

Northwest ENERGY STAR Homes Central AC Commissioning & Startup Form

Technician Certification Number PTCS- _____		Installation Company/Name		Electric Utility Company	
Customer Name			Site Street Address		
Site Address 2 (Unit Number)		Site City	Site State	Site Zip Code	Site Phone Number () -
<input type="checkbox"/> Site Built (Existing) Year Built _____	<input type="checkbox"/> Site Built (New Construction) ENERGY STAR Home? <input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Manufactured Home Sections <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Foundation Type: <input type="checkbox"/> Half Basement <input type="checkbox"/> Full Basement <input type="checkbox"/> Crawl <input type="checkbox"/> Slab	ENERGY STAR Home? <input type="checkbox"/> Y <input type="checkbox"/> N	Super Good Cents? <input type="checkbox"/> Y <input type="checkbox"/> N
What type of heating system is installed at this site? <input type="checkbox"/> Gas Furnace <input type="checkbox"/> Gas Hydronic <input type="checkbox"/> Electric Zonal <input type="checkbox"/> Electric Forced Air <input type="checkbox"/> Other _____					Conditioned floor area of house (square feet)

SECTION A: SITE INFORMATION

Equipment Data			
AHRI Number:		SEER	
Outdoor Unit Make		Outdoor Unit Model Number	Capacity (tons)
			# of Compressor Stages
Indoor Unit Make		Indoor Unit Model Number	Capacity (tons)

Does the Indoor Unit have an ECM blower? (check one) <input type="checkbox"/> Yes <input type="checkbox"/> No	Ambient Temp _____ °F	Unit Test Method (check one) Weigh-in method may only be used if ambient temperature is below 65°F or the manufacturer-recommended operating temperature for the cooling equipment. If Weigh-in Method is used, TXV must be present.	<input type="checkbox"/> Sub Cooling <input type="checkbox"/> Weigh-in	Stage or Capacity Tested
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External Static Pressure Test—Check in full capacity unless conditions do not permit. Attach additional sheets as needed if test must be re-run.

1. Record expected CFM/Ton based on fan wiring/board settings.
2. Measure return plenum static pressure.
3. Measure supply plenum pressure.
4. Add values together (ignore minus “-” sign on return pressure).

TrueFlow Test		Cooling CFM/Ton Setting 1		Note: Result of 0.8 Inch H₂O (200 Pa) or more in Step 4 can result in extreme fan energy use and early fan failure
		Return Static Pressure 2 [A]	Units (check one) <input type="checkbox"/> Inches H ₂ O <input type="checkbox"/> Pa	
		Supply Static Pressure 3 [B]	External Static Pressure 4 [C] [A] + [B] = [C]	

1. Measure Normal Supply Operating Pressure (NSOP) or re-record Supply Static Pressure from above.
2. Specify TrueFlow plate # and filter size.
3. Install True Flow plate at filter slot and specify location.
4. Measure Supply Pressure with plate in (TFSOP)
5. Determine Correction Factor (as needed)
6. Measure pressure across TrueFlow plate and record Raw Flow (in CFM).

SECTION B: AIRFLOW TEST

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7. Calculate Corrected Flow = (Raw Flow x Correction Factor)

	NSOP	1 [A]	Plate Size (check one)	2	Units (Check one)
	<input type="checkbox"/> 14	<input type="checkbox"/> 20	<input type="checkbox"/> Inches H ₂ O	<input type="checkbox"/> Pa	
	Filter Location (check one)	Indoor Unit <input type="checkbox"/>	Return Grille <input type="checkbox"/>	Other (explain) <input type="checkbox"/>	3
	TFSOP	4 [B]	Enter Correction Factor (CF) from table or use formula	5 [C]	
			$\sqrt{\frac{\text{NSOP [A]}}{\text{TFSOP [B]}}}$		
	Plate Pressure		Raw Flow (CFM)	6 [D]	
			CFM/Ton	Is flow above 350/Ton? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Refrigerant Charge Information/Testing *To be completed by certified technician at time of installation*

