

These comments on the Draft 2018-2020 New Hampshire Statewide Energy Efficiency Plan (Draft Plan) submitted by the electric and gas utilities of New Hampshire (NH Utilities) are submitted by the New Hampshire Sustainable Energy Association (NHSEA). Our comments are divided into two sections. First, we address the provisions of the Settlement Agreement (SA) and comment on the extent to which the Draft Plan adheres to these provisions. Second, we provide comment on the proposed program designs, budgets, savings estimates, and related topics.

Adherence to Settlement Provisions

NHSEA continues to support the terms of the settlement agreement filed on April 26, 2016 and approved by the Commission on August 2, 2016. The comments below reflect our view of some of the key provisions of the agreement, but do not represent an exhaustive review of the its terms. Where appropriate, we make recommendations for the NH Utilities' consideration as they proceed to develop the Final Plan, and to support the Commission's understanding of NHSEA's positions and values.

Lost Revenue Recovery

The theory, practice, and mechanism for lost distribution revenue recovery were extensively discussed in the workshops and negotiations that lead to the settlement agreement. The Commission did not explicitly recognize the importance of fair and transparent lost revenue recovery in approving the settlement agreement, yet this fact cannot be ignored. The SA contained several provisions regarding the Lost Revenue Adjustment Mechanism (LRAM), some of which represented changes from past practice.

- **The LRAM is implemented beginning January 1, 2017 and will continue until replaced** – This is an important provision for the utilities, as it provides some assurance that they can take a longer view of EE and not face the risk of unrecovered lost revenues. This in turn removes one of the main disincentives to EE investment by Investor-Owned Utilities (IOUs).
- **Savings will be retired based on effective useful life of measures; no LRAM for savings > 110% of planned** – These provisions provide ratepayers with some assurances that LRAM will not over-compensate the NH Utilities.
- **Savings calculations and lost revenue calculations will be subject to audit by independent third parties** – This provision provides ratepayers with transparency into the LRAM's working and gives the NH Utilities more confidence that stakeholders will accept the resulting increase in SBC because they themselves have greater confidence that they are getting what they are paying for.
- **The LRAM will be reset at the next rate case and will cease when a decoupling mechanism or other alternative is approved in a rate case occurring after 2020** – Again, this gives the NH Utilities assurance that the lost revenues from the 2018 to 2020 EE savings will be recovered, but also provides a trigger for subsequent refinement of the mechanism if challenged.

The test of the Draft Plan filed by the NH Utilities does not explicitly address the lost revenue recovery provisions of the SA, nor the workings of the LRAM. On the other hand, the Draft Plan does include several attachments that present the details of the LRAM calculations for each of the NH

Utilities, based on planned savings and forecast utility characteristics such as sales and distribution rates. These calculations appear to adhere to the provisions of the SA regarding lost revenue recovery and the LRAM. For 2018, the NH Utilities are only estimating the LBR charge necessary to recover revenues lost in 2018, but from savings achieved in both 2017 and 2018.

Recommendation

The final Plan should explicitly address the issue of lost revenue recovery and affirm that the estimated LRAM amounts are based on the provisions of the SA.

Utility Performance Incentives

An incentive for exemplary achievement is a second key component in ensuring that utilities are able to consider EE investments on a level playing field with traditional supply-side investments. Before the EERS working sessions and the SA, the NH Utilities received performance incentives that were at the upper end of the range of PI in other jurisdictions. This was to compensate, in part, for the lack of a lost revenue recovery mechanism, particularly for the electric utilities. With the implementation of the LRAM, the SA provided for a reduction in PI, bringing it more in line with other jurisdictions. In fact, the SA explicitly requires the LRAM be implemented as a pre-requisite to the new, lower PI amount. The target performance incentive is set at 5.5% of program spending, with a maximum payment of 6.875% of spending, contingent on LRAM. Keeping the financial incentives and rewards for exemplary performance separate from the recovery of lost revenues provides important for transparency to the Commission, the NH Utilities, and ratepayers.

