



EEB Residential Committee Meeting
Wednesday, November 10, 2021 10AM - 12PM (Webinar Only)

Meeting Materials: <https://app.box.com/s/akd30ut5vwhzvsa8rl0qbifb43cfrclh>

MINUTES

1. Welcome – Vicki Hackett

a. Roll Call of Committee Members

Board and Committee Members: Kate Donatelli, Vicki Hackett (she/her), Donald Mauritz
Other attendees: Devan Willemsen, Diane Del Rosso, Giulia Bambara, Glenn Reed, Jeff Howard, Joe Buonannata, Kyle Huston, Larry Rush, Meg Howard, Rebecca Baez Castro, Richard Faesy, Rose Croog, Sergio Carrillo, Art St. Armand, Brendan Thomas, Michael Cresta, Damaris Velez, Joe Roy, John Karyczak, Michelle Long, Mike Uhl, Patrice Gillespie, Pete Carlson, Robert Snook, Sheri Borrelli, Shubha Jaishankar, Stacy Sherwood, Stephanie Weiner, Tanya Mulholland, Tim Fabuien, Vivian Perez

Both the Chair (Ms. Amy McLean) and co-Chair (Ms. Brenda Watson) were not able to attend. Ms. Kate Donatelli facilitated the meeting.

b. Meeting procedures and process update

Ms. Kate Donatelli went over the procedures for the meeting. The chair of this meeting does need to recognize people before speaking, so attendees can either raise their virtual hand or ask a question in the chatbox to be recognized. Public comments should be kept within 3 minutes per organization or individual.

2. Approve 10/13/2021 Residential Committee Meeting Minutes

The minutes for the October Residential meeting were not voted on.

3. Public Input/Comments (limit to 3 min./person)

There were no public comments.

4. Case Studies and Technologies: MassCEC Whole House Heat Pump Pilot – Meg Howard

Ms. Meg Howard is Program Director focused on MassCEC's Residential Building Decarbonization Initiatives. MassCEC is a quasi-state agency in Massachusetts that promotes clean energy and the Commonwealth's climate solutions while growing the state's clean energy economy.

The Whole House Heat Pump Pilot launched in May 2019 and ended June 2021. The program awarded \$630K. The program aimed to complement Mass Save's integrated controls incentives driving strategic electrification, improve understanding around cost-effective and efficient design strategies for whole-home ASHP solutions. The program offered incentives to new construction and existing homes.

Eligible equipment included products from the NEEP cold-climate ASHP list, VRFs, and air-to-

water heat pumps. For existing buildings, the owners needed to be replacing natural gas equipment, the HP had to be the sole heating source, and the home needed to have an energy assessment that identified a need for heating equipment upgrades. For new construction applicants, ASHP had to be the sole heating source and no fossil fuel appliances could be in the home.

During the pandemic, MassCEC made a few changes to the program: \$500 additional incentive for existing buildings to conduct blower door tests, requiring review of three years' historical natural gas data, adding an "efficiency and electrification" adder of up to \$2,500, and increased low- and moderate-income incentives. The measures supported by the adder included spray foam insulation, insulated and sealed duct system, windows, blower door tests, and fiberglass batts in basement ceilings.

Overall the pilot awarded 168 projects, 126 to existing buildings, 11 for gut rehabs, and 31 for new construction. The median project cost was \$18,400, with existing buildings being highest and gut rehabs lowest. Customers were surveyed and 95% were somewhat or fully satisfied with the level of comfort achieved for heating and 100% were somewhat or fully satisfied with the level of comfort achieved for cooling. Regarding costs, Ms. Howard was surprised to see how high costs were for whole home approaches, but is optimistic that as installers become more familiar the cost will decrease. Ms. Howard remarked that she doesn't anticipate a cost trajectory like PV, that it may have a much slower curve, which will impact low- and moderate-income residents.

