



November 9, 2022

Kate Donatelli
Bureau of Energy and Technology Policy
Connecticut Department of Energy and Environmental Protection
10 Franklin Square
New Britain, CT 06051

Subject: Energy Efficiency Board Response to Eversource and UIL Holdings Submission for 2022-2024 Electric and Natural Gas Conservation and Load Management Plan (“2022-2024 Plan”) for Connecticut General Statutes § 16-245m(d)—Condition of Approval Item No. 13

Dear Ms. Donatelli:

The Connecticut Energy Efficiency Board (EEB) hereby submits our response to the Connecticut Department of Energy and Environmental Protection (“DEEP”) in response to the filing made by Connecticut Light and Power Company (“CL&P”) and Yankee Gas Services Company (“YGS”), doing business as Eversource Energy (“Eversource”), and The United Illuminating Company (“UI”), Connecticut Natural Gas Corporation (“CNG”), Southern Connecticut Gas (“SCG”), collectively, UIL Holdings Corporation (“Avangrid”), collectively (the “Companies”) regarding Condition of Approval (“COA”) Item No. 13 (“All-Electric Residential New Construction Package”).

2022-2024 Plan, DEEP Condition of Approval Item No. 13 states:

The Companies are directed to develop a proposal for transitioning the Residential New Construction (“RNC”) program into an all-electric offering that will begin accepting projects no later than July 2023. This proposal shall include:

- *Interim targets for increasing the proportion of all-electric projects through the RNC program;*
- *Any necessary changes to incentive structures or levels; and*
- *Any perceived barriers to an all-electric new construction offering, including workforce development, education, and customer outreach needs and proposed solutions to those barriers.*

After review of the Companies’ filing, the EEB would like to provide additional information for consideration by DEEP. While the EEB strongly supports transitioning the RNC Program to an all-electric offering and the general direction the

Companies plan to take, there are several items and recommendations we would like to contribute to the record. Below is the EEB's response, organized using the sections identified in the Companies' filing.

Affordable Housing

In many other RNC Programs¹, new affordable housing is a primary focus where they make special efforts to establish and maintain relationships, work with design and construction stakeholders, offer more favorable incentives, and then showcase the exemplary buildings as flagship examples of what the rest of the market could achieve. The Companies' filing makes no specific mention of affordable housing as part of the RNC Program. With the 2022-2024 Plan Priorities of Equity and Energy Affordability (in addition to Decarbonization), the EEB believes that an all-electric RNC Program should support affordable housing providers, and greater collaboration with the appropriate state agencies, local housing authorities and others. Emphasis on affordable housing would serve the segment of the market most in need of support while encouraging others to also participate and achieve similar outcomes. The RNC Program should be inclusive of affordable housing.

Response to Companies' Filing

45L Tax Credit

Upcoming tax credits potentially available for eligible builders could provide a significant boost to RNC Program offerings. The 45L Tax Credit² included in the *Inflation Reduction Act of 2022*³ will become available January 1, 2023. It will provide tax credits to builders of up to \$5,000 per housing unit, based on performance standards and prevailing wages. While the Companies mentioned it in a footnote, the tax credit appears to be a meaningful opportunity if leveraged and promoted. This is a potentially significant incentive that can be offered to eligible builders on top of the ratepayer funded incentives as an additional means of encouraging builder participation in the RNC Program. Plans for aligning the RNC Program with the Federal ENERGY STAR and Department of Energy ("DOE") Zero Energy Ready standards and the accompanying messaging and communicating the imminent availability should be part of the Companies' 2023 RNC Program plans.