Total lineset length: _____ ft	Refrigerant Adjustment (if any)	Stage/Capacity Test
If Weigh-in Method is used, TXV must be present.		TXV present? <input type="checkbox"/> Y <input type="checkbox"/> N

Performance Check *Run unit for at least 15 minutes in compressor-only mode before taking readings.*

Sub Cooling Test *Acceptable deviation of +/- 3F*

Discharge Pressure	Temp °F [A] (From Chart)
Measured Liquid Line Temp [B]	Sub Cooling [A] - [B] Acceptable? <input type="checkbox"/> Y <input type="checkbox"/> N
Notes	

Verification of Compliance – *To be completed by technician at the time of installation*

As a certified PTCS™ Technician, I have verified that the commissioning performed on this site and equipment is in accordance with the System Airflow and Refrigerant Charge (sections B and C) of this form.

PTCS™ Certified Technician Name (Print)	Date
PTCS™ Certified Technician Signature (Required)	PTCS™ Certified Technician Phone Number

SECTION C: REFRIGERANT CHARGE INFORMATION/TESTING

SECTION E: COMPLIANCE

PTCS® Air Source Heat Pump Form

All sections must be filled out, signed, and dated by a PTCS Certified Technician at the time of installation. A copy of the completed form must be promptly submitted to the utility and homeowner in accordance with utility policy. Please enter this form online at ptcs.bpa.gov or fax to 877-848-4074. Questions? Call 800-941-3867 or email ResHVAC@bpa.gov.

Site Information (Please print clearly)

PTCS Tech #	PTCS Tech Name	Install Date	Electric Utility
Customer Name		Installation Site Address*	
Site City*	Site State*	Site Zip*	Customer Phone # () -
*Mailing address if different (#, City, St, Zip):			
Home Type: <input type="checkbox"/> Existing Site Built <input type="checkbox"/> New Construction Site Built <input type="checkbox"/> Manufactured: # of Sections <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
Heated Area: Sq Ft	Year Built:	Foundation Type (Site Built): <input type="checkbox"/> Crawlspace <input type="checkbox"/> Full Basement <input type="checkbox"/> Half Basement <input type="checkbox"/> Slab	
Existing Heating System Being Replaced (If new home, indicate heating system installed):			
<input type="checkbox"/> Electric Forced Air <input type="checkbox"/> Electric Forced Air w/ AC <input type="checkbox"/> Electric Zonal <input type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Geothermal Heat Pump <input type="checkbox"/> Natural Gas Furnace (Gas Company: _____) <input type="checkbox"/> Other Non-Electric Space Heating: _____			
Back up Heat: <input type="checkbox"/> None <input type="checkbox"/> Elec. Forced Air <input type="checkbox"/> Elec. Zonal <input type="checkbox"/> Heat Pump <input type="checkbox"/> Natural Gas Furnace <input type="checkbox"/> Non-Electric Space Heating			

New Heat Pump Equipment Data

****PTCS requires minimum 9.0 HSPF, 14 SEER. Commissioning, Controls & Sizing requires Federal minimum. Check with utility for requirements.**

AHRI #	SEER**	HSPF**	EER	Outdoor HP Capacity (tons)
Heat Pump Make	Outdoor HP Model #	<input type="checkbox"/> HP Single Stage <input type="checkbox"/> HP Multi Stage _____ <input type="checkbox"/> HP Variable Speed		
	Indoor HP Model #	What is the Balance Point? _____ Provide BP calculation to utility.		

External Static Pressure Test

Check unit operating at full capacity unless conditions do not permit. Attach additional sheets as needed if test must be re-run.

