



Program Participation 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. Applicants' projects will be reviewed and possibly inspected for accuracy and pass rate.
 - 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. Applicant's projects will be reviewed and possibly inspected for accuracy and pass rate.
 - 1.1.3. Maintain an acceptable history of delivered training quality, at the discretion of the BPA program manager.
 - 1.1.4. Trainers shall have training and/or teaching experience that is supported with a reference who can attest to teaching effectiveness. This must be for teaching activities that have happened in the last two years. If current trainers or applicants do not have this experience, they may conduct two trainings that may be observed, evaluated, or coached to monitor for teaching effectiveness.
 - 1.1.5. The program will have a yearly renewal requirement (I.e. attend the annual Train-the-Trainer training session provided by BPA) that will allow for new program information to be passed from the program to trainers.
 - 1.1.6. Heat Pump trainers are not required, but are encouraged to have industry certifications such as NATE or BPI.
 - 1.1.7. Trainers will be asked to provide information about their background of working with energy efficiency.
 - 1.1.8. Provisional approval is granted upon application submittal that meets these requirements. Full approval is granted following provisional approval and upon a BPA-approved PTCS certified trainer observing a training.
- 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 operate necessary equipment, complete program installation form(s) and understand program QA requirements.
 - 1.2.1. **PTCS Heat Pump and Duct Sealing Trainings** Trainers must conduct at least two trainings per year. Trainings must utilize PTCS program provided presentations and collateral. Trainers must offer a PTCS program provided evaluation to trainees at the conclusion of the training and will submit evaluations to the PTCS program.





- 1.2.2. 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.
- 1.2.3. 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.
- 1.2.4.** Trainers shall provide student 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.** 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.
 - 2.1.1.** PTCS Heat Pump alternatives: BPI® AC and Heat Pump Professional, NATE® Heat Pump Service Certification, CheckMe!, 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.
To receive alternative certification a technician must complete the following steps:
 - 1) Watch the flow plate instruction and heat pump sizing videos on the BPA YouTube Channel page:
 - <https://www.youtube.com/watch?v=iKOakSgQPm8&t=4s>
 - <https://www.youtube.com/watch?v=yrmN3ZuAv90>
 - <https://www.youtube.com/watch?v=yc4H9vnbHhs&t=3s>
 - <https://www.youtube.com/watch?v=vVoCDs3rkC0>
 - 2) Complete the PTCS Heat Pump Admin/Sales class on the PTCS Learning Management Site:
 - <https://clearesult.moodle.school/login/index.php>
 - 3) Quick call with a PTCS Trainer to go over any other details (ESP probe locations, TrueFlow® Air handler Flow Meter, etc.). Regardless of certification type, technician shall be trained to use a TrueFlow® Air Handler Flow Meter.
 - 2.1.2.** 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. Ground Source Heat Pumps may be installed by both a PTCS Heat Pump technician and an IGSHPA certified technician or one technician certified in both.
 - 2.1.3.** PTCS and Prescriptive Duct Sealing training alternatives: [Please see the Prescriptive Duct Sealing Program Requirements](#). A certified PTCS Trainer can approve a technician for PTCS Duct Sealing certification if the technician demonstrates adequate experience and knowledge required to certify duct sealing to meet Prescriptive and PTCS standards. Technicians seeking to PTCS certify duct sealing shall have been trained to test duct leakage according to PTCS standards.
- 2.2.** Technicians who attend a PTCS Duct Sealing training will also be certified for Prescriptive Duct Sealing. Technicians can complete the online [Prescriptive Duct Seal Certification Training](#) to be certified for only Prescriptive Duct Sealing.
- 2.3.** Technicians must create an account on the PTCS Online Registry at <https://ptcs.bpa.gov>, and enter projects there. Projects must be approved in Registry before incentives can be paid.
- 2.4.** Technicians must complete, sign, and submit the Certified 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.

- 2.5. Technicians are responsible for maintaining current knowledge of technical standards and program requirements. BPA offers technicians annual continuing education classes for this purpose, and technicians are strongly encouraged to attend.
- 2.6. New PTCS Heat Pump technicians shall inform the PTCS program of the first three projects to be input into the registry for quality assurance inspections of installations through video or photo review. Technicians with high quality assurance inspection failure rates will be subject to increased quality assurance inspections.
- 2.7. 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.

3. Quality Assurance (QA) Requirements

- 3.1. **Heat Pump QA Inspectors** shall have documented experience commissioning and/or co-commissioning a minimum of 10 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. Heat Pump QA Inspectors shall participate in BPA's annual PTCS continuing education or PTCS refresher webinars to stay on top of program specs and issues. BPA reserves the right to consider other performance issues, in addition to QA performance.
- 3.2. **Duct System QA Inspectors** shall have documented experience testing and/or co-testing a minimum of 10 systems and possess current certification (or other approved alternative). Utility employees may request an opportunity to demonstrate testing skills to BPA as a substitute. Duct system QA Inspectors shall participate in BPA's annual PTCS continuing education or PTCS refresher webinars to stay on top of program specs and issues. BPA reserves the right to consider other performance issues, in addition to QA performance.
- 3.3. New QA inspectors must [submit an application](#) and be approved by the program prior to performing inspections.
- 3.4. Certified inspectors may not conduct QA inspections in a territory where they install PTCS or prescriptive duct sealing measures.
- 3.5. 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.
- 3.6. Only QA inspections performed by a BPA-approved QA inspector shall be entered in the online registry. BPA will coordinate efforts to achieve a QA rate of approximately 10% of all projects per program year.
- 3.7. 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.
- 3.8. 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.
- 3.9. *Timeliness:* For QA to be most effective, an inspection should be done within 90 days or, in new homes, before owner occupies the home.
- 3.10. 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.** Equipment – meets program-required of at least 9.0 HSPF/7.6 HSPF2, 14.0 SEER/13.4 SEER2 requirements for PTCS measures and federal minimum standard for commissioning, controls, & sizing measures
- 3.12.2.** External Static Pressure – measurement at or below 0.8 inches of water (200 Pa). See spec for a different requirement pertaining to a VSHP.
- 3.12.3.** 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.
 - 1) For projects with an airflow value submitted using the ESP-CFM Manufacturer Table methodology, the inspector will note the airflow value using observable fan settings and available ESP-CFM tables.
 - If fan settings are not observable, airflow will be tested using a TrueFlow® Air Handler Flow Meter for reference purposes only.
 - 2) Airflow measurement is not required for variable speed systems, but airflow should be confirmed if performing an inspection at the time of installation.
- 3.12.4.** Auxiliary heat settings are set to only come on at or below 35°F in normal (no defrost) operation.
- 3.12.5.** 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. Minimum temperature split testing is not required for variable speed systems.
- 3.12.6.** Ensure correct heat loss calculations and proper equipment sizing.
- 3.12.7.** "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 or review of the contractor's sizing calculations for accuracy and appropriate inputs, if approved by BPA.

