May 15, 2017

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

RE: R1615 Light Emitting Diode Net-to-Gross Evaluation

Dear Dr. Skumatz,

Eversource Energy ("Eversource") is pleased to submit these written comments with regard to a draft evaluation report: *1615 Light Emitting Diode Net-to-Gross Evaluation*, Review Draft ("Draft Report"), April 16, 2017, NMR Group, Inc. ("Evaluator"). Eversource received the Report on April 26, 2017 with a request to provide comments. Per the Energy Efficiency Board Evaluation Road Map Process, these comments will be considered for inclusion in the Final Report.

The purpose of the Draft Report was to estimate net-to-gross ratios through 2018 and beyond for the Retail Products Program and undertook five primary tasks: in-depth interviews with suppliers and program staff, sales data modeling, demand elasticity modeling, benchmarking, and a consensus panel. These efforts were carried out during a time of extreme political uncertainty, with significant implications for lighting efficiency standards and programs. Thus, the findings in the Draft Report are inconclusive because they hinge on federal rulemaking, political appointments, and funding of public agencies.

Eversource understands the complexity and challenges associated with estimating net-to-gross ratios for the rapidly changing light emitting diode (LED) market, and appreciates the analysis of the LED market in the Draft Report. However, the Draft Report is missing key information that would impact the net-to-gross (NTG) estimates. Summarized below are Eversource's comments on the Draft Report.

- The Draft Report assumes that federal rule making will essentially make LEDs the de facto baseline by 2020. Eversource does not agree with this assumption. The current Energy Independence and Security Act (EISA) of 2007 lists EISA exempt bulbs including incandescent "rough service" bulbs. Rough service bulbs are readily found on store shelves at costs as low as $0.33 per bulb and oftentimes have efficacy levels that are less than half of standard incandescent bulbs. In addition, these rough service bulbs often

have rated lifetimes of 5,000 to 10,000 hours; so once installed they may remain in place for many years. It is presumptive for the Report to assume that LEDs will become the baseline. Rather, the report should assume that incandescent bulbs will continue to be a low-cost, readily available, long term baseline option for consumers.

The packages above were recently found at two different local retailers at a cost of $2.00 (for 4 bulbs), and $1.00 (for 3 bulbs). The rated efficacy of these bulbs were approximately 11 and 7 lumens per Watt, both well below the "standard" efficacy level of 16 lumens per watt for incandescent bulbs. Both of these products have rated lifetimes of 5,000 hours. However, there are similar rough service products with rated lifetimes of 10,000 hours.

- The Report (page 2) states that "the program may not be able to factor post-2019 savings into their cost effectiveness tests" and that "market changes may lead to the cessation of a retail-based residential lighting program in the next program cycle." These statements do not acknowledge that the appropriate baseline for savings calculations (delta watt calculations) and measure life estimates should consider the unintended side effects of EISA: the proliferation of low efficacy and inexpensive rough service bulbs. Eversource requests that these statements be modified to consider the availability of these bulbs.

- The Report used a variety of techniques to estimate NTG. The final consensus panel results did not appear to utilize the relevant data collected as part of this study. For example, the 2016 recommended NTG (57%) is irreconcilably lower than any of the other data points for that year (61% for interviews, 70 % for data modelling, and 61% for demand elasticity modelling, net of spillover).

- Statistically, the most rigorous and defendable data in the Draft Report is the sales data modelling (70 percent for 2015 and 2016) and the demand elasticity model (61% for 2015 and 2016, net of spillover). The supplier interview results are more speculative and should not have been weighed heavily as part of the consensus panel results. If removed,

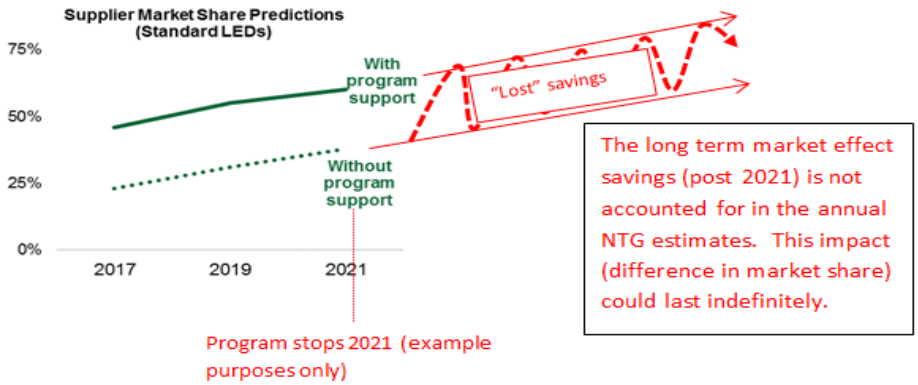
the estimated NTG for 2017 would be closer to 70% (versus 47%, see table below), and the subsequent years NTG recommended estimates would all be significantly higher.

Table 1: Estimated and Recommended LED NTG Estimates

Source	Retrospective[1]		Prospective				
	2015	2016	2017	2018	2019	2020	2021
% of CT Lighting Strategy 2015 Program Bulbs	100%	100%	-	-	-	-	-
2016 to 2018 PSD	82%	82%	-	-	-	-	-
In-depth supplier interviews	61%	61%	40%		38%		35%
Sales data modeling	70%	70%	-	-	-	-	-
Demand elasticity modeling[2]	61%	61%	-	-	-	-	-
Consensus panel / Recommended	63%	57%	47%	40%	36%	33%	-

[1] The in-depth interviews addressed 2015-2016 estimates together, while the sales data and demand elasticity modeling addressed only 2015. The consensus panel recommended separate estimates for 2015 and 2016.
[2] Because the model includes only program data, the estimate is net-of-freeriders, which excludes spillover.

- The Report provides NTG estimates that appear to be defined on an annual basis i.e. they do *not* consider the long term impact of market transformation. For example, the chart below is based on the supplier interviews and appears to align with the Table 1 estimates in the Report (the ratio of "with program support" and "without program support" agrees with Table 1 values for the "In Depth Supplier Interviews). The NTR ratios do *not* appear to account for the long term market effects. This is relevant because (based on the chart example below) if the Retail Lighting Program were to cease after 2021, consumers would not immediately reduce their LED purchases to the "without program support" levels. Rather, the momentum from the program would continue to lead consumers to purchase LEDs in 2021 above the "without" program levels indefinitely. The NTR ratios as presented in the Report fail to acknowledge this and therefore if applied on an annual basis as the report suggests, would grossly understate the true long-term program impact.



- Eversource notes the original "one pager" description for this study stated that the consensus panel be *"ideally completed through a consensus building approach involving EEB evaluation, planning, and implementation consultants,* ***program design and implementation staff****, and evaluation team members."* This approach is similar to the process used successfully in other states to bring balanced viewpoints to the table. Unfortunately, the process as described at the onset of the study was not followed and market expertise from the utilities' program design and implementation staff was not considered as part of the consensus panel. The program design and implementation teams would have brought additional information to the consensus panel to consider as part of the collaborative process. Eversource requests the collaborative consensus panel task be redone following the recommendation included in the original study description. This approach will allow the consensus panel to consider the expertise of the utilities' program design and implementation staff prior to the issuance of a Final Report.

Eversource appreciates the opportunity to provide comments. Please contact me with any questions you may have.

Sincerely,

Joseph Swift

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