One of the key provisions of the PI formula for the electric utilities is a requirement that more than 55% of the total energy savings reported in the common unit of kilowatt-hours come from electric savings. Because some of the residential sector programs address the building envelope, they create both electric and fossil fuels savings when the home is heated by natural gas or delivered fuels such as oil, propane, or kerosene. The requirement that a minimum portion of the total savings comes from electric savings is designed to ensure that electric ratepayers do not unduly subsidize non-electric savings from which they do not benefit. On the other hand, it is important to realize that effectively every delivered fuel consumer is also an electric customer. That is, money collected from electric ratepayers that is spent on non-electric savings is still being returned to the customers who contributed the funds.

The proposed Draft Plan for the electric utilities results in 74% of total energy savings from electric measures, which exceeds the 55% threshold. On the other hand, this is achieved by a greatly imbalanced contribution of the C&I sector programs. Fully 98% of the total energy savings in this sector come from electric measures, while only 27% of total energy savings in the residential sector do so. Notably, the PI formula does not distinguish between sectors for this component, although it does for subsequent calculation of the actual PI amounts.

Recommendation

The electric utilities should explain in the Draft Plan why there is such an imbalance in the contribution of the residential and C&I sectors to the electric savings percentage threshold criterion, and justify the assumptions and program plans that generate this result.

Another important aspect of PI is setting the targets against which performance will be measured accurately, at an amount that is achievable, but not too easily. The appropriateness of the planned savings and budgets will be addressed later in these comments.

Other Provisions

Several other provisions of the SA are worth mentioning. As noted, the Draft Plan addresses these satisfactorily, and we have no recommendations on these issues at this time.

- **Commission to hire an independent EM&V expert** – The Draft Plan proposes a new EM&V working group and strategic evaluation plan, modeled after Massachusetts' approach.
- **Developing a NH-specific Technical Reference manual (TRM)** – The Draft Plan commits to developing the TRM during the three-year cycle.
- **Acknowledging the non-energy benefits of energy efficiency** – In addition to the energy and capacity values specified in the AESC, the NH Utilities' cost-effectiveness test includes a 10% adder to total benefits to account for additional, yet unquantified, benefits.
- **Increasing efforts to serve income-limited customers** – The Draft Plan meets or exceeds the agreed-upon spending level for these customers.

Proposed Programs Review

The Draft Plan provides both quantitative and qualitative information on the programs the NH Utilities propose to achieve the savings targets. Our review of this information is organized to address both components, beginning with the use of quantitative metrics to identify potential issues.

Quantitative Program and Portfolio Metrics

One approach to quickly assessing the characteristics of an EE program plan is to review several quantitative metrics related to the programs' savings and costs. This section presents the results of our metrics analysis, as well as our conclusions from those results and any resulting recommendations.

Cost to Achieve

One of the primary concerns of most EE stakeholders is the cost of each unit of energy saved by an EE program, whether electric savings in kWh or natural gas savings in therms or MMBtu. This unit cost can then be compared to the cost of similar programs implemented in other jurisdictions or to the planned costs for the program. The unit cost can be expressed as either the cost of each unit of annual (or "first year") savings or the cost per unit of savings over their entire lifetime. The latter provides a relevant comparison with the cost of supply from generation resources, although this is not a complete picture.

The table below presents the cost per lifetime energy savings for the electric utilities’ programs in \$/kWh. Overall, the electric sector programs generate savings at cost of between 3 and 4 cents per lifetime kWh, which is a very typical value and well below the value of avoiding one kWh of supply. Yet the table also shows a wide variance in cost between programs. The Home Energy Assistance Program and HPwES programs are far more costly than the other programs. This is a result of the large amount of non-electric savings that these programs generate. A more accurate representation of their cost can be had by apportioning the program budget to the electric and gas savings and recalculating the unit cost. Doing so halves the cost of the HEA program, to 29 cents/kWh, and lowers the cost of the HPwES program by two-thirds, to 14 cents/kWh.

