PERFORMANCE TESTED COMFORT SYSTEMS®

Last Updated April 2018

PTCS® Ground Source Heat Pump Form (required)

All fields must be completed. Work must be performed by one or more technicians certified in PTCS and/or IGSHPA. Multiple technicians may be employed to meet these certification requirements, but all must be present at the time of the install.

1) **Enter data on a mobile device or computer** at ptcs.bpa.gov using the installing technician's account. Issues entering data? Submit this form for entry:
   - Customers of Bonneville Power Administration (BPA) utilities: email ResHVAC@bpa.gov, fax to 1.877.848.4074, or call 1.800.941.3867
2) **Submit documentation to the customer utility,** including this form, the Registry Installation Report (found online), and any required backup documentation.

Site Information

Install Date		**Electric Utility**	
PTCS Tech Name	**PTCS Tech #**	**IGSHPA Tech Name**	**IGSHPA #**
Installation Site Address	**Site City**	**Site State**	**Site Zip**

Home Type: ☐ Existing Site Built ☐ New Construction Site Built ☐ Manufactured: **# of Sections** ☐ 1 ☐ 2 ☐ 3

Heated Area: **Sq Ft** | **Foundation Type (Site Built):** ☐ Crawlspace ☐ Full Basement ☐ Half Basement ☐ Slab

Existing Heating System Being Replaced *(If new home, indicate heating system installed)*:

☐ Electric Forced Air w/out AC ☐ Electric Forced Air w/ AC ☐ Electric Zonal ☐ Air Source Heat Pump ☐ Ground Source Heat Pump

☐ Natural Gas Furnace (Gas Company: _____) ☐ Other Non-Electric Space Heating: _____

Back up Heat: ☐ None ☐ Electric Forced Air ☐ Electric Zonal ☐ Natural Gas Furnace ☐ Non-Electric Space Heating

New Heat Pump Equipment Data

**PTCS requires GSHPs to be Energy Star qualified. Visit energystar.gov.*

***ENERGY STAR®?** ☐ Y ☐ N	**AHRI#**	☐ Closed Loop ☐ Open Loop ☐ Pond	☐ Vertical Loop ☐ Horizontal Loop	☐ Forced Air Furn. ☐ Hydronic
Heat Pump Make	**Heat Pump Model #**			**Capacity (tons)**
☐ Non-Variable Speed HP ☐ Variable Speed HP	**What is the Balance Point?** _____ Provide BP documentation to utility.		**Are the refrigeration piping/other penetrations sealed?** ☐ Yes ☐ No	
For Closed Loop Systems Total external loop length: _____ft	For Horizontal ground loop Average in-ground loop depth: _____ft.		For Vertical Loop No. _____ and depth _____ ft. of boreholes	

For Open Loop Systems Supply side depth (elevation difference between water source and heat pump): _____ft.

Return water: Re-injected into ground. Re-injection depth (elevation difference between heat pump and re-injection point): _____ ft.

Discharged onto the surface. Specify surface:

True Flow Test

Not necessary for Water to Water systems.

Testing Mode Used: ☐ Heating ☐ Cooling	External Static Pressure		Plate Location: ☐ Air Handler ☐ Return Grille ☐ Other:	Units: ☐ Pa ☐ H2O
Plate Size	**Plate 1** ☐ 14 ☐ 20	**Plate 2** ☐ 14 ☐ 20	**Plate 3** ☐ 14 ☐ 20	*True Flow Test Notes*
NSOP **[A]**				
TFSOP **[B]**				
Plate Pressure				
Correction Factor **[C] = √([A]/[B])** or from table				
Raw Flow CFM from tables **[D]**				
Corrected Flow **CFM = [C] x [D]**			**Total CFM**	**CFM/ton**

Auxiliary Heating System

Auxiliary (strip) heat lockout: ☐ greater than 30°F ☐ Other (specify):

Flow Rate in GPM

**For GPM flow rate use manufacture's startup instructions, numbers in PTCS specs, or measure directly.*

Loop In Pressure **[A]**	Loop Out Pressure **[B]**	Pressure Drop **[A-B]**
GPM flow rate from Mfg. table*	Calculate GPM/ton	GPM/ton requirement met: ☐ Y ☐ N

