MEMORANDUM

DATE: 7/27/21

TO: Megan Wethern, cc: committee list

FROM: Lisa Skumatz / EA Team

RE: Responses to Utility Comments on R1959 and R1965/2027 (NMR Studies)

R1959

Report released on 7/9 answered most of the questions. Targeted responses to utility questions coming from the presentation are included below.

- General comments
  - Eversource concerned about savings being overstated
    - The report provides additional information that puts these results in context and makes clear that these are not predicted savings from a program launch.
- Methodology comment
  - Request for economic/achievable potential analysis
    - This additional analysis falls outside the scope of the existing study design.
    - The report does provide additional context around these findings, and explanation of the types of projects and measure-level values included in the modeling. Modeling cannot fully describe all potential projects, but the modeling was based on a range of reasonable renovation and addition project types. Certainly, not all projects would participate, but this was a gross technical potential estimate.
  - Details on the breakdown of permits pulled
    - A detailed description of the permit analysis is included in the report. The permit analysis predicts the number of renovation and addition projects, and attempts to exclude other projects, such as roofs or pools.
  - HERS rater availability and cost concerns
    - The report provides additional detail that will help clarify the report recommendation.
    - The study describes the two-path approach (as currently described in program design materials), and notes this may be a reasonable approach to target both small and large projects.
    - The main recommendation is that the program expand, and having a HERS rater path may be a way to target larger projects. NMR also notes that the minor project path would require subsidizing the cost of an HES vendor as well, like a major path might subsidize a HERS rater.
    - This study design did not include an incentive/cost-effectiveness analysis or analysis of the size of the HERS rater market, as requested in this comment.
  - Clarity on baselines

        - The report provides measure-level detail about the baseline values used in the modeling.
        - The report also suggests that it may be appropriate to set up a working group to finalize and tweak measure-level baseline values to identify the best ISP values (if different from those in the study's modeling) or potential exceptions for an ISP baseline.
        - The Massachusetts version of the program is also using an ISP baseline for renovations; there may be lessons for the Connecticut program from that program, but note that this study does *not* require that the Connecticut program exactly mimic or replicate the Massachusetts program.
    - Recommendation for eligibility criteria
        - NMR thanks the utilities for the clarification and apologies for any misstatement during the presentation. The report is aware of the eligibility criteria noted by Eversource, and modeling was based on those criteria to the extent possible.

R1965/R2027

Comments on the R1965/R2027 presentation were received. The following provides responses.

- **Increased incentives for HPs and HPWHs in 2020.** As a general comment, Eversource would like to note that the incentives for HPs and HPWHs were significantly raised in 2020 and the programs have seen an increase in participation as a result. As this study considered data and surveyed participants from the program years 2017-2019, the results may not accurately reflect current satisfaction and installation counts.
    - Response: NMR appreciates this information, and recognizes that this market is always moving.
- **Clarity on how units were counted.** Please clarify how HP units were counted and included in the estimates of annual installs on page 3 of the presentation (i.e., indoor units, outdoor units, or whole systems). Eversource only incentivizes whole system upgrades and so program participation counts whole HP systems as 1 unit. Additionally, how were number of HP units defined in the denominator of the program penetration calculations? The program penetration numbers may not be a good representation of program participation if the Evaluator was counting number of outdoor units or indoor units as opposed to whole HP systems.
    - Response: Program tracking data included sufficient details on the systems installed (model numbers, quantities, single vs. multizone), etc., independent of whole-home incentive amounts, allowing us to make system-level comparisons (i.e., based on outdoor unit counts), avoiding a system vs home issue for market size calculations. The estimates are all based on the system-level (which NMR defines as a single outdoor unit with one or more heads, depending on the type of unit), not the home level. For example, two single-zone MSHP systems were treated as two systems, and two multi-zone (multi-condenser) MSHP systems were treated as two systems even if installed in the same home, and so forth. NMR does not have sufficient market data to make home-level estimates for such systems. NMR also conducted multiple data calls and email exchanges with the Companies to make sure they were properly counting units included in tracking data.

- **Definition of cold climate heat pumps.** Please clarify how the study defined "cold climate heat pumps". Was this definition provided to installers and distributors during the survey and interviews?
    - Response: Generally, questions asked respondents to think about systems that were marketed or otherwise identified as being designed to operate in colder climates than traditional systems. Interviewees could also provide additional feedback about more specific cold climate standards, such as the NEEP ccASHP standard. The study recognizes that different brands and credentialing organizations may think about this differently.
- **Clarity on air source heat pump (ASHP) definition.** Please provide a definition of ASHP as it is used in the report. There is some confusion since ASHP could refer to ducted or ductless heat pumps. It appears ASHP is being used to describe central or ducted heat pumps in the report.
    - Response: Correct. MSHP referred to the (typically) ductless, inverter driven-systems, while ASHP referred to central ducted systems.
- **Additional details on baseline heating.** Please provide a breakdown of the types of baseline heating present with HP systems and if possible, compare this to the results of pre-existing heating systems from the R1617 CT Ductless Heat Pump Market Characterization Study (Table 2-1 and 2-2).
    - Response: The report will include additional information on this topic and such a comparison.
- **Additional details on HPWH issues.** On page 6 of the selected results presentation, HP/HPWH Reliability, it's noted that a portion of survey participants cited "not enough heat" or "not enough hot water" as reasons for service/repair visits. If possible, please clarify if these complaints are from participants in single family or multifamily homes. Additionally, please share if the survey participants or installers noted possible reasoning for the lack of hot water, such as incorrect sizing of the HP/HPWH that was installed or if the equipment was malfunctioning due to technical issues.
    - Response:
        - Re: not enough heat / not enough hot water: these few complaints were all in SF homes.
        - Re: the reasons for lack of hot water with HPWHs: as a reminder, there were only 2 HPWH owners who noted these specific complaints. NMR has limited additional information, but one identified the repair/service as including a repair, replacement, or adjustment of the thermostat and the filter, and the other described electrical/electronic components being serviced/repaired/adjusted.
- **Utility bill satisfaction and breakdown of displaced fuel.** On page 7 of the selected results presentation, HP Satisfaction Among End Users, the Evaluator noted one of the areas of least satisfaction was "changes in other utility bills since installing". If available, please provide any additional information about satisfaction levels among those with backup gas versus backup oil versus backup electric.
    - Response: NMR will attempt to look into this as a part of the analysis.