



## **DRAFT Meeting Summary**

**January 20, 2020**  
Virtual Meeting via Zoom

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**Participants:** Over 100 people attended the workshop including 22 Councilors. A list of Councilors in attendance, EEAC Consultant presenters, and others is included in the Appendix. The workshop background material and presentations can be found at <https://ma-eeac.org/january-20-workshop-6/>.

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### **WORKSHOP OVERVIEW**

Maggie McCarey, DOER Energy Efficiency Division Director and EEAC Chair, welcomed participants. She reminded everyone that the goal of this EEAC workshop series is to develop a set of consensus recommendations for PAs to address in the development of their next 3-year plan. She then said that there will not be public comment at this workshop, as there have been six dedicated public listening sessions for public comments to be posted to the EEAC website. Finally, she conducted roll call.

Facilitators Dr. Jonathan Raab, Raab Associates, and Dr. Scott McCreary, CONCUR, Inc., provided an overview of the Agenda, Ground rules, and the approach to reviewing and finalizing the recommendations which can be found in the meeting materials at the link above (“MA EEAC 2020 Workshop Protocols and Ground rules”).

Facilitators Raab and McCreary noted distinguishing features for this workshop. Meeting summaries 1-4 will be considered today for approval by Voting Councilors. Next, the yellow highlighted recommendations will be presented with EEAC Consultants summarizing why those recommendations were highlighted for the discussion. Then, facilitators will organize the conversation around the highlighted and non-highlighted recommendations by breaking the discussion into two categories: clarifying questions and comments, and suggested improvements by Voting Councilors, followed by suggestions Non-Voting Councilors.

## **APPROVAL OF WORKSHOPS #1-4 SUMMARIES-COUNCIL VOTE**

Maggie McCarey went through each Meeting Summary, asking Councilors for comments on the accuracy of the summaries as written for approval. For all Meeting Summaries, 1-4, she asked for Councilor comments, and there were none. Hearing no comments on all the meeting summaries, she asked for the motion to approve the meetings summaries from a Councilor. Greg Abbe made a motion for approval followed by a second. Maggie then conducted the roll call vote. Greg Abbe, Cindy Arcate, Jo Ann Bodemer, Amy Boyd, Justin Davidson, Elliot Jacobson, Paul Johnson, Maggie McCarey, Cammy Peterson, Bob Rio, Dennis Villanueva, and Sharon Weber voted to approve the meeting summaries. Charlie Harak abstained. Deirdre Manning and Mary Wambui were not present. With these votes, the Council approved the meeting summaries from Workshops 1-4.

## **APPROACH TO RECOMMENDATION FRAMING AND DISCUSSION**

Consultants who were active in drafting recommendations in the recommendations (in highlighted yellow text) that were prioritized for discussion described the proposed edits and the logic behind them.

- For Workshop #1, New Construction & Active Demand Management recommendations, specifically under Residential, EEAC Consultant Glenn Reed summarized recommendations 3 and 4. Under Commercial & Industrial, EEAC Consultant Adam Jacobs summarized recommendation 1. Under Active Demand Management, EEAC Consultant Jeff Schlegel summarized updates for recommendations 1-6.
- For Workshop #2, under Equitable Budgets and Service, EEAC Consultant Elizabeth Chant summarized recommendation 1 from “Ensuring Adequate Budgets.” Under Multi-family Pipelines & Protocols, Elizabeth Chant summarized recommendation 2. Under Data and Systems, there were no recommendations highlighted.
- For Workshop #3, under HVAC, EEAC Consultant Adam Jacobs summarized the updates made to recommendation 1. He also summarized recommendations 1 and 2 were highlighted under CHP.
- For Workshop #4, Residential Existing Building Market Rate Recommendations, EEAC Consultant Glenn Reed summarized recommendation 3, and EEAC Consultant Margie Lynch summarized recommendations 5 and 7. For Workshop #4, Workforce Development, EEAC Consultant Adam Jacobs summarized recommendation 3.

For each highlighted and non-highlighted recommendation, facilitators Jonathan Raab and Scott McCreary organized the conversation by breaking the discussion into two categories: clarifying questions and comments, and suggested improvements. Note that although the yellow

highlighted recommendations were discussed first in each section, the meeting summary retains the order of the numbered recommendations.

## **WORKSHOP #1: NEW CONSTRUCTION & ACTIVE DEMAND MANAGEMENT RECOMMENDATIONS**

### ***Residential***

- 1. Continue to grow the pipeline of new multi-family (5+ units) Passive House projects by increasing participation and workforce training.**
  - a. Include specific targets and goals**
- 2. Investigate opportunities for promoting zero-energy modular homes based on DOER's Zero Energy Modular Affordable Housing Initiative (ZE-MAHI)**
- 3. Better characterize the non-energy impacts of fossil-free new construction.**
  - a. Prioritize/accelerate evaluation activities that quantify health and equity-related non energy impacts of gas stoves and other in-home fossil fuel combustion so that findings are available for review and inclusion in the 2022-2024 Plan.**
  - b. The PAs should provide tools and training to promote the use of variable refrigerant flow (VRF) and ground-source heat pump HVAC systems.**
- 4. Develop one to four unit all-electric program offers.**
  - a. Develop and implement an education and outreach strategy for all relevant participant segments (customers, builders, developers etc.)**
- 5. Develop connected home requirements.**
  - a. Include a broad range of active demand measures and opportunities, including Wi-Fi thermostats, home energy management systems and/or connected equipment such as HVAC and hot water equipment, and electric vehicle charging.**
  - b. As part of this connected home effort, the PAs should leverage opportunities to actively recruit new homeowners to participate in the PA's active demand management (ADM) efforts, and more seamlessly integrate already available storage, EV-charger, and PV incentives into the program.**

Clarifying Questions/Discussion on Recommendation 1 (Councilor questions. PA and Consultant responses in italics).

- Cammy: #1, Looking at the red-lined version, I was reminded that we had specified previously to run demonstrations to address centralizing water heating barriers. I am wondering why we are eliminating the reference to central water heating? I would advocate for putting that back in.
  - *(Consultant Comment) Glenn:* Interesting question. I understand the need. In fact, I have been having some back and forth in another jurisdiction about this very same

- issue in terms of central water heating, particularly if you are trying to finalize electric opportunities. But, I cannot tell you why exactly that component fell on the proverbial cutting room floor. If someone from DOER wants to comment?
- *Maggie*: I think it was more of an issue around the demonstration terminology and which entity could pilot. Cammy, I think we could try to put it back in with some language, just making sure there is some coordination with some testing out and piloting some new technologies. I think it was more of a text issue.
  - *Cammy*: That makes sense. I am not tied to “demonstration” being in there, but I think addressing the issue of central water heating would be great.

Clarifying Questions/Discussion on Recommendation 2 (Voting Councilor questions. PA and Consultant responses in italics).

- Justin: #1, Why focus on modular homes rather than all homes?
  - *(Consultant Comment) Glenn*: The other recommendations address single family and multi-family housing. Modular housing is often overlooked by efficiency programs, so this was an attempt to explicitly call out. This opportunity also indirectly seems to address affordability issues as modular homes are one way to provide efficient and affordable new homes.
  - *Justin*: Thanks.

EEAC Consultant Glenn Reed summarized why Recommendation 3 was revised:

*(Consultant Comment) Glenn*: First, part b, under Recommendation 3, should be a stand-alone recommendation because it is not tied to the issue of non-energy impacts of fossil-free new construction. In regard to “Better characterize the non-energy impacts of fossil-free new construction,” there were some changes to the wording. Specifically, rather than having been proposed to study this issue, the revised recommendation looks to our planned EM&V efforts to inform the discussion on this area regarding non-energy impacts. In fact, there is a plan in the evaluation activity that is supposed to commence at the beginning of this year to provide information on non-energy impacts associated with residential new construction to inform the three-year plan.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- Sharon: #3, I am confused. Did I hear that item 3 does not belong on this list and it belongs in a different list?
  - *(Consultant Comment) Glenn*: Item 3b should be its own recommendation.
  - Sharon: So, move it to somewhere... it’s still under Residential New Construction?
  - *(Consultant Comment) Glenn*: Yes. It would be its own numbered recommendation-under Residential New Construction. Those are technologies that would be primarily applicable to multi-family new construction. As a result, they should probably have their own numbering. They kind of fit under recommendation 1, but recommendation 1 also is specific to Passive House and VRFs. Ground-Source Heat Pumps can apply

- to any and all multi-family new construction regardless of if it was Passive House. In fact, people do put ground-source heat pumps into single-family new construction.
- *Sharon*: I am all set.
  - *Charlie*: #3, Can you explain why this was highlighted because it does not seem that there is a lot of controversial comments raised. What is the thinking behind that?
    - *Maggie*: There were not too many recommendations from the first workshop that required significant editing. But, we wanted to make sure that there were some that had more discussion than others. So, that is why we highlighted this one.
  - *Jo Ann*: #3, I wanted to clarify that the evaluation activities that will consider non-energy impacts for in-home fossil fuel combustion is not just limited to new construction, but it is in general that it could be applied outside new construction. Or is this just for “new construction”?
    - *(Consultant Comment) Glenn*: We have been doing “a sort of not energy impact studies” for years in Massachusetts. I’ve heard one of the evaluators offer the comment that we’re generating about half of the non-energy impacts studies in half the country. The study that is being proposed here is not that specific to residential new construction.
  - *Cindy*: #3, I am not sure if this is the right place to raise this. In Workshop 4, we talked about having to do EM&V for ground-source heat pumps and whether we should continue providing incentives because of the potential for free-riders. So, I wanted to flag that issue here. I am not sure if this recommendation is consistent with what we might make as a recommendation under Workshop 4. My hope was to have an EM&V that is going to assess ground-source heat pumps. I am not sure how to reconcile that.
    - *(Consultant Comment) Glenn*: I believe that any incentives for ground-source heat pumps are either fairly new or in the process of being developed. We would not yet be in the position to, at least for Massachusetts, to assess issues of net to gross and free-ridership. Further research could be done. Maybe we could revisit this once we get to Workshop 4.
    - *Cindy*: If we cannot do the EM&V, then I think we should at least suspend incentives for ground-source heat pumps. So, this recommendation would be inconsistent with that step if we’re going to be encouraging it. This recommendation only talks about training and giving tools. So, maybe it is okay. It does not say anything about incentives. I do not have a problem with training and providing tools to do ground-source heat pumps, but I do have a problem with providing incentives. I am sure we can put a pin on it, but that is the way I look at it.
    - *Maggie*: I think the PAs could weigh in on the new construction program, but I do think we talked about potentially monitoring free ridership and ground-source heat pump retrofit rebates. But, I am not sure that this is a huge issue for new construction because isn’t it primarily technology neutral and primarily performance-based? So, I am just wondering if the PAs think that it is an issue in new construction? I know there is some consideration with retrofit.
    - *PA Comment (Amanda)*: Apologies Maggie, do you mind repeating the question?

- *Maggie*: I know Stephan talked about this during the retrofit workshop on ground-source heat pump rebates and making sure we monitor free ridership and the impacts of those rebates. But, I was not sure if that is not an issue for new construction given the way the incentives are structured?
- *PA Comment (Amanda)*: I do not think it is as much of an issue. We already have some customers who are going with ground-source heat pumps. Not a large number of them, but they're already integrated in the program based on the pay for savings structure. So, I do not share the concern on new construction side as within retrofits.
- *Cindy*: Nor do I, but I just wanted to flag this. I think for new construction I feel less strongly about it. That is a good point Maggie.

EEAC Consultant Glenn Reed summarized why Recommendation 4 was highlighted:

*(Consultant Comment) Glenn*: Recommendation 4 was primarily a simplification of the wording. The initial recommendation was more detailed and prescriptive. For example, we made the distinction between one and two and two and four unit buildings. We also removed other specific state efforts, such as Connecticut as well as the need to develop a prescriptive path for all electric single family new construction. There were also references for the need to focus on UTs for Passive Housing, but that is already addressed in recommendation 1 above. So, primarily the text is a shortening and simplification of this recommendation.

