

Attachment A: Pricing Proposal Pricing and Equipment Warranty

Section 1: Ground-Source Heat Pump Equipment & Installer Workmanship Warranty

Warranty (Clarify standard installer Workmanship Warranty and the Equipment Warranty) Bill Wenzel Heating & Air Conditioning, Inc. provides a full one-year warranty on all parts and labor for GSHP installations. Bosch Thermotechnology provides a standard ten year warranty on all components incorporated into the geothermal unit cabinet at the time of manufacture, other components and parts a one year parts warranty from certified start up. A ten-year labor allowance is included to offset the replacement of defective components. As an Accredited Bosch Contractor, Bill Wenzel Heating & A/C is able to provide an extended one-year warranty after installing and registering GSHP's, bringing the warranty period to 11 years. For Water Furnace, there would be a ten year parts and five-year labor allowance to partially offset the cost of any labor needed for repairs.

Section 2: Ground-Source Heat Pump Equipment Pricing

Base System Assumptions

Vertical Closed Loop Systems
 -2 bore holes
 -One u-bend per bore hole
 -150 feet of total well depth per ton of capacity of the heat pump in wet soil
 -50 feet of casing
 -Basic excavation and yard clean up, more extensive excavation and yard clean up may be an adder

Horizontal Closed Loop System
 -With adequate trenching based on the capacity of the heat pump
 -Includes excavation and yard clean up

Open Loop Systems
 -Standing Column Well
 -non-existing well, 100 feet of total well depth per ton of capacity of the heat pump
 -bled
 -Basic excavation and yard clean up, more extensive excavation and yard clean up may be an adder

Fees associated with additional material and labor for non-standard installations (adders) are detailed in the GSHP Cost Adders tab.

