

Attachment B. 2019 HeatSmart Mass: Pricing, Cost Adders, and Equipment Form - Air Source Heat Pumps

Instructions: Air Source Heat Pump Installers should fill out Tab 3: ASHP Equipment and Pricing Proposal, and Tab 4: ASHP Cost Adders

Section 1: Air Source Heat Pump Equipment & Installer Workmanship Warranty

Warranty (Clarify standard installer Workmanship Warranty and the Equipment Warranty)	Boucher Energy Systems offers a 3 year 100% bumper to bumper warranty on all 2019 HeatSmart installations (requires annual maintenance)
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Section 2: Air Source Heat Pump Equipment Pricing

Single-Head Ductless System

Base System Equipment	<p>Please complete the tables below detailing your proposed discounted fixed-fee costs for standard installation of cold climate air source heat pumps. All products must be listed on NEEP's cold climate air-source heat pump specification (https://neep.org/initiatives/high-efficiency-products/emerging-technologies/ashp/cold-climate-air-source-heat-pump). The installed cost per unit should include all equipment and non-equipment costs associated with the typical installation scope of work (e.g. electrical work, permitting, etc.).</p> <p>For direct comparison of single-head system pricing between installers, please assume the following in pricing provided:</p> <ul style="list-style-type: none"> -pan heater or equivalent included -up to 25 feet line set; -up to 20 feet Line Hide or similar (including one 90 degree ell, one wall inlet, one end fitting.); -electrical feed is no more than 40 feet from the outdoor unit to the electrical panel; -exterior units must be mounted on a stand above the level of snow drifts typically experienced at the location of the installation; -exterior unit installed adjacent to the same wall as the interior unit; -home construction to be wood frame with clapboard or shingle siding. <p><i>Fees associated with additional material and labor for non-standard installations (adders) should be detailed in the ASHP Cost Adders tab. Any additional non-standard cost adders beyond those provided should also be included.</i></p>
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Manufacturer	Model Number	Installed cost per Unit	Deposit Required at Contracting (if applicable)	Heating Capacity at 5°F (btu/hr)	Cost per Ton of Heating Capacity at 5°F
	MUZ-FH06NAH	\$4,355	1,306	8,700	\$6,006.90
	MUZ-FH09NAH	\$4,467	1,340	10,900	\$4,917.80
	MUZ-FH12NAH	\$4,620	1386	13600	\$4,076.47
	MUZ-FH15NAH	\$5,089	1494	18300	\$3,337.05
	MUZ-FH18NAH	\$5,282	1584	20300	\$3,122.36

Multi-Head Ductless System/Central Ducted System

Base System Equipment	<p>Please complete the tables below detailing your proposed discounted fixed-fee costs for installation of multi-head and/or central ducted cold climate air source heat pumps. All products must be listed on NEEP's cold climate air-source heat pump specification (https://neep.org/initiatives/high-efficiency-products/emerging-technologies/ashp/cold-climate-air-source-heat-pump). These per-unit-installed compensation rates should include all equipment and non-equipment costs associated with the typical installation scope of work (e.g. labor, permitting, etc.).</p> <p>For direct comparison of multi-head and centrally ducted system pricing between installers, please assume the following in pricing provided:</p> <ul style="list-style-type: none"> -pan heater or equivalent included; -exterior units must be mounted on a stand above the level of snow drifts typically experienced at the location of the installation; -exterior unit installed adjacent to the same wall as the interior unit; -home construction to be wood frame with clapboard or shingle siding. <p>Given the wider range of sizes and applications for multi-head systems, please indicate for each model the number and type of indoor units that are assumed for the base or standard pricing, as well as the length of line set and line hide that is assumed for the base pricing.</p> <p><i>Fees associated with additional material and labor for non-standard installations (adders) should be detailed in the ASHP Cost Adders tab. Any additional non-standard cost adders beyond those provided should also be included.</i></p>
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Manufacturer	Model Number	Base number and type of indoor heads (indicate if ducted units will be installed)	Base length of line set and line hide (feet)	Installed cost for Base System	Deposit Required at Contracting (if applicable)	Heating Capacity at 5°F (btu/hr)	Cost per Ton of Heating Capacity at 5°F
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Multi-Head Ductless System/Central Ducted System