- *(PA Comment) Marie*: I want to echo Maggie quickly to thank everyone for their active engagement in adapting to doing this all virtually. I know that it couldn't have been easy to organize, but thank you. Overall, in reviewing the recommendations, the PAs wanted to note that there are a lot of strong areas of alignment in what we have been reviewing in talking in such detail. I think there is over 150 recommendations when you count the numbers and sub bullets. That is a lot to digest. But, there are still some areas where we are not in full agreement. We look forward to continuing to engage on that.

**Councilor Comments/Suggested Improvements (on Residential New Construction recommendations)**

- *Cammy*: On #1, Add back in reference to central water heating
- *Glen*: 3B, Was meant to be its own recommendation
- *Cindy*: 3B, Suspend incentives for ground-source heat pumps if not cost-effective

***Commercial & Industrial***

**1. Increase thresholds for participation and increase incentives to push for deeper efficiency, ensuring significant impacts on building energy use through investments in very high efficiency building envelopes and electrification to avoid more costly future deep energy retrofits.**

- a. Ensure EUI baselines used for Paths 1 and 2 are stringent enough to drive projects towards the highest efficiency achievable with modern construction practices.**

- b. **Emphasize Path 1 (ZNE ready) as often as possible – including with smaller buildings that are motivated to achieve ZNE status. Include bonus incentives for electrification and reduced thermal loads by focusing on high-performance building envelope.**
  - c. **Address barriers to and find means for consistently shifting new construction to all-electric buildings to avoid more costly deep energy retrofits in the future.**
  - d. **Enhance pathways for smaller buildings to participate in ZNE offerings**
  - e. **Increase use of performance monitoring and monitoring-based commissioning, particularly in Path 2.**
2. **Actively promote projects with small or mid-size customers in the less comprehensive new construction Paths 3 & 4 that utilize modern building envelopes and high performance HVAC systems such as Variable Refrigerant Flow or Ground Source Heat Pumps paired with Dedicated Outdoor Air Systems.**
- a. **Include commissioning and operator training, and actively promote performance monitoring and monitoring-based commissioning.**
  - b. **Study project impacts on energy and non-energy benefits including: energy and cost savings, lifetime carbon emissions, indoor air quality and occupant comfort.**
3. **Develop Connected Buildings offerings for all four C&I new construction paths that build ADM capabilities into the design of new buildings of all sizes.**
- a. **Leverage controls for end uses like lighting and HVAC in new buildings, for active demand management (ADM) from early in the design process, tailoring approaches to address sophistication and size of customers.**
  - b. **Expand marketing for ADM and co-market EE and ADM for all customers.**
  - c. **The U.S. Department of Energy has coined the term “Grid Interactive Efficient Buildings”, which integrates technologies ranging from EE, to ADM, to distributed generation and EV charging. Integrate the themes of this concept into the New Construction programs.**
  - d. **Develop an approach that supports campuses in overcoming compatibility issues that otherwise could limit their investment in modern control systems in new buildings.**

EEAC Consultant Adam Jacobs summarized why Recommendation 1 was revised:

*(Consultant Comment) Adam:* Recommendation 1 is highlighted because we did receive some feedback from Councilors, particularly on lowest two sub bullets. There was a suggestion to enhance pathways for smaller buildings to participate in zero net energy offerings for the new construction path in C&I. The PAs expressed their willingness to work with those customer segments. But there are cost-effectiveness considerations that were referenced in the workshop. Section A refers to increasing the use of performance monitoring. Again, this is to ensure that the modeled energy use intensities of the buildings deliver. The PAs do have some performance incentives built into this new construction pathway, however, we do not have a lot of time to talk about this today. But using monitoring-based commissioning is a way to ensure that those efficiencies that are designed into the new construction are continuously kept on top of by both the applicant and presumably the PAs through partnerships with their customers.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Dennis*: #1, I support the comments. Obtaining any energy efficiency is relatively easy. The hard part is to maintain it. If Energy Conservation Measures (ECM) are trending away from the intent, it is difficult to do. So, it would be good to outfit this stuff to support measuring verification on all these projects to ensure that the savings are maintained and intertwined with continuous commissioning. This is a comment for overall recommendations. We should have better tools and better incentives to do EM&V.
- *Greg*: #1, I have a question for recommendation 1, section C. When it says, “Address barriers to and find means for consistently shifting new construction...” What does that mean in practice? Or is the recommendation designed to be vague in terms of how it is implemented?
  - *(Consultant Comment) Adam*: I think that is a fair point Greg. There are some barriers outside the purview of the efficiency programs frankly, such as the differences in costs of fuels to make all electric new construction a little bit more challenging. I think some of the other barriers within the purview of the program that could relate to general training of contractors on things like building envelope and commissioning- another thing you will hear us going back to throughout new construction. I think it is meant to be vague. We know there are barriers to all electric new construction. Those are just a couple of them. I think identifying and consistently supporting mechanisms to eliminate or reduce those barriers is the intent here.
  - *Greg*: I do not think I have suggestions to make this recommendation clearer. I think the sentiment is captured. This is obvious that what this is suggesting is to try and find ways to encourage new construction and to be all electric wherever possible. I think capturing this sentiment is probably enough. I read this and thought, “I don’t really know how this would work per se.” Maybe the intent is to be vague and that’s fine.
  - *(Consultant Comment) Adam*: One quick note on that is that the second part of that statement is important as well because anything we do not address in new construction now just becomes a retrofit at some point in the future. So, really focusing on and trying to emphasize all electric new construction, “where feasible,” will save us a good amount of time and money in the future.
  - *Greg*: Makes sense.

**Councilor Comments/Suggested Improvements (on C&I New Construction recommendations)**

None

***Active Demand Management***

- 1. Direct Load Control (DLC): Increase participation in existing DLC offerings, incorporate new end uses, and increase participation of low-income customers.**
  - a. Increase Wi-Fi thermostat DLC penetration through tactics including bundling Wi-Fi thermostats and DLC with heating and cooling system installations including heat pumps, and comarketing and delivery coordination of DLC with in-home**

audits and Wi-Fi thermostat rebates. Increase enrollment and penetration of Wi-Fi thermostats in DLC, e.g. from 3% of Wi-Fi thermostats to 15% (residential and small business).

- b. Incorporate new end uses by expanding or adding EV charging and pool pumps, and revisit the cost-effectiveness and potential addition of appliance DLC opportunities such as water heaters and dehumidifiers.
- c. Increase the participation of low-income customers in the DLC offerings.
- d. Include a target date for the implementation of the National Grid EV charging effort.

**2. C&I Load Curtailment:** Grow the C&I load curtailment resource through integration with normal program and market sales channels and with the new construction program. Before 2022, assess the eligibility for new CHP/generators to participate in C&I load curtailment for the 2022- 2024 Plan, including an assessment of GHG emissions impacts, and consider phasing out existing CHP/generators that are currently enrolled during the 2022-2024 period.

**3. Storage:** Significantly expand the program behind-the-meter (BTM) storage targets to contribute to the Commonwealth's overall storage goal of 1,000 MWh by 2025 (or 500 MW with storage duration of 2 hours). Revise the program outreach and integration processes to enable increased and broader participation of customers and storage/inverter providers. Identify and highlight other value streams. Help integrate the storage program offerings into a statewide framework that leverages SMART and the Clean Peak Standard, possibly including through co delivery.

**4. Electric Vehicle (EV) Charging and Mobility:** Increase enrollment and participation of EV chargers in the bring-your-own-device (BYOD) ADM program offering including payment of pay for-performance incentives. Develop and implement co-marketing and targeted incentives for newer-technology EV chargers, and for EV chargers for some customer segments to provide equitable opportunities to benefit from transportation electrification. Implement co-marketing or co-delivery integration with other state EV and charger programs including potential co-funding sources. Develop and implement a statewide program for BYOD for EV chargers and/or vehicle-controlled charging to be implemented by a specific date.

**5. Winter Demand Management:** Revisit the performance and cost-effectiveness of winter ADM by mid-2021 after the AESC 2021 study is complete. Consider combining summer and winter efforts into an annual ADM offering. Continue winter ADM efforts in the interim in 2020-2021 by leveraging investments in summer ADM to increase utilization in winter.

**6. Gas Demand Management.** Assess the potential benefits and costs of gas ADM, building on the preliminary analysis of Eversource and National Grid. Develop and implement a gas ADM program offering that complies with the DPU order in the Eversource and National Grid gas rate cases that directs the PAs to pursue gas ADM through the EE programs.

EEAC Consultant Jeff Schlegel summarized what were made for Recommendations 1-6:

*(Consultant Comment) Jeff:* One clarification. The track changed version that was posted did not show all the changes in red line. Some changes made earlier were not captured. Apologies for that. The changes coming out of the earlier workshop are fully represented in the clean version. For example, we added number 6 to address gas demand. We also updated the language for the National Grid and Eversource Rate Case discussions. Recommendation number 1 was sharpened. For this recommendation, there was a desire to emphasize increasing participation of low-income customers rather than expanding the offerings (the offerings are available to low-income customers), and we are seeking to increase participation. Also, we added in the need for a target date for the National Grid EV charging effort. Finally, there were a number of Councilor comments along the lines of sharpening or focusing the recommendations. In response, for example, words like “consider” or “investigate” were deleted. Words like “developed” and “implement” were used instead, particularly for number 4, and in some other areas. Those are the main changes that were made.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Maggie:* I wanted to apologize for the track changes oversight. We will let Councilors know when we will post a version with the full track changes just so that everyone can see it. Jeff did highlight the changes.
- *Bob:* #2, For recommendation 2, it says, “Before 2022, assess the eligibility for new CHP/generators...and consider phasing out existing CHP/generators that are currently enrolled during the 2022-2024 period.” Am I missing something in that sentence? I am forgetting something we discussed before... the sentence to me needs some clarification. It looks to me that we are looking for new CHP, but we are getting rid of the old ones.
  - *(Consultant Comment) Jeff:* The load curtailment is not limited just to CHP. The first sentence is the major recommendation to grow that load curtailment. But, there is also a question about how CHP will be addressed in the next plan. Most of that discussion is highlighted in the C&I section. I think all we are trying to communicate here in the second sentence is not to wait until 2022 to figure out what you are going to do with CHP in the next plan. The middle sentence essentially says, “assess the eligibility” during the period that we are in now (2021). So that you know what you are going to do before you get to 2022. Then, consider a phase out for the CHP installations that are currently enrolled. We have the two situations of the new CHP as well as the existing, enrolled CHP. We’ve tried to address both of those situations in one sentence. We could break the sentence up and deal with each thing specifically, if that helps?
  - *Bob:* It will help me, but I do not want to change it just for me. If everyone considers that sentence clear then that is fine with me. Maybe two sentences would work better. It should be the same theme; somehow break the sentence up.
- *Sharon:* #4, For recommendation 4, the last sentence talks about how it could be, “BYOD for EV chargers and/or vehicle-controlled charging.” I am wondering about the “vehicle-controlled charging.” It is not clear to me that it is on a successful path. I do not want this to

be locked into these recommendations as something we are okay with. I want a decision to be made soon, whether we should be shifting to not be on that path. I do not want to continue to investigate it on the side, but I am hoping that we will actually be implementing the approach that has so far shown itself to be feasible. I would like to delete “vehicle-controlled charging.”