The program didn't require that the previous system be removed. 43% removed, 22% disabled or turned off, and 35% left in place and operational. Homes using a boiler for hot water presents somewhat of a complication and is something to think about in program design. A technical consultant was used for feasibility and blower door tests (BDTs) were used. Ms. Howard noted that manual Js and room-by-room considerations are key in addition to BDTs. MassCEC is working with NYSERDA to develop a sizing and selection tool.

Program takeaways: whole-home heat pumps should be considered for every new construction project, there are remaining focus areas to scale to retrofit market (i.e. costs, EE, improving design, installation, equipment), whole-home ASHP retrofits are possible. More information can be found in Ms. Howard's presentation and the meeting recording in the [materials folder](#).

Ms. Vicki Hackett thanked Ms. Howard for the presentation and asked if they tried to pair the heat pump installations with any kind of demand response. Or whether there are rate designs that are compatible with heat pumps that they tried to pair people up with as they were converted? Ms. Howard said they didn't but that would be a great thing to do, adding that an electrification rate or time-of-use rate are good considerations. Ms. Howard shared that she has been excited for a couple years about a Canadian startup called Stash that has a built-in thermal storage in the heat pump.

Ms. Diane Del Rosso asked about the Manual J check, and whether customers adjusted their projects if the technical consultant found the system was oversized. Ms. Howard mentioned the response varied, there was some resistance and others worked to figure out a solution.

Mr. Jeff Howard asked what the parameters and experience was regarding air-to-water systems. Ms. Howard noted there were four projects, one was \$12-\$15K but the rest were some of the more expensive projects. Because the existing radiators were designed for higher temperature water and would need to be adjusted or replaced, and because a lot of the homes wanted to be

able to do cooling, they put in a lot of new fan coils as part of the projects.

5. Heat Pump Cost-Effectiveness Analysis – Consultants

Mr. Richard Faesy shared an analysis that will hopefully inform some of the conversations around DEEP's direction and program development going forward. The Consultants are proposing an in-depth analysis that looks at space and water heating, electrification, and cost-effectiveness that is in alignment with the decarbonization priorities in the Three-Year Plan.

There are a lot of different options, equipment and strategies for electrification, along with different fuel costs and prices that vary across states. The Consultants want to make this specific to Connecticut and assess what this looks like from both the consumer perspective and the utility system perspective. The proposed analysis would look at both full and partial displacements, early retirement retrofit and replacement on failure given that there are different assumptions in terms of savings for each. It will also consider a number of different heat pump technologies, ducted, ductless, air source ground source, heat pump water heaters and compare those to a number of different baselines, both technology and fuel, depending on what's in the building right now, that fuel type and the system type.

The analysis will be adapted from Massachusetts but will incorporate the benefit-cost models that Connecticut uses to determine cost-effectiveness and the Connecticut-specific avoided costs and include available and local energy prices. Where possible information from program planning work like evaluation and verification studies will be used. Analysis will include residential and small C&I. Because modeling becomes more complex with large C&I projects, the Consultants will be doing a small literature review.

The analysis will hopefully demonstrate whether each of these different measure combinations passes different cost-effectiveness tests. So, cash flow analysis, by fuel and rate class, emissions reductions, energy and demand impacts will all be reviewed. The Consultants will share the residential results at the December Res meeting, C&I results in January at the C&I meeting, and a full summary to the Board in February. The Consultants will coordinate with DEEP, Companies and key stakeholders. Mr. Faesy offered stakeholders to reach out to him if they have input, suggestions, etc.

Ms. Kate Donatelli said DEEP is excited to leverage this resource. Mr. Glenn Reed noted that Griff Keating will be presenting on this in more detail at the EEB meeting later today. Mr. Reed also stated that the Consultants have been given the green light for this work, that they are not necessarily looking for a full vote but for engagement from the Board.