<ol style="list-style-type: none"> 1. Record expected CFM/ton based on fan wiring board settings 2. Measure return static pressure 3. Measure supply plenum static pressure 4. Calculate external static pressure: add values in #2 and #3 values together, ignoring the minus sign 	1a. Testing Mode Used: <input type="checkbox"/> Heating <input type="checkbox"/> Cooling 2. Return Static Pressure 3. Supply Static Pressure	1b. CFM/Ton Setting Units (check one): <input type="checkbox"/> Pa <input type="checkbox"/> Inches H ₂ O 4. External Static Pressure	Note: Any External Static Pressure above 200 Pa or 0.8 Inches H ₂ O will result in a rejection.
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TrueFlow Test

Use the Performance Checks in the Reference Materials at www.bpa.gov/goto/reshvac to determine acceptable performance, unless using an alternative method.

<ol style="list-style-type: none"> 1. Measure Normal System Operating Pressure (NSOP) [A] 2. Check TrueFlow plate size and units 3. Note TrueFlow plate location 4. Measure Supply Pressure with TrueFlow plate in (TFSOP) [B] 5. Calculate Correction Factor [C] 6. Measure plate pressure 7. Enter Raw Flow CFM from tables [D] 8. Calculate Corrected Flow (CFM = [C] x [D]) 9. Calculate CFM/ton 	1. NSOP [A]	2a. Plate Size: <input type="checkbox"/> 14 <input type="checkbox"/> 20	2b. Units (check one) Use same units ESP: <input type="checkbox"/> Pa <input type="checkbox"/> Inches H ₂ O
	3. Filter Location: <input type="checkbox"/> Air Handler <input type="checkbox"/> Return Grille <input type="checkbox"/> Other (specify):		
	4. TFSOP [B]	5. Correction Factor [C] from table or calculate $\sqrt{([A]/[B])}$	
	6. Plate Pressure	7. Raw Flow CFM from tables [D]	
	8. Corrected Flow CFM = [C] x [D]	9. CFM/ton	Is flow at or above 325 CFM/ton? <input type="checkbox"/> Y <input type="checkbox"/> N Please submit proof of manufacturer target CFM/Ton if under 325.

Refrigerant Charge Information

Outside Air Temp °F	Mode unit tested in: <input type="checkbox"/> Heating <input type="checkbox"/> Cooling <input type="checkbox"/> Alternative <i>If > 65°F, test in cooling; if ≤ 65°F, test in heating.</i>	Are the refrigeration piping/other penetrations sealed? <input type="checkbox"/> Yes <input type="checkbox"/> No
Stage/Capacity Tested <input type="checkbox"/> High <input type="checkbox"/> Low <input type="checkbox"/> Other (specify):	Total lineset length ft.	Refrigerant Adjustment: <input type="checkbox"/> Added _____ oz. <input type="checkbox"/> Removed _____ oz. <input type="checkbox"/> None

Performance Check: Run unit for at least 15 minutes in compressor-only mode before taking readings.

Use the Performance Checks in the Heat Pumps section at www.bpa.gov/goto/reshvac to determine acceptable performance, unless using alt. method.

Heating Mode (65°F or lower)	Cooling Mode (higher than 65°F)	Alternative Method
Supply Air (SA) Temp:	Discharge Pressure:	Specify method used:
Return Air (RA) Temp:	Discharge Temp [A]:	Target:
Temp Split (SA – RA):	Liquid Line Temp [B]:	Test result:
Expected Temp Split from table: Is it acceptable? <input type="checkbox"/> Y <input type="checkbox"/> N	Sub cooling [A] – [B]: Is it acceptable? <input type="checkbox"/> Y <input type="checkbox"/> N	Is it acceptable? <input type="checkbox"/> Y <input type="checkbox"/> N

Controls

Compressor Low Ambient Lockout control (LAL) setting at 5° or less? <input type="checkbox"/> Yes <input type="checkbox"/> Not Installed/Disabled <input type="checkbox"/> Non-Electric Backup <input type="checkbox"/> No	Auxiliary (strip) heat lockout has been set to <input type="checkbox"/> 35°F <input type="checkbox"/> Below 35°F
Single Capacity Compressor Systems <input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	Make <u>and</u> Model of Heat Pump Thermostat
Multiple Capacity Compressor systems (<input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable) <input type="checkbox"/> If the discharge air sensor control is used to control auxiliary heat, confirm it is set no higher than 85°F or, <input type="checkbox"/> If staging thermostat is set warmer than 85°F, confirm resistance heat cannot operate at temperatures above 35°F	Confirm discharge air temperature sensor is either not installed or is disabled. <input type="checkbox"/> Confirmed