Vertical Closed Loop Systems

Heat Pump Manufacturer	Heat Pump Model Number	Heat Pump Type (water to air, water to water)	Heat Pump Capacity	Average COP (Full Load and Part Load)	Loop Configuration (Closed Loop Horizontal, Closed Loop Vertical, Vertical Open Loop-Standing Column)	Geo	Bore	Electrical	Excavation & Yard Clean-Up	Total Base Price	Deposit Required at Contracting (if applicable)	Eligible for MassCEC Rebate (Meets Efficiency Requirement)? Y/N
Bosch Thermotechnology	Greensource SM024 vertical	Water-to-Air	18,700 Btuh	4.10	Closed Loop Vertical	\$17,336	\$6,000	\$1,200	\$1,750	\$26,286	\$2,000	Y
Bosch Thermotechnology	Greensource SM036 vertical	Water-to-Air	28,200 Btuh	4.40	Closed Loop Vertical	\$17,715	\$9,000	\$1,200	\$1,750	\$29,665	\$3,000	Y
Bosch Thermotechnology	Greensource SM048 vertical	Water-to-Air	38,200 Btuh	4.20	Closed Loop Vertical	\$18,507	\$12,000	\$1,500	\$1,750	\$33,757	\$4,000	Y
Bosch Thermotechnology	Greensource SM060 vertical	Water-to-Air	48,600 Btuh	4.00	Closed Loop Vertical	\$18,785	\$15,000	\$1,800	\$1,750	\$37,335	\$5,000	Y
Bosch Thermotechnology	Greensource SM070 vertical	Water-to-Air	56,000 Btuh	3.80	Closed Loop Vertical	\$19,542	\$18,000	\$2,100	\$1,750	\$41,392	\$6,000	Y
Bosch Thermotechnology	Greensource SM024 split w/DX025 AH	Water-to-Air	15,500 Btuh	3.90	Closed Loop Vertical	\$18,289	\$6,000	\$1,200	\$1,750	\$27,239	\$2,000	Y
Bosch Thermotechnology	Greensource SM036 split w/DX035 AH	Water-to-Air	22,800 Btuh	4.50	Closed Loop Vertical	\$18,457	\$9,000	\$1,200	\$1,750	\$30,407	\$3,000	Y
Bosch Thermotechnology	Greensource SM048 split w/DX049 AH	Water-to-Air	29,200 Btuh	4.30	Closed Loop Vertical	\$19,035	\$12,000	\$1,500	\$1,750	\$34,285	\$4,000	Y
Bosch Thermotechnology	Greensource SM060 split w/DX061 AH	Water-to-Air	37,800 Btuh	4.00	Closed Loop Vertical	\$19,686	\$15,000	\$1,800	\$1,750	\$38,236	\$5,000	Y
Bosch Thermotechnology	Greensource SM070 split w/DX071 AH	Water-to-Air	44,800 Btuh	3.80	Closed Loop Vertical	\$20,405	\$18,000	\$2,100	\$1,750	\$42,255	\$6,000	Y
Bosch Thermotechnology	Greensource TW035	Water-to-Water	27,000 Btuh	3.10	Closed Loop Vertical	\$28,944	\$9,000	\$3,000	\$1,750	\$42,694	\$3,000	Y
Bosch Thermotechnology	Greensource TW061	Water-to-Water	48,000 Btuh	3.10	Closed Loop Vertical	\$30,515	\$15,000	\$3,000	\$1,750	\$50,265	\$5,000	Y
Bosch Thermotechnology	Greensource TW071	Water-to-Water	53,500 Btuh	3.10	Closed Loop Vertical	\$31,989	\$18,000	\$3,000	\$1,750	\$54,739	\$6,000	Y
Bosch Thermotechnology	Greensource TW122	Water-to-Water	102,500 Btuh	3.10	Closed Loop Vertical	\$39,460	\$30,000	\$3,000	\$1,750	\$74,210	\$10,000	Y
WaterFurnace	5 Series NDV049	Water-to-Air	38,200 Btuh	4.20	Closed Loop Vertical	\$19,222	\$12,000	\$1,500	\$1,750	\$34,472	\$4,000	Y
WaterFurnace	5 Series NDV064	Water-to-Air	47,300 Btuh	4.05	Closed Loop Vertical	\$19,500	\$15,000	\$1,800	\$1,750	\$38,050	\$5,000	Y
WaterFurnace	5 Series NDV072	Water-to-Air	55,400 Btuh	3.80	Closed Loop Vertical	\$20,257	\$18,000	\$2,100	\$1,750	\$42,107	\$6,000	Y
WaterFurnace	7 Series NVV048	Water-to-Air	43,000 Btuh	4.45	Closed Loop Vertical	\$21,016	\$12,000	\$1,500	\$1,750	\$36,266	\$4,000	Y
WaterFurnace	7 Series NVV060	Water-to-Air	51,000 Btuh	4.30	Closed Loop Vertical	\$21,960	\$15,000	\$1,800	\$1,750	\$40,510	\$5,000	Y