Cost of Savings (\$/lifetime kWh)	2018	2019	2020
Electric – All Programs	0.03	0.04	0.04
Energy Star Homes	0.11	0.10	0.10
Energy Star Products	0.05	0.05	0.06
Home Energy Assistance	0.59	0.58	0.57
Home Performance with Energy Star	0.42	0.41	0.40
Large Business Energy Solutions	0.02	0.02	0.02
Municipal Energy Solutions	0.03	0.03	0.03
Small Business Energy Solutions	0.03	0.03	0.03

The table below presents the unit cost for the gas programs, in \$ per lifetime MMBtu. These values are also well below the cost of avoided supply in Northern New England, with the possible exception of the Home Energy Assistance program. While the programs delivered by the gas utilities generate some electric savings, it is to a much lesser extent than the gas savings generated by electric utility programs

Cost of Savings (\$/lifetime MMBtu)	2018	2019	2020
Gas – All Programs	3.81	3.89	3.95
Energy Star Homes	5.32	5.32	5.34
Energy Star Products	4.58	4.63	4.62
Home Energy Assistance	7.98	8.20	8.35
Home Performance with Energy Star	5.35	5.67	5.88
Large Business Energy Solutions	2.77	2.86	2.92
Small Business Energy Solutions	3.06	3.11	3.12

Recommendation

To the extent possible, we recommend that in the Final Plan, the NH Utilities provide some means of comparing the cost-to-achieve of programs with substantial cross-fuel savings with an appropriate metric, such as converting all energy savings to source fuel savings in MMBtu.

Budget Allocate to Rebates or Direct Services to Customers

Good efficiency programs invest most of their budgets in activities that directly benefit customers, whether through financial payments for rebates and incentives (e.g., payments to offset some of the cost of efficiency measures purchased by the customer) or through delivery of goods and services (e.g., efficient equipment provided directly to customers free-of-charge, or the value of auditing, weatherization services, or technical assistance).

Data provided in the attachments to the NH Utilities' plan shows that the budget category "rebates and services" represents between 70% and 80% of the total for every program in the portfolio both gas and electric. This is an appropriate amount. Marketing represents between 3% to 5% of total budgets, which is also an appropriate amount for most programs.

Realization Rates and Adjusted Gross Savings

The Draft Plan presents savings as "adjusted gross savings." According to the NH Utilities, adjusted gross savings are "gross savings with in-service and realization rates applied." The values used to adjust the savings for each measure for the combined effect of in-service and realization rates are shown in Attachments to the Plan. For example, the for LED Lighting Products is 95%. This value is drawn from a study conducted in 2012, using data from the 2009 and 2010 program years. At that time, LED lighting was promoted only through catalog sales, not at retail outlets. They represented just 10% of savings from catalog sales and less than 1% of all lighting savings. In contrast, LED Lighting Products represent 45% of lifetime savings over the three years of the Draft Plan period. The NH Utilities should not rely on a nearly eight-year-old study for a measure that has undergone such a rapid change in the last several years and that represents such a large portion of program savings.

Recommendation

The NH Utilities should research potential other evaluations that are more recent and relevant to the current state of the lighting market and revise the factor used to develop the savings estimates in the Final Plan.

Percentage of Program Savings from Lighting Measures

Electric energy efficiency programs have traditionally achieved the vast majority of savings from lighting measures, including both efficient lighting and lighting controls. While this has helped keep the costs of EE programs low, most advocates wish to see programs achieve savings across a broad range of end-uses. This is necessary to achieve deeper savings in the long run and begin transforming the market for efficiency equipment in much the same way as the market for efficient lighting has been transformed. We reviewed the detailed program data and calculated the percentage of savings from lighting in each program, each sector, and for the electric portfolio overall. The table below provides the results for Eversource, which represents approximately three-quarters of state electric savings. Lighting savings are less than one-third of residential sector savings, an unexpectedly low value that is much lower than in Massachusetts (69%), but one that may be realistic given the changes in the lighting market that will occur in the next three years. The C&I sector results are more typical of past programs, but still represent a reasonable contribution from non-lighting measures.