Notes

Required Signatures: This section shall be filled out by the electrical utility account holder. This form must be signed by the person whose name appears on the electric utility account. ENERGY INFORMATION RELEASE: The undersigned utility customer requests and authorizes the specified utility to release billing and usage information for the account listed below to the PTCS program. With this authorization, the PTCS program can request billing information for up to two years pre-installation and two years post-installation. The utility customer also hereby releases the utility company from any and all liability arising from or connected with providing this information.

Electric Utility	Account #
Account Holder Name	
Account Holder Signature	Date
By signing below, technician certifies that this form and any accompanying documentation are complete and accurate, and that all measures associated with this project were completed as of the signature date below.	
Technician Name	Installation Company
Technician Signature	Date Tech Phone # () -

PRIVACY ACT STATEMENT

Basic authority for collecting this information is authorized by 16 U.S.C. §§ 832 et. seq., and 838 et. seq., pursuant to Bonneville Power Administration's Conservation Program system of records established in 46 FR 31700. This information is primarily intended to further, but is incidental to the performance of, BPA's overall Energy Efficiency Program, the objective of which is to acquire energy resources through energy efficiency, to determine what cost-effective conservation and direct application renewable resources measures should be installed or adopted under different circumstances, and to provide incentives for the installation of such measures. Other routine issues of this information include: aggregation into a public database on energy efficiency; furnished to authorized personnel for installation/repair of equipment; aggregated into a database for program publicity; and in some instances information regarding buildings will be made available to subsequent purchasers of the buildings. Your disclosure of the requested information is voluntary; however failure to provide requested information means that it will not be possible for you to participate in this BPA Energy Efficiency program.

PTCS® Ground Source Heat Pump Form

All sections must be filled out, signed, and dated by technician(s) certified in PTCS and IGSHPA at the time of install. A copy of the completed form must be promptly submitted to the utility and homeowner in accordance with utility policy. Please enter this form online at ptcs.bpa.gov or fax to 877-848-4074. Questions? Call 800-941-3867 or email ResHVAC@bpa.gov.

Site Information (Please print clearly)		Install Date	Electric Utility	
PTCS Tech Name	PTCS Tech #	IGSHPA Certified Tech Name		IGSHPA #
Customer Name		Installation Site Address*		
Site City*	Site State*	Site Zip*	Customer Phone # () -	
<i>*Mailing address if different (#, City, St, Zip):</i>				
Home Type: <input type="checkbox"/> Existing Site Built <input type="checkbox"/> New Construction Site Built <input type="checkbox"/> Manufactured: # of Sections <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3				
Heated Area:	Sq Ft	Year Built:	Foundation Type (Site Built): <input type="checkbox"/> Crawlspace <input type="checkbox"/> Full Basement <input type="checkbox"/> Half Basement <input type="checkbox"/> Slab	
Existing Heating System Being Replaced (If new home, indicate heating system installed):				
<input type="checkbox"/> Electric Forced Air <input type="checkbox"/> Electric Forced Air w/ AC <input type="checkbox"/> Electric Zonal <input type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Geothermal Heat Pump <input type="checkbox"/> Natural Gas Furnace (Gas Company: _____) <input type="checkbox"/> Other Non-Electric Space Heating: _____				
Back up Heat: <input type="checkbox"/> None <input type="checkbox"/> Elec. Forced Air <input type="checkbox"/> Elec. Zonal <input type="checkbox"/> Heat Pump <input type="checkbox"/> Natural Gas Furnace <input type="checkbox"/> Non-Electric Space Heating				

New Heat Pump Equipment Data ***PTCS requires GSHPs to be Energy Star qualified. Visit energystar.gov.*