- *(Consultant Comment) Jeff:* This comes up in two places in this paragraph. In the second sentence it comes up more generally in the newer technology EV chargers or charging. It also comes up explicitly in the last sentence. In the larger workshop recommendations, we had the discussion about whether it was going to be solely charger-based or would allow some other technologies including vehicle-controlled. We came forward with this set of recommendations that at least would allow the current situation where both are being considered by National Grid and Eversource, and perhaps by others. I know the PAs asked for that flexibility to at least allow the ongoing consideration of that to continue. I don’t think at least at the time of the workshop back in the Fall, the PAs had not gotten to the point where they selected one over the other, or one at the exclusion of the other. So, I think we heard that and we tried to leave that open for now because that work was and is ongoing. So, I do not know if the PAs want to jump in on that?
- Adding “if feasible” in the last sentence, as Jonathan suggested, would help me. These recommendations are not about this year and this three-year plan, and are about next year’s three-year plan. I am hoping we would have decided by the end of this year. So, I am fine with the idea of using “if feasible.”
- *(Consultant Comment) Jeff:* Okay, will do.
- *Cammy:* #4, For recommendation 4, one of the things that was previously included was about support for other mobility solutions beyond individual automobile approaches. So, I would advocate for that text being returned to this recommendation. I am in favor in seeing program support for school buses, transit buses, shuttles -- things beyond the individual automobile. I think it would be great to add that back in.
  - *(Consultant Comment) Jeff:* Maggie, I think DOER asked for that to be removed? In our drafting, we had left it as a possibility using “explore,” not as a strong “develop and implement.” I know that it did get deleted as part of the interactions with DOER.
  - *Maggie:* I have no issue with that being included.
  - *(Consultant Comment) Jeff:* Okay.

### **Councilor Comments/Suggested Improvements (on Active Demand Management recommendations)**

- *Bob:* # 2, Create two sentences where one addresses new CHP and the second addresses existing CHP for phase out
- *Sharon:* #4, Add “if feasible” following “vehicle-controlled charging”
- *Cammy:* #4, Return deleted sentence, “Explore possible co-marketing or program support for other mobility solutions beyond individual automobile approaches” after the last sentence

## WORKSHOP #2: INCOME ELIGIBLE PROGRAM RECOMMENDATIONS

### *Increasing Heat Pump Installations and Introducing New Measures*

- 1. Increase cold climate heat pump installations, by identifying and prioritizing cost-effective applications for IES customers, developing protocols to standardize decision-making, identifying and addressing barriers to participation and installation, and working to increase customer education and support for operation and maintenance.**
  - a. All heat pumps, whole house conversions, partial displacement, and heat pump water heaters should break out goals.**
  - b. Provide education to customers on the viability and benefits of electrification; provide training to operators on maintenance and operations of heat pump systems.**
- 2. Develop heat pump expertise to include at least one specialist at each Community Action Partnership (CAP).**
- 3. Increase participation in active demand management programs, including developing and implementing protocols for appropriate installation of Wi-Fi thermostats for energy efficiency and demand management. Include follow-up, when necessary, to provide customer support.**
- 4. Collect and report data on the number, type, and location of barriers including those related to installation (e.g., building code violations) as well as those related to participation. Use this data to inform program delivery.**

#### Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Charlie: #1, I will read some words I proposed slowly so that Jonathan or someone can capture them and then I will explain why I want it. Before the very first word, “Increase”, I would add “Subject to available income eligible funding...”. I say this because the Massachusetts Low-Income Energy Affordability Network (LEAN) has always been spent at the dollars it gets with air source heat pumps as a goal. They could spend all of their dollars earlier or if there is a sub budget for air source heat pumps. In a sense I am kind of laying a predicate for the next one which is “ensuring adequate budgets.” So, I want to tie those two things together by those words I proposed.*
- *Cammy: #1, I understand Charlie’s concern. However, I want to be careful that we don’t diminish attention paid to increase those installations subject to budgets not being made available to do that. I am not sure the best way to potentially address that. I want to make sure that we are not avoiding the efforts to increase it because of not giving the program enough money to do so. That is one item that I wanted to add to the conversation. The other comment is about 1B. I think it is not only important to add education to customers on the viability and benefits of electrification, but also on the current market pricing. One of the big challenges that we’ve heard with heat pumps and them being more expensive in Massachusetts and even other states in New England, is that there isn’t as much transparency around those costs. Consumers are sometimes at a disadvantage if they were given more of that information on how the market was functioning. I would encourage education on that piece as well beyond “electrification as viable and that there are benefits to it.”*

- *Maggie: #1*, I want to respond to Charlie’s comment. I was wondering if you would make your comment on budget if they were paired? I think I understand your concern, which is that LEAN consistently spends their budget and they are doing a lot of work assessing where heat pumps makes sense and moving forward with heat pumps installations. However, the only way they will be able to do that is if the budget is increased. But, I think these recommendations from the Council are also to the Program Administrators more broadly on how we actually allocate the budget. I want to make sure that if the Council thinks that we should be increasing the low-income budget for heat pumps, that we are making that clear here rather than caveating the recommendation.
  - *Charlie*: I agree of the thrust of what Cammy said and what you said. The way I am trying to create the pressure for the budget to be there. Maybe the words I have chosen is not the best way to do that. I am just trying to create the pressure for the budget to be there.
- *Elliot: #1*, I support Charlie’s comments. His comments were the products of a lot of LEAN members, including Jerry, John Wells, and many staff members who are familiar with the technologies. The comments on budget, Charlie and I can talk about. We really feel that we need some direction on what heat pumps, but how many different kinds and make sure that we are getting the goals above us and everybody else. I will wait until later to make further comments.
- *Charlie: #1*, Under 1A, it says, “Goals should be broken out...” which implies that there is an overall goal that you then break out. I didn’t see anything here about the overall goal? Is that oversight or intentional?
  - *(Consultant Comment) Elizabeth*: This sub bullet was added to provide a little bit more clarification. There had not been a sub bullet originally about goals. We added the sub bullet because each of the different types of technology or whole house versus partial have such different savings.
  - *Charlie*: I understand the statement about breaking out. But, it struck me as odd to have a statement about breaking out with no statement about overall goal. I do not have a suggestion there; I am only asking a question.
  - *Maggie*: The other reason we added this Charlie was because once we went through all the recommendations from all the workshops and tried to identify some consistency between them. And, this was the language that was in the Residential section on how the Council would want heat pump goals broken out for Residential. So, we tried to make some alignment there. But, you are right. We could potentially re-word this to be more about increasing budget allocation. And, then having a recommendation on setting increasing goals.
  - *(Consultant Comment) Margie*: Yes. I was going to speak to yet another point. I think this probably has a presumption in it, Charlie. The 2019-2021 term sheet does have goals for heat pumps for each individual sector, but they are high-level goals. I think the assumption is that there will be an interest in continuing that approach in 2022-2024 term sheet, but when those goals are established, they are broken down into different categories rather than just high-level sector goal for each sector.

- *Charlie*: My understanding is when LEAN sees a heat pump opportunity, it is almost always “Whole House.” So, I just wanted to raise that. We have been thinking about this a lot.
- *(PA Comment) Amanda*: This is just a reminder of how PAs build our budgets. It starts at the measure level. Looking at those goals, how many heat pumps, for example, were installed 2019-2020, what is the growth curb expected, what are the additional customers we anticipate, etc. We set the budget that way. Associated with the goals in the current plan, we allocated the budget to be able to meet those goals. Whatever goals we set, we will make sure that there is budget available for them. So far, we have not seen any issues with that.
- *Cammy*: #2, For recommendation 2, in the tracked changes version, the text used to be broader. I like what is included here- the idea of having at least one specialist in each CAP agency. I think what we lose a little bit of what had previously been there which was around assessing capabilities within the workforce, but I think even more directly as its written out to develop capabilities within the workforce is what I would suggest being added to this recommendation since we need more robust heat pump technicians. I think re-adding, “develop heat pump capabilities within the workforce” and include at least one specialist at each CAP or however we want to structure that. I do not know if it makes sense to have them both in one sentence, but to have that sentiment represented again.
  - *Maggie*: I believe the reason we took out “workforce” was because we have the separate workforce recommendations that specifically talk about increasing heat pump expertise. So, our intention was not to remove reference to workforce, but to streamline and reduce any repetitive recommendations. I do not know if that addresses your concern or maybe we add something to the workforce development section that specifically calls out in different sectors, including low-income to make that it is specific. Just so you know, we were not trying to get rid of that, we were trying to move it under the workforce recommendations.
  - *Cammy*: That makes sense. If it is captured somewhere else, that is fine. When we get to workforce, we want to make sure that it fully calls out heat pumps in the income-eligible sector.
- *Steve*: #1, For recommendation 1, add sub bullet C, which says “Carry out all needed weatherization in advance of heat pump sizing and installation.” LEAN folks are strong on this and I am too. All the research we have, particularly in an inefficient home, installing a heat pump frequently causes excess air circulation. So, I think it is worth making that explicit. LEAN is doing this now. It is being explicit about what is being done. Charlie and Elliot, is that correct? Charlie is nodding his head yes.
  - *Elliot*: You could add “Continue carrying out all needed weatherization in advance of heat pump sizing and installation”
  - *Maggie*: I think that is a good recommendation.

### **Councilor Comments/Suggested Improvements (on Income Eligible Heat Pump recommendations)**

- *Charlie*: For #1, Add “ Subject to available income eligible funding” before the word “Increase” in the first sentence.
- [In response to Charlie’s above comment] *Maggie*: Address increasing budget allocation

- [In response to Charlie’s above comment] *Maggie*: Add a separate recommendation on setting goals for increasing funding
- *Cammy*: #1B, Encourage education beyond “the viability and benefits of electrification”
- *Steve*: #1, Add a new bullet that states, “Carry out all needed weatherization in advance of heat pump sizing and installation”
- [In response to Steve’s above recommendation] *Elliot*: “Continue carrying out all needed weatherization in advance of heat pump sizing and installation”
- *Cammy*: #2, Either add back “workforce” into this recommendation and/or make sure adequately covered in the workforce recommendations

## ***Equitable Budgets and Services***

### **Ensuring adequate budgets**

- 1. Ensure that income eligible budgets reflect expected increases in the number of low-income households due to COVID, and reflect revised measure mixes and improved protocols.**
  - a. Collect data on and report to EEAC if and when there are deferrals or delays in service (in whole or in part) due to budget constraints.**

### **Ensuring equitable service**

- 1. Determine if there are differences in service by CAP territory, PA territory, or PA program (gas or electric) that are not warranted by differences in proportions of low-income households.**
  - a. Develop and implement strategies to correct unwarranted service differences, including additional resources to CAP agencies.**
- 2. Expand efforts to enroll customers newly eligible for IES services as a result of the COVID 19 pandemic.**

EEAC Consultant Elizabeth Chant summarized why Recommendation 1 from “Ensuring Adequate Budgets” was highlighted for review:

*(Consultant Comment) Elizabeth*: We did change the language from “should” to “ensure” because there was good discussion about how there are processes to change budgets along the way. There are ways to take account of different needs in the budget arena. So, the revision is to revise the text from “the budget should” to “ensure that income eligible budgets are reflected”. The other major change that was made was originally this did have a statement that the plan should incentivize additional spending on non-income eligible programs. We’ve removed that call for incentivizing, for a couple of reasons. First, the additional spending in this sector relates primarily to improving equity. At least one Councilor questioned the use of incentives to attain equity. The Councilor made the strong case that programs of Mass Save need to be moving toward equity whether there are incentives or not. There was a case made that having used incentives to improve or attain equity was not a good use of incentives. There were also questions on how to define “additional at this point” without the ability of being more specific.

We thought it was a better call to remove the call to incentivize. So, we have taken that out. Lastly, we put this call for data collection on the issues of deferrals and delays. We have made that text more specific than it was originally, so that the Council has a heads-up when budget shortfalls exist and that those budgets shortfalls are not adversely affecting programs and its customers.

Clarifying Questions/Discussion on Recommendation 1 under “Ensuring Adequate Budgets” (Councilor questions. PA and Consultant responses in italics).

