

# Memorandum

**To:** Lisa Skumatz, Connecticut Energy Efficiency Board Evaluation Consultant  
**CC:** Craig Diamond, Connecticut Energy Efficiency Board Executive Secretary  
**From:** Glenn Reed, Connecticut Energy Efficiency Board Residential Technical Consultant  
**Date:** 4/19/2016  
**Re:** Residential Technical Consultant comments on the March 13, 2016 draft Ductless Heat Pump Evaluation (R113)

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Provided below are summary and additional comments on the March 13 review draft of the Ductless Heat Pump (DHP) Evaluation. These comments supplement those contained in the marked-up draft report that was also submitted. Most of the comments below are included in the marked-up draft report, but are provided here as a high level summary and for emphasis.

1. The report's first Recommendation is for the PSD to better reflect the diversity of different DHP baselines, e.g., prior CAC or RAC cooling, no cooling, displacing fossil heat, added electric heating load, etc. However, for the programs to calculate savings against different baselines adequate participant data must be collected. Does the current DHP rebate form collect sufficient information to support a larger and more granular set of PSD algorithms to address multiple baselines? How accurate are contractors in providing the correct information? Do the Companies do any post-installation onsite verifications that would help ensure that these data are being properly reported?
2. The Recommendations do not explicitly address:
  - a. Contractor installation and sizing practices, though recognizing that only two vendors were interviewed.
  - b. Whether better control hardware should be promoted (required?) to ensure better integration of the DHP with the existing heating system.
3. Provide URLs for reports cited in footnotes whenever possible.
4. The R16 study contained a very large number of MF DHP installations. Current DHP program efforts probably involve a higher proportion of SF installations. Would that

have any impact on usage, savings, or realization rates? In comparison, the 2013-2015 survey sample were all HES SF participants.

5. There are numerous mentions of DHPs not being able to fully meet heating loads. Some of these statements reflect survey responses while others are comments by the authors. Note that properly installed and sized *cold climate* heat pumps could fully meet space heating loads in some instances, particularly in well weatherized homes.
6. While the impact of using TMY3 vs. TMY2 weather files was not fully quantified, it is noted that it would have had an “undoubtedly downward pressure on the realization rate.” Should this finding be brought forward to the Executive Summary?
7. The billing analysis discussion focuses primarily (entirely?) on better estimating electric savings. What about using billing analyses to estimate changes in fossil fuel use? Is this (adequately?) addressed? Changes in fossil fuel use are important to assess GHG impacts and to fully populate a TRC assessment that includes fuel displacement/fuel switching.