**Energy Star? <input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Closed Loop <input type="checkbox"/> Open Loop <input type="checkbox"/> Pond	<input type="checkbox"/> Vertical Loop <input type="checkbox"/> Horizontal Loop	<input type="checkbox"/> Forced Air Furn. <input type="checkbox"/> Hydronic	Capacity (tons)
AHRI#	Heat Pump Make	Heat Pump Model #		
<input type="checkbox"/> HP Single Stage <input type="checkbox"/> HP Multi Stage _____ <input type="checkbox"/> HP Variable Speed		What is the Balance Point? _____ Provide BP calculation to utility.	Are the refrigeration piping/other penetrations sealed? <input type="checkbox"/> Yes <input type="checkbox"/> 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: <input type="checkbox"/> Re-injected into ground. Re-injection depth (elevation difference between heat pump and re-injection point): _____ ft.				
<input type="checkbox"/> Discharged onto the surface. Specify surface:				

True Flow Test (Not necessary for Water to Water systems)

Units (check one): <input type="checkbox"/> Heating <input type="checkbox"/> Cooling	External Static Pressure	Filter Location: <input type="checkbox"/> Air Handler <input type="checkbox"/> Return Grille <input type="checkbox"/> Other: _____		Units: <input type="checkbox"/> Pa <input type="checkbox"/> H ₂ O	
Plate Size	Plate 1 <input type="checkbox"/> 14 <input type="checkbox"/> 20	Plate 2 <input type="checkbox"/> 14 <input type="checkbox"/> 20	Plate 3 <input type="checkbox"/> 14 <input type="checkbox"/> 20	True Flow Test Notes	
NSOP [A]					
TFSOP [B]					
Plate Pressure					
Correction Factor [C] = $\sqrt{([A]/[B])}$ 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 manufactures 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: <input type="checkbox"/> Y <input type="checkbox"/> 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

Required Customer and Technician Signatures

To be filled out by the electrical utility account holder. This form must be signed by the person whose name appears on the electric utility account. ENERGY INFORMATION RELEASE: The undersigned utility customer requests and authorizes the specified utility to release billing and usage information for the account listed below to the PTCS program. With this authorization, the PTCS program can request billing information for up to two years pre-installation and two years post-installation. The utility customer also hereby releases the utility company from any and all liability arising from or connected with providing this information.

Electric Utility		Account #	
Account Holder Name	Account Holder Signature	Date	
By signing below, technician certifies that this form and any accompanying documentation are complete and accurate, and that all measures associated with this project were completed as of the signature date below.			
PTCS Technician Name		Installation Company	
PTCS Technician Signature		Date	PTCS Tech Phone # () -
IGHSPA Certified Tech Signature (if different)		Date	IGHSPA Tech Phone # () -

PRIVACY ACT STATEMENT Basic authority for collecting this information is authorized by 16 U.S.C. §§ 832 et. seq., and 838 et. seq., pursuant to Bonneville Power Administration's Conservation Program system of records established in 46 FR 31700. This information is primarily intended to further, but is incidental to the performance of, BPA's overall Energy Efficiency Program, the objective of which is to acquire energy resources through energy efficiency, to determine what cost-effective conservation and direct application renewable resources measures should be installed or adopted under different circumstances, and to provide incentives for the installation of such measures. Other routine issues of this information include: aggregation into a public database on energy efficiency; furnished to authorized personnel for installation/repair of equipment; aggregated into a database for program publicity; and in some instances information regarding buildings will be made available to subsequent purchasers of the buildings. Your disclosure of the requested information is voluntary, however failure to provide requested information means that it will not be possible for you to participate in this BPA Energy Efficiency program.

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

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

PTCS® Duct Sealing Form

All sections must be filled out, signed, and dated by a PTCS Certified Technician at the time of installation. A copy of the completed form must be promptly submitted to the utility and homeowner in accordance with utility policy. Please enter this form online at ptcs.bpa.gov or fax to 877-848-4074. Questions? Call 800-941-3867 or email ResHVAC@bpa.gov.