- *Charlie*: #1, For recommendation 1, I would somewhere say, “Not only due to COVID-19 pandemic, but also the increased emphasis on installing on air source heat pumps.”
  - *(Consultant Comment) Elizabeth*: We thought we captured it, but maybe not clearly enough with the revised measure mixes and improved protocols. Maybe we need more clarification.
  - *Charlie*: Until you said that I was not certain what “revised measure mixes” was getting at. It helps because I think COVID and the air source heat pumps are going to be the biggest drivers of the need for more budget.
- *Jo Ann*: #1, For recommendation 1, excuse the questions if this has already been discussed in the prior iteration of this item. Where it says, “... expected increases in the number of low-income households...” Is that due to delays in servicing them in 2020 so that there is a back log that is going to put pressure on the next year’s budget? Or is the concern that the newly minted low-income customers will increase because of job loss? Maybe there needs to be some clarification? Maybe it is expected to increase in the number of new low-income households due to COVID impacts?
  - *(Consultant Comment) Elizabeth*: We can certainly put that in. It is the second one you mentioned.
- *(PA Comment) Amanda*: #1, For PAs, we are monitoring from our colleagues who work on registering people for the discount rate. So far, there have not been big changes since the time of the workshop. We have not seen big increases of numbers of people going onto the discount rate. Again, this is something difficult to predict. Given that we haven’t had any issues with income eligible budgets to date, this is something that we want to keep in mind.

Clarifying Questions/Discussion on Recommendations 1 and 2 under “Ensuring Equitable Service” (Councilor questions. PA and Consultant responses in italics).

- *Charlie*: #2 (under Ensuring Equitable Service), I want to point out that the PAs have done an extraordinary job on doing outreach on connection with COVID, but it has been about discount rates and enrollment payment plans. The words I would add are, “ by coordinating with the outreach efforts the PAs have taken, and continue to take, to promote payment plans, arrearage management programs, and discount rates.”
  - *Maggie*: Can you send that language to the Mass Save inbox or to me?
  - *Charlie*: Yes. And, to add something to Amanda’s comment. We at NCLC are going to come out with a report on the DPU 20-58 arrearage data. PAs know this. The arrearages in the dollar of the worst arrearages which is the 90+ a day arrearages are up 25% in the low-income sector. They are actually up more percent in the non-low

income sector because those are people were able to pay their bill. I think it is particularly good to think ahead that there will be a big impact, particularly when the moratorium ends. I think the first part is important to anticipate that growth.

**Councilor Comments/Suggested Improvements (on Equitable Budgets/Services recommendations)**

- *Charlie:* For #1 ( under “Ensuring Adequate Budgets”), add “Not only due to COVID-19 pandemic, but also the increased emphasis on installing air source heat pumps.”
- *Jo Ann:* For #1 (under “Ensuring Adequate Budgets”), clarify that the number of low-income households is expected to increase because of job loss from COVID-19
- *Charlie:* For #2 (under Ensuring Equitable Service), add " by coordinating with the outreach efforts the PAs have taken, and continue to take, to promote payment plans, arrearage management programs, and discount rates" at the very end of the sentence

***Multi-family Pipelines & Protocols***

- 1. Increase and improve service to multifamily buildings, including naturally occurring affordable housing (NOAH). Strategies should include:**
  - a. Working with the Massachusetts Department of Housing and Community Development (DHCD), the U.S. Department of Housing and Urban Development, and public housing authorities to identify and reach out to owners and managers of small multifamily buildings that are part of the certificate-based Section 8 program.**
  - b. Utilizing PA account data to identify multifamily buildings.**
- 2. Provide more flexibility for multifamily building owners undergoing scheduled rehabilitation, renovation, or refinancing, to enable deeper energy-savings.**
  - a. Collaborate with affordable housing developers and key stakeholders to establish a workable pay-for-savings approach, which promotes deep energy, retrofit projects.**

EEAC Consultant Elizabeth Chant summarized why Recommendation 2 was highlighted:

*(Consultant Comment) Elizabeth:* We cleaned up the language. We deleted “develop and implement strategies” in favor of a more prescriptive language. We also deleted electrification to keep this recommendation focused on energy efficiency. Most important, this came from the public comments in writing, sub bullet A was added. It is not highlighted, but it is the reason why we wanted to talk about it. This was a good suggestion that came through the stakeholder process.

Clarifying Questions/Discussion (Councilor questions. PA Consultant, and DOER responses in italics).

- *(PA Comment) Amanda: #2, For 2A, since we already pay the full cost of energy efficiency upgrades for income eligible multi-family, is the recommendation from the Council that we pay additional money to the multi-family property owner?*
  - *(Consultant Comment) Elizabeth: It is looking for more flexible approaches that if, for example, in a multi-family retrofit project, if there is a different way to structure the incentives. One that might be looked at would be a pay-for-savings approach rather than measure by measure. This could be an augment to a measure-based approach. Instead of looking at measures, let's look at the savings that are resulting from measures.*
- *Maggie: #2, I would ask Alissa Whiteman or Ian Finlayson to chime in if there is anything additional on the public comment question. The first was more flexibility in terms of deeper measures. Rather than specific approved measures, if a bundle of deeper measures result in cost-effective savings to allow that flexibility. The second piece on public comment was often times affordable housing developers or owners are working with different contractors on these projects, not contractors that are necessarily certified through the low-income programs. I think there was an ask from stakeholders to have some flexibility in terms of who they are working with. The public comments came both from Winn Development and LISC. Folks might want to look at them. Alissa and Ian, am I reflecting correctly on both the issues on the public comments were received?*
  - *(DOER) Ian: Yes.*
- *Charlie: #2, Could you clarify that if we take this approach, and I think pay-for-savings is a good idea, would LEAN say that the owner will pay 100% of this list of measures and we've had this different approach that we will pay you for the savings that comes from the same things that you are doing? Or, will it somehow be intermingled? I am confused.*
  - *(Consultant Comment) Elizabeth: I think it could be an intermingled approach. I think the first three words, "Provide more flexibility" are important. As Maggie said, a lot of times these developers, especially in a large-scale rehab are working with lots of different contractors who may have nothing to do with the regular programs as we see them. They are not part of the regular contractors. They may be something that the GC has to oversee and need some sort of funding for it. It may not be easy to breakdown or look at the individual incremental cost, but rather design a package of incentives that really focus on the savings.*
  - *Charlie: That helps. Thanks a lot.*
- *Greg: #2, The comment I have is more process related. In reviewing a lot of the workshop summaries, each of them had a list of recommendations from Councilors. Are those imbedded in these yet or does that come in a further time period?*
  - *Maggie: Those should be imbedded. If you think we missed anything, raise those again.*
- *Greg: #2, I would like to then comment on this section. I would like to see a reference to doing air leakage or blower door testing on multi-family buildings on the residential side. I think it is not only important from a savings standpoint, but from a human-health standpoint. We do it in single family homes, we should do it in multi family homes to make sure we are*

not leaving places any worse than where we found them. I would imagine putting the phrase “air leakage” in the protocol bit would be fine.

- *Steve: #3*, I had a recommendation which was to add a number 3. The problem of multi-families being “sliced and diced.” Dealing with owners was difficult. I think the commercial-industrial versus residential has been solved. But a recommendation to package a delivery of services to multifamily with mixed low-income and market rate units to avoid mixed messages and information to the owners is important. Some units are by low-income, some units are by market rate, and it gets confusing to the owner. I think packaging that makes a lot of sense.
  - *Maggie*: I think that makes sense. The mixed income protocols are something that is actively being worked on that potentially the PAs or LEAN could comment on.
- *Elliot: #3*, We have been working on middle income protocol to have some drafts out to people for comment. I would support putting something in there to memorialize it. I agree with Steve’s idea.
  - *(Consultant Comment) Elizabeth*: No problem with including it here. I do recall that the Equity Working Group (EWG) recommendations do refer to the mixed income protocol. It may come through in two places. We are not addressing the EWG recommendations today, but I do think the mixed income protocol was referred to there. It doesn’t hurt to have it in two places.

### **Councilor Comments/Suggested Improvements (on Multi-Family recommendations)**

- *Greg: #2*, Add “air leakage/blower door testing” in the protocol
- *Steve*: Include a recommendation to package a delivery of services to multifamily with mixed low-income and market rate units to avoid mixed messages and information to the owners  
*(Note: Steve agreed to send text for his stand alone recommendation 3, but we do not have it)*
- *Elliot*: Include a recommendation that delineates the middle income protocol

### ***Data and Systems***

- 1. Strengthen regular reporting in order to identify areas of improvement and resources needed to support comprehensive and equitable service to all submarkets. Reporting should provide insight into specific program activities and buildings served, as well as identify where program designs are working well or need modification. Quarterly reporting to the EEAC should allow differentiation of program activities by more granular parameters, including:**
  - PA and CAP territory
  - Program (gas, electric)
  - Service type (Appliance Management Program (AMP), weatherization, heating system)
  - Building size (number of units)
  - Resident status (owner or renter)
  - Ownership (public housing, subsidized affordable housing, private)

**2. Develop and implement a statewide computerized audit tool by the third quarter of 2022 that can provide regular, timely, and consistent information to support identification of best practices and needed continuous improvement as well as reporting to the Council and providing data for EM&V.**

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Charlie: #2, For recommendation 2, where it says, “by the third quarter of 2022...” How do you guess on when that is going to be available? How did you come up with the “third quarter”?* I don’t know if there are PAs on the call who can speak to that.
  - *(Consultant Comment) Elizabeth:* I thought the third quarter of 2022 came during the discussion by the Councilors in the workshop. There was discussion of “If we don’t put a firm deadline in, then we may as well take the recommendation out.” It might have been Sharon (I don’t want to put words in your mouth) or Cindy.
  - *Maggie:* I think we can let LEAN or the PAs to weigh in on the timeline. I don’t think we talked about third quarter 2022, but when we were updating the recommendations, we were not sure if the start of the next plan was a reasonable date. I know that this is being worked on by LEAN. We put it in as a discussion point.
  - *Sharon:* I disagree. I am the person that was looking for some definitiveness about a deadline. I am open to whether 2<sup>nd</sup> quarter or 3<sup>rd</sup> quarter is better.
  - *(PA Comment) Amanda:* I wanted to address Charlie’s question and Maggie’s question. It is true that all PAs have different tracking systems that are internal and CAP agencies use slightly different tools. So, it is something that we tried to address in this current plan. Because of the level of how complicated it is arranging and coordinating all of those and addressing the fact that they are utility level systems rather to specific energy efficiency. That has presented a lot of challenges. However, the spirit of this is to get at specific data and reporting questions. The computerized audit tool is the vehicle to some of those underlying questions. I think it would be helpful to know what those questions are to see if there is a different path we could use to help address them.
  - *Maggie:* Amanda, am I hearing you right that there are plans to implement a state-wide computerized audit tool through the low-income programs?
    - *(PA Comment) Amanda:* That are currently underway?
    - *Maggie:* Or planned? Are you saying that this is something that you are planning to do in the next plan?
    - *(PA Comment) Amanda:* We are not necessarily ready to commit to a date. I would ask if Elliot wanted to comment about what some of the requirements have been coming from DOE. This would be about online tracking. I know the CAP agencies are working on. It is something that we have explored over the last couple of years, but we don’t have a specific plan at this point in time to implement a statewide online audit tool.
    - *Elliot:* The DOE audit issue has been going on for decades. We have made a lot of progress, but it is still not ready. We are aware that there is a new

administration. We will then begin the process again with DOE. I am sure it will be a lot more receptive to the ideas we have. The worry is putting a date on it. The goal is admirable.

