EVERSOURCE

August 30, 2018

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

RE: R1707 Net-to-Gross Study of Connecticut Residential New Construction, Draft Report

Dear Dr. Skumatz,

Eversource Energy ("Eversource") is pleased to submit these written comments regarding the draft evaluation report: *R1707 Net-to-Gross Study of Connecticut Residential New Construction*, Review Draft ("Draft Report"), submitted August 9, 2018 by NMR, Inc. ("Evaluator"). Eversource received the Draft Report on August 16, 2018 with a request to provide comments by August 30, 2018. Per the Energy Efficiency Board Evaluation Road Map Process, these comments are for consideration for inclusion in the Final Report.

This study assessed how Connecticut's Residential New Construction (RNC) affected the energy consumption of participant and non-participant homes. The study was designed to (1) estimate savings and an overall Net-to-Gross (NTG) ratio for the RNC program; (2) gain feedback on the program's impacts on the efficiency of multifamily homes relative to single-family homes, and on the adoption of solar PV, Net Zero designs, and efficient lighting; and (3) assess whether future evaluations should adjust the savings baseline to include the efficiency values of program homes to account for free-ridership in the program. The study used a Delphi panel approach, in which a panel of 13 RNC experts reviewed (1) efficiency data on non-program homes from the 2017 and 2011 single-family RNC baseline studies,[1] (2) program home efficiency data, (3) findings from a 2017 RNC program process evaluation,[2] and (4) a host of supporting documentation about the Connecticut RNC program and market. They used this information to estimate measure-level building practices for 2009 IECC homes built around 2015 in a hypothetical scenario where the RNC program had ended after 2011.

Comments on Findings and Recommendations

Eversource appreciates the Evaluator's careful analysis and useful findings about the impact of the RNC program on Connecticut's new construction market, and insight about the program's

[1] *CT 2011 Baseline Study of Single-Family Residential New Construction,* NMR Group, et al; 2012: https://goo.gl/M5P2DY, *R1602 Residential New Construction Program Baseline Study*, NMR Group; Dec 2017: https://bit.ly/2Nr4YU4

[2] *R1602 Residential New Construction Program – Process Evaluation*, NMR Group; Aug 2017: https://bit.ly/2MVrHL4

future. We generally agree with the Draft Report's findings and recommendations, and are pleased that the program was found to have significant net impacts on duct leakage, air infiltration, and insulation installation quality in new homes in and outside of the program. The spillover of efficiency to non-program houses is consistent with our experience in other states, as builders and contractors receive training on methods and materials that they apply to all homes they build.[3]

Eversource offers the following comments on the Draft Report's recommendations:

- **Use the retrospective NTG value of 1.56 for prospective program planning purposes.** The program adopted a revised baseline in October 2018 based on the R1602 study results, which showed significant improvements in building practices and efficiency since the prior baseline was adopted. This change put downward pressure on gross savings, but as the R1707 Draft Report found, this higher baseline partially reflects the program's impact on non-program homes. Eversource agrees that incorporating NTG results will provide a balanced accounting of savings attributable to the program. That said, we have two technical comments that may impact how we apply the results:
    - *Fuel type mix.* The savings results by fuel type appear to reflect proportions of electricity, natural gas, and propone savings based on 2015 data. The program has begun shifting toward electric homes in recent years—and may shift more so in coming years with targeted incentives for all-electric homes or other changes. The NTG ratio for electric savings was lower than that for propane and natural gas, so applying an overall result may overstate NTG given the shift toward electric homes. We will review the results by fuel type, and the planned savings by fuel type for 2019 homes, and potentially adjust the NTG ratio accordingly.
    - *Multi-family penetration rate.* We were surprised to see a multi-family penetration of around 50 percent—which is higher than our anecdotal evidence would suggest. We are uncertain what data source was used for non-program multi-family units, but if these data did not include commercial permits, the penetration rate would be overstated as many multi-family projects are built under commercial, rather than residential, permitting processes.

- **Continue to promote the adoption of solar PV and net zero designs and improve the efficiency requirements for the lowest program tier.** Eversource agrees with the finding that the program will need to push higher overall performance levels to maintain a wide efficiency gap between program and non-program homes. The Companies raised

[3]In Massachusetts, a separate Delphi Panel of experts reviewed program data and estimated a NTG ratio for the 2011 Massachusetts RNC Program of 1.87, including free-ridership of 0.53 and spillover (mostly from non-program homes) of 1.39. See https://bit.ly/2PlQg1k. In New Hampshire, a study of the residential new construction program found significant evidence of spillover, although because NH does not use net savings, the study did not directly quantify spillover or free-ridership: "Interviews with builders and HVAC contractors indicated that their experience participating in the Program has raised their levels of performance in all of the homes that they build, not just homes that participate in the Program. Several builders and HVAC contractors stated that they build their homes to ENERGY STAR standards, regardless of whether the home is a participant." See https://bit.ly/2ooy0J7.

thresholds for 2018 by eliminating the 61-70 HERS tier, to push builders towards lower HERS index targets (greater efficiency) and stay a step above energy code when ERI compliance becomes part of the new energy code. Also, although the program is not designed to directly incentivize PV systems, it does require PV-readiness for higher tier homes. In addition, we are currently contemplating several additional changes to incentive tiers and efficiency requirements, including (1) an all-electric home bonus incentive to encourage electrification and renewable thermal technologies, (2) an electric vehicle-ready checklist similar to the PV-ready checklist already in place, and (3) a bonus incentive for homes built using passive design principles, meeting the highest standards for insulation, air tightness, balanced gains, and efficient systems.

- **Continue to include code compliance as a part of the RNC program, and carefully track the outcomes of such efforts.** Eversource has and will continue to support trainings throughout the year in a number of different areas, primarily in changes to building energy code, both internally and through partnerships with trade ally organizations. We will also track information on attendance and content of the trainings to better understand the effect on building practices, materials, and equipment.

- **Continue to exclude program homes from the savings baseline and use evaluation methods that account for free-ridership**. Eversource agrees with this recommendation.

- **Continue to improve program tracking databases**. Eversource is in the midst of developing and rolling out a new tracking system for all energy efficiency programs that is expected to enhance data quality and streamline processes for extracting and providing data to evaluators and others.

In addition, the program could benefit from further insight in Section 2 on the Delphi Panel findings regarding the trends driving the low NTG and high NTG measures. For instance, measures with lower NTG may tend to have more stringent code requirements, greater code compliance, or be eligible for tax incentives, while higher NTG measures may receive more focus in program trainings. Providing such insight on the factors underlying the NTG results in a revised report could help inform program design going forward.

Thank you for the opportunity to provide comments.

Sincerely,

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