Site Information (Please print clearly)

PTCS Tech #	PTCS Tech Name	Install Date	Electric Utility
Customer Name		Installation Site Address*	
Site City*	Site State*	Site Zip*	Customer Phone # () -
*Mailing address if different (#, City, St, Zip):			
Home Type: <input type="checkbox"/> Existing Site Built <input type="checkbox"/> Manufactured: # of Sections <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3			
Heated Area: Sq Ft	Year Built:	Foundation Type (Site Built): <input type="checkbox"/> Crawlspace <input type="checkbox"/> Full Basement <input type="checkbox"/> Half Basement <input type="checkbox"/> Slab	Air Handler installed? <input type="checkbox"/> Y <input type="checkbox"/> N
Existing Heating System: <input type="checkbox"/> Elec. Forced Air <input type="checkbox"/> Elec. Forced Air w/ AC <input type="checkbox"/> Elec. Zonal <input type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Geothermal Heat Pump <input type="checkbox"/> Natural Gas Furnace (Gas Company: _____) <input type="checkbox"/> Other Non-Electric Space Heating: _____			# Supply
Back up Heat: <input type="checkbox"/> None <input type="checkbox"/> Elec. Forced Air <input type="checkbox"/> Elec. Zonal <input type="checkbox"/> Heat Pump <input type="checkbox"/> Nat. Gas Furnace <input type="checkbox"/> Non-Elec. Space Heating			# Returns
Location of Duct Work. Ducts are considered to be in unconditioned space when they are in vented crawlspaces, attics, and unheated garages. Basements are considered conditioned space. The bellies of manufactured homes are considered accessible.			
Are at least 30% of supply ducts in unconditioned space and accessible? <input type="checkbox"/> Y <input type="checkbox"/> N <i>If no, the home does not qualify for PTCS Duct sealing.</i>			

House Pressurization and Duct Blaster Tests *Work must be done to PTCS Duct Sealing Specification found at bpa.gov/goto/reshvac.*

Do either of these special conditions apply? (check if "yes") <input type="checkbox"/> Record Only – no duct sealing work done <input type="checkbox"/> PTCS Certification ONLY – pretest leakage too low to qualify		Testing Equipment Used: <input type="checkbox"/> Energy Conservatory <input type="checkbox"/> RetroTec <input type="checkbox"/> AeroSeal <input type="checkbox"/> Air Care <input type="checkbox"/> Other:		
Duct Insulation <i>Select one:</i> <input type="checkbox"/> Ducts were not insulated OR <input type="checkbox"/> Existing duct insulation was re-installed OR <input type="checkbox"/> New insulation was installed				
House Pressurized (Blower Door) to: <input type="checkbox"/> +50Pa <input type="checkbox"/> Other Pa	Duct Blaster Location: <input type="checkbox"/> Return Grille <input type="checkbox"/> Other:	Pressure Tap Supply Register Location:		
<p>Duct Leakage Test: DUCT BLASTER CFM READING with Duct Pressure at 0Pa with respect to house and Blower Door @ +50Pa.</p> <p>Duct Blaster Fan Pressure: It is the fan pressure, NOT the house pressure. (Ex. Ring 1, 78 Pa Fan Pressure, 364 CFM)</p> <p>Note: CFM leakage is calculated in the online registry using the ring size and fan pressure.</p>	Pre-Test	Existing Home, Site Built	Manufactured Home	
		Pre-test Ring (select one)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
		Duct Blaster Fan Pressure	Pa	Pa
		Duct Blaster CFM	CFM	CFM
	Pre-leakage Requirements (BPA Only)	<input type="checkbox"/> ≥ 250 CFM (>1667 sq ft) <input type="checkbox"/> ≥ 15% of home's sq ft	<input type="checkbox"/> ≥ 100 CFM, Single Wide <input type="checkbox"/> ≥ 150 CFM, Double Wide <input type="checkbox"/> ≥ 225 CFM, Triple Wide	
	Post-Test	Post-test Ring (select one)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
		Duct Blaster Fan Pressure	Pa	Pa
		Duct Blaster CFM	CFM	CFM
Certification Requirements (check all that apply)		<input type="checkbox"/> ≤ 10% of home's sq ft <input type="checkbox"/> ≥ 50% Reduction	<input type="checkbox"/> ≤ 50 CFM, Single Wide <input type="checkbox"/> ≤ 80 CFM, Double Wide <input type="checkbox"/> ≤ 110 CFM, Triple Wide <input type="checkbox"/> ≥ 50% Reduction	