### **Councilor Comments/Suggested Improvements (on Income Eligible Data Systems recommendations)**

None

## **WORKSHOP 3: EXISTING BUILDINGS FOR COMMERCIAL AND INDUSTRIAL RECOMMENDATIONS**

### ***Lighting Controls***

- 1. End support for non-dimmable TLEDs by the end of 2021 across all program pathways. To receive support, dimmable TLEDs should be installed and commissioned to deliver some combination of initial wattage tuning, daylight harvesting, occupancy controls and dimming capabilities. Refocus upstream product offerings on “smart” dimmable and controllable TLEDs and DLC qualified luminaire-level lighting controls.**
- 2. Drive customers towards luminaire-level lighting controls wherever possible using performance lighting and other more comprehensive pathways. Improve the ease of participation for the Performance Lighting Plus program, particularly for existing buildings.**
- 3. Increase investments in lighting controls training for contractors/installers and customers; expand training efforts to include commissioning for contractors/installers, sales strategies for distributors/contractors, operation and maintenance best practices for facility managers, and customer education on energy and non-energy benefits of controls.**

### **Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).**

- *Bob*: #1, I am okay with this text. I think everyone will agree with me on this. It is time as a group to stop subsidizing things in places we don't want to go. I am okay with ending support for certain things. I think it is time as an energy efficiency program to say, “we will not give you money for that anymore because this is where you should go.” Particularly in this area it is warranted.
- *Cammy*: There was another recommendation that I made here that I do not think was captured. It's connected to lighting controls, but not only about that. That had been on continuing to convert streetlights to LEDs and incorporating controls to all streetlights including prior LED conversions.
  - *Maggie*: I am sorry, that was an oversight. We did mean to add that in.

### **Councilor Comments/Suggested Improvements (on Lighting Control recommendations)**

MA Energy Efficiency Advisory Council

Workshop #6: Review and Finalize Draft Recommendations from Workshops 1-4 (1.20.2021): Draft Meeting Summary

- *Cammy*: Add recommendation that speaks about “continuing to convert street lights to LEDs and incorporating controls to all street lights including prior LED conversions”

## *HVAC*

- Increase electric and gas HVAC savings from existing buildings** improving realization rates, increasing participation, addressing system optimization, providing benchmarking services, commissioning projects from concept through operations and including envelope upgrades.
  - Improve realization rates for implemented HVAC projects by consistently including third party commissioning to ensure the Massachusetts ratepayers and the customers investing in HVAC retrofits have accurate savings estimates that are realized.
  - Increase participation in custom HVAC projects and pursue system optimization to increase savings per project. System optimization includes right sizing, eliminating pinch-points and by-passes, adding energy and heat recovery, implementing optimal sequences of operations and commissioning.
  - Consistently prioritize support for building envelope assessments and upgrades including air sealing, insulation and incremental improvements to siding and windows when investments in thermal envelope are planned.
  - Incorporate standardized benchmarking across PAs (using ENERGY STAR Portfolio Manager) as a pre-post component of project implementation and capture benchmark data in PA tracking databases.
  - Align timing of interventions with planned infrastructure upgrades to support deeper, more comprehensive upgrades.
  - Undertake evaluation study that addresses barriers to adoption, site level realization rates and reasons for differences in verified vs reported savings.
- Increase and drive demand for electrification projects, including conversions to variable refrigerant flow (VRF), air source and ground-source heat pump systems paired with Dedicated Outdoor Air Systems (DOAS) and providing operator and occupant training.
  - Establish increasing target for electrification projects by fuel type.
  - Establish target for heat-pump water heating.
  - Provide training to customers on the viability and benefits of electrification; provide training to operators on maintenance and operations of heat pump systems.
- Undertake a Deep Energy Retrofit Pilot including working with customers to leverage planned replacements to achieve cost-effective deep energy retrofits that result in balanced investment in envelope, HVAC and other improvements. Engage private and public customers with significant real estate portfolios to identify potential buildings and undertake integrated design with scenario modeling, lifecycle and financial analysis to identify the optimum investments. Completed

retrofits should reduce energy use by at least 40%<sup>1</sup> to move participants toward ZNE and renewable-ready buildings. Use the pilot to build the supply chain and workforce including identifying existing market actors with the skills best suited to delivering successful projects and training providers. Document project characteristics in promotional materials.

- a. Work with customers with significant real estate portfolios to identify buildings suitable for inclusion in the pilot with a target of 50 participant buildings. Help customers realize the full benefits of holistic lifecycle cost analysis by working with them to plan how they will replace equipment, systems and envelope components nearing end of life in order to move buildings towards lowest required energy inputs for HVAC operation.
  - b. Use an integrated design approach incorporating early retirement of existing equipment, systems, and components to ensure comprehensiveness and to identify the optimal package of integrated energy efficiency measures for the client; consider electrification in every package. Incorporate envelope improvements including assessments of the addition of insulated exterior cladding and upgrading windows to triple glazed units at the time of replacement.
  - c. As part of the process assess which service providers are best suited to support customers and the PAs in pursuing Deep Energy Retrofits.
  - d. Document project costs, savings, benefits and measured results in case studies and other promotional materials.
4. Expand delivery of services and savings relating to building automation and energy management information systems including legacy system upgrades and replacements and portfolio optimization. Require the use of and provided incentives for independent third-party commissioning in the existing building sector to improve savings.
- a. Work with customers to upgrade legacy systems and optimize HVAC system performance. For customers with significant real estate holdings, works to ensure interoperability and optimization across their portfolio by helping them bring existing systems up to modern standards when new buildings or systems are added.
  - b. Require existing building commissioning to use independent third-party commissioning providers who participate in the project from kick-off through Measurement and Verification and include operator training.
5. Increase support for and participation in Energy Management Information Systems (EMIS) measures and monitoring-based commissioning (MBCx).
- a. Include participation rates, estimated savings, achieved savings and project costs in quarterly reports to the Council.
  - b. Evaluate EMIS and MBCx to identify market barriers, identify proven programmatic approaches that addressed those barriers in other jurisdictions and assess the market actor competency in delivery EMIS and MBCx services.

<sup>1</sup>DOE Deep Energy Retrofit Challenge <https://www.energy.gov/management/spo/articles/doe-s-sustainability-performance-office-announces-deep-energy-retrofit>

EEAC Consultant Adam Jacobs summarized why Recommendation 1 was highlighted:

*(Consultant Comment) Adam:* The biggest changes came from a few items around 1C, which is to “prioritize support for building envelope” work. That includes both the assessments and upgrades themselves. Before that, we had including support for building envelope, but there was some feedback that “prioritizing support for building envelope” measures would generally increase HVAC savings opportunities because those are really linked measures. Another addition to this was section 1E. We tried to get in line with customer replacement cycles to ensure that we are providing recommendations to them on equipment replacements at the time it fits with their capital planning process. There were also some revisions to 1F, with “undertaking evaluation study” rather than reporting on progress to study barriers. It went from reporting on barrier identification to completing a study. We had a note from Sharon to include data wherever feasible. This was about the study itself.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Cindy:* #1, How much of this recommendation is suggesting that PAs do something that they are not doing and how much of it is to note things that they are already doing, but express that you want them to do more? This is a lengthy recommendation and I don’t think you are saying they are not doing any of these things. From the perspective of the PAs, we ought to be clear about what we think they should be doing that they are not doing, or that we want to see more of as opposed to just re-stating things that are already being done.
  - *(Consultant Comment) Adam:* Yes. A lot of these steps are already in progress. I think the “building envelope” is one that we heard regularly as not being cost effective for C&I. That is one that we do want to dig into more. The other component, such as “improving realization rates,” we know that there are relatively lower realization rates for a lot of HVAC projects that include any sort of controls upgrade. There is a study done on a coffee retail chain that had low realization rates for a series of projects that came in with almost zero realization rates on a project specific basis. I agree we have a lot to unpack, but it is one of the biggest sources of savings. A lot of those details are in response to the complexity of the issue.
  - *Cindy:* I think the whole prefatory sentence can be eliminated. It seems to me that these are the things that the PAs are already doing.
  - *(Consultant Comment) Adam:* We do have a Key Performance Indicator that points to the amount of custom HVAC savings by the PAs? While there is not an end use target or goal built into the plans, the amount of HVAC savings we have been achieving is coming well under what we have planned for in the current plan cycle. It really is about increasing that. These are some of the ways that we think that can be achieved.
  - *Maggie:* Some of the feedback we got from C&I on the detail on the “how” we will get to those high-level recommendations was important. I am trying to think about how we will prioritize this for the PAs as they think about the April draft.
- *Cammy:* #1, I do not share that concern that there is too much verbiage. I agree that we are re-stating the first sentence and then the rest follow it, so we can make it more concise, but I

am not concerned about that. I see us provide the level of detail we can so there is a guidance going into the plan rather than filling in that detail after the first draft.

- *Cindy: #1*, I do not have a problem giving detail if it is suggesting something new. Apart from the “building envelope” recommendation, most of the recommendations are already being done.
- *Dennis: #1*, I would like more detail about 1D. How can this be done? It could be quite a bit of work for all customers to maintain this. I know that the PAs can fit this information. Is it possible that the PAs can set up all these accounts by address in a somewhat easy format to add to it to a customer’s portfolio? This is already being done in Boston, but for some, it is not a straightforward process. It takes quite a bit of resources.
  - *(Consultant Comment) Adam*: I think there have been efforts to help customers integrate Energy Star Portfolio Manager Benchmarking into projects. Also, to help with compliance to those benchmark ordinances. This one is in there because one of the main drivers of energy use intensities is the thermal loads that come into the C&I buildings. Since we are talking about HVAC and we are touching the largest end use for that building in most cases, there will be tangible reductions in energy use intensity. If we are trying to simplify things, this might be one where I can see fall into the cutting room floor.
  - *Dennis*: Second question, going back to M&V for this project. There is a lot of value, especially in HVAC, to set up the right metering--to make sure that the measures remain with the original intent where things are not overridden. It would also be great to follow up to help with M&V, to install metering, that can track those measures if any deviation from the original purpose is found to track and incentivize it through a continuous Commissioner review. That is the biggest challenge that you will find there- a lot of things get overridden and people forget about it. It must be incentivized, and it is not cheap.
  - *(Consultant Comment) Adam*: Your points are somewhat supported by 1A and 1C in the need to provide commissioning in the first place and to make sure that the sequence of operations is designed and implemented properly. What this does not capture is your point on monitoring and continuous commissioning. To some extent it might be picked up by continuing to do benchmarking and making sure you are seeing those reductions. I think it is a fair point.
- *Sharon: #2*, For recommendation 2, I was thinking about Cindy’s comment about “what is different?” And when I look at the redline version on recommendation 2, I see that there is at least a version that said “1,000 in Year 1”, “2,000 in Year 2”, “5,000 in Year 3.” However, that text is not in the final version. Anywhere we can be more specific is better. I think what we have laid out here is going to guide the PAs. I want some insight into why “1,000 in Year 1”, “2,000 in Year 2”, “5,000 in Year 3” was in and then came back out?
  - *(Consultant Comment) Adam*: I think the specificity of the numbers was originally meant to be illustrative. Coming up with the specific target was more of the recommendation, which is to say ‘we don’t just want heat pumps, we want heat pumps that are actually delivering fuel switching opportunities by fuel type. I don’t know if the “1,000 in Year 1”, “2,000 in Year 2”, “5,000 in Year 3” was based off the

- potential there. It was setting some targets associated with it. The intention is there, but the numbers are something we would like to work with the PAs to figure out.
- *Sharon*: So actual targets to come is how I am going to think about that. Thank you.
  - *Maggie*: I agree with Sharon. My hope is that the potential study will help us get into the numbers on what the right targets are for heat pumps. But it feels premature until we have the numbers t in front of us.
  - *Steve*: I am not sure where this fits in terms on new technologies, but certainly with the HVAC issue. Eversource just got approved for their pilot for Geothermal Microgrid Project. National Grid is interested in it. We are working with HEET and Eversource is there to assist with implementation of that pilot. Since this is a three-year plan, the results of that pilot should be considered (should the Geothermal Microgrid Project prove successful). That could be an additional technology opportunity, particularly around HVAC. That’s a big one if it works. Also, incorporating more explicitly PV & Storage into the plans, particularly active demand management and also in identifying added savings to come from that. My thought was to add the “PV & Storage” to number 6.
  - *(Consultant Comment) Adam*: If we jump to recommendation 3, I think what Steve mentioned is somewhat partly captured in there. In that instance Steve, I think what you are talking about the integration of renewable and storage. Perhaps the storage could have some support through ADR. I think the way the efficiency support programs would support something like that would be through reducing the loads in the building in the first place and making it zero net energy and renewable ready. I agree that we need to find a way to have the efficiency programs support that initiative. That was approved through a gas rate case, so it is sort of equipping the buildings to be capable of interacting with that technology, knowing that it is getting its financial support through a slightly different mechanism.
  - *Steve*: It will be heat pumps that will deliver the heating and cooling. Granted that the energy is coming from geothermal, but it will be heat pumps that are installed. You never know how you will slice and dice these technologies.

