperature hot water unit heater was designed and engineered specifically for use with high-efficiency boilers. The typical, oversized, hydronic unit heater overworks the high-efficiency boiler system resulting in poor system performance and lower temperature output. By using the Lodronic™ unit heater with the high-efficiency boiler system, there will be a significant performance improvement when compared to the HC165.

- High-efficiency 4-row coil with low water pressure drop
- Smaller fan and motor for a lower system amp draw
- Designed for lower entering hot water temperatures
- High-temperature output vs old traditional systems
- UL1995 Certified

## HCH/LODRONIC® STEAM/HOT WATER MODELS PERFORMANCE DATA ①②

Model	Model Size	Steam	Hot Water	Temperature Rise (°F)	CFM Range	Maximum Mounting Height (ft.)	Heat Throw (ft.)
		Btu/hr Input	Btu/hr Input				
HCH	22	22,000	21,688	60	370	8	27
	39	39,000	38,547	60	660	8	28
	67	67,000	66,875	60	1,150	9	33
	104	104,000	104,204	60	1,830	11	39
	170	170,000	169,564	60	2,780	11	42
	195	195,000	194,917	60	3,200	11	40

① Ratings are shown for elevations up to 2,000 feet.  
 ② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

For complete technical information and specifications reference catalog 1-150



## WIDE PRODUCT SELECTION • APPLICATION FLEXIBILITY • EASE OF INSTALLATION AND MAINTENANCE

Steam/Hot Water unit heaters are offered in both horizontal and vertical air delivery models, used to counter heat loss along outside building walls, especially where windows are present. Horizontal unit heaters are ideal for heating buildings with large open areas and low ceilings. Vertical unit heaters are ideal for heating buildings with high ceilings or areas that require the heater to be mounted above obstructions such as crane ways.

- Horizontal, Vertical and Power-Throw™ (high-velocity horizontal air delivery) models offer maximum application flexibility
- Quiet operation is assured through the use of carefully selected motors, fans and scientifically designed venturi fan shrouds
- Casings are treated for corrosion resistance and finished with a neutral gray-green baked-on, electrostatically applied polyester powder coat paint finish
- All units include electrical junction box
- Component tested for proper motor function
- Fins are vertical to limit build-up of foreign particles

### MODEL HSB/HC Horizontal Unit Heater

- Available in 13 model sizes from 18,000 to 340,000 Btu/hr
- Recommended for use in buildings where ceilings are low with few obstructions
- Copper tubes with mechanically bonded aluminum fins for maximum heat transfer performance
- Motors are totally enclosed with thermal overload protection



### MODEL PT/PTN Power-Throw™ High-Velocity Horizontal Unit Heater

- Available in 6 model sizes from 279,000 to 952,000 Btu/hr
- Recommended where there is a requirement for greater heat throw and hard to heat areas such as docks and large warehouses
- Powerful, high-velocity air delivery distributes heat over a wide area
- PT models have copper tubes while PTN models have copper/nickel tubes for high temperature and/or pressure
- Low outlet temperature models for higher steam pressures or dirty atmospheres



### MODEL V/VN Vertical Unit Heater

- Available in 15 model sizes from 42,000 to 952,000 Btu/hr
- Recommended for areas where ceilings are high or where obstructions do not permit good horizontal movement of air
- V models have copper tubes while VN models have copper/nickel tubes for higher temperature and/or pressure
- Low outlet temperature models for higher steam pressures or dirty atmospheres
- Optional cone-jet, truncone, or louver air deflectors for a variety of heat patterns



## HSB/HC AND PT/PTN STEAM/HOT WATER MODELS PERFORMANCE DATA ①②

Model	Model Size	Steam		Hot Water		CFM Range	Maximum Mounting Height (ft.)	Heat Throw (ft.)
		Btu/hr Input	Temperature Rise (°F)	Btu/hr Input	Temperature Rise (°F)			
HSB/HC	18	18,000	107	12,600	94	340	8	17
	24	24,000	119	16,300	100	370	9	18
	33	33,000	108	21,700	91	630	10	21
	47	47,000	119	30,900	98	730	12	28
	63	63,000	111	45,600	97	1,120	14	29
	86	86,000	118	60,200	101	1,340	15	31
	108	108,000	109	83,700	98	2,010	17	31
	121	121,000	122	93,000	108	1,775	16	25
	165	165,000	106	130,900	97	3,240	19	40
	193	193,000	121	143,000	105	2,900	18	38
	258	258,000	111	202,000	100	4,560	19	44
	290	290,000	117	228,600	105	4,590	20	46
	340	340,000	120	271,100	108	5,130	20	46
	PTN	279	279,000	111	192,400	94	5,460	16
333		333,000	116	238,500	99	5,980	17	110
385		385,000	110	276,100	95	7,680	17	115
500		500,000	108	358,000	93	10,390	18	130
610		610,000	112	450,400	97	11,750	20	140
PT	952	952,000	139	721,600	120	12,170	21	145