Ms. Vick Hackett asked if the cost-benefit test changes can the model be updated to reflect that? Mr. Glenn Reed said he believes updates can be made, particularly choosing avoided costs, but will be confirming with Mr. Griff Keating. Ms. Hackett also asked if building in something that would account for multiple approaches (HPs with solar PV for example) and how that impacts cost-benefit or combining with demand response and time-of-use rates. Mr. Reed noted that many of these considerations were made in the MA model. At a minimum, HPs and PV, but Mr. Reed will confirm with Mr. Keating. Mr. Reed noted with the expected deadlines, the additional tasks may need to occur in a later timeframe. Ms. Hackett said that was understandable. Mr. Reed also shared that the Consultants will need to coordinate with the Companies for existing and potential rates to be included.

6. Q3 Report – Companies

Ms. Diane Del Rosso shared a presentation summarizing Q3 results for Eversource. On the

electric side, residential is performing well with most programs expected to achieve spending and savings goals by end-of-year. Eversource is anticipating 118% of lifetime savings of 125% through the end of the year. New construction is expected to hit 100% of spending and lifetime savings, and over 100% for annual savings. Home energy solutions – core services is over goal for year-end predictions (125% spent and approximately 100% savings). HES-IE is anticipated to be 100% spent and lifetime savings 120% at end-of-year.

On the gas side, Ms. Del Rosso shared that by the end of the year, Eversource is expected to be 119% spent and achieve 124% of lifetime savings. New Construction is slightly behind and likely won't make up spending by the end of the year. With HES Core Services, 150% spent as of Q3 and 250% savings. HES-IE is predicted to exceed spending and savings goals by the end of the year.

Ms. Del Rosso shared secondary metrics. For HES single family and BTU Core Services, Eversource is meeting its goals. The metric for insulation rebates, Eversource is ahead of goal. The insulation rebate amount was increased and is driving results for insulation rebates. Eversource anticipates meeting secondary metrics goals by the end of the year, with the exception of the new equity metric for new participants in the HES/HES-IE single family customers.

Eversource is behind on electric market-rate multifamily and doesn't anticipate catching up on the electric side but is achieving spending and savings goals on the market-rate gas side by end of year. But MF electric IE should meet the savings goals while gas MF IE won't. Multifamily has been impacted by the pandemic; Eversource is not allowing blower door testing, so MF has been focused on equipment and window measures. Ms. Del Rosso shared numbers on equipment targets and compared performance from last year to this year for a number of measures. Eversource is slightly behind in HP water heaters and natural gas boilers as of Q3 but should achieve goal by end of year; anticipates meeting the rest of equipment goals. Eversource is meeting mail-in rebates for HVAC goals, with the exception for central AC equipment. In New Construction, Eversource has exceeded the incentives goals. Ms. Del Rosso indicated that participants seem to be moving away from gas and other fuel types

Ms. Del Rosso shared the Q2 and Q3 adoption rate percentages for both Companies. The goal is to increase the adoption rate; what score customers are accepting in their homes at the assessment. The target metric is 40% and the companies are at 36% as of September 30. Ms. Dep Rosso shared that the Companies anticipate meeting their goal. The Companies have a number of changes coming and will discuss that in February.

Ms. Kate Donatelli asked about multifamily savings goals, and wanted more clarity on the disparity between spending and savings goals between gas and electric. Ms. Del Rosso noted that she would need to get more information, but posited that many of the measures like windows and HVAC drive more gas savings. Mr. Richard Faesy asked why the gas residential new construction was lagging and whether it was due to the trend of electrification. Ms. Del Rosso said she would get more information. Mr. Faesy asked what was driving success in HES and Ms. Del Rosso said the decreased co-pay (\$0 in Q1; \$50 Q2,Q3) and increased insulation rebates have helped drive participation.

