X1931 Prospective Realization Rate Update Guidance

To: Connecticut EA Team

From: Jon Maxwell, ERS

Date: July 14, 2020

In Connecticut, as in most jurisdictions with energy efficiency programs, evaluators develop gross energy and demand savings realization rates (RRs) based on retrospective impact evaluations. Appendix Three of the Connecticut Program Savings Document (PSD) tracks the RRs by program. Programs of similar type are sometimes combined. Within program or combined program group, there are separate RRs for each commercial and industrial end-use category and for each residential measure category. The RRs are applied prospectively until they are updated in response to later program evaluation.

> *For example, researchers completed an impact evaluation of the Energy Conscious Blueprint (ECB) program of the 2012-2013 program years in 2015. They found an 85% RR for electric heating energy measures. The administrators have applied 85% RR to all such measures since then. Once evaluators complete a new ECB impact study, administrators will update Appendix Three.*

The Issue. The cross-cutting evaluation project X1931 is recommending changes to the PSD, including many changes to deemed savings calculation results. These changes raise the issue of overlap or double counting. Double counting refers to making the same adjustment to reported savings in two places to correct for the same issue.

> *For example, assume for simplicity that the entire explanation for the ECB heating RR being 85% instead of 100% was overstated annual loading, as expressed by the effective full load hours (EFLH). If ECB administrators reduced their assumed EFLH by 15% starting in 2015, then in theory the presumed RR should be increased by that same 15% starting in 2015, so that the reported gross savings multiplied by the RR reflects a best estimate. If the RR is left at 85%, the program would be subject to both lower reported savings than in prior years due to the change in PSD EFLH and also a reduction due to the application of the now-obsolete RR that corrected for the previously high EFLH estimate.*

This issue is more traditionally a concern in program evaluation, when administrators take action in response to evaluation findings. The logic applies equally to the PSD changes being proposed.

The question this memo addresses is: **If the programs immediately make a PSD change in response to an X1931 recommendation, should the presumptive prospective RR be adjusted in the reverse direction so that the program gross savings is not adjusted twice?**

The theoretically obvious answer is that such changes should be made both in response to evaluation recommendations and PSD updates but there are important practical considerations to make, as well as recognition that after thirty years of New England efficiency program evolution, program redesigns and adoption of recommendations, savings claims continue to change and the industry has yet to converge on 100% RRs.

Proposed Solution. There are circumstances when adjustment is appropriate. We recommend that changes be implemented when four criteria are met: The PSD-recommended change must cause quantifiable and systematic directional adjustment that is of significant magnitude and is not a routine baseline update. The conditions are further defined as follows:

1. **Systematic** The PSD change must be predictable and systematically cause savings to increase or decrease.

   For example, splitting the residential EFLH into two separate values for coastal and inland projects has been recommended. This change may increase or decrease the RR in a given year compared to past performance depending on the program's mix of participant locations. This change is not systematic enough to warrant RR updates. A second example is VFDs. The X1931 review is recommending a different calculation approach. The savings will increase or decrease as a function of fan type. This change would not warrant an RR adjustment even if the most recent program year data indicates change is justified because the fan type mix will vary over time.

2. **Quantifiable.** The PSD change must translate directly to a percentage difference in deemed savings that can be quantified. Quantification is necessary both at the measure level and at the combined program/group and end-use/measure level.

   For example, a decrease in PSD lighting hours for three C&I building types in Appendix Five would decrease lighting measure deemed savings. C&I lighting would therefore be a candidate for corresponding upward RR adjustment, but only if the percentage impact of that change can be expressed within the end-use/measure and for the program(s) affected. For an Energy Conscious Blueprint lighting end-use electric energy RR to be adjusted, the program savings contribution by building type would need to be known to properly weight the PSD revision's effect on program-wide lighting savings. For RRs based on measures from multiple PSD chapters this can be a challenging exercise.

3. **Significant.** Changing the RR is a material undertaking that requires development, review, and careful documentation. The statistical and measurement precision of the prior evaluation that is the basis of the RR is typically no better than ±10% at the measure level. The engineering precision of the new PSD estimate likewise has engineering uncertainty. Making an interim change to a prospective RR value on the basis of this X1931 research should only be performed if the change is greater than 10 percentage points.

4. **Routine baseline updates.** Baselines gradually evolve. A change made to the PSD due to ordinary, reasonable baseline updates that are expected of the PSD do not warrant RR adjustment. IOUs and the PSD are expected to improve their baselines and program minimum efficiency requirements as codes and industry standard practice changes. If the margin above code stays constant then the RRs would also stay constant, and even if the margin does not stay constant the difference would not be predictably different over time. In short, updating a baseline parameter value due to Connecticut's steadily evolving energy efficiency code should not cause RR adjustment. The previous evaluation is likely to have been based on then-current code. The X1931 parameter adjustment is only "keeping up" with steady change.