Base System Equipment	Manufacturer	Model Number	Base number and type of indoor heads (indicate if ducted units will be installed)	Base length of line set and line hide (feet)	Installed cost for Base System	Deposit Required at Contracting (if applicable)	Heating Capacity at 5°F (btu/hr)	Cost per Ton of Heating Capacity at 5°F
	Mitsubishi	MXZ-2C20NA	2- MSZ-GL09NA	40' lines 32' line hide	6800	2040	11100	\$7,351
	Mitsubishi	MXZ-3C24NAHZ	2- MSZ-GL09NA	40' lines 32' line hide	8330	2490	25000	\$3,998
	Mitsubishi	MXZ-3C24NAHZ	2- MSZ-GL12NA	40' lines 32' line hide	8462	2820	25000	\$4,062
	Mitsubishi	MXZ-3C24NAHZ	3- MSZ-GL09NA	60' lines 48' line hide	9588	2850	25000	\$4,602
	Mitsubishi	MXZ-3C30NAHZ	2- MSZ-GL09NA & 1 MSZ-GL12NA	60' lines 48' line hide	9660	2880	28600	\$4,053
	Mitsubishi	MXZ-4C36NAHZ	4- MSZ-GL09NA	80' lines 64' line hide	14175	4200	45000	\$3,780
	Mitsubishi	MXZ-5C42NAHZ	5- MSZ-GL09NA	100' lines 80' line hide	16045	4800	48000	\$4,011
	Mitsubishi Mix ducted non ducted	MXZ-4C36NAHZ	MSZ-GL12NA & SVZ-KP18NA (DUCTED)	60' lines 48' line hide	19990	6000	45000	\$5,331
	Mitsubishi Ducted	PUZ-HA36NHA	PVZ-A36AA7 (ducted)	25 lines 16 line hide	13450	4035	38000	\$4,247
	American Standard Ducted	4A6V8024A100	TAM9A0830V31	25 lines	10800	3240	12920	\$10,031
	American Standard Ducted	4A6V8036A100	TAM9A0C36V31	25 lines	11400	3420	20500	\$6,673
	American Standard Ducted	4A6V8048A100	TAM9A0C42V41	25 lines	13800	4140	28920	\$5,726
	Bosch	BOVA-36HDN1-M18M	BMAC-2430*NTD	25 lines	8950	2685	18000	\$5,967
	American Standard Ducted	BOVA-60HDN1-M18M	BMAC4248*CNTF	25 lines	9480	2844	34000	\$3,346

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Instructions:

Please provide costs for the adders below and indicate whether you expect it to be a high use adder. Costs for adders can be given as a range. If you do not plan to offer an adder for a project factor, you may keep it blank. Applicants can list other adders under the "Other" section heading. If selected, an Installer may alter the list of approved cost adders during the course of the HeatSmart Mass program upon review and pre-approval by MassCEC's technical consultant.

