



Program Requirements for Performance Tested Comfort Systems® and Prescriptive Duct Sealing

Introduction

This document sets forth the minimum program requirements for trainers and trainings, technicians and installations, and quality assurance (QA) delivered in connection with the Performance Tested Comfort Systems® (PTCS) Program and the Prescriptive Duct Sealing measures. For Bonneville Power Administration (BPA) utilities, the program requirements outlined here replace the PTCS Provider Standards issued by the Regional Technical Forum.

1. **Trainer Requirements**
2. **Technician Requirements**
3. **Quality Assurance Requirements**

1. Trainer Requirements

- 1.1. **Minimum Trainer Qualifications** –Trainers shall meet all requirements for technician certification and meet the following minimum standards:
 - 1.1.1. **PTCS Heat Pump Commissioning Trainers** shall have a minimum two (2) years verifiable full time experience installing or inspecting the following: testing heat pump auxiliary heat controls, indoor coil airflow, sizing and refrigerant charge.
 - 1.1.2. **PTCS Duct Sealing Trainers** shall have a minimum two (2) years verifiable full time experience installing or inspecting the following: duct system testing, diagnostics, repair, and sealing in site built and manufactured homes.
 - 1.1.3. **Prescriptive Duct Sealing Trainers** shall have a minimum two (2) years verifiable full time experience installing or inspecting the following: duct system diagnostics, repair, and sealing in site built and manufactured homes.
 - 1.1.4. Maintain an acceptable history of delivered training quality, at the discretion of the BPA program manager.
- 1.2. **Training Requirements** – Trainers may certify a technician in PTCS or Prescriptive Duct Sealing only if the trainee has scored not less than 80% on a BPA-provided written test and meets all other requirements for the specific training, as listed in the following sub-sections. The trainee will be able to complete program installation form(s) and understand program QA requirements.
 - 1.2.1. **PTCS Heat Pump Trainings** shall prepare the trainee to demonstrate understanding of auxiliary heat control requirements, airflow testing using approved methods, sizing, and refrigerant charge methods. The training must include hands-on experience, and all trainees must demonstrate their skills to pass the class.
 - 1.2.2. **PTCS Duct Sealing Trainings** shall prepare the trainee to demonstrate competency in duct system testing, diagnostics, repair, and sealing in site built and manufactured homes; capture and record required CFM duct leakage measurements; conduct a total duct leakage test; and conduct a duct leakage to outside test.
 - 1.2.3. **Prescriptive Duct Sealing Trainings** shall prepare the trainee to demonstrate competency in the repair and sealing of ducts systems according to the BPA-adopted specification at the time of training.
 - 1.2.4. Trainers shall provide students with dated proof of training completion after the students have demonstrated mastery of the subject.
 - 1.2.5. Trainers will confirm an individual's training completion status to BPA and/or BPA utilities upon request.

2. Technician Requirements

- 2.1. A BPA-provided program orientation is required for PTCS Duct Sealing, PTCS Heat Pumps, and Prescriptive Duct Sealing. Technicians will be ineligible to do work or access the online registry until orientation has been completed.
- 2.2. Technician must complete, sign, and submit the Technician Application to BPA and be approved prior to installing heat pump or duct sealing measures. Technicians will be ineligible to do work or access the online registry until the application has been approved.
- 2.3. Technician shall submit dated proof of training completion for the measures they install. In addition to PTCS or Prescriptive Certifications from BPA-approved trainers, additional acceptable trainings are listed below.
 - 2.3.1. PTCS Heat Pump alternatives: BPI® Heating Professional, NATE® Heat Pump Technician, CheckMe, BPI® Air Conditioning and Heat Pump Professional, a two year vocational degree in Air Source Heat Pump





installations, or a verifiable apprenticeship with a BPA-approved technician lasting a minimum of 2 years. Regardless of certification type, technician shall be trained to use a TrueFlow® Air Handler Flow Meter.

- 2.3.2.** PTCS Ground Source Heat Pumps require a heat pump credential identified in 2.3.1, and an International Ground Source Heat Pump Association (IGSHPA) certification. Please note that **all ground source heat pump installations must be done by an IGSHPA certified technician who is also certified in PTCS or an approved PTCS-alternative; there are no exceptions to this requirement.**
- 2.3.3.** PTCS and Prescriptive Duct Sealing training alternatives: BPI® Heating Professional, BPI Envelope Professional, BPI® Air Conditioning and Heat Pump Professional, a vocational degree in duct construction and sealing, or a verifiable apprenticeship with a BPA-approved technician lasting a minimum of 2 years. Regardless of certification type, technicians seeking to PTCS certify duct sealing shall have been trained to test duct leakage according to PTCS standards.
- 2.4.** Technicians are responsible for maintaining current knowledge of technical standards and program requirements.
- 2.5.** Technicians shall respond promptly and correctly to data input issues and QA inspections. Technicians are required to correct errors identified during the QA inspection within 10 business days of notification. Failure to do so may result in disqualification from BPA programs.
- 2.6.** Technicians shall be responsible for ensuring data from project(s) are entered into the online registry.