Horizontal Closed Loop Systems

Heat Pump Manufacturer	Heat Pump Model Number	Heat Pump Type (water to air, water to water)	Heat Pump Capacity	Average COP (Full Load and Part Load)	Loop Configuration (Closed Loop Horizontal, Closed Loop Vertical, Vertical Open Loop-Standing Column, Open Loop-Diffusion/Recycle)	Geo	Horizontal-Loop Trenching (including excavation and yard clean up)	Electrical	Total Base Price	Deposit Required at Contracting (if applicable)	Eligible for MassCEC Rebate (Meets Efficiency Requirement)? Y/N
Bosch Thermotechnology	Greensource SM034 vertical	Water-to-Air	18,700 Btuh	4.10	Closed Loop Horizontal	\$17,336	\$8,000	\$1,200	\$26,536	\$2,700	Y
Bosch Thermotechnology	Greensource SM036 vertical	Water-to-Air	28,200 Btuh	4.40	Closed Loop Horizontal	\$17,715	\$12,000	\$1,200	\$30,915	\$4,000	Y
Bosch Thermotechnology	Greensource SM048 vertical	Water-to-Air	38,200 Btuh	4.20	Closed Loop Horizontal	\$18,507	\$16,000	\$1,500	\$36,007	\$5,300	Y
Bosch Thermotechnology	Greensource SM060 vertical	Water-to-Air	48,600 Btuh	4.00	Closed Loop Horizontal	\$18,785	\$20,000	\$1,800	\$40,585	\$6,700	Y
Bosch Thermotechnology	Greensource SM070 vertical	Water-to-Air	56,000 Btuh	3.80	Closed Loop Horizontal	\$19,542	\$24,000	\$2,100	\$45,642	\$8,000	Y
Bosch Thermotechnology	Greensource SM024 split w/DX025 AH	Water-to-Air	15,500 Btuh	3.90	Closed Loop Horizontal	\$18,289	\$8,000	\$1,200	\$27,489	\$2,700	Y
Bosch Thermotechnology	Greensource SM036 split w/DX035 AH	Water-to-Air	22,800 Btuh	4.50	Closed Loop Horizontal	\$18,457	\$12,000	\$1,200	\$31,657	\$4,000	Y
Bosch Thermotechnology	Greensource SM048 split w/DX049 AH	Water-to-Air	29,200 Btuh	4.30	Closed Loop Horizontal	\$19,035	\$16,000	\$1,500	\$36,535	\$5,300	Y
Bosch Thermotechnology	Greensource SM050 split w/DX061 AH	Water-to-Air	37,800 Btuh	4.00	Closed Loop Horizontal	\$19,686	\$20,000	\$1,800	\$41,486	\$6,700	Y
Bosch Thermotechnology	Greensource SM070 split w/DX071 AH	Water-to-Air	44,800 Btuh	3.80	Closed Loop Horizontal	\$20,405	\$24,000	\$2,100	\$46,505	\$8,000	Y
Bosch Thermotechnology	Greensource TW035	Water-to-Water	27,000 Btuh	3.10	Closed Loop Horizontal	\$28,944	\$12,000	\$3,000	\$43,944	\$4,000	Y
Bosch Thermotechnology	Greensource TW061	Water-to-Water	48,000 Btuh	3.10	Closed Loop Horizontal	\$30,515	\$20,000	\$3,000	\$53,515	\$6,700	Y
Bosch Thermotechnology	Greensource TW071	Water-to-Water	53,500 Btuh	3.10	Closed Loop Horizontal	\$31,989	\$24,000	\$3,000	\$58,989	\$8,000	Y
Bosch Thermotechnology	Greensource TW122	Water-to-Water	102,500 Btuh	3.10	Closed Loop Horizontal	\$39,460	\$40,000	\$3,000	\$82,460	\$13,300	Y
WaterFurnace	5 Series NDV049	Water-to-Air	38,200 Btuh	4.20	Closed Loop Horizontal	TBD	TBD	TBD	\$36,722	TBD	Y
WaterFurnace	7 Series NVV048	Water-to-Air	43,000 Btuh	4.45	Closed Loop Horizontal	TBD	TBD	TBD	\$38,516	TBD	Y

Open Loop Systems (Standing Column Well)

