



**Energy Efficiency Board  
Commercial & Industrial Committee Meeting**

**Tuesday December 7, 2021**

1:00 – 3:30 PM

Meeting Materials in Box.com:

<https://app.box.com/s/lygcrpw97qa7gmg50dhm7b2gnu6yq7z3>

## **Minutes**

1. Roll Call

Board members: Neil Beup, Ron Araujo, Steve Bruno, Joel Kopylec, Walt Szymanski

Other attendees: Alex Sopelak, Daniel Robertson, Emily Rice, Gary Lane, George Lawrence, Glen Eigo, Griff Keating, Jay Goodman, Jordan Schellens, Paul Gray, Peter Klint, Philip Mosenthal, Ricky Jordan, Stacy Sherwood, William O'Connor, Andrea Goodman, Brandon Mark, Colleen Morrison, Dave McIntosh, Erin Engelkemeyer, Glenn Reed, Jodi Sullivan, Kim Peters, Madison Butler, Paul Gray, Ricardo Jordan

Mr. George Lawrence acknowledged Board and Company representatives, as well as contractors and others joining for the meeting. Mr. Ron Araujo introduced Ricardo Jordan who re-joined Eversource yesterday and is the new Manager of C&I Implementation for Eversource in CT. Mr. Jordan will regularly attend the C&I Committee meetings and will be involved with program implementation in 2022. Mr. Jordan expressed excitement with returning to the team in this new role as Manager.

2. C&I Heat Pump Modeling – Consultants

Mr. George Lawrence provided a presentation that's available in the [materials folder](#). Decarbonization is one of the main Three-Year Plan priorities going forward and there's a lot of public support for electrification and decarbonization. Heat pumps will be a necessary part of the solution. Heat Pump Modeling can help determine what technologies and project scenarios pass the Connecticut Cost effectiveness tests and make financial sense for the customer.

The Pacific Northwest Energy Efficiency Alliance (NEEA) conducted a study on the C&I HVAC market that determined three typical upgrade scenarios. (1) Some customers plan replacements more than six months out, (2) customers wait until equipment fails but have a plan, (3) customers that wait until failure but don't have a plan and this becomes an emergency. NEEA estimated the percentage of customers that fall into each of these three scenarios: 40% plan six months or more out, 20% have a plan but wait until failure, and 40% have no replacement plan. For the 60% of customers with a plan there is an opportunity to switch fuels and equipment. For the 40% of customers without a plan, they could be captured by the upstream program, but trying to make the case to change systems at the time of an emergency replacement is pretty difficult.

Mr. Lawrence indicated that there are many variables that may impact baselines; from the motivation of the customer, whether the project is new construction, is the equipment at end of life, which equipment is getting replaced (heating/cooling/both), will zones be changed, are there corporate or institutional goals, are there other financial drivers, will the fuel change? Given these variables, determining which baseline is appropriate (industry standard, building code, a hybrid) is another consideration. Mr. Lawrence shared a logic map that was put together for Residential applications in Massachusetts. There are varying pathways based on these factors, but Mr. Lawrence hopes this is simplified for C&I applications. Whether the system will be a full displacement or partial displacement, which technology is used, and the fuel types are factors that impact the economics.

Mr. Lawrence noted that the preliminary analysis results for CT Residential sector will be presented at the Residential Committee meeting tomorrow. The Consultants will be performing a preliminary analysis for the C&I sector and presenting results in January. The scope for the C&I analysis will focus on primarily measures for small C&I customers because the model isn't currently capable of addressing large VRF systems. Analysis will include customer economics, cost-effectiveness, and sensitivity changes on key inputs like fuel & electricity costs. The model will allow for customer cost forecasting, cash flow analysis, etc. by fuel and rate class. The model can also predict emissions reductions as well as energy and demand impacts.