¹ <https://www.aceee.org/topic/low-income>;
<https://www.nyscrda.ny.gov/About/Publications/Program-and-Initiative-Case-Studies>
<https://evernorthus.org/construction-begins-on-new-affordable-housing-in-downtown-morrisville/>

² <https://ics-tax.com/news/the-inflation-reduction-act-impact-on-45l-tax-credit/>

³ "Text - H.R.5376 - 117th Congress (2021-2022): Inflation Reduction Act of 2022." *Congress.gov*, Library of Congress, August 16, 2022, <http://www.congress.gov/>

Companies' Priority 1: Interim Targets for Increasing the Proportion of All-Electric Projects

The EEB feels that the information in the Companies' filing appears limited, while also supporting the adoption of a more stringent goal. First, the historical data provided in the filing appears to be strictly from Eversource and none from Avangrid. As a result, it was challenging to understand the participation rates in past all-electric programs for Avangrid. Although the letter to DEEP was from all Companies, the EEB believes that developing a uniform statewide RNC Program should be informed by data in all service territories to ensure success for all customers, regardless of the service territory.

Second, there was limited discussion of the recent all-electric bonus incentive offering and the impact it has had on recent participation rates. As a result, we assume that the all-electric participation rate of 55 percent of all single-family attached home participants was driven by the more recent all-electric offer. However, there was little discussion of the reason behind this high rate or the impact on participation driven by the recent all-electric offer.

Third, there is no data or information on the fuel breakouts for space heating and water heating by building type, which would provide insight into the current baseline of gas, oil, propane, and electricity in new construction to then identify the level of incentives to transition each of these building types to all-electric.

Finally, given the evidence provided, the Companies' suggestion that a 2024 all-electric target for single-family attached buildings should be 26.4% is far too low when the RNC program already achieved 56% market share for all-electric in that building type in 2020 and 46% in 2021. If the program already exceeded that threshold for the past two years, DEEP should establish an all-electric RNC target of at least 50% in 2024. Energy efficiency programs are supposed to drive the market to more efficient options that they would otherwise pursue.

Companies' Priority 2: Changes to Incentive Structures or Levels

In alignment with the EEB's adopted "Principles for Leveraging New Energy Efficiency Program Funds"⁴, we support the Companies' efforts to "...align, as closely as possible, with other energy efficiency program offerings,⁵ as well as with regional and federal offerings.⁶", especially the *Inflation Reduction Act of 2022* including the 45L tax credit, mentioned above. We also see value in alignment with other regional RNC Program standards and incentives, where possible, to enable builders and suppliers who work across state lines to find as much program consistency as

⁴ <https://app.box.com/folder/175772268955?s=kjrekjyp8ghzq1wd7to61bg69o2bi3hf>

⁵ For example, through the Retail Products channels.

⁶ For example, the *Inflation Reduction Act of 2022*.

possible. It would also be helpful to understand how any new program standards and incentives align with the current all-electric and Passive House incentive offerings.

The Companies suggest continuing to use the Home Energy Rating Systems (“HERS”) index as the means of program qualification. However, if HERS is not recognizing the value of electrification by sending mixed messages to the construction industry through penalizing the installation of heat pumps, it may be time to reconsider HERS as Connecticut’s primary means of qualification for the RNC Program, as well as the basis for the secondary performance management incentive (“PMI”) metric for the RNC Program. If and when RESNET (Residential Energy Services Network) updates the HERS standards to accurately value the performance of heat pumps and heat pump water heaters in our climate, thus aligning the standards with the C&LM goals, then the RNC Program could go back to utilizing it as the qualification standard. The EEB does not have a definite recommendation on what should be used in lieu of the HERS standard, but instead offers two considerations. First, as mentioned in the Companies’ filing, the RESNET CO₂ index could be used. Second, DEEP could consider basing program qualification and savings on the percentage and absolute savings of the rated home as compared to a baseline home (i.e., User-Defined Reference Home, or “UDRH”), which is like the method utilized in Massachusetts⁷. Once DEEP issues its guidance related to an all-electric RNC program, the EEB can work with the Companies to adjust the PMI secondary metric, if needed.

The Companies’ filing did not mention how the savings for an all-electric baseline for each building type will be determined. It will be important to understand whether participant savings will be compared against a baseline all-electric home, a gas home, or some blended fuel home. The EEB believes that the Companies should work with the Evaluation Administrator to inform the baseline.