Heat Pump Manufacturer	Heat Pump Model Number	Heat Pump Type (water to air, water to water)	Heat Pump Capacity	Average COP (Full Load and Part Load)	Loop Configuration (Closed Loop Horizontal, Closed Loop Vertical, Vertical Open Loop-Standing Column, Open Loop-Diffusion/Recycle)	Geo	Well	Electrical	Excavation & Yard Clean-Up	Total Base Price	Deposit Required at Contracting (if applicable)	Eligible for MassCEC Rebate (Meets Efficiency Requirement)? Y/N
Bosch Thermotechnology	Greensource SM024 vertical	Water-to-Air	24,700 Btuh	5.05	Open Loop Standing Column	\$15,579	\$6,800	\$1,200	\$1,750	\$25,329	\$2,300	Y
Bosch Thermotechnology	Greensource SM036 vertical	Water-to-Air	36,700 Btuh	4.55	Open Loop Standing Column	\$16,009	\$10,200	\$1,200	\$1,750	\$29,159	\$3,400	Y
Bosch Thermotechnology	Greensource SM048 vertical	Water-to-Air	49,200 Btuh	4.35	Open Loop Standing Column	\$16,929	\$13,600	\$1,500	\$1,750	\$33,779	\$4,500	Y
Bosch Thermotechnology	Greensource SM060 vertical	Water-to-Air	62,400 Btuh	4.80	Open Loop Standing Column	\$17,226	\$17,000	\$1,800	\$1,750	\$37,776	\$5,700	Y
Bosch Thermotechnology	Greensource SM070 vertical	Water-to-Air	72,600 Btuh	4.50	Open Loop Standing Column	\$17,824	\$20,400	\$2,100	\$1,750	\$42,074	\$6,800	Y
Bosch Thermotechnology	Greensource SM024 split w/DX025 AH	Water-to-Air	24,600 Btuh	4.40	Open Loop Standing Column	\$16,690	\$6,800	\$1,200	\$1,750	\$26,440	\$2,300	Y
Bosch Thermotechnology	Greensource SM036 split w/DX035 AH	Water-to-Air	36,300 Btuh	4.90	Open Loop Standing Column	\$16,854	\$10,200	\$1,200	\$1,750	\$30,004	\$3,400	Y
Bosch Thermotechnology	Greensource SM048 split w/DX049 AH	Water-to-Air	45,800 Btuh	4.65	Open Loop Standing Column	\$17,461	\$13,600	\$1,500	\$1,750	\$34,311	\$4,500	Y
Bosch Thermotechnology	Greensource SM060 split w/DX061 AH	Water-to-Air	59,200 Btuh	4.40	Open Loop Standing Column	\$18,113	\$17,000	\$1,800	\$1,750	\$38,663	\$5,700	Y
Bosch Thermotechnology	Greensource SM070 split w/DX071 AH	Water-to-Air	66,400 Btuh	4.05	Open Loop Standing Column	\$18,762	\$20,400	\$2,100	\$1,750	\$43,012	\$6,800	Y
Bosch Thermotechnology	Greensource TW035	Water-to-Water	34,000 Btuh	3.10	Open Loop Standing Column	\$28,446	\$10,200	\$3,000	\$1,750	\$43,396	\$3,400	Y
Bosch Thermotechnology	Greensource TW051	Water-to-Water	59,500 Btuh	3.15	Open Loop Standing Column	\$30,572	\$17,000	\$3,000	\$1,750	\$52,322	\$5,700	Y
Bosch Thermotechnology	Greensource TW071	Water-to-Water	70,000 Btuh	3.10	Open Loop Standing Column	\$31,867	\$20,400	\$3,000	\$1,750	\$57,037	\$6,800	Y
Bosch Thermotechnology	Greensource TW122	Water-to-Water	129,500 Btuh	3.10	Open Loop Standing Column	\$39,843	\$34,000	\$3,000	\$1,750	\$78,593	\$11,300	Y
WaterFurnace	5 Series NDV049	Water-to-Air	47,200 Btuh	4.65	Open Loop Standing Column	TBD	TBD	TBD	\$1,750	\$34,494	TBD	Y
WaterFurnace	7 Series NVV048	Water-to-Air	55,000 Btuh	5.10	Open Loop Standing Column	TBD	TBD	TBD	\$1,750	\$36,288	TBD	Y

Notes: Bill Wenzel Heating & Air Conditioning is offering participants in the HeatSmart Mass pilot program 2017 pricing for all equipment, piping materials, and labor, representing a discount off of 2018 prices. Permit fees vary from trade to trade and from town to town and are NOT included in the above model. See the GSHP Cost Adder tab for other adders.