3. Quality Assurance Requirements

- 3.1. Heat Pump Inspectors** shall have documented experience commissioning and/or co-commissioning a minimum of 30 certified systems, and possess current PTCS certification (or other approved certification). Utility employees may request an opportunity to demonstrate testing skills to BPA as a substitute for installation experience. For jobs where the inspector is listed as the certifying technician, they shall have a QA pass rate of not less than 90%, and no record of undersized equipment for the most recent two years of installations. BPA reserves the right to consider other performance issues, in addition to QA performance.
- 3.2. Duct System Inspectors** shall have documented experience testing and/or co-testing a minimum of 30 systems, of which at least 15 are retrofit projects, and possess current certification (or other approved alternative). Utility employees may request an opportunity to demonstrate testing skills to BPA as a substitute for installation experience. For jobs where the inspector is listed as the certifying technician, they shall have a QA pass rate of not less than 90% for the most recent two years of installations. BPA reserves the right to consider other performance issues in addition to QA performance.
- 3.3.** Certified inspectors may not conduct QA inspections in a territory where they install PTCS or prescriptive duct sealing measures.
- 3.4.** Utilities may request reimbursement from BPA for inspections they conduct by submitting a Letter of Interest. The Letter of Interest and submittal instructions are available by request to the BPA program manager.
- 3.5.** Only QA inspections performed by a BPA-approved QA inspector shall be entered in the online registry. BPA will coordinate efforts to achieve a rate of approximately 10% of all projects per program year.
- 3.6.** Inspectors shall use BPA Quality Assurance Inspection Forms to collect inspection data and determine whether a site has passed or failed inspection. Inspectors shall record these results in the PTCS online registry.
- 3.7.** The QA inspector has the responsibility to: (1) fail any system that he/she finds does not meet installation specifications adopted by BPA at the time of installation; (2) report that failure to the BPA program manager, utility and technician; (3) identify corrective actions required to bring substandard systems up to measure specifications; (4) support BPA audits of prior QA inspections as requested.
- 3.8. Timeliness:** For QA to be most effective, an inspection should be done within 90 days or, in new homes, before owner occupies the home.
- 3.9.** In the case of new technicians, QA inspector shall observe and/or inspect at least three (3) installations by new technicians within three months of their first job being submitted to the online registry.
- 3.10.** Repeated failures will lead to additional training requirements or other measures to improve technician performance. Failure to improve performance may lead to technician removal from the program.
- 3.11. Duct Sealing Inspections** shall be designated as passing according to these requirements:
- 3.11.1.** A visual inspection shows that high pressure areas have been sealed (air handler, supply, plenum, and take-offs). Physical items to check: UL-181 Mastic is applied according to manufacturer's specifications, straps are used if needed, no ducts are disconnected, no tape is used on the system except UL 181 tape on the access cover only, and a CO detector is installed in homes with combustion air zones.





- 3.11.2. In addition to the visual inspection, PTCS duct sealing jobs shall not have duct leakage (CFM) exceeding 120% of the program requirements,
- 3.11.3. "Fail" if it does not meet any of the applicable inspection criteria. The technician must return to the jobsite and perform the required corrections.
- 3.11.4. Duct Accessibility: The following guidelines can be used to determine if a portion of a duct system is accessible or not. Accessible ducts do not require drywall patching, are within reasonable reach by an average person, and do not require destruction of duct insulation. Technicians may consider pressure boundary manipulation (bringing ducts within pressure boundaries of the house) as an alternative to sealing difficult to reach ducts.
- 3.12. **Heat Pump Inspections** shall be designated as passing according to these requirements:
 - 3.12.1. Airflow measurement at or above 325 CFM/ton (this allows for testing equipment error rate). The CFM/ton may be lower if recommended by the heat pump manufacturer.
 - 3.12.2. Auxiliary heat settings are set to only come on at or below 35°F in normal (no defrost) operation. If the minimum setting available for auxiliary cutout on the indoor thermostat is 40°F, 40°F may be used if the thermostat was installed prior to October 1, 2014. After that date, 40°F is not an acceptable auxiliary heat setting.
 - 3.12.3. Compressor lockout set no higher than 5°F or as low as possible, if installed.
 - 3.12.4. Refrigerant charge: use the minimum expected temperature split method and/or verification of compliance with manufacturer requirements for line set length and ounces of refrigerant added.
 - 3.12.5. Ensure correct heat loss calculations and proper equipment sizing.
 - 3.12.6. "Fail" if it does not meet any of the inspection criteria. Except for sizing, the technician must return to the jobsite and perform corrections to bring the system into compliance. Incorrect sizing automatically triggers a corrective action plan.