Mr. Lawrence provided a table with a few heating and cooling scenarios and sought feedback from the Committee, especially Companies. Mr. Lawrence noted that there are approximately 162 measures, or specific heating and cooling scenarios. Mr. Lawrence introduced Mr. Griff Keating, Optimal Energy, who works on the Consulting Team and is conducting the modeling. Mr. Keating said he wanted to hear what scenarios the Companies want to prioritize. Mr. Lawrence noted that in terms of baseline technology, the model should look at boilers and furnaces, replacing rooftop units (RTUs) with heat pumps. Mr. Glen Eigo noted that the model should focus on RTUs. Mr. Peter Kline echoed Mr. Eigo's suggestion. Mr. Lawrence asked if boilers and furnaces were just as common in small C&I. Mr. Keating added that the residential measures can be used to give a good idea of what those projects would look like for C&I without remodeling. Mr. Phil Mosenthal suggested focusing on the operating hours as that would vary largely from residential to C&I applications.

Mr. Lawrence brought up the fuel and indicated that propane is fairly rare in C&I settings in UI territory, but wasn't sure if that was the same in Eversource territory. Mr. Mosenthal noted that propane equipment efficiencies are not much unlike natural gas, but the pricing could be adjusted as it varies between the two. Mr. Lawrence noted that the propane displacement projects are the most cost-effective for Residential projects and if there are C&I customers using propane, they would be the lowest hanging fruit. Mr. Lawrence noted that electric space heating would be a potential fourth option but posited that it would be even more rate than propane. Ms. Jordan Schellens suggested that the RTU conversion would be the most common but also most difficult to adopt. Mr. Lawrence summarized boilers, furnaces, and RTUs using gas, oil or propane would be the focus.

For cooling, Mr. Lawrence noted that most C&I sites, with few exceptions, there would be existing AC. Mr. Lawrence suggested AC only vs both replacements. Ms. Schellens said it would be rare for a C&I customer installing a heat pump to only be doing cooling. With the cooling and heating scenarios discussed, the number of modeling options goes from 162 to 54. Mr. Joel Kopylec noted that this would make the model more precise, which is desirable. Ms. Alex Sopelec asked if AC would include window unit and Mr. Lawrence said it would. Ms. Schellens clarified if the window AC would be used as a baseline, and Mr. Lawrence said yes. Mr. Mosenthal and Ms. Schellens discussed the parameters around replacing window units

with a new heating and cooling system. Ms. Schellens noted the Companies would need guidance on allowing backup versus not.

Mr. Lawrence asked what would be most beneficial to the Companies regarding partial displacement scenarios? Mr. Kopylec stated that integrated controls and the assumptions around setpoints and transfer of fuels is important for standardization. Mr. Lawrence asked if more than one temperature change is needed? Mr. Mosenthal suggested the model could run at different crossover temperatures and with a simple graph display where the optimal is, noting heat pump performance is reduced at lower temperatures. Mr. Keating noted a study that does a good job establishing these curves. Mr. Eigo asked if the model could calculate the point where natural gas prices become economically feasible to switch to a heat pump and Mr. Keating said it could. Mr. Mosenthal said it would be helpful to see graphs of the relationship between customer economics as a function of gas pricing.

Ms. Sopelak noted that warehouses and manufacturing customers might offer different scenarios and it could be helpful to think about sites with split functions. Ms. Sopelak noted that warehouses might have electric heat in the warehouse and window units in the office space. Ms. Sopelak noted that these customers have complicated spaces but are thinking about a different strategy for heating and cooling. Mr. Lawrence asked if this type of customer would be better assisted through Custom or SBEA program? Ms. Schellens noted these are the customer that heat to 55-60 degrees and it is more common. Ms. Schellens and Ms. Sopelak clarified the heating and cooling baselines for this type of customer. These was discussion about how to address this type of building in the model.