### Councilor Comments/Suggested Improvements (on HVAC recommendations)

- *Cindy*: #1, Streamline recommendations and focus on/clarify when expect PAs to do something new and incremental
- *Cindy*: #1, Consider deleting the intro. prefatory statement as this is mainly about what PAs are already doing
- *Dennis*: #1d, Add something around continuous commissioning
- *Steve*: #3a, Add “geothermal microgrids”
- *Steve*: 3a, Add “PV and Storage” language

### ***Industrial/Process Savings***

- 1. Continue to identify and eliminate barriers that are preventing project implementation and savings already identified through the Industrial Initiative.**

- a. **Continuously check back regularly with customers to see if circumstances have changed, or what it would take to move forward. Once a project has been identified, and quantified, the incremental support to cause a project to move forward should be less than the effort and cost to identify a new potential project.**
  - b. **Provide sales training to Industrial Initiative contractors.**
  - c. **Use the Massachusetts Pro Forma tool to provide cash flow analysis, rate of return, and other project financial information to the customer CFO to sell the project.**
  - d. **Report to the EEAC on work being done to reduce barriers for industrial process savings.**
2. **Expand Strategic Energy Management (SEM) to a full program offering for all industrial customers.**
    - a. **Pair SEM with implementation of traditional Industrial Initiative to drive more capital projects. Track any increases in capital projects to assess the impact of SEM participation in Massachusetts. SEM may be the most valuable marketing tool available to target manufacturers.**
    - b. **Reassess the measure life for Strategic Energy Management operational savings.**
    - c. **Support Energy Management Information Systems through financial cost sharing.**
  3. **Identify customer segments where there are still appreciable non-lighting savings opportunities and construct targeted initiatives to address these markets. Examples include:**
    - **Smaller/distributed telecom sites, including cabinets and other unoccupied structures.**
    - **Cannabis cultivators with substantial process savings from CO2 extraction and environmental controls.**

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Sharon: #3, On the last bullet it says, “process savings from CO2 extraction.” I am wondering what is CO2 extraction? Are we talking about sequestration?*
  - *(Consultant Comment) Adam: No. It is just a process built into the cannabis cultivation. It is one of the industrial processes they looked at. We talked about it at the C&I Management Committee related to breweries. But there haven’t been any recommendations regarding cannabis cultivation yet. These are examples of measures. We could just easily not include that text if its confusing. It is part of the process of cannabis cultivation, not carbon capture sequestration if that is the question.*
  - *Sharon: If anything, I thought you would pump extra CO2 in and not extract it to make the plants grow faster. I do not know what this example is meant to convey. I might suggest deleting that example, but okay either way.*

- *(Consultant Comment) Adam:* It was meant to be illustrative. We would absolutely take that line out. The one area for cannabis cultivation that we sometimes classify as lighting as a process because in this instance it is. We did want to provide an example of a non-lighting process.
- *Cammy:* #3, I did have another recommendation for Existing C&I that did not fall under Industrial. This was not captured in one of these categories. It was something that I did mention at the previous workshop. I think there should be a recommendation for a distinct pathway for public municipal buildings in facilities, including structured agreements. I think Margaret Song commented that it would be helpful to conduct an evaluation for public facilities in order to establish sector specific base lines.
  - *Maggie:* I am wondering if it could go under the HVAC section?
  - *Cammy:* It includes lighting as well as HVAC. That generally makes sense.
  - *PA Comment (Adam):* To some extent does Equity Working Group looking at C&I in the municipal partnerships at all look at muni-specific?
  - *Cammy:* That has not been raised too much.
  - *PA Comment (Adam):* We focused a lot on the measures and end uses. We just didn't know where to put it.

### Councilor Comments/Suggested Improvements (on Industrial/Process Savings recommendations)

- *Sharon:* #3, Consider deleting “from CO2 extraction and environmental controls”

### **CHP**

#### **1. Reassess incentives for natural gas fueled CHP**

- Analyze lifecycle greenhouse gas impacts of CHP in the context of the Global Warming Solutions Act climate goals**
  - Complete a dedicated CHP impact evaluation no later than 2022 and reassess incentive levels based on this evaluation. Ensure this report includes an update to free-ridership, spillover and net to gross ratios. Study new and replacement systems separately.**
- For all CHP projects, conduct detailed lifecycle emissions analysis using an impartial and agreed upon forecast of ISO New England's emissions intensity between now and 2050. Conduct a project-by-project economic analysis that determines whether a given CHP project needs Mass Save support to generate a 5-year positive cash flow. Prioritize and offer enhanced incentives for lower carbon systems such as renewable fuel CHP systems that run on anaerobic digester gas.**

EEAC Consultant Adam Jacobs summarized why Recommendations 1 and 2 were highlighted:

*(Consultant Comment) Adam:* These changes were fine tuning the recommendations to focus on the right sizing of the incentives that are given to CHP. Completing the Impact Evaluation in Section 1B is the primary focus. We have not conducted a dedicated impact study since 2011. The proposed study here focuses on net gross and free ridership rates. Currently, NTG for CHP

is imbedded into a broader C&I study effort that touches on several different initiatives. I believe the last study had a sample size of about seven. It's a fairly limited measure. I think conducting a dedicated study was the main point here. Recommendations 1 and 2 talk about lifecycle greenhouse gas emissions impact accounting to look at how that aligns with broader Global Warming Solutions Act (GWSA) and other climate goals. All these changes were geared toward figuring out the appropriate place for CHP's incentivization through Mass Save.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Dennis: #1 and #2, What does this come from- to study CHP specifically as opposed to onsite generation? Was it because the APS program was reassessing its feasibility? Isn't there a perception that the economics are there and there is more free ridership? Is it perceived as a polluter as opposed to low emissions? I want to understand that. There is no mention of fuel cells, for example. For any technology that is on site generation, the State has set clear goals to increase resiliency at the community and facility level. There are limited forces that can be used to do this, especially for hospitals. Why focus on CHP? I do understand that reassessing is always healthy. In my point of view, economics are not there without incentives.*
  - *(Consultant Comment) Adam: The way we incentivize fuel cells is through the same pathway as CHP, assuming it provides the same electrical and thermal energy. The reason why we are focusing on it is because it is a fairly large portion of the portfolio, especially in this planning cycle. For the amount of resources reporting towards CHP, those are resources that cannot go towards other efficiency measures necessarily. Also, on the point of resilience, there are some funding sources and other ways to support resilience that are not necessarily driven by the efficiency programs. I agree with you. I do not know if this answers your question.*
  - *Maggie: I agree with Adam. I think we could include fuel cells in here, but I don't think this falls under this category of onsite generation. However, I think the number of CHP projects we have funded by Mass Save compared to fuel cells is different. CHP has been a big investment in the programs and fuel cells have been much smaller. I think this was why this was specifically talking about CHP.*
- *Sharon: #2, My comment was about the use of the word "lifecycle." I am not sure we want this word. I am interested in perhaps "lifetime greenhouse gases" which is a term we used earlier in this document. "Lifecycle" gets into emissions that were generated to make the steel that you used to make the framework for the CHP unit. I do not think that is what we are talking about here. I think we are talking about "lifetime emissions" unless someone wants to correct me, and they were interested in "lifecycle."*
  - *(Consultant Comment) Adam: Do we consider a difference in terminology for something that is a renewable fuel stock? In that case, do you want to consider "lifecycle" or is "lifetime" still the appropriate term?*
  - *Sharon: I don't think we want to be talking about the materials- the concrete, of the windmill pad and the carbon fiber blades of the windmill. I don't think this is what the intent was here. I think we are interested in "lifetime emissions."*

- *Bob: #1*, My problem lies with recommendation 1A. I have no problem looking at CHP or any incentive we give to ensure that it is going to the right place. When you take the GWSA, which goal are you talking about? If you are talking about 2050 then that is a different goal than what I just saw on the Climate Bill for 2025. I am not convinced on some of the things, like heat pumps, are giving us reduced greenhouse gases over the next few years. They may over the longer term, but if you said to me, “let’s only do things that reduce greenhouse gases between now and 2030”, I am not sure even heat pumps will work. This is because we are transferring something that is 97% efficient at my house to something that must go through all the electrical lines heat produced by basically by the same fuel and then covert it to heat in my house. I don’t know why we have to look at greenhouse gases and CHP any differently than anything else we do. Knowing that they are at different lifetimes, this may help us reach a 2030 goal, but it may not help us meet a 2040 goal. Heat pumps may help us meet a 2040 goal, but they may not help us reach a 2030 goal. I have no issues with looking at CHP. I agree with Dennis. Why is this being parcelled out for something that nothing else that I know of goes through the same analysis?
  - *Dennis*: It would be good to look at the effectiveness of the energy production being delivered by CHP compared to all of the other ECMs.
- *Cammy: #1*, We are not singling out CHP as the only type of technology that should be considered in the GWSA goals. We should be doing this program wide throughout Mass Save. There are goals we are required to meet both for 2020 and 2050, and now 2030. There is also great benefit to greenhouse emission reduction in heat pumps in other renewable technology as compared to other fossil fuel-based technology. CHP has had a big investment and has been a big part of our C&I portfolio. Taking another look at that, knowing that the last study done was many years ago. And, including this context, which as certainly changed in the last 8-9 years is useful. We do not want to get rid of CHP or other fossil fuel-based equipment, even though we must move in that direction to meet these goals. Determining best how we want to allocate our energy efficiency dollars. I think it makes sense to take these priorities into account.
- *Cindy: #1*, I understand what Dennis and Bob were saying, but I also agree with Cammy. CHP is heavily dependent on natural gas. It is also a significant financial commitment in our energy efficiency budgets. I think it requires greater scrutiny than other technologies that we are incentivizing through the programs. I think it would be helpful to have the potential study because the number of economically viable projects is dwindling. It started off really big because it started replacing more expensive oil. People did it because they had to replace their boilers anyway. The rationale for doing it now is different. We need to understand the business of CHP, the economics of CHP, and the emissions impact. We should expand 1B to make it clearer that we are interested in the potential and the opportunities for more CHP before the State decides to cut it off. I think it would be helpful to understand the economics of CHP right now, especially with gas prices.
- *Bob: #1*, Yes, Dennis’ suggestion is fine with me. I am okay with assessing and evaluating it. I don’t want to hold it to a higher standard. There are things that are proposed on the grid right now related to renewable energy, like offshore wind. But the fact of the matter is, is that they are not here yet. I can’t say with 100% confidence that within 5 years everything that we

plan to build, will be built. When you analyze things like this, you need to put it into the context of whatever your goal is. Using 2050 as a goal is not fair to something like this. I would analyze this in the context of APS as well as the ITC. What role does energy efficiency program play with all these other programs?