Mr. Larry Rush provided an update for UIL. UIL is lagging a bit in savings, but Mr. Rush indicated that much of this is due to the transition from the old to new tracking system. UIL has seen an uptick in new construction electric projects. HES is performing ahead of goal and budget; insulation was a driver due to the lower co-pay and marketing initiatives. HES-IE participation

has increased, also driven by insulation projects, and UIL should achieve goals by end of year. There's been an uptick in geothermal projects.

On the gas side, UIL's new construction budget goal will not be met this year and is behind on residential behavior. SCG HVAC and water heater equipment were performing well and UIL temporarily curtailed these incentives.

Mr. Rush shared results for the new equity metrics. Compared to lower performance of previous years, UIL is doing better in this area. Mr. Rush shared that UIL doesn't expect to fully reach the 2.2% goal. UIL is over exceeding goals for HP water heaters and is seeing a trend towards heat pumps versus central air system. Natural gas tankless water heaters, furnaces, and boilers have performed well, and have been curtailed due to budget constraints.

UIL's Heat Pump Pilot has received 37 applications, which is 17 higher than the goal for the pilot. There are 22 projects currently approved. 16 installations are complete; 6 ducted, 4 ductless, and 6 hybrid projects.

In Multifamily, UIL is behind goal for market rate in spending and savings and doesn't anticipate catching up. For income-eligible, UIL anticipates exceeding spending and being slightly behind in savings. UIL has received 84 electric MF projects; Tier 1 projects are most prevalent.

Ms. Kate Donatelli asked if the Companies could share trends regarding a shift from central AC to heat pumps. Mr. Rush noted that UIL is seeing that trend towards more ducted and ductless heat pumps, though it does come down to the right fit and the equipment needs to be sized appropriately. Ms. Del Rosso shared that Eversource has also seen this trend and is encouraging customers to consider heat pumps. Mr. Faesy asked if the incentives are enough to drive customers towards heat pumps? Mr. Rush said the Companies can look more closely at this, but it does seem to be having an effect. Mr. Rush stated the value is there and believes the incentive is currently aggressive.

More details on the Q3 Company Updates can be found in slide decks located in [the materials folder](#).

7. CT Green Bank Updates - Sergio Carrillo

Mr. Sergio Carrillo provided an update on the battery storage program that is about to launch in CT. PURA's priorities for the program are cost-effectiveness (RIM 1.4), targeting vulnerable communities, and maximize deployment for grid resilience. Mr. Carrillo explained that the RIM is the ratepayer impact metric, and 1.4 means the benefit is 1.4 times the cost of the program. The program seeks to drive 580MW of deployment over nine years; split between Residential and C&I/Industrial sectors. This deployment goal increases over Three-Year Plan periods, starting with 100MW for 2022-2024.

On the residential side, there will be three customer classes (60% standard, 30% underserved, and 10% low-income). For C&I/Industrial there will be small, medium, and large classes based on peak demand. A significant program design element is the requirement for a HES audit, which will ensure the batteries last longer. Mr. Carrillo shared information on program elements; there will be passive dispatch in the summer and active dispatch throughout the year. Active dispatch provides the performance-based incentive; Companies anticipate 30-60 dispatch events June-September between 9AM and 1PM.

Mr. Carrillo shared the proposed incentive levels, which have not been finalized yet (they

require approval from PURA). The proposed weighted average for upfront incentives in 2022-2024 is \$196.55/kWh. Incentives vary by capacity (MW) and classes. The proposed performance incentives are \$225/kW (\$200/kW in summer and \$25/kW in winter) for years 1-5.

Mr. Joe Buonatta provided an update on the Smart-E Loan Program that supports 40 different home energy improvements. The past legislative session passed Public Act 21-115 that expanded the scope of the Green Bank to include environmental infrastructure. Smart-E is expanding the list of eligible measures that can be financed in the following areas: parks and recreation, agriculture, water, waste and recycling, and environmental markets. Green Bank is working to determine the parameters for these measures. There are two key priorities that underly the expansion: environmental justice and climate adaptation and resiliency. Green Bank will be sending out a communication soon to get feedback from contractors on program details like citing, incentive structure, etc.

