

# Memorandum

**To:** Scott Dimetrosky and Lisa Skumatz, Connecticut Energy Efficiency Board Evaluation Consultants

**CC:** Craig Diamond, CT EEB Executive Secretary

**From:** Glenn Reed, CT EEB Residential Technical Consultant

**Date:** January 17, 2016

**Re:** Residential Technical Consultant comments on the 12/23/15 Air Sealing, Duct Sealing, and Insulation Practices Study Draft Report (R151)

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Provided below are summary and highlight comments on the December 23 review draft of the Air Sealing, Duct Sealing, and Insulation Practices Study Draft Report. 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 and are provided here as a high level summary and for emphasis.

1. Can the report be condensed? The same data appear multiple times throughout the report. For example, that 92% of homes received air sealing is noted seven times in the text. This occurs repeatedly for many key data points.
2. To assist in the above, can most of the key numerical findings be summarized in a small set of tables? For example, bring Table 11 forward into the main report.
3. The overall, general assessment appears to be that the level of completeness and quality of the work are, across all parameters, fair to middling. Yet, the QA/QC process is put forward as being fairly robust. There appears to be a disconnect. If the QA/QC process was doing its job, one would expect better completeness and quality of work.
4. It is not well documented how the onsite QA/QC findings are used to improve vendor performance. What is the feedback loop and what are the roles of the Companies vs. the QA/QC vendor to improve vendor performance?
5. How does the 5% QA/QC inspection rate compare to other programs? Are there nationally accepted standards or protocols for the frequency of these types of QA/QC inspections?
6. NMR seemed to be stymied by lack of program tracking data, e.g., not being able to identify UI audit recommendations, proper tracking of health and safety issues, presence of ducts, whether ducts were within conditioned space, lack of UI house volume, etc. Where there were data capture, reporting, and tracking issues these should be thoroughly summarized and brought forward as a detailed recommendation.

7. Did NMR auditors do IR scans of walls to assess the prevalence of uninsulated walls? If not, this was a large missed opportunity.
8. More generally, it appears that there was no attempt to assess whether all possible insulation recommendations were identified during the initial HES assessment? This was an initial objective of the study. Why was it not addressed, even if these data were not available for UI? The wide variability of insulation recommendations by vendor (Figure 38) is concerning. Do some vendors just fail to make appropriate recommendations?
9. The appendices include figures that show wide variability in vendor performance for air and duct sealing and for insulation. Please bring these figures and the associated text forward into the main report.
10. The text in footnote 40 – that NMR auditors did not use blower doors or duct blasters to perform actual diagnostics - is an important caveat to NMR's assessment of air and duct leakage and needs to be brought forward more prominently.
11. The failure to fully air seal attics appeared fairly endemic. While a number of reasons as to the challenges of properly air sealing attics were listed (page 44), what direction/expectations does the HES Implementation Manual provide on these details?
12. NMR appears – at least at times - to misunderstand the vendors' MMBtu goals. These are average, per household minimums.
13. There is considerable discussion from various parties, though mostly vendors, as to possible advantages of moving to a two-stage audit/core services implementation process. This would limit the financial risk associated with health and safety barriers. However, there is nothing said as to the likely attrition that would occur nor much as to program cost implications. Do any similar programs in the country have comparable rates of air and duct sealing as CT's? On the other hand, while a two-stage model might yield fewer completed air and duct sealing jobs, they might attain higher CFM reductions per treated homes. But we don't have those data either.
14. I believe that Eversource and UI have different QA/QC vendors. Only one vendor was interviewed. Are the HES vendor concerns listed on page 51 reflective of both QA/QC vendors?
15. Please attach the HES Quality Assurance Plan and the HES Implementation Manual as Appendices or provide a URL for each.
16. There were interviews with administrators of other HES-type programs in other states. Besides MA and RI, what other states were examined? Note that MA, unlike CT, faces few budget constraints allowing them to more easily provide financial support for H&S remediation. RI's budgets are also larger on a % of revenue basis than CT's.
17. Please explain more fully and verify the legal and/or regulatory barriers cited by the Companies that prevent them from funding H&S remediation activities.

18. If the above are more a matter of cost-effectiveness concerns, does this reflect a failure of CT to not properly quantify NEBs?
19. Can any of the CT air and duct sealing leakage reductions be benchmarked against other programs? Otherwise the presented % CFM reductions have little context.