PTCS Commissioned Ground Source Installation Checklist

Temperature Rise/Drop across Ground Loop. Tests to be performed w/o desuperheater after 15 min continuous operation.					
Mode unit tested in: ☐ Heating ☐ Cooling					
Existing Condition	Cooling	Heating	After Adjusted Cond. *(If necessary)*	Cooling	Heating
Loop in Temp.	°F	°F	Loop in Temp.	°F	°F
Loop out Temp.	°F	°F	Loop out Temp.	°F	°F
Temp. Diff.	°F	°F	Temp. Diff.	°F	°F
Target Diff.**	°F	°F	Target Diff.**	°F	°F
Temperature Rise/Drop across Air Coil Check after 15 minutes of continuous operation.					
Existing Condition	Cooling	Heating	After Adjusted Cond. *(If necessary)*	Cooling	Heating
Supply Air Temp.	°F	°F	Supply Air Temp.	°F	°F
Return Air Temp.	°F	°F	Return Air Temp.	°F	°F
Temp. Diff.	°F	°F	Temp. Diff.	°F	°F
Target Diff.**	°F	°F	Target Diff.**	°F	°F

***Refer to manufacturer's installation guide for target loop and air-side temperature splits. If measured splits do not meet the manufacturer's specifications, repair and re-test until specs are met*

Notes

Closed Loop GSHP Specification Requirements Checklist (Specification dated October 4, 2011)

Installation	Equipment, including filter(s), is accessible. ☐ Y ☐ N	All direct potable water connections protected by approved backflow prevention devices. ☐ Y ☐ N	
Pump(s)	≤ 165 Watts/nominal ton and sized to provide 3 GPM/ton. ☐ Y ☐ N	Pumps are cast iron and or bronze. ☐ Y ☐ N	Flow centers have filling and air purge ports. ☐ Y ☐ N
Pipe	HDPE & PEX piping rated/designed for GSHP systems per IGSHPA. ☐ Y ☐ N	HDPE socket weld, electro-fusion, or butt weld. ☐ Y ☐ N	Only non-metallic connections on PEX. ☐ Y ☐ N
Controls	Installed auxiliary heat capacity does not exceed 125 percent of the heating design load. ☐ Y ☐ N	Auxiliary heat does not operate during a 1st stage heating call, except in emergency heat. ☐ Y ☐ N	
Horizontal Loops ☐ NA	Designed and sized for 30°F min Entering Water Temperature **(EWT)**. ☐ Y ☐ N		
Vertical Ground Loop ☐ NA	Designed/sized for 30°F min EWT. ☐ Y ☐ N	Detailed drilling log for boreholes. ☐ Y ☐ N	Boreholes grouted correctly. ☐ Y ☐ N
Pond/Lake Loop ☐ NA	Heat exchanger is installed beneath at least 8 feet of water in all seasons and designed/sized for 30°F min EWT. ☐ Y ☐ N		
Hydronic Systems ☐ NA	Newly poured concrete slabs designed for 100°F design water delivery temperatures. ☐ Y ☐ N	Insulation R-15 4' perimeter and R-10 under the rest of the slab. ☐ Y ☐ N	
Desuperheater ☐ NA	Approved for model by manufacturer. ☐ Y ☐ N	Vented double-wall heat exchanger. ☐ Y ☐ N	Constructed of copper, cupro-nickel, or stainless. ☐ Y ☐ N
Desuperheater Pump ☐ NA	Is rated by UL or ETL-US. ☐ Y ☐ N	Bronze construction. ☐ Y ☐ N	Potable water rated. ☐ Y ☐ N
Desuperheater Preheat Tank ☐ NA	IAPMO/NSF/GAMA rated electric tank manufacturer. ☐ Y ☐ N	GAMA EF rating 0.93. ☐ Y ☐ N	Glass Lined Steel tank, 50 gal min size. ☐ Y ☐ N