Mr. Lawrence summarized the scenarios to include for AC, that AC only would be sufficient. Mr. Mosenthal agreed, but indicated analysis that shows heating costs and cooling costs separately would be desirable. Mr. Lawrence noted that full and partial displacement scenarios, with the partial displacement scenario being based on the economic break point, would be useful. Ms. Schellens suggested that the model shouldn't exclude scenarios that are not cost-effective today given the fact that heat pump conversions align with DEEP's goals and are the future, the economics will change over time and it's best to have the model now.

Mr. Lawrence pivoted to water heating and as a starting point shared scenarios for water heating that include both storage and on-demand with oil, propane, and natural gas. Mr. Lawrence asked if solar thermal assist could be considered as well. Mr. Peter Klint noted that solar thermal assist projects are very expensive with less infrastructure for maintaining than geothermal and will be less common as heat pump water heaters continue to advance, referencing the MA Clean Energy Center's solar thermal hot water heating analysis. Mr. Keating asked how these scenarios will differ from Residential? Mr. Mosenthal said the main difference will be the consumption of hot water, and Mr. Eigo noted the variability across different types of C&I customers. Mr. Lawrence suggested that instead of solar thermal assist the model could look at customer type, like office and food service and school. Ms. Schellens asked about the goal of the model – to focus on sites likely to adopt the technology today or to explore applications regardless of existing feasibility. The Consultants discussed further possibilities for the model.

Mr. Keating noted that the Consultants are limited by what data is available in order to have good evidence backing up the characterizations.

### 3. Demand Response and Storage Update – Companies

Mr. Bill O'Connor, Program Manager for Demand Response at Eversource, provided a presentation. First, he shared a graph with the ISO NE Load Duration Curve, which indicates a

peak of 25,159 during the summer of 2021. About 5% of the time accounts for nearly 25% of the load and 2% accounts for 10% of the load. By dealing with the 1-2%, the Companies could reduce the peak and save of GHG emissions, and avoid the costs of new power plants and grid infrastructure. Eversource offers Res and CI offerings. For Residential, Wi-Fi thermostats, solar PV with battery storage, and EV charging stations are offered. For CI, customers can create a curtailment plan and for large customers battery storage and thermal storage are options.

Mr. O'Connor noted COVID continues to affect the programs, though that seems to be lessening. CT enrollments in the CI Demand Response program are growing, along with MW. Daily storage and thermal numbers remain small. Eversource has a distributed energy management system platform that dispatch events by program type or by location. Mr. O'Connor noted that Eversource captured the five highest peaks with events that were called. Daily dispatch can be called 60 times per summer and thermostats 18 times per summer. At times, weather events supersede the ability to call for an event. Mr. Lawrence asked if the numbers presented are for all three states or just CT; Mr. O'Connor said all three states.

Mr. Gary Lane asked what time June 29 event occurred and Mr. O'Connor noted 6-7PM. Mr. O'Connor noted that with the growing solar capacity, the peak has moved to later in the day. Mr. O'Connor shared a chart that demonstrates the impact of demand response programs on the grid. The Companies get data from curtailment service providers they use to pay incentives to customers. The goal was 60MW, but as of the presentation Eversource had achieved 70MW. While the Companies would like the predictions to be closer to actual, the performance does indicate the programs are working. Mr. Lawrence asked whether the average performance of the events adds up to the preliminary performance, and Mr. O'Connor confirmed that participating customers are paid based on the average. Based on the summers results, Eversource will work with customers to predict the following year.

Mr. Lawrence asked where the final numbers come from. The number's come from the Durham's platform, backfilled for any missing gaps, which runs the calculation for performance when all the data is available.

Mr. Paul Gray shared an overview of UI CI demand response pilots and programs. UI offers an electric auto demand response program and a gas demand response program pilot. UI's goal for the electric DR program is to enroll 50MW and customers must have an energy management system. Customer incentives are paid in a flat rate per MW for the average reduction over the season. There were 9 events in the summer of 2021. Customer AMI data is automatically utilized. During 2020, UI contracted with Honeywell to provide marketing for the program. There are currently 10 customer sites in the program.