- *Dennis*: #1, We should expand the study to all fossil fuel technologies or onsite generation. We need to consider what it delivers and the answer is a more comprehensive study.

### **Councilor Comments/Suggested Improvements (on CHP recommendations)**

1. *Dennis*: #1, Include a more comprehensive study for onsite generation, including but not limited to CHP (or at least all fossil-fuel related CHP including fuel cells)
2. *Cindy*: #1, Add a new sub-bullet for a potential study on CHP
3. *Sharon*: #2, Change “lifecycle emissions” to “lifetime emissions”

### **Other C&I Suggested Recommendations:**

- *Cammy*: Add in recommendation that calls for a distinct pathway for public municipal buildings in facilities, including structured agreements under the HVAC section.

### **WORKSHOP #4: RESIDENTIAL EXISTING BUILDING MARKET RATE RECOMMENDATIONS**

1. **Establish separate, higher heat pump unit goals to reflect EEAC priorities and report progress within the PA quarterly reports. All heat pumps, whole house conversions, partial displacement, and heat pump water heaters should break out goals.**
2. **Bolster program support and market promotion of heat pump technologies for primary heating including the addition of incentives and HEAT Loan eligibility for ground-source heat pumps by January 2022:**
  - **Enhance HVAC contractor technical competencies for heat pump system selection, design, installation and maintenance**
  - **Enhance customer education efforts**
  - **Co-deliver with other energy efficiency and active demand management measures**
3. **Recognizing climate goals and the market transformation that has occurred with respect to fossil fuel systems, update current fossil fuel space heating incentives to limit incentives only to technologies and installations where clear cost-effective savings remain.**
  - a. **By January 2022, for market rate customers with existing gas or propane equipment: remove incentives for customers replacing existing condensing systems and maintain incentives for customers replacing non-condensing with condensing systems,**
  - b. **For market rate customers, cease incentives and HEAT loans for oil-fired heating equipment as of January 2022; handle as custom measure, especially for multifamily buildings.**

- c. Study low and moderate income customer impacts and needs to determine appropriateness of the application of A and B for these customer groups.

**Phase out fossil fuel water heating incentives.**

- a. Cease incentives and HEAT Loans for oil and propane water heating equipment by January 2023, using a phased approach if necessary to support an orderly market transition.
  - b. Cease incentives and HEAT Loans for storage and indirect natural gas water heaters as of January 2022, but retain incentives for more efficient tankless and condensing gas systems.
  - c. Study low and moderate income customer impacts and needs to determine the appropriateness of the application of A and B for these customer groups.
4. Supplement RCD with new, custom performance-based offers modeled after DOER's Home MVP pilot that incentivizes customers to both weatherize and install heat pumps.
  5. Implement state of art communication and data management practices to increase effectiveness of customer interactions, including but not limited to:
    - Review/refresh the Mass Save and PA websites
    - Carry through updated messaging strategies to customer emails, social media, and other communication channels
    - Improve the home energy audit report
    - Improve behavior reports
    - Enhance use of technology
    - Enhance sales training to program contractors who interact with customers

**6. Increase participation and conversion rate in RCD:**

- Increase savings and participation from weatherization measures.
- Improve customer access through simplified customer experience such as, reduction in number of steps to participate, increased opportunities for immediate action, additional facilitated support etc. streamlined customer support.
- Increase data-driven targeted marketing and outreach efforts.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Steve: #2, If there are inefficient conditions in the home, putting in a bigger heat pump and one that cycles too often is not a good idea. So, my proposal is to add a sub bullet "increase incentives and support for heat pumps, combining it with weatherization where inefficient conditions exist."*
  - *Maggie: I think that is the intent of the 3<sup>rd</sup> bullet. You want to be specific to pairing with weatherization specifically?*
  - *Steve: Yes.*
- *Justin: #2, Are we intending to require that somebody has a weatherization completed before they receive the incentive or is it just recommending?*
  - *Steve: Some states are requiring it. I would almost say yes, but we could say encourage and incentivize in the recommendation.*

- *Dennis*: It should be required.
- *Steve*: I don't disagree with that.
- *Elliot*: I would say "require when feasible or when practical."
- *Justin*: I would like to see it recommended. We have talked about barriers to weatherization in the past. Is somebody is looking to install a heat pump because they're heating system has gone out now, but they re-do the wiring in the home in order to have the weatherization done, then I would hate to see us pull the incentive away to discourage someone from putting in a heat pump when they are planning to make the other improvements down the road.
- *Paul*: #2, I think weatherization should be required. Recommending weatherization is not enough. I would emphasize that it should be required.
- *Maggie*: #2, I want to remind folks that we do have another recommendation on custom residential programs to pair weatherization with electrification. I do not know if that necessarily resolves this issue, but there is another recommendation that tries to get at a program path for customers that are trying to incentivize pairing weatherization with electrification. This is recommendation 5.
  - *Steve*: I thought that the small pilot program in recommendation 5 was too narrow. It should reach everything across the board.
  - *Maggie*: Recommendation 5 is about that the pilot should be a new state-wide offering as a supplement to RCD based on the Home MVP Pilot, but not at the size.
- *Cammy*: #2, I am in favor of weatherization paired with heat pumps. It makes sense to weatherize before putting in heat pumps. But, that is true for any heating system. There are several barriers were are trying to overcome here to accelerate heat pump installations. I would not be supportive of requiring it. We want to encourage it. I think Justin stated it very well before. I am fine with how it is originally written.
- *Cindy*: #2, I agree with Cammy. I like how it is written. I would support the encouragement of weatherization or even requiring an audit before someone can get the incentive for heat pumps. It is complex. I don't think you can assume that everyone can do this.
- *Dennis*: #2, I agree with the language, "when feasible." The challenge there is what is reasonable? We could also say, "if you do this, we will give you X amount of money."
- *Paul*: #2, I would modify the requirement to include "require weatherization where feasible." Weatherization has the highest return and shortest pay back.
- *(PA Comment) Stephan*: #2, We really do want customers to weatherize their homes, but if you look at the non participant study, where the most often cited challenge for participating in our programs is the ease of participation. Even if you were to say "weatherize if feasible", by definition there is going to be some additional step for us to determine whether or not something is feasible.
- *Cindy*: #2, Feasibility is a subjective term. It is not objective criteria.

EEAC Consultant Glenn Reed summarized why Recommendation 3 was highlighted:

*(Consultant Comment) Glenn*: The text is largely unchanged except for part C. The revised version explicitly recognizes climate goals and acknowledges that market transformation has

occurred. The recommendation clearly distinguishes from the recommendations on market rate customers for parts A and B versus part C. Part C recommends the need to study the impacts and the needs for low to moderate income customers to assess the appropriateness of the two market rate recommendations above. We clarified and tightened the language in response to comments from Voting Councilors.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- Charlie: #3, I appreciate inclusion of part C. We have to make sure that low-income people are not left with inoperative efficient heating systems. This is important to study.
- *(PA Comment) Melanie*: #3, we are waiting for the results of an evaluation study that is going to help inform what will be cost effective and what won't. This recommendation is a bit premature. At this point, we do not know which heating systems will be cost effective.
  - *Maggie*: With regard to #3, particularly with the gas heating systems incentives, the PAs don't currently look at the existing heating equipment of the customer, so is the study that you are referencing going to look at how many gas heating systems we are incentivizing for customers that already have high efficiency systems and are replacing that system? Is that the type of data you are expecting to get from this study?
  - *(PA Comment) Melanie*: No. This study is the TRM review, where the Consultant is reviewing what we have been using as baselines for the heating systems. They will recommend new baselines.
  - *Maggie*: What you are seeing here in the recommendation is that we should be looking at the existing heating system for gas customers and how we incentivize gas systems. Is that being factored in that study?
  - *(PA Comment) Melanie*: I do not know for sure the answer to that. I can find out.
- *Charlie*: #3b, what does "handle as custom measure" mean? At first it is saying "cease incentives," so to me it reads it is still possible.
  - *(Consultant Comment) Glenn*: For multifamily buildings, we may still encounter that 40-year-old oil converter boiler. In the market rate building, we didn't want to include outliers by adopting a "one size fits all" situation. We wanted to have some flexibility. That will be primarily through RCD and home energy assessments as opposed to through the retail program.
  - *Charlie*: thank you.
- *Bob*: #3, An oil fire boiler that goes to gas, will still get an incentive? If you were going to oil then to gas, neither of the exceptions apply?
  - *(Consultant Comment) Glenn*: You get your incentive based upon the higher efficiency program.
  - *Bob*: Thank you.
- *(PA Comment) Melanie*: #3, Responding to Maggie's question, I do believe that the evaluation will look at both at what is existing in a customer's home and also what is available in the market.

- *Maggie*: I think that helps. I want to make sure that this recommendation in terms of looking at the existing heating equipment is going to be factored into that study rather than looking at the baseline as you look at it now. That is part of the challenge we are facing.
- *(PA Comment) Melanie*: The answer is yes.
- *Bob*: #4b, So you're going to cease incentives for oil and propane heating systems to push people over to tankless and condensing gas systems. The cost differentials for those is the idea that a tankless system would be the same or more expensive? Are we trying to make the incentive so that it would be the same? Does the incentive make a difference for someone with those two choices?
  - *(Consultant Comment) Glenn*: It is to move people to substantially more efficient versus incrementally more efficient measures. Yes, they are more expensive. I don't have the numbers in front of me. The savings from the systems moving off from a boiler or from efficient stand-alone gas/water heaters are fairly small.
  - *Bob*: I just wonder if the incentives are going to be erasing that cost-differential?
  - *(Consultant Comment) Glenn*: The incentive is certainly higher, but I don't have the numbers in front of me. We would have the opportunity to revisit this in the plan.

EEAC Consultant Margie Lynch summarized how Recommendation 5 was revised:

*(Consultant Comment) Margie*: We added incentives to customers by both weatherization and installing heat pumps. That came out of the discussion to more clearly illustrate what was happening with the goals from 5. The addition that Paul noted, recommendation 6, was added specifically to Councilor Johnson's suggestion.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Maggie*: #6 Paul, what was the comment you wanted to add after "program contractors"?
  - *Paul*: It was to add "and others" after "program contractors."
  - *Maggie*: Can we be more specific than that?
  - *Paul*: Staff, for example.
  - *(Consultant Comment) Margie*: Paul, aren't staff program contractors too? They work for the program and under contract.
  - *Paul*: When you say "program contractors" it seems to me you are talking about weatherization contractors. We need to make sure it includes call center staff.
- *Steve*: #6E, I would like to add, "increasing the incorporation of PV & Storage education, marketing, and installation". We should assess the increase savings that come from that. We need to be explicit on breaking down the barriers between the technologies. Recommendation 6E could read: "Enhance use of technology, including increased education, marketing, and installation of PV & Storage."
- *Paul*: #6, I am confused what Steve suggested. Can you refine that a little more?
  - *Steve*: We worked with Stephan Wollenburg on creating increased education materials to be used around solar. That is one example. Perhaps working with the auditors to be better trained in assessing whether a home is suitable for solar and also

storage. That's an example. The phrase, "Enhance use of technology, including increased education, marketing, and installation of PV & Storage" could be an additional stand-alone recommendation or extension of 6E.

- *(Consultant Comment) Margie:* We have a version of what Steven suggested under the New Construction recommendation. This is under the connected home requirements section. Recommendation 5b, in part it reads, "...more seamlessly integrate already available storage, EV-charger, and PV incentives into the program." Steve does that goes far enough for you?
- *Steve:* This is consistent with what I was talking about.
- *Maggie:* If we add something related to Steve's comment, it should go under recommendation 7 or 6. We will figure out the right place to put it.
- *(PA Comment) Stephan:* #5, Recommendation 5 is one we are interested in. We received lots of data from DOER which we are excited to start reviewing. I want to reiterate that we want to look for opportunities to accomplish all the benefits that are associated with MVP without introducing another path for customers. We want to understand who would be most likely to benefit and ensure that customers are taking advantage of the right offer. There is interest from Councilors on focusing incentives on those who most need them.