① Ratings are shown for elevations up to 2,000 feet.  
② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

For complete technical information and specifications reference catalog 1-150

## V/VN STEAM/HOT WATER MODELS PERFORMANCE DATA ①②

Model	Model Size	Steam		Hot Water		CFM Range	Maximum Mounting Height (ft.)	Heat Throw (ft.)
		Btu/hr Input	Temperature Rise (°F)	Btu/hr Input	Temperature Rise (°F)			
V/VN	42	42,000	103	30,100	90	950	15	11
	59	59,000	111	42,600	96	1,155	19	14
	78	78,000	109	57,000	95	1,590	20	15
	95	95,000	118	69,300	101	1,665	20	15
	139	139,000	112	106,600	99	2,660	24	18
	161	161,000	115	123,200	101	2,940	27	20
	193	193,000	116	147,200	101	3,500	30	22
	212	212,000	120	161,700	104	3,610	30	22
	247	247,000	111	188,700	98	4,820	34	26
	279	279,000	111	212,700	98	5,460	37	30
	333	333,000	116	260,100	103	5,980	37	30
	385	385,000	110	302,100	98	7,680	36	30
	500	500,000	108	391,700	97	10,390	44	37
	610	610,000	112	450,400	97	11,750	43	36
V	952	952,000	139	721,600	120	12,170	45	56

① Ratings are shown for elevations up to 2,000 feet.  
② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

For complete technical information and specifications reference catalog 1-150

## EFFECTIVE HEAT THROW • EFFICIENT COMBUSTION • EASY TO SERVICE

Oil-fired unit heaters are built to last with time-tested and field-proven components to provide optimum heating comfort. This unit offers an efficient and reliable means of heating, particularly in regions where natural gas may be unavailable or undependable. The lightweight, preformed, ceramic fiber firepot resists both mechanical and thermal shocks, and is made from corrosion-resistant aluminum steel and roll-formed to eliminate thermal stress. In addition, the heat exchanger is equipped with an inspection port, two clean-out ports and a large service door for removing fire pot for ease of service when necessary.

- Available in 3 model sizes from 100,000 to 185,000 Btu/hr
- Effective heat throw from 39 to 51 feet
- Up to 84% thermal efficiency for fuel savings
- Corrosion-resistant
- Pressure-atomizing gun-type burner
- Beckett-microprocessor based ignition controller
- Interrupted-duty ignition that disables the mark once ignition begins
- Electric oil igniter
- Finger-proof fan guard
- Beckett CleanCut burner pump
- UL Listed

## OPTIONAL FEATURES

- Single-stage 24-volt low-voltage thermostat
- Thermostat guard
- Booster pump relay
- Oil safety valve
- Fuel oil filter
- Vertical louvers
- Draft regulator
- Outside combustion air kit

## PERFORMANCE DATA ① ②

Model	Model Size	Btu/hr Input	Btu/hr Output	Temperature Rise (°F)	CFM Range	Maximum Mounting Height (ft.)	Heat Throw (ft.)
POR	100	119,000	100,000	49	1,890	12	39
	145	175,000	145,000	56	2,400	13.5	50
	185	231,000	185,000	54	3,200	12	51

① Ratings are shown for elevations up to 2,000 feet.

② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

For complete technical information and specifications reference catalog 4-112



MODEL POR



## LOW INSTALLATION COST • REDUCED MAINTENANCE • LONG HEAT THROW

Electric unit heaters are ideal for most industrial plants, commercial and recreational buildings that provide a variety of options in solving comfort-heating problems. Each unit is designed for long heat throw, uniform heat delivery and reduced maintenance.