Ms. Kate Donatelli asked if there was a way for stakeholders not involved in the Smart-E contractor network to get involved. Mr. Buonatta said that Green Bank is soliciting feedback and engaging through a variety of channels, but added that if stakeholders are not on any of the GB mailings lists they can contact the Green Bank at smarte@ctgreenbank.com.

8. DEEP Legislative and Regulatory Updates

- a. 2022-2024 Plan Technical Meetings & Public Input Session Nov. 16 - 18
- b. Staff Openings
- c. EEB Seats
- d. CTAC
- e. Weatherization/Health & Safety Barriers Remediation RFP & Plans
- f. CT Clean Heating & Cooling Page

Ms. Giulia Bambara shared that DEEP is in the process of interviewing for the Buildings and Transportation, Decarbonization Office Director and for the Affordable Housing Retrofits Director as well as the Bureau Chief.

Ms. Bambara reminded attendees that applications for available EEB seats are still open.

CTAC had a regular meeting and weatherization barriers around were discussed. Data entry requirements and improving efficiency was also discussed.

Development for the clean heating and cooling calculator page has been slow due to staffing constraints, but the page text is near its final form. DEEP has proposed a list of other pages to cross-reference. The Web Development Committee has been developing four consumer guides adapted from the Mass Clean Energy Center; ASHPs, GSHP, heat pump water heaters, and solar water heating. The CHC calculator has undergone some revisions.

Ms. Bambara shared the schedule for the technical meetings regarding the 2022-2024 C&LM Plan. Details can be found in the slide deck located in [the materials folder](#).

Ms. Rose Croog shared that DEEP has released it's RFP for a Weatherization Barriers Remediation Program Operator. The program will address health and safety issues, such as mold and asbestos, that prevent the completion of important residential, weatherization, and energy efficiency measures. The RFP conference will be November 22, deadline for submitting questions is December 1. The RFP is available on the CTSource Bid Board (search for Solicitation #DEEP11102021CM) and more information is available on DEEP's Weatherization Barriers

webpage.

9. Community Partnership Initiative – Companies

Ms. Devan Willemsen provided an update. For round 1, applicants proposed projects in 9 municipalities; 5 are in distressed communities. Participants were notified October 29 on preliminary selection. Projects aim to champion HES, HES-IE, HP and insulation rebates, and SBEA. Until the MOU agreements are executed between the project lead partners and electric utilities. There is a joint press release that will share where the projects will take place. The program will kickoff January 1.

The project goals include outreach projects that drive 10% increase in HES, 5% increase in HES-IE, 15% increase in insulation and HP rebates, and 5% increase in SBEA. The selected projects are evenly distributed across the goals. Funding is projected to be \$240K and if bonus funding is taken into consideration this will increase by 10%; individual funding \$10K-\$30K.

Ms. Willemsen will be provided a more detailed update at the EEB meeting. Her presentation can be found in [the materials folder](#).

10. Agenda items for future Residential Committee meetings

- a. Participation Study (UI in December and Eversource in January)
- b. End of Year/Q4 Report & Home Energy Score Deep Dive (February)
- c. Low Income Deep Dive (WAP and HES-IE Coordination)
- d. Program QA/QC Processes and Result
- e. Companies' Concierge Services Offering
- f. DEI Consultant Engagement and Recommendations
- g. Water Utility Coordination
- h. Defining "Weatherization" for Connecticut
- i. Case Studies and Technologies Topic Ideas
 - Water heating in electrified homes
 - Heat Pump Standards – NEEP, ENERGY STAR, 47/17 Ratio
 - ENERGY STAR Home Upgrade

Mr. Faesy noted that the heat pump analysis results for residential should be included on this list. Mr. Faesy added that stakeholders could provide suggestions for other topics to him.

11. Public Comments

There were no public comments.

12. Adjourn

The meeting was adjourned.