The Companies’ proposed incentives, detailed in Figure 3 of their October 14, 2022 filing (provided below), does not provide a comparison to the current incentive offerings for new homes and how the four HERS Tiers would factor in. A side-by-side comparison would aid the justification for the proposed new incentive structure, including a better understanding of the following:

1. Do the proposed Level 2 incentives support higher tiered HERS efficient building envelopes? If not, should there be a higher level of incentives offered?
2. Is Tier 1 the right level for all-electric, or should we be requiring a higher level of efficiency for an all-electric program?

⁷ <https://www.masssave.com/-/media/Files/PDFs/Save/Residential/Pay-for-Savings.pdf>

3. How will the adoption of the IECC 2022 impact the Companies’ proposed levels and the planned incentive offerings, or have the existing tier offerings already been adjusted to account for the new code?
4. Is the proposed all-electric multifamily incentive enough to overcome market resistance, especially related to the water heating challenges discussed below?
5. If incentives are intended to encourage builders to overcome barriers to participation, how are we assured that these incentives are set at the right levels?

Companies’ Figure 3: Proposed Incentive Structure for All-Electric Home Pathway

All-Electric Home Incentive Structure		
	Level 1	Level 2
Single Family	\$7,500	\$10,000
Single Family Attached	\$3,000	\$5,000
Multifamily	\$1,500	\$2,500

On another note, there is confusion on a measure level, as to what heat pumps will qualify under the proposed RNC program. The Companies’ Figure 4 *Heat Pump Incentive for New Construction* lists Consortium for Energy Efficiency (“CEE”) Tier 2 as a qualifying measure. However, CEE’s draft heat pump specifications (v. October 18, 2022) list only “CEE Tier 1” and “CEE Advanced Tier”, and not “Tier 2”. For consistency and clarification, the CEE naming conventions should be referenced. Furthermore, it is unclear if the heat pump incentives will align with the final incentives and standards DEEP will provide in response to Condition of Approval #11.

In the approval of the heat pump incentives for RNC, DEEP should take into consideration an effort to promote consistency in measure offerings to eliminate potential market confusion. In doing so, the EEB recommends DEEP consider whether heat pump incentives should be included under the all-electric incentive structure with only an additional incentive for ground source heat pumps or provided as a separate RNC heat pump incentive. If heat pumps are rebated individually, there needs to be a mechanism established to eliminate double counting of savings from those delivered through the upstream HVAC program.

Furthermore, heat pump water heater (“HPWH”) information was not included in the Companies’ filing. Therefore, we have questions as to the standards, incentive levels, number of efficiency tiers, alignment of incentives between the RNC and HVAC programs, baselines for determining savings, and whether HPWH incentives should be assumed as part of the RNC incentives. As a result, the EEB recommends that the Companies provide additional details to consider how HPWH could be incorporated into an all-electric RNC program.

Companies' Priority 3: Eliminating Perceived Barriers through Workforce Development and Education and Customer/Developer Outreach

There is a growing body of work and all-electric training materials from Massachusetts (among other states) that could also be referenced. There may also be opportunities as part of the planned updated energy code training for promoting the all-electric RNC Program.

Companies' Section Two: Additional Barriers

The EEB is particularly concerned about the Companies' proposal to allow natural gas to be part of the DEEP-directed "all-electric" RNC Program. This not only goes against the intent of removing gas from the RNC program, but the optics and messaging would potentially result in significant backlash from stakeholders, customers, and the media. A program including gas measures and allowing the hook up of gas distribution cannot be labeled an all-electric program. Allowing gas also eliminates an all-electric RNC program from recognizing potential savings associated with the costs to connect to the gas system and the monthly customer fees. Avoiding the cost of expanding the gas distribution system to new construction along with the monthly service fees can add up to significant cost savings that could be credited to the overall project and considered an additional benefit of all-electric. Ensuring that all end-uses in the buildings, including cooking, are all-electric would support this objective and minimize first-cost and on-going monthly costs. This is the approach that the Massachusetts All-Electric Home Program⁸ has taken; participating buildings must indeed be "all electric".