- Factory assembled and wired for specific power supply ordered
- Fin tube sheathed nichrome wire heating elements
- Enclosed motor with thermal overload protection
- Statistically and dynamically balanced fans
- Fan and motor exposed and can be removed without lowering unit
- Corrosion-resistant
- Easy access to heating-element terminals
- Automatic reset overheat control

### PERFORMANCE DATA ①②

Model	Model Size	Btu/hr	CFM Range	Temperature Rise (°F)	Maximum Mounting Height (ft.)	Heat Throw (ft.)
HER	30	10,200	380	25	8	12
	50	17,100	380	42	8	12
	75	25,600	530	45	8	14
	100	34,100	830	38	9	20
	125	42,700	830	38	10	20
	150	51,200	830	57	10	20
	200	68,300	1,300	49	11	25
	250	85,400	1,300	61	11	25
PTE	300	102,000	2,575	40	17	75
	400	137,000	2,575	54	15	60
	500	171,000	2,575	70	14	45
VE	50	17,100	800	21	13	20
	75	25,600	800	31	11	17
	100	34,100	940	36	12	18
	150	51,200	1,340	38	17	26
	200	64,900	1,600	41	20	30
	250	85,400	1,600	55	17	26
	300	102,000	2,575	40	20	31
	400	137,000	2,575	54	18	27

① Ratings are shown for elevations up to 2,000 feet.

② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

### MODEL HER Horizontal Unit Heater

- Available in 8 model sizes from 10,200 to 85,400 Btu/hr
- Effective heat throw from 12 to 25 feet
- Recommended for use in buildings where ceilings are low with few obstructions
- Normally placed around perimeter of building
- Standard horizontal air deflector blades
- Feature hinged bottom panels for easy control access



### MODEL PTE Power-Throw™ High-Velocity Horizontal Unit Heater

- Available in 3 model sizes from 102,000 to 171,000 Btu/hr
- Effective heat throw from 45 to 75 feet
- Recommended for hard to heat areas such as loading docks or large warehouses
- Standard horizontal air deflector blades
- Offered in single and two-stage controls



### MODEL VE Vertical Unit Heater

- Available in 8 model sizes from 17,100 to 137,000 Btu/hr
- Effective heat throw from 17 to 30 feet
- Recommended for high ceiling areas
- Motor heat shield protects motor from heated air passing through
- Offered in single and two-stage controls



## EXPLOSION-PROOF ELECTRIC MOTOR • SEALED HEAT EXCHANGER CORE • LONG HEAT THROW

Explosion-proof electric unit heaters are designed for hazardous industrial applications where potential for explosion exists due to the presence of flammable gases, vapors and powered-metals or dusts.

- Available in 9 model sizes from 10,250 to 119,450 Btu/hr
- Effective heat throw from 30 to 70 feet
- Liquid to air, finned tube heat exchanger core
- Ethylene glycol water mixture used as heat-transfer fluid in the heater core, providing -49°F (-45°C) freeze damage protection
- Thermally protected, automatic reset, explosion-proof, motor driven fan moves air across finned tubes for even heat distribution
- Automatically reset, bimetal high limit provides over temperature protection and is rated for 100,000 cycles of service
- Pressure relief valve provides over-pressure protection
- Epoxy coated, 14 gauge steel cabinet contains heater core, motor, and fan assembly
- Narrow-gap, two-piece fan-guard shields all moving parts
- Adjustable extruded aluminum louvers allow directional control of air
- Copper conductor wires enclosed in steel conduits carry all electrical power
- UL Listed

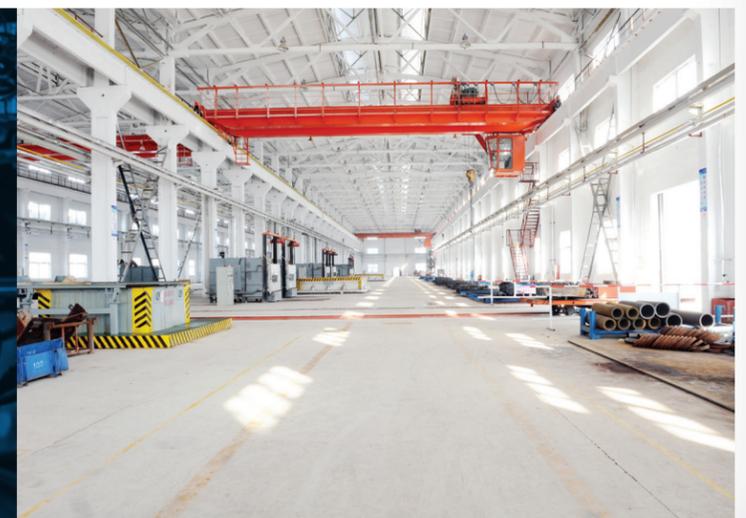
## MODEL HEX ELECTRIC UNIT HEATER PERFORMANCE DATA ① ②

Model	kW	Btu/hr Input	Temperature Rise (°F)	Maximum Mounting Height (ft.)	Heat Throw (ft.)
HEX	3	10,250	11.2	10	30
	5	17,050	18.6	10	30
	7.5	25,600	27.9	10	30
	10	34,100	37.2	10	30
	15	51,200	27.1	10	40
	20	68,250	36.1	10	40
	25	85,300	45.2	20	70
	30	102,350	26.4	20	70
	35	119,450	30.7	20	70

① Ratings are shown for elevations up to 2,000 feet.