For the gas DR pilot, Honeywell is UI's vendor. The objective for the pilot is to learn the most effective way to shave peak demand, reduce pipeline capacity and emissions, and alleviate temporary physical pipeline constraints on low pressure areas. The pilot's goals: understand magnitude of potential net load reduction customers can provide, test incentive feasibility, determine best strategies, inform process of selling program incentive levels, test baseline methodologies, and provide data that informs Avangrid's peak day gas demand forecasting process. The pilot will run two consecutive winter capability periods, November 1, 2021- March 31, 2022 and November 1, 2022- March 31, 2023.

Mr. Phil Mosenthal asked how the Companies handle snapbacks from reductions from the gas DR program. Mr. Gray noted that the value to the gas distribution system is going to be over a full 24 hour period due to snapbacks, so the events will be 24 hour events on the coldest winter days for CI customers. The program is not automatic and the customer is responsible

for developing their own DR strategies for reduction, load shifting, etc. The program is 100% performance based. Customers need to enroll or commit to 50 therms per day and be prepared for 6 events in the winter season and customers are given 24 hour notice. As an example, a large general service customer enrolling 200 therms in the program that responds to 3 events will receive approximately \$5,400. Once the pilot is over, UI can determine what the effect would be to the gas distribution system.

Mr. Gray discussed the PURA Battery Storage Docket REO-03, now called Energy Storage Solutions Program that will begin Jan 1, 2022. The program includes upfront declining block incentive for residential and single block for CI with an additional performance-based structure for 580 MW by 2030. CT Breen Bank will administer upfront incentive and marketing. EDCs will administer performance-based incentive. There will be an upfront incentive adder to prioritize electric storage deployment in environmental and distressed communities.

#### 4. Legislative Report Outline Discussion – Companies and Consultants

Mr. Steve Bruno shared the outline for the legislative report. Mr. Steve Bruno is looking for additional input on items to include in the ALR. The ALR will be provided to legislators and stakeholders. Typically, the report includes a letter from the chairs, introduction to Board members. Mr. Bruno shared suggestions received so far; including the DEEP equity proceeding and the DEI Consultant, pandemic and recession response to support customers and the workforce. Another topic is emerging issues like decarbonization, economic recovery and climate change. Loss of lighting savings and the implication on program planning as well as integration of active demand response/EE with PURA's grid modernization dockets.

An Executive Summary will include the importance of EE, recognition of the EEB's work and performance highlights of savings, workforce numbers, and emissions reductions. The report will also discuss outreach and engagement with customers and workforce, C&I energy solutions, Residential energy solutions. For each sector, the report will include case studies, program highlights, and milestones. The report will include sections on economics, peak demand, and environmental benefits. The Report will have town-specific data that shows program participation and impacts by location. On the back cover will be a key benefits infographic.

Mr. Bruno shared the schedule for the ALR; the ALR is developed October – December, the EEB gives feedback in December, and will be approved by EEB in February and submitted March 1, 2022. Mr. George Lawrence noted that anyone with feedback could send their ideas to [Mr. Stephen Bruno](#) by the end of the week. Mr. Neil Beup reiterated the Board's desire to get input from the Committee, including vendors, stakeholders, etc.

#### 5. Plan for January C&I Committee meeting

- a. C&I Committee planning for 2022
- b. Discuss Commercial Contractor Consortium (CCC) Feedback
- c. Discuss CT Industrial Energy Consumers (CIEC) Feedback

Mr. Lawrence noted that anyone with ideas for topics for the coming year to send them [to him](#). Mr. Lawrence referenced the CCC and CIEC feedback provided during DEEP's Technical Sessions and thought those details could be discussed in more detail at the Committee level. Ms. Schellens asked if representatives from each group could provide their feedback and be available for discussion. Mr. Daniel Robertson, CCC, and Mr. Jay Goodman, CIEC, said they could be available.

6. Adjourn

The meeting was adjourned.