While we understand that solutions for electric water heating may be challenging, we want to remind the Companies that overcoming market barriers is one of the purposes of the C&LM programs. Other programs across the country are working with designers, building owners, and contractors to implement water heating solutions, and many of these are in the most challenging buildings; affordable multifamily. New York, Massachusetts, and Vermont and other states all have examples⁹ of successful all-electric multifamily projects. However, in acknowledgement of potential

⁸ <https://www.masssave.com/en/saving/residential-rebates/all-electric-home>

⁹ <https://www.nyserda.ny.gov/About/Publications/Program-and-Initiative-Case-Studies>;
<https://evernorthus.org/construction-begins-on-new-affordable-housing-in-downtown-morrisville/>
<https://newbuildings.org/resource/getting-to-zero-database/>
<https://www.abettercity.org/assets/images/Buildings%20Electrification%20Report%20Reduced.pdf>
https://whova.com/xems/whova_backend/get_event_s3_file_api/?event_id=bbbdc_202202&file_url=https://d1keuthy5s86c8.cloudfront.net/static/ems/upload/files/1652286774_nfrwz_Delivery_Efficiency_of_Recirculated_Domestic_Hot_Water_Systems.pdf&eventkey=632d40f97c83f951bf94368aef757a0ab7bcc29f67b5d573db661a789577bc83;

market barriers and challenges faced with individually owned apartments in multifamily buildings, DEEP could consider a phased-in or tiered approach to adopting water heating technology as it becomes more widely available.

Companies' Section Three: Recommendations to DEEP

The EEB recognizes that it will be hard to convince all housing types and projects to move to all-electric, but that is the task that DEEP directed the Companies to achieve. The Companies' proposal for "all electric ready" while still installing gas should not meet this standard. There are many examples of successful multifamily projects¹⁰ that have achieved electrification of all end-uses in the building, and not just the space heating. "All electric" is what it means and should be the goal of the program. The EEB Technical Consultants can provide information and introductions to other successful programs if the Companies do not have those connections.

Companies' Recommendation 1: Move to an All-Electric Program for Low-Rise Single Family & Single Family Attached Projects

Again, the EEB feels strongly that the "all electric" RNC program needs to be just that, without any exceptions for fossil fuels in these buildings. Depending on the building construction type (i.e., single family, single family attached and multifamily 5+ units), the ownership type (i.e., rental or owned) and whether the building is constructed for sale on speculation or built for the owner, there will be different challenges. Each of these market configurations will need to be addressed separately with specific strategies developed for each. How the program approaches the project designers, owners and contractors in each situation may be different and will likely be challenging, but that does not mean those challenges cannot be overcome like others have elsewhere. We can achieve this in Connecticut with good planning, strategies, research, case studies, materials, analysis, incentives, and sales.

https://whova.com/xems/whova_backend/get_event_s3_file_api/?event_id=bbdbc_202202&file_url=https://d1keuthy5s86c8.cloudfront.net/static/ems/upload/files/1651866676_jvbmC_Conditioning_HP_MF_20220427_1_.pdf&eventkey=632d40f97c83f951bf94368aef757a0ab7bcc29f67b5d573db661a789577bc83

¹⁰ <https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Case-Studies/New-Construction/BOE-bushwick-cs.pdf>;
<https://newbuildings.org/resource/getting-to-zero-database/>; <https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Case-Studies/New-Construction/BOE-r1-lacental-cs.pdf>;
<https://passivehouseaccelerator.com/articles/hotel-marcel-sparks-interest-in-sustainable-hospitality>
See <https://www.nyserda.ny.gov/About/Publications/Program-and-Initiative-Case-Studies> for more.