② Deflector blades pitched 45° toward the floor. Mounting height is measured from floor to bottom of unit.

For complete technical information and specifications reference catalog 2-116



## UNVENTED OPERATION • SIMPLE MOUNTING ABILITY • LOW INSTALLATION COST

Gas-Fired high-intensity infrared heaters are approved for indoor unvented installation where as low-intensity infrared heaters are certified for both indoor and outdoor residential or commercial applications. Both high-intensity and low-intensity infrared heaters do not utilize a fan, eliminating noise and draft distractions. There are no moving parts to maintain for inexpensive maintenance.

### MODEL IHR FEATURES

- Available in 5 model sizes from 30,000 to 160,000 Btu/hr
- Uses natural or propane gas, field convertible from natural to propane gas
- Rugged aluminized steel frame
- Exclusive ceramic burner provides maximum infrared radiation
- Stainless steel rods increase heat temperature and efficiency
- Highly polished aluminum reflector design
- Direct spark or pilot ignition
- Potted circuitry for protection in high-moisture environments
- 5-year limited ceramic burner warranty
- CSA Design Certified
- CE Certified
- UL Listed

### MODEL OHP FEATURES

- Available in 2 model sizes from 31,000 to 34,000 Btu/hr
- Uses natural or propane gas, field convertible from natural to propane gas
- Rugged aluminized steel frame
- Decorative stainless steel widescreen eggcrate grille
- Wind and rain protected design
- Reliable direct spark ignition
- Potted (water resistant) 24-volt circuitry
- Black coated aluminized steel or brushed stainless steel housing
- ETL Design Certified

### OPTIONS

- Direct spark ignition
- Self-generating Millivolt
- Intermittent pilot (non-100% shut-off)



### MODEL IHR LOW-INTENSITY INFRARED HEATER PERFORMANCE DATA ①

Model	Model Size	Btu/hr Input	Recommended Mounting Height (ft.)		Radiating Surface (sq. in.)
			Standard Reflector	Parabolic Reflector	
			30°	30°	
IHR	30	30,000	12 - 14	12 - 15	85
	60	60,000	14 - 16	18 - 21	170
	90	90,000	16 - 18	21 - 25	255
	130	130,000	21 - 24	26 - 32	340
	160	160,000	24 - 28	29 - 35	425

① Ratings are shown for elevations up to 2,000 feet.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalogs 9-122

### MODEL OHP HIGH-INTENSITY INFRARED HEATER PERFORMANCE DATA ①

Model	Model Size	Btu/hr Input	Maximum Mount Height (ft.)	Approximate Area (ft.)	Control Voltage
OHP	31	31,000	8 - 12	8 x 8	24
	34	34,000	8.5 - 13	9 x 9	24

① Ratings are shown for elevations up to 2,000 feet.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalogs 5-157

## SIMPLE CHAIN MOUNTING • AVAILABLE IN NATURAL OR PROPANE GAS • 20 - 70 FOOT LENGTHS

Gas-fired low-intensity infrared heaters are approved for vented or unvented commercial and industrial applications. The water-resistant control compartment provides weatherproof protection and allows either indoor or outdoor installation.

- Available in 8 model sizes from 50,000 to 200,000 Btu/hr
- Uses natural or propane gas, field convertible from natural to propane gas
- Heat-treated 16 gauge aluminized steel heat exchanger enhances corrosion resistance and radiant heat transfer
- Durable 16 gauge aluminized steel combustion chamber
- Blocked intake/exhaust shut-off switch
- Controls located in enclosed, water-resistant compartment for indoor or outdoor installation
- 180° rotatable gas valve, accessible from either side of burner box
- Durable polyester powder paint maintains life-long appearance
- Side access panels for servicing either side of the burner box
- Improved serviceability with sight window for flame viewing
- Indicator lights for combustion blower operation and a removable cover