EEAC Consultant Margie Lynch summarized why Recommendation 7 was highlighted:

*(Consultant Comment) Margie:* The initial schedule of the workshop on Residential Existing Buildings did not allow a lot of time to discuss Residential Coordinated Delivery (RCD). This recommendation takes some of the comments Councilors made at Workshop 4. The core recommendation, "Increase participation and conversion rate in RCD" is the centerpiece of the PAs Residential Program Comprehensive Whole House Services are offered to customers. This starts with an audit and paired with weatherization. The three sub bullets simplify that statement. It also improves customer access and increase data-driven targeted marketing and outreach efforts.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- *Paul:* #7, I agree with Margie that we had a limited presentation on RCD. I was disappointed and I expressed that in the workshop. These recommendations are general and not comprehensive. This will not do the job of maintaining current weatherization levels. I think we need to increase the fee for the HGA. Secondly, streamline customer support for single point contact. Finally, we need to incentivize the call center staff to have customers do weatherization monetarily or in some manner. Also, in recommendation 6, I would add "and others" after "program contractors."

### **Councilor Comments/Suggested Improvements (on Residential Existing Building recommendations)**

- *Steve:* #2, Expand the third bullet to include the phrase "increase incentives and support for heat pumps, combining it with weatherization where inefficient conditions exist" to encourage and incentivize

- *Justin: #2, Add that weatherization should be recommended (referring to Steve’s above recommendation)*
  - *Elliot: Add that weatherization should be “required when feasible or when practical” (referring to Steve’s above recommendation)*
  - *Paul: Weatherization should be required where feasible*
- *Paul: #6, Include call center staff specifically*
- *Paul: #7A, Add “increase the fee for the HEA”*
- *Paul: #7B, Add “customer support for single point contact.”*
- *Paul: #7C, Add “incentivize the call center staff to have customers pursue weatherization monetarily or in some manner”*
- *Steve: #6 or #7, Add “Enhance use of technology, including increased education, marketing, and installation of PV & Storage” (Note: Maggie agreed to work on where exactly this recommendation will fit)*

## **WORKSHOP #4: WORKFORCE DEVELOPMENT**

*NOTE: The Equity Working Group (EWG) Workforce recommendations will be included with the full list of EWG recommendations in a separate document. This document only includes the Workforce recommendations from the Consultants.*

- 1. Deliver targeted training for emerging and/or critically important technologies including building automation systems and heat pumps.**
  - **Expand investment in targeted trainings for field assessment, installation, and commissioning of various heat pump technologies for residential, income eligible, and commercial sectors.**
  - **Fund efforts that grow the field of qualified building automation system technicians and commissioning specialists in the commercial and multifamily sectors.**
  - **Expand building operator training for large, complex facilities to ensure that investments made in new technologies deliver on their full savings potential.**
- 2. Complete an independent Mass Save workforce study with a first report to be completed by September 2022. Report on jobs resulting from Mass Save Program investments, statistics on workforce demographics prioritized by the Equity Working Group, and ongoing identification of areas for strategic workforce investments that drive future program success. Coordinate with MassCEC on its annual Clean Energy Industry Report.**
  - **Assess the overall quality and quantity of the workforce that directly and indirectly deliver the Mass Save program (PA staff, PA contracted vendors, and firms that operate through the PAs open market programs).**
  - **Include demographic information on workforce outlined in the recommendations from the Equity Working Group.**

- Continually identify deficiencies and needs for greater investment for various programs and technologies.

**3. Expand investments in workforce development including but not limited to funding apprenticeships and internships, training and upskilling for incumbent workers, and outreach to draw new and diverse workers into the Mass Save ecosystem. Develop a budget to support significant expansion of workforce development efforts based on Equity Working Group Recommendations and Recommendation 10 above.**

- Encourage significant, steady and sustained ramp-up of spending incrementally throughout the 2022-2024 plan (for example, 0.8% in 2022, 1.6% in 2023, 2% in 2024).
- Develop a bottom-up budget that includes workforce development initiatives including trainings and continuing education for existing workers, certification programs, direct investment in trade school and community college programs, stipends for internships, outreach to new/diverse prospective EE workers, support for trade ally diversity, equity and inclusion policy development, and tracking and reporting on EE workforce demographics.
- Expand the level of detail included in quarterly reporting to the Council on workforce development spending to ensure investments are effectively delivering on objectives developed by all stakeholders.

EEAC Consultant Adam Jacobs summarized why Recommendation 3 was highlighted:

*(Consultant Comment) Adam:* When we went through this topic at workshop 4, this was the sole discussion focus. The main edit here was to remove reference in the primary text to a 2% target for total budget. It is still listed as an example as a sub bullet. However, there were some Councilors that were supportive of that 2% target while others were less comfortable with it. So, I am interested to see what discussions will take place about this issue. Our budget text says in a way that we need to find a way to cover all the expenditures associated with all the recommendations from the EWG on Workforce Development as well as the other two bullet points we did not have the opportunity to talk about last time.

Clarifying Questions/Discussion (Councilor questions. PA and Consultant responses in italics).

- Paul: #3, In terms of the workforce development recommendations, I think that the main way you will get the workforce increased is by increasing pay to workers. You are competing with workers who are working in the New Construction field.
- *(PA Comment) Marie:* #3, I wanted to thank the folks for making the edits. We support it as shown here. I appreciate the updated recommendation.
- *Cammy:* #3, What I liked about the previous version of this recommendation, was that it targeted a 2% increase. The implication I took from that was that we do not know exactly what the right level is. I think we can all agree on that. It definitely needs to be substantially increased. If we don't reach the target, we can figure out why, regroup, and then set a more reasonable target for the next time. I would like to see what target we are aiming for in the

plan more specifically rather than steadily increase spending. I would like it to be more concrete.

- *Maggie*: Although it is helpful to have a target to signal to the Council how much of an expansion we think the Workforce Development piece needs, I thought by keeping those numbers in the first bullet, we were displaying that signal. We could consider rephrasing the statement by including “for example” or another phrase. Additionally, the PAs expressed at the last workshop the interest of making sure we build the budget from the bottom up. I think from a budget perspective, it makes sense. The April draft plan needs sufficient detail for the Council so that we can understand how much money we are spending and where spending is going to be focused on in the next three years. I would express more than just a target, but more detail that the bottom up budget approach is working.
- *Jo Ann*: #3, I am a little reluctant to put in a target because I would like to see the numbers of what we are spending and where the spending is going to be focused on in the next three years. What can the PAs do, how much is it going to cost, and what is a reasonable expansion of investment in workforce development? I don’t know whether that means it will be a 1.2% increase in 2022? I want to see the text first in April and then we can regroup. I would be comfortable with an aim to include more data rather than stating an arbitrary target without having the PAs figuring out what we can accomplish.
- *Steve*: #3, I support this, but I would add one thing. We are working with Roxbury Community College. They have tremendous effort around an energy efficiency laboratory. We’re helping to assist them in that effort. I think we should include a clarifying note to include collaborating with other existing workforce development efforts. Mass CEC is funding it. There is funding from the Department of Labor, particularly if there’s workforce categories that are established. This should fit into and coordinate with other existing workforce development initiatives.
  - *(Consultant Comment) Margie*: This concept might be in the EWG recommendations. There is certainly a comprehensive list of workforce development recommendations.
  - *Steve*: As long as the concept of working with other existing workforce development initiatives is in these recommendations, it absolutely makes sense.
  - *(PA Comment) Ruth*: Regarding Steve’s comment, I wanted to mention that we are in general aligned with the workforce development recommendations that are here. We do support working with workforce development organizations, such as RCC and Mass CEC. We are active partners and advisors in both as a way of identifying recruitment and identifying talent in the workforce pipeline.
- *Paul*: #3, I am in favor of putting those hard numbers in. I recall that the amount of money that the PAs spend in high schools is far more than we spend on workforce development. I think it is important to include target numbers and percentages.
- *Maggie*: #3, I wanted to circle back on Cammy’s earlier comment in the low-income recommendations around increasing workforce training on heat pumps. Now that we are in this section, does this text address that comment or do you think we need to add something here?

- *Cammy*: Since we are getting investment training related to heat pump technologies, I think this recommendation addresses that here, thank you.

**Councilor Comments/Suggested Improvements (on Workforce Development recommendations)**

- *Cammy/Paul*: #3, Specify that a target should be established and included in the Plan
- *Maggie*: #3, Focus recommendation on the details to understand how much money is being spent and where the spending will be focused in the next three years

**WRAP UP, FEEDBACK & NEXT STEPS**

Jonathan Raab thanked participants for their engagement and attention for all six workshops. The facilitation team will develop a meeting summary for this workshop and send the meeting summary to DOER and the Consultant team early next week for revisions. The changes made from the recommendations today and separately the recommendations from workshop 5 (after they have to go to the Equity Working Group) will be posted in separate redline and clean documents that provides transparency into changes. Afterwards, the Councilors will review the final recommendations in the late February EEAC Meeting.

Additionally, the facilitation team will create a final report for workshops 1-6 once DOER and the Consultant team have completed the next version of recommendations 1-4 from today’s workshop and the recommendations from workshop 5.

Jonathan stated that DOER is considering conducting a poll among the Voting Councilors before the late February EEAC Meeting to help prioritize the list of the recommendations to discuss and package the recommendations to send to the PAs.

Maggie thanked everyone for their engagement. She highlighted that EEAC will take all the feedback from today’s workshop and work with the Executive Committee to develop all the final changes prior to the late February EEAC Meeting. She emphasized that the late February EEAC Meeting will focus on pairing recommendations 1-4 with a high-level resolution in advance of the April draft plan. She also reminded participants that there will be a Council Meeting next week, but recommendations 1-4 will not be presented at the meeting.

In closing, Maggie asked Commissioner Woodcock for final thoughts. He thanked everyone for their dedication to this effort. He also encouraged everyone to focus on the efforts centering on electrification, greenhouse gas mitigation, and equity. He looks forward to finalizing the recommendations in the coming months.

**APPENDIX: Meeting Attendees (not including the public attendees)**

<b>January 20, 2021 Attendance -EEAC Workshop #6</b>		
<b>Voting Councilors</b>		
Greg	Abbe	DHCD
Cindy	Arcate	Non-Profit Network
Joann	Bodemer	AGO
Amy	Boyd	Acadia Center
Justin	Davidson	MA Association of Realtors
Charlie	Harak	NCLC
Elliott	Jacobson	Action Inc.
Paul	Johnson	Greentek
Maggie	McCarey	DOER
Cammy	Peterson	MAPC
Bob	Rio	Associated Industries of MA
Dennis	Villanueva	Partners MGH
Sharon	Weber	DEP
Patrick	Woodcock	DOER Commissioner
<b>Non-Voting Councilors</b>		
Cindy	Carroll	Unitil
Tim	Costa	ISO-NE
Steve	Cowell	Councilor Designee-E4theFuture
Maggie	Downey	Cape Light Compact
Mike	Ferrante	MEMA
Frank	Gundal	Eversource
Chris	Porter	National Grid
Stephanie	Terach	Liberty Utilities
<b>Presenters</b>		
Elizabeth	Chant	EEAC Consultant Team
Adam	Jacobs	EEAC Consultant Team
Margie	Lynch	EEAC Consultant Team
Glenn	Reed	EEAC Consultant Team
Jeff	Schlegel	EEAC Consultant Team
<b>PA Respondents</b>		
Marie	Abdou	National Grid
Melanie	Coen	National Grid
Amanda	Formica	National Grid
Ruth	Georges	Eversource
Stephan	Wollenburg	National Grid