Attachment A: Pricing Proposal Cost Adders

Factors	Adder (\$)	Adder units (if applicable)	High use adder? Please indicate if over 50% of systems will require this adder (Y/N)	Description of Cost Adder / Scope of Work
Ground Loop				
Additional boreholes needed for a closed-loop vertical system (beyond 2)	\$6,000	per 300' borehole	No	If additional borehole is necessary
Additional borehole depth for a closed-loop vertical system (beyond base assumptions)	\$18	per foot	Yes	For additional depth beyond the base assumptions of 150 feet per ton of heat pump capacity.
Additional SCW well depth needed (beyond base assumptions)	\$15	per foot	No	For additional depth beyond the base assumptions of 100 feet per ton of heat pump capacity. 6" drilling per foot of well with pump costs included. Pricing for 8" well and shroud are not included and could increase this adder. 8" well and shroud are typically not required for projects below 6 tons.
Cost of receiver well for open loop diffusion/recycle (instead of the standard SCW) configuration	\$15	per foot	No	Assumes that discharge water is contained on site
Additional horizontal piping length needed (beyond baseline)	\$6	per foot	No	Cost includes pipe and labor. The base pricing should allow for adequate piping for almost all scenarios.
Discounts on horizontal loop projects	Custom	per project	No	The base pricing for horizontal loop systems makes conservative assumptions about the necessary trenching, excavation, etc. It is possible that the base pricing for horizontal loop systems could be less based on the specific site conditions.
Grout with earth conductivity greater of 1.2 BTU/hr-ft-F	\$0.60	per foot		The base pricing assumes grout with earth conductivity greater of 1.0 BTU/hr-ft-F. This adder is for an increase in grout material/cost.
Grout with earth conductivity greater of 1.2 BTU/hr-ft-F	\$0.85	per foot	No	The base pricing assumes grout with earth conductivity greater of 1.0 BTU/hr-ft-F. This adder is for an increase in grout material/cost.
Casing 6"	\$16	per foot	No	6" steel casing installed in overburden
Glycol -100 Cryotek antifreeze	\$30	per 100' of loop tubing	No	Material only, labor included in install price
Heat Pumps/Distribution				
Multiple heat pump types (i.e. water to water and water to air)	See first tab		No	Pricing for multiple units can be estimated by adding the pricing of each unit from the first tab. A discount on the loops on may apply, depending upon the heat load of the building.
Ductwork for a new construction home	\$2500-\$3000 per ton plus \$800 if riser is needed	per ton	No	Pricing once plans provided or site specific review completed
Retrofit of Existing Ductwork or new ductwork for an existing home	Custom		Yes	Pricing once plans provided or site specific review completed
Internal upgrades related to water-to-water heat pumps	Custom		No	Internal upgrades related to water-to-water heat pumps could include chilled water pipe wrap, air handlers, radiant tubing or distribution, additional zoning or radiant controls
Symphony Web-enabled Comfort/Monitoring System	\$700		No	Applicable for Water Furnace Units only
Wi-fi compatible thermostats	\$170	per thermostat	Yes	Upgrade to the ecobee wi-fi thermostat
General				
Removal of existing oil tank	\$1,000-\$1,600	per existing tank	No	Depending on site conditions and accessibility
Closed loop variable flow sensor (including variable speed circulator pump)	\$1,940	per flow sensor	No	Option for closed loop only, including Grundfos Magna variable speed circulator pump, material only because labor costs would be the same.
For open loop, VFD controller for well pump	\$1,300	per controller	Yes	Well pump constant pressure controller, for open loop systems only.
Excavation and yard clean-up beyond standard scenario	\$0-\$1,500	per jobsite	No	This adder applies to vertical closed loop and SCW projects only because horizontal closed loop base pricing already includes an adequate allowance for excavation costs. The base pricing for vertical closed loop and SCW projects includes a \$1750 allowance for excavation and yard clean up, but digging trench and cleaning up are very site-specific and could exceed this base allowance in some cases.
Electrical Panel Upgrades	\$1,500-\$2,000		No	
Permits	\$200-\$700	per project	Yes	The cost of permitting will depend upon the individual town and the project. Possible permitting costs include sheet metal permit application (\$50 for Bolton, \$120-\$450 for Harvard), drilling permits through the MassDEP (\$100), and electrical permits (\$50-\$140 for Bolton, \$45-\$150 for Harvard). Additional permits may be required for customers that require any plumbing work.