Eversource lighting savings (GWh)		2018	2019	2020
Portfolio wide	Total savings	809	1,005	1,274
	Total lighting savings	533	653	814
	% lighting	66%	65%	64%
Residential	Total savings	89	105	121
	Total lighting savings	32	34	26
	% lighting	36%	32%	21%
C&I	Total savings	720	900	1,153
	Total lighting savings	501	620	788
	% lighting	70%	69%	68%

Distribution of Savings and Costs by Customer Sector

Another important factor in EE portfolio design is the distribution of costs and savings among customer sectors. Ideally, both costs and savings are distributed in proportion to each sectors' contribution to the budget and portion of energy sales. For the natural gas programs, this is largely the case, with the commercial and industrial (C&I) sector providing 69% of three-year savings statewide as compared to 66% of sales. The electric programs are more biased towards C&I, which provide 78% of three-year savings vs. 59% of sales. On the other hand, C&I programs represent only 52% of electric program budgets. This is a typical outcome, because energy savings in the C&I sector are often less expensive than for the residential sector, due to both economies of scale and greater equipment operating hours. As a result, the residential sector provides only 22% of annual electric savings from electric utilities, despite being nearly 41% of sales. As a counter-example, in Massachusetts the residential sector (including low-income) represents 45% of annual electric savings but just 38% of statewide electric sales. This difference may be related to the fact that the residential sector electric programs in New Hampshire are much less dependent on lighting savings than in Massachusetts, as noted earlier. Therefore, the distribution of savings by customer sector in the Draft Plan is not a problem, but stakeholders should continue to monitor the program results to ensure that residential customers continue to have opportunities to reduce their consumption and energy bills.

At the state level, we also expect to see each utility contributing in proportion to their share of the state's energy consumption for each fuel. According to data provided by the NH Utilities, the distribution of electric savings by utility closely parallels the distribution of utility sales. Eversource is planning to acquire slightly more than their share of savings (78% vs. 73% of sales), with a corresponding underachievement by NHEC and Unitil (total 14% vs. 18% of sales). This is not a large enough variance to be of concern, and is likely explained by the relatively larger contribution of C&I sector to Eversource's sales than for the smaller utilities, and the effect of the previously mentioned bias towards C&I sector savings.

Program Design

Lighting

The Draft Plan does not provide much detail on how the proposed programs will address the rapid evolution of the lighting market and the likelihood of impending changes in lighting standards. The only

information provided is a note that the measure life for residential LEDs has been reduced from previously used values.

Recommendation

The Final Plan should provide additional information to address this issue, including specificity about the assumptions underlying program design responsiveness to this market.

Peak demand

The Draft Plan correctly notes that lowering consumption during peak periods through energy efficiency “may help mitigate the need for new capacity” and therefore that “the avoided capacity costs [of efficiency] represent a substantial value.” Despite this acknowledgement, the Draft Plan is relatively thin on details regarding peak demand reduction. The individual program tables report on “kW” savings, but do not specify if this is summer coincident peak, connected load, or some other measure. A quick analysis of the available data suggests that the planned programs are relatively weak on peak demand savings relative to the amount of energy savings.

Recommendation

The Final Plan should include peak demand savings measured in kW in the summary tables (e.g., Table 1.1). Furthermore, it would be informative to have comparisons of the ratio of peak demand savings to energy savings (i.e., kWh) between programs, between the planned programs and historic results, and between the planned programs and similar programs from nearby jurisdictions.