



May 16, 2022

Lisa A. Skumatz, Ph.D.

Skumatz Economic Research Associates (SERA)

762 Eldorado Drive

Superior, CO 80027

RE: CT X1931-4 Advanced Lighting Controls - PSD New Measures

Dear Dr. Skumatz,

Eversource Energy (“Eversource”) is pleased to submit these written comments regarding the draft memo for the *CT X1931-4 Advanced Lighting Controls - PSD New Measures* study (“Draft Memo”), shared May 6, 2022, by DNV (“Evaluator”). Eversource received the Draft Memo on May 6, 2022, with a request to provide comments by May 16, 2022, for the purposes of including the study’s findings into the Connecticut Program Savings Document (“PSD”) for 2023. Per the Energy Efficiency Board Evaluation Road Map Process, these comments are for consideration for inclusion in the Final Memo.

The objectives of this study are to update, where necessary, and enhance the technical basis of the savings factors and measure lives for new residential and commercial Advanced Lighting Controls (“ALC”) measures adopted in Phase 1. The results are to be incorporated into the 2023 PSD. In Phase 1 of this study, these new measures were developed through a literature review, discussions with experts, and program administrator (PA) interviews.

General Comments on Selected Presentation Findings

Eversource appreciates the Evaluator’s efforts to enhance or update controlled savings factors and adjusted measure lives, including providing updated savings factors for luminaire-level lighting controls (“LLLC”) based on systems that are commissioned and networked, or are non-networked or networked but not commissioned. Eversource anticipates incorporating the new information into the 2023 PSD. However, we do have

reservations, which are described in the comments and questions section, on how the 35% for non-networked or networked but not commissioned LLLCs can be implemented.

Comments on Methodology

The Evaluator interviewed four industry experts and four market actors, and reviewed 12 custom networked lighting controls (“NLC”) project files from Eversource and United Illuminating Co (“UI”). In addition, the study team reviewed the methodology used in the DLC and Northwest Energy Efficiency Alliance (“NEEA”) study "Energy Savings from Networked Lighting Control (NLC) Systems with and without LLLC" (Energy Solutions, Sept 24, 2020), which is the basis for the ALC’s savings assumptions.

Eversource finds the study methodology to be appropriate yet seeks comments on the following three items.

1. The 35% for non-networked or networked but not commissioned LLLCs was calculated by taking the average of the combination controls identified in Phase 1. Per DesignLights Consortium (DLC), an LLLC is partly defined as “the capability to have a networked occupancy sensor and ambient light sensor installed for each luminaire or kit, and directly integrated or embedded into the form factor during the luminaire or kit manufacturing process.¹” Therefore, Eversource seeks to further understand the rationale behind using a 35% savings factor for this type of LLLC while a non-LLLC dual occupancy and daylight sensor has a savings factor of 38%, per Table 2-1 in the Draft Memo?
2. The Draft Memo provides an anecdote around fixtures with integrated controls that were installed incorrectly, as well as quotes regarding the default settings of LLLCs. Eversource would like to know if the Evaluator came across situations where there was an LLLC installed but was not commissioned? If yes, then Eversource kindly requests the Evaluator to provide recommendations that would impact the implementation of LLLCs based on this situation?
3. Eversource also seeks to understand if, during the interviews, the Evaluator learned about circumstances where non-networked fixtures with integrated controls provided

¹ https://www.designlights.org/wp-content/uploads/2021/12/DLC_NLC5-Technical-Requirements_FINAL_12222021.pdf

greater savings than those same types of fixtures with integrated controls that were networked together? If yes, then Eversource kindly requests that the Evaluator provide comments and recommendations on how this circumstance can impact the application of controlled savings factors? If not, then this topic should be further explored in future integrated controls studies.

Comments and Questions

Eversource has the following comments and questions.

Updating Delta Watts for Lighting Measures: Eversource recognizes that the findings in this Draft Memo will be used to update Sections 2.1.3 and 3.1.3 of the 2022 Connecticut PSD. Yet the current controlled savings factors are also used to determine delta watts for commercial lighting measures. For example, Section 2.1.2 of the 2022 Connecticut PSD includes a table that calculated the delta watts for upstream lighting measures, including LED fixtures, LED High Bay / Low Bay, and LED troffer retrofit kits with NLC and LLLCs using the 49% savings factor. Based on the recommendation to use a 35% savings factor for LLLCs that are non-networked or networked but not commissioned, what recommendation(s) can the Evaluator provide regarding how commercial lighting measures with LLLCs should be updated for the 2023 PSD? Also, can the Evaluator please confirm that these updates would only apply to commercial measures, and not residential ones? If residential measures do in fact need to be updated, Eversource requests the Evaluator's recommendation on how to proceed with this process?

Requests for Definitions: Eversource appreciates the recommendation that program implementers work with evaluators and the EA team in CT to define the exact parameters required for an LLLC to be considered networked and commissioned. As such, we would seek to define the following terms to be included in the Final Memo:

- **Commissioning:** Section 2 of the Draft Memo that states that commissioning “includes field calibration, field programming, and controls education.” Moreover, Section 4 of the Draft Memo mentions that commissioning can be defined as “systematic process of ensuring that all building systems perform interactively according to the documented

design intent and the owner’s operational needs.” Eversource requests that the Evaluator:

1. Indicate which description for commissioning should be used consistently in the Final Memo as the definition for commissioning; and
 2. Include in the Final Memo the process (or processes) to ensure that a lighting fixture with integrated controls that is installed is also commissioned. To highlight the reasoning for this specific ask, LLLCs are sold in the market with the intent on being commissioned. As a result, some LLLC products are calibrated before being packaged and shipped and therefore may not require field commissioning.
- Networking: What criteria does the Evaluator recommend using to determine that a system is networked? Eversource advises using the definition for “Networking of Luminaires and Devices” as described in DLC’s “Networked Lighting Controls Technical Requirements (Version NLC5, Released June 23, 2020, Updated December 22, 2021):” “The capability of individual luminaires/lamps and control devices to exchange digital data with other luminaires/lamps and control devices on the system. This capability is required at the room, space, or area level, but not at the whole building level or beyond (e.g. non-lighting systems, or the internet).”
 - Non-networked or networked but non-commissioned: Based on the definitions and criteria for commissioning and networking, how should a non-networked or networked but non-commissioned LLLC be defined?
 - Lighting Controls Measures Listed in Table 2.1: Eversource recommends that each lighting control measure listed in Table 2.1 of the Draft Memo also be defined for the final version. The rationale for this request is that there can be overlap between different controls that would fall outside the combination of high-end trim and daylight dimming, or high-end trim and occupancy sensors. Definitions (or references to definitions) from industry organization such as DLC of NLCs, LLLCs, high-end-trim, daylight dimming, occupancy sensors, and dual occupancy and daylight sensors would help PA implementation teams understand which savings factors to apply.

Applying the 35% Savings Factor for LLLCs that are Non-Networked or Networked but Non-Commissioned: As previously mentioned, Eversource does have reservations on how the 35% for non-networked or networked but not commissioned LLLCs can be implemented. Eversource’s implementation teams work with installers and partners to

ensure that each LLLC installed is commissioned. These collaborations also are conducted in a way to help to minimize the risk of poor performance due to issues such as incorrect installations. As a result, Eversource does not have an offering of LLLCs that are not commissioned. Based on this background, Eversource seeks to understand from the Evaluator how this 35% savings factor can be applied, including scenarios where this application would occur. Additionally, what would be the distinction between applying this 35% savings factor and correcting the savings for an incorrectly installed fixture with integrated controls.

Thank you for the opportunity to provide comments.

Sincerely,

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