

# HVAC Program's Response UES Portfolio Evaluation: Findings from the CY 2017 Evaluation Activities (May 1, 2018)

## General

**The Evaluator states:** The evaluation team recommends that the requirements in the IM be closely aligned with the RTF requirements. Alternatively, the evaluation team also recommends the BPA team (including, as necessary, the PTCS team) reach out to RTF if they feel that some of the current DV requirements do not align with their understanding of the measures so that the current DV requirements can be studied further and revised if necessary.

**Programs Response:** While BPA agrees with the value in aligning RTF and BPA requirements, the RTF functions independently of BPA's advice on best practices for DV and measure needs. Where the RTF chooses requirements that are not consistent with BPA's understanding of best practices and measure needs, BPA may need to continue to provide inconsistent offerings.

## Ductless Heat Pumps – Zonal

**The Evaluator states:** Some DHP zonal installation forms had missing/ineligible information. Incomplete or ineligible information on installation forms were the primary reason DHP Zonal projects received a realization rates less than 1.0. In these instances, the implemented measure received a realization rate of 0.0, as it did not comply with RTF delivery verification requirements as reported.

**Programs Response:** In response, BPA has simplified DHP forms to remove unnecessary information and more clearly state the information that is necessary for delivery verification.

## Low Income Weatherization

**The Evaluator states:** Claimed savings estimates used in the Low-Income Weatherization State Grant program are higher than comparable estimates in other studies. Navigant found that BPA's current deemed savings estimates for low-income weatherization measures in single-family and manufactured homes are high



compared to other studies that include similar weatherization measures. This is more pronounced for single-family homes than manufactured homes. To reduce uncertainty in these estimates, Navigant suggests updating the per-unit savings value using a more robust estimation method such as a billing analysis. In the meantime, we recommend that BPA consider reducing their single-family savings value by approximately 50% and their manufactured home savings value by approximately 25%.

**Programs Response:** An important point of consideration for the BPA Low Income Energy Efficiency grant program is that we offer stand alone “deemed” measures to be installed in addition to what measures are approved through the standard “Savings to Investment Ratio (SIR)” calculation. This is different than most, if not all, of the programs that were part of the study. Note that most of the savings in the study were for insulation and sealing. This is because in the field, certified auditors determine what will be installed in the home on an individual basis, specific to each home’s size, climate zone, etc. The most cost effective measures go in first and depending on the house, they often stop after sealing and insulation. This is because after these measures are installed, the additional savings and costs associated with more measures often do not pencil out to be cost effective. With the BPA grant program, we follow the same procedure as DOE (calculating SIR at each individual house, and stopping when it is determined to no longer be cost effective to add measures) However, a section of the BPA grants that is unique from other programs in the study is that we allow some “deemed” stand alone measures. These are measures that have been evaluated and vetted through the Regional Technical Forum to be cost effective on average across the BPA region. These deemed measures are utilized in our utility program, and we have added some of them to the BPA grants to be installed in addition to the SIR approved measures. This is extremely relevant because we have had high numbers of ductless heat pump installations because of this allowance and I anticipate there will be more air source heat pumps and heat pump water heaters because these are also permitted to be installed as measures outside the SIR. These measures yield high savings and could cause BPA’s low income household savings to be much higher than with other programs.

## RSAT Methodology

**The Evaluator states:** RSAT methodology is reasonable. The evaluation team finds the RSAT allocation methodology robust and recommends a few areas of future research, including exploring the potential for double-counting and the impact of the allocations methods used by regional utilities.

**Programs Response:** BPA agrees and will continue to support use of the RSAT methodology. BPA’s Planning and Evaluation team will lead an effort within the BP-18

rate period to further investigate alternative methodologies that utilities may opt to use, including a review of border stores. This will take place in collaboration with customer utilities. That said, BPA believes that the risk of double-counting savings is very low because these are trued up at the regional level through Momentum Savings analysis.

## Residential HVAC PTCS Measures

**The Evaluator states:** The evaluation team recommends that for QA inspection data to function as delivery verification for purposes of impact evaluation, the QA inspection forms must require that the project pass all of the RTF DV requirements to pass the QA inspection. Alternatively, the evaluation team also recommends the BPA team reach out to RTF if they feel that some of the current RTF DV requirements do not align with their understanding of the measures so that the current DV requirements can be studied further and revised if necessary.

**Programs Response:** Prior to 2015, the PTCS Quality Assurance Program operated on a binary Pass/Fail for each inspection. There was little consistency between inspectors, significant subjectivity, and little insight into why something passed or failed. The grading scales were developed in 2014-2015. It brought more objectivity to the QA grading criteria and allowed for more nuance in an inspection. This nuance accounted for impact on savings, environmental and structural issues, how repeatable the testing was, and other factors which the binary Pass/Fail didn't adequately address. It also allowed for more precise and effective feedback to technicians about their performance. The Program did significant outreach to industry HVAC SMEs, utilities, participating technicians, QA inspectors, planners, program implementers, and internal BPA staff to develop these parameters.

Under the current system, a grade is automatically calculated for each inspection rather than just relying on the opinion of the inspector. We introduced four possible grades (A: Meets/exceeds spec, B: Meets spec; C: Passable, F: Fails). Some components just have an A/F grading options while other components are more nuanced with all grade options (A, B, C, and F). Some components which greatly impact savings or are safety issues result in an automatic overall job failure. Other components, which have less impact to savings or are harder to replicate during an inspection, can fail but won't result in an overall job failure. All results are communicated to the technician regardless of the grade.

This approach has been very successful and has given us much insight into our Program and improved the performance of our technicians. It has also allowed us to simplify our Air Source Heat Pump specifications.

**The Evaluator states:** The team recommends more research to determine how and when the project is reported in IS2.0. The team suggests using the values from remediation for the evaluation only if the remediation happens before the project is reported to IS2.0.

**BPA Programs Response:** In determining how to proceed in leveraging data from the PTCS QA program to meet the needs of evaluation through delivery verification, BPA will investigate the timing of savings reporting in IS2.0 relative to remediation reporting in the registry.

**The Evaluator states:** Ground source heat pump QA inspections used versions of the QA/QC inspection forms that did not contain the DV requirements. This resulted in two key data needs for DV requirements not being collected during the inspection for all 8 GSHP projects in the sample. Due to the unavailability of data, the evaluation team assigned 0 savings for these GSHP projects, which is one of the key drivers for a lower realization rate. The team recommends the BPA and PTCS teams to use the revised QA/QC forms moving forward and/or collect the installation documents for GSHP projects which will help filling this data gap.

**BPA Programs Response:** BPA will reach out to inspectors and remind them of the requirement to use the most recent form. The information that the evaluator requested be included in the form is available through alternative means such as the registry and RefNos.

## Leveraging Oversight Data for Evaluation

**The Evaluator states:** The evaluation team believes that the approach adopted for Residential HVAC measures—i.e., document review leveraging the existing oversight—can work with other measure groups. The team believes that with a typical program oversight, there is a significant overlap between what BPA’s oversight team is doing and what an evaluation team would do when they go onsite. Thus, the team recommends using similar approach to all the different measure groups which receive oversight from BPA. However, for this approach to work efficiently, the team recommends BPA align the oversight data collection with the delivery requirements and adjust the grades in order to match the binary approach if feasible before the evaluation.

**Programs Response:** BPA understands the value of this approach for evaluation. We will look into whether it is feasible during our revisions for the 2019 Rate Period Implementation Manual.