

April 18, 2016

Lisa A. Skumatz, Ph.D.
Skumatz Economic Research Associates (SERA)
762 Eldorado Drive
Superior, CO 80027

RE: R113 Ductless Heat Pump Evaluation

Dear Dr. Skumatz,

Eversource Energy (“Eversource”) is pleased to submit these written comments with regard to a draft evaluation report: *R113 Ductless Heat Pump Evaluation* (“Report”), March 13, 2016, prepared by DNV GL under subcontract to NMR Group, Inc. (“Evaluator”). Eversource received the Report on April 4, 2016 with a request to provide comments by April 18. The objectives of the study were to explore drivers of the ductless heat pump (DHP) savings realization rate from the R-16 impact evaluation¹ and provide recommendations on how the HES/HES-IE programs can realize as much impact from the installations of DHPs as possible.

The Report findings were generally predictable and consistent with Eversource experience with DHPs, and the report validated Eversource assumptions regarding DHP usage, performance, and savings. While the report provided some useful recommendations, it did not adequately address one key factor: determining the appropriate baseline to estimate DHP savings. The importance of establishing appropriate baselines cannot be over emphasized and has been a prominent topic of discussion in the energy efficiency evaluation community².

There are two valid ways to estimate savings for heat pumps depending on the assumed baseline: *retrofit* and *lost opportunity*. Retrofit heating savings is based on the pre-existing condition and is used to estimate savings when DHPs are installed in homes that have electric resistance heat. DHP retrofit heating savings is the difference between electric resistance and DHP heating consumption. Lost opportunity heating savings assumes a heat pump baseline (i.e. the customer would have installed a baseline efficiency heat pump), and savings is estimated based on the difference between a baseline heat pump and the high efficiency (installed) heat pump. Both of these savings methodologies are included in the Program Savings Documentation (PSD). For DHPs that are installed in fossil fuel homes, the PSD assumes lost opportunity savings. Therefore, while electric consumption may increase, the customer is savings electricity (and fossil fuel) compared to the installation of a baseline heat pump. The report fails to recognize the existence of lost opportunity savings and states that there is negative savings in fossil fuel homes because electricity usage increases. Eversource acknowledges that the true baseline for DHPs is challenging to assess, and it’s likely a blended average of retrofit and lost opportunity.

¹ <http://www.energizect.com/your-town/hes-and-hes-ie-impact-evaluation-r16-final-report-12-31-14>

² For example, see *Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy (EE)*, U.S. Environmental Protection Agency. August 3, 2015.

Eversource recommends that the report consider the validity of each baseline, provide a recommendation of the appropriate baseline to use, and change the report recommendations as appropriate.

Eversource would also like to provide responses to the recommendations in the report.

Recommendation 1: Update the current PSD to better reflect the conditions in which DHPs are being installed and used.

Eversource Response: Eversource generally agrees with this recommendation. However, consistent with the previous Eversource baseline comment, the report should provide guidance on what the appropriate baseline is prior to adjusting the PSD.

Recommendation 2: Perform a billing analysis using a more representative sample of program participants.

Eversource Response: Eversource believes that a billing analysis is not an effective method to evaluate savings for DHPs when the baseline is a mix of retrofit and lost opportunity. Eversource believes that a dual fuel billing analysis would be possible, but it would be impractical given that many DHP installations are displacing delivered fuels (e.g. oil or propane).

Recommendation 3: As an alternative to (recommendations) 1 and 2 above, perform an on-site engineering analysis.

Eversource Response: Eversource agrees with this recommendation. However, Eversource believes that the results of the ongoing Massachusetts study should be reviewed prior to planning an expensive Connecticut specific DHP study.

Recommendation 4: Educate customers on DHP operation and strategies that generate the highest savings rates.

Eversource Response: Eversource agrees with this recommendation and will increase emphasis on DHP operation strategies when training customers and contractors.

Recommendation 5: Increase program engagement with the electric resistance heating customers.

Eversource Response: Eversource agrees with this recommendation. Currently, electric heat customers can qualify for a higher incentive for DHPs. In addition, the Eversource Customer Engagement Portal recommends DHPs to customers that have electric heat.

Recommendation 6: Use a two-stage, variable degree-day approach for all future billing analysis to estimate DHP savings.

Eversource Response: Evaluation designs are developed primarily by the Energy Efficiency Board Evaluation Consultant. With that said, Eversource generally agrees with this recommendation. However, because of the high cost of this type of evaluation, and consistent with the previous Eversource comments, Eversource believes that it would be prudent to wait for the results of the ongoing Massachusetts DHP evaluation and assess whether any of those findings can be transferable to Connecticut before planning future DHP studies.

To help ensure efficient and timely completion of a final Report that provides utmost value, Eversource encourages clarifying questions on these comments.

Sincerely,

Joseph Swift

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