There are many heat pump water heating solutions currently available and more coming on the market every year. Vermont and New York have been using Sanco split systems for multifamily rental properties successfully¹¹. Central systems that are either metered or included in the rent with smart controls and effective designs to minimize costs have also been used in buildings throughout the Northeast¹². Integrated HPWHs with lower sound ratings are available through the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heating Specification¹³ for buildings with basements. The major heat pump manufacturers¹⁴ are about to come out with more split water heating systems. Such systems would allow moving the compressor outside or to another space separate from the tank which can allow for heat to be pulled from outside of the apartment and/or removed from the apartment to eliminate HPWH fan noise.

While some of these multifamily water heating systems are expensive now, as they get installed and the HVAC community gains comfort in their sizing, installation and operation, costs will come down as it does with all new technology. We acknowledge that this will not happen overnight. But it will progress more quickly with Companies' program support and engagement. Custom incentives for system design, engineering support and on-going monitoring in early projects will help accelerate the learning curve. Incentivizing early adopters with systems like the Parsons Platform¹⁵ to help monitor and optimize systems in multifamily buildings will pave the way for those who follow. Providing building owners and property managers with the supporting analysis and models to show alternative ways of covering the cost of central water heating as part of the rent may help convince them to change

¹¹ <https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Case-Studies/New-Construction/BOE-bushwick-cs.pdf>;
https://whova.com/xems/whova_backend/get_event_s3_file_api?event_id=bbdbc_202202&file_url=https://d1keuthy5s86c8.cloudfront.net/static/ems/upload/files/1652286774_nfrwz_Delivery_Efficiency_of_Recirculated_Domestic_Hot_Water_Systems.pdf&eventkey=632d40f97c83f951bf94368aef757a0ab7bcc29f67b5d573db661a789577bc83;
<https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Case-Studies/New-Construction/BOE-r1-northmiller-cs.pdf>

¹² https://whova.com/xems/whova_backend/get_event_s3_file_api?event_id=bbdbc_202202&file_url=https://d1keuthy5s86c8.cloudfront.net/static/ems/upload/files/1652286774_nfrwz_Delivery_Efficiency_of_Recirculated_Domestic_Hot_Water_Systems.pdf&eventkey=632d40f97c83f951bf94368aef757a0ab7bcc29f67b5d573db661a789577bc83

¹³ <https://neea.org/our-work/advanced-water-heating-specification>

¹⁴ At least Mitsubishi has publicized that they will be making available such equipment in 2023 that combines space and water heating in a multizone split system that places the compressor outside with indoor space heating and water heating zones.

¹⁵ <https://evernorthus.org/parsons-platform/>

their business models if it also means eliminating the costs of multiple individual water heaters along with the maintenance required for all of them compared to maintaining a single central system.

While individual electric storage water heaters would be less desirable than a heat pump water heating system, they are all-electric, would not require any of the first costs or on-going monthly meter costs of gas. As technology evolves, these systems can also be converted to either central or split heat pump systems. As previously discussed, there is a HERS index penalty, that if not fully resolved through the recommendations provided above could negatively impact the RNC PMI secondary metric. As stated previously, we would be willing to modify the secondary metric as necessary so that the RNC program will be pursuing a truly all-electric approach.

Companies' Recommendation 2: Transitional RNC Framework

The EEB recognizes that there will be a transition period as enrolled buildings with fossil fuels move through the existing program. DEEP required the date of July 2023 after which only all-electric project applications would begin being accepted. If DEEP agrees that the new all-electric RNC Program should indeed be “all electric”, then the EEB recommends that the Companies provide some additional plans to address the COA request to consider workforce development, education and customer outreach solutions. At a minimum, the workforce plans should address the multifamily water heating challenges identified and some of the solutions we suggest be adopted to overcome those challenges to prepare for a successful roll out.

The EEB is supportive of the implementation of an all-electric RNC program. The EEB would like to note that its consultants are available to assist, as necessary, with the development of this effort.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Neil Beup". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Neil Beup
Energy Efficiency Board Chair