## MODEL IPT LOW-INTENSITY INFRARED HEATER PERFORMANCE DATA ①②

Model	Model Size	Btu/hr Input	System Lengths (ft.)	Recommended Mount Height (ft.)
IPT	50	50,000	20, 30	10 - 12
	60	60,000	20, 30, 40	10 - 12
	75	75,000	20, 30, 40	12 - 14
	100	100,000	30, 40, 50	12 - 14
	125	125,000	40, 50, 60	15 - 22
	150	150,000	50, 60	15 - 25
	175	175,000	50, 60, 70	18 - 28
	200	200,000	50, 60, 70	20 - 30

① Ratings are shown for elevations up to 2,000 feet.  
 ② Consult factory for propane operation at 50 ft. system lengths.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 9-117



MODEL IPT

**DESIGNED FOR HEATING AND/OR MAKE-UP AIR • LOW INITIAL COST • LOW MAINTENANCE • EASY TO SERVICE**

Modine duct furnaces are an economical choice for superior quality and dependability in most applications. Offering three types of indoor indirect gas-fired duct furnaces that cover a wide range of applications in building heating and make-up air systems.

**STANDARD FEATURES**

- Available in 11 model sizes from 75,000 to 400,000 Btu/hr
- Airflow range 556 to 14,815 CFM
- All models feature 82% minimal thermal efficiency for fuel savings
- Natural or propane gas (select indoor units field convertible from natural to propane gas)
- Certified for upstream or downstream placement from cooling coils; Indoor units include a drain pan that allows connection to a condensate drain line, outdoor units drain to the roof
- Certified to 3.0" W.C. external static pressure for high static applications
- Wide range of controls, options, and accessories for unit customization

**OPTIONAL FEATURES**

- Aluminized steel heat exchanger and burner
- Aluminized steel drip pan
- Two-stage and electronic modulation controls
- Building management compatible gas controls using 0 - 10 Vdc or 4 - 20 mA input
- High and/or low gas pressure switches



**MODEL DFG** Indoor Gravity Vented

- Relies on a natural draft to vent properly
- Note: Power vented units should be considered if the vent system is horizontal or if the space the unit is located is generally under a negative pressure



**MODEL DFP** Indoor Power Vented

- Similar to Model DFG, with the addition of an integral power exhauster for:
- Vertical or horizontal venting with the smallest diameter vent pipe possible
  - The ability to overcome reasonable negative pressures seen in buildings with inadequate make-up air
  - Reduction of off-cycle vent losses improves building efficiency



**PERFORMANCE DATA** ①②③

Model	Model Size	Btu/hr Input	Btu/hr Output	Low Air Temperature Rise without Air Baffle		High Air Temperature Rise with Air Baffle	
				Temperature Rise (°F)	CFM Range	Temperature Rise (°F)	CFM Range
DFG/DFP	75	75,000	61,500	20 - 60	926 - 2,778	20 - 100	556 - 2,778
	100	100,000	82,000	20 - 60	1,235 - 3,704	20 - 100	741 - 3,704
	125	125,000	102,500	20 - 60	1,543 - 4,630	20 - 100	926 - 4,630
	150	150,000	123,000	20 - 60	1,852 - 5,556	20 - 100	1,111 - 5,556
	175	175,000	143,500	20 - 60	2,160 - 6,481	20 - 100	1,296 - 6,481
	200	200,000	164,000	20 - 60	2,469 - 7,407	20 - 100	1,481 - 7,407
	225	225,000	184,000	20 - 60	2,778 - 8,333	20 - 100	1,667 - 8,333
	250	250,000	205,000	20 - 60	3,086 - 9,259	20 - 100	1,852 - 9,259
	300	300,000	246,000	20 - 60	3,704 - 11,111	20 - 100	2,222 - 11,111
	350	350,000	287,000	20 - 60	4,321 - 12,963	23 - 100	2,593 - 11,111
	400	400,000	328,000	20 - 60	4,938 - 14,815	27 - 100	2,963 - 11,111

① Ratings are shown for elevations up to 2,000 feet.  
 ② DFP is approved for use in California by CEC.  
 ③ For DFG or DFP models in high CFM applications, the air distribution baffle may be removed to reduce the pressure drop through the duct furnace.

**Do Not Locate ANY Gas-Fired Unit in Areas with Chlorinated, Halogenated or Acidic Vapors in Atmosphere.**

For complete technical information and specifications reference catalog 5-174



**Modine Manufacturing Company**

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# APPENDIX E

## PROJECT TEAM



# Joshua D. Martin

## Senior Energy Engineer

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### 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

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### 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