Adder	Adder Cost (can be a range)	Adder units (if applicable)	High use adder? Please indicate if over 50% of systems will require this adder (Y/N)	Notes on Cost Adder
Electrical				
Electrical subpanel upgrade	\$1200-\$1600	per subpanel	no	Depends on size of panel needed
Outdoor GFCI outlet	\$200	per outlet	yes	Will be needed on most projects
Electrical feed longer than 40' from the outdoor unit to the electrical panel	\$50-\$600	any	yes	Most systems will be over 40'
Other electrical work	\$50-\$600	any	no	Difficult wiring situation. Wire through conduit. Wire through attic
Indoor Upgrades				
Integrated controls compliant with Mass Save requirements	\$2200-\$2900	per control package	no	No incentive for this with municipal electric providers
Remote/smart thermostat	\$400	per thermostat	no	Mitsubishi MHK1 with gateway.
More expensive indoor units (e.g. floor mounted)(per indoor unit)	\$50-\$500	per indoor unit	no	most installations will utilize wall heads
Additional indoor units for multi-head systems (per indoor unit)	MassCEC suggests a range for this adder	per indoor unit		
Existing central ductwork requires upgrades or repairs	\$250-\$5000	Ducted only	no	depends on extent of duct repairs and size of system
Outdoor Upgrades				
Line set beyond base (per foot price)	\$10	per foot of additional line set	no	
Line hide beyond base (per foot price)	10	per foot of additional line hide	no	
Outdoor unit on different wall than indoor unit or otherwise difficult to connect (i.e., penetrations across basements, masonry wall, complicated geometry)	\$100-\$2000	per system	yes	This is common on many older homes where lines have to go through basement or attic to get to outside condenser
Outdoor units mounted on an exterior wall with brackets with vibration dampening features	(\$150)	per outdoor unit	no	We only use the stand and pads not advisable on multi head units due to their size.
Projects involving installations on three or more stories (per project)	\$500-\$3500		no	only needed if unit is higher than 32' above the ground.
General				
Discount for projects that install multiple systems (per system)	\$0			Lowest price is given on all systems
Extended Warranty	\$500-\$1500			Depends on system and number of indoor units
Annual maintenance & servicing: Single-head ductless heat pump	\$100	per unit		
Annual maintenance & servicing: Multi-head ductless heat pump	\$170	up to 3 indoor heads		
Annual maintenance & servicing: Central Ducted Heat Pump	\$200			
Additional permitting costs	varies by town			base price includes electrical permit only. All other permit fees if needed are added to proposal.
Other				

Attachment B. 2019 HeatSmart Mass: Pricing, Cost Adders, and Equipment Form - Ground-Source Heat Pumps

Instructions:

Please provide costs for the adders below and indicate whether you expect it to be a high use adder. Costs for adders can be given as a range. If you do not plan to offer an adder for a project factor, you may keep it blank. Applicants can list other adders under the "Other" section heading. If selected, an installer may alter the list of approved cost adders during the course of the HeatSmart Mass program upon review and pre-approval by MassCEC's technical consultant.

Factors	Adder (\$)	Adder units (if applicable)	High use adder? Please indicate if over 50% of systems will require this adder (Y/N)	Notes on Cost Adder
Group Loop				
Additional boreholes needed for a closed-loop vertical system (beyond the base scenario)	\$3,300	Per Ton	N	Based on 170' per ton
Additional borehole depth for a closed-loop vertical system (beyond the base scenario)	\$19.50	Per Foot	N	
Additional SCW well depth needed (beyond the base scenario)	\$15	Per Foot	N	
Open loop diffusion/recycle (instead of the standard SCW) configuration	\$5,700	Per Project	N	
Additional horizontal piping length needed (beyond base scenario)	\$7/FT	Per heating ton of peak heating load	N	
Standing Column Pump Upgrades	TBD		N	Case-by-case - depends on tonnage/scenario
Trenching cost to connect Vertical-Closed-Loop, Horizontal-Closed-Loop and Standing-Column-Well from the well field to the home (beyond the base case scenario)	\$200/hour	Excavator w/operator	N	Depends on site conditions, ledge, etc.
Heat Pumps/Distribution				
Multiple heat pump types (i.e. water to water and water to air)	TBD		Y	Base-by-case depends on load/equipment sizing
Internal distribution upgrades (i.e. new ductwork)	\$3,000 - \$3,500/ton	Plus ductwork chase and zoning upgrades		Site visit need to determine ductwork requirements
Monitoring system				
Desuperheater	Delete factory installed hot water generator pump 3-ton (\$350) 4 or 5-ton (\$430)			
Heat or Energy Recovery Ventilator	\$3,715	Includes ductwork		Broan ERV140 ECM variable speed energy recovery ventilator Sheet metal ducting to bathrooms is additional.
General				
Removal of existing oil tank	\$600 allowance plus permit			Does not include tank cut-up in unable to remove through bulkhead
Variable speed circulator pump	Included in 7 Series units, Upgrade \$525 for 5 Series units for variable speed closed-loop pump pack			
Other				