Specification Requirements The duct sealing at this site meets program requirements including: repairs, metal ducts secured with screws, flex duct interior and exterior liners secured with nylon straps or steel band clamps, ducts are supported and off the ground, boots are mechanically fastened to floor/ceiling, plenum, main ducts, takeoffs and boots sealed, and a good faith effort was made to remove existing duct tape and cover with mastic. Y N

Combustion Appliance Zone (CAZ) Test

Are there any combustion appliances in the home? Y N
Combustion Appliance Type: Fireplace or wood stove
 Gas Furnace Gas water heater Other: _____

Is there a UL-approved and functioning CO detector installed in the home? Y N
 A carbon monoxide (CO) detector installed in the home is **required** in all cases where a sealed or non-sealed combustion appliance is located in a conditioned space or attached structure i.e. garage. RECOMMENDED CO detector specifications: UL 2034/CSA 6.19-01, digital display, peak CO memory and recall.

Is a Combustion Air Zone (CAZ) test required by the electric utility? Yes, complete the fields below No, skip to notes

Baseline Pressure with reference to outside (all exhaust devices and air handler fan off): _____ Pa
 Weather conditions on day of test: Calm Windy

With air handler fan ON, record gauge readings:		Interior doors open		Interior doors closed	
Zone Description		Reading (Pa)	Net (Pa)	Reading (Pa)	Net (Pa)
Zone 1					
Zone 2					

Net Depressurization = Net (Pa) = All fans off Reading (Pa) (minus) Air Handler Fan on Reading (Pa)
 Example: Baseline reading with all fans off = 1 Pa; Reading with air handler fan on = -2Pa. Net Depressurization = 1 - (-2) = 3 Net Depressurization (Net) equals how much the pressure goes down when the air handler is turned ON (compared to the fan off baseline pressure).

Notes

Required Signatures: To be filled out by the electrical utility account holder. This form must be signed by the person whose name appears on the electric utility account. ENERGY INFORMATION RELEASE: The undersigned utility customer requests and authorizes the specified utility to release billing and usage information for the account listed below to the PTCS program. With this authorization, the PTCS program can request billing information for up to two years pre-installation and two years post-installation. The utility customer also hereby releases the utility company from any and all liability arising from or connected with providing this information.

Electric Utility _____ **Account #** _____

Account Holder Name _____

Account Holder Signature _____ **Date** _____

By signing below, technician certifies that this form and any accompanying documentation are complete and accurate, and that all measures associated with this project were completed as of the signature date below.

Technician Name _____ **Installation Company** _____ **Tech Phone #** () -

Technician Signature _____ **Date** _____

PRIVACY ACT STATEMENT
 Basic authority for collecting this information is authorized by 16 U.S.C. §§ 832 et. seq., and 838 et. seq., pursuant to Bonneville Power Administration’s Conservation Program system of records established in 46 FR 31700. This information is primarily intended to further, but is incidental to the performance of, BPA’s overall Energy Efficiency Program, the objective of which is to acquire energy resources through energy efficiency, to determine what cost-effective conservation and direct application renewable resources measures should be installed or adopted under different circumstances, and to provide incentives for the installation of such measures. Other routine issues of this information include: aggregation into a public database on energy efficiency; furnished to authorized personnel for installation/repair of equipment; aggregated into a database for program publicity; and in some instances information regarding buildings will be made available to subsequent purchasers of the buildings. Your disclosure of the requested information is voluntary, however failure to provide requested information means that it will not be possible for you to participate in this BPA Energy Efficiency program.