

**EEAC Residential Workshop #1  
New Approaches in the Face of Rising Baselines and Other Trends:  
Challenges and Innovative Options**

**Tuesday September 26<sup>th</sup>, 2017  
9:00 AM – 1:00 PM  
Saltonstall Building, 100 Cambridge Street, Boston**

**Facilitators: Dr. Jonathan Raab, Raab Associates & Toby Berkman, CBI**

**Draft Meeting Summary**

There were 35 Councilors, consultants, program administrators, and DOER staff in attendance at this workshop. A list of these attendees is included in the Appendix. Numerous members of the public were also in attendance. The workshop background material and presentations can be found at <http://ma-eeac.org/september-26-residential-planning-workshop-1/>.

**INTRODUCTION AND WORKSHOP OVERVIEW**

Dr. Jonathan Raab, facilitator from Raab Associates, welcomed the group to the workshop and reviewed the overall design and sequencing for the three residential workshops. He noted that both this meeting and the third residential meeting would focus on addressing the challenges from rising baseline in lighting and their implications for program design. He also reviewed the workshop agenda and ground rules.

Judith Judson, Commissioner of the Massachusetts Department of Energy Resources (DOER) provided an overview of the broader context and purpose of the workshops. She noted that the purpose was for the Massachusetts Energy Efficiency Advisory Council (EEAC) to develop high-level directional recommendations to help the energy efficiency Program Administrators (PAs) develop their next three-year statewide Energy Efficiency Investment Plan for 2019-2021. She pointed out that Massachusetts has incredible strong energy efficiency programs that have delivered extremely aggressive savings goals, resulting in Massachusetts being ranked #1 in energy efficiency nationwide for the past six years. While there will be a reduction in future claimable savings available through lighting, this presents an opportunity for the EEAC to incorporate new innovations and technology into Massachusetts's energy efficiency programs. She highlighted the potential to achieve savings through measures related to program delivery, peak demand reduction, fuel switching, and electric vehicles (EVs).

## **RISING BASELINES**

Margie Lynch, EEAC Consultant, reviewed the challenges of rising baselines and the need for innovative options. Slides from her presentation are available on the workshop materials website (URL noted above).

### Discussion

A member of the group asked the following question about the challenges of rising baselines and the need for innovative options. *The response is in italics.*

- What would 2016 residential energy usage look like both with and without lighting, in MMBtu's? *We can compile that information.*

## **WHOLE HOME/BUILDING APPROACHES**

### Presentation

Courtney Moriarta, EEAC Consultant, reviewed whole home/building approaches, providing background on the issue and potential innovative options. Slides from her presentation are available on the workshop materials website.

### Discussion

The group provided the following questions and comments about whole home/building approaches. *Responses are in italics.*

- The meeting notes should reflect the fact that among the Councilors in attendance there is no one representing the residential sector. We should bring such a person on board as soon as possible.
- It would be helpful to have information from the consultants on the extent of our market penetration in air sealing and weatherization. Air sealing and weatherization can be incredibly cost effective, and will have long-term impacts regardless of the kind of fuel we are using.
- We should consider prescreening and targeting energy audits. While it is a core tenet of the program that anyone can have an energy assessment who wants one, we can do much more in some homes than in others. We could do more proactive outreach to the homes where we can have the greatest impact. *We are hoping to get at this issue through customer profiles, which would allow that kind of market segmentation.*
- We need to target our home energy assessments on people who we can work with. Maybe we do not go to a home unless we know we can do something for them.

- We should look at energy usage to see which customers to target. We should chase after customers in the 800 to 1000 kilowatt-hour range.
- The Heat Loan is a complicated process, which leads people to not follow through on it. The consultants and PAs should look at ways of streamlining it. If you have a complicated process, people might be interested but few follow through.
- We should think about requiring people to do more to get benefits. For example, if someone is doing a renovation we could require he or she to use more efficient lighting in order to get a Heat Loan. We should think about using codes as “sticks,” instead of just using benefits as “carrots.”

## **NEW MEASURES/STRATEGIES: RENEWABLE HEATING/FUEL SWITCHING**

### Presentation

Glenn Reed, EEAC Consultant, reviewed new measures and strategies related to renewable heating/fuel switching, providing background on the issue and potential innovative options. Slides from his presentation are available on the workshop materials website.

### Discussion

The group provided the following questions and comments about new measures and strategies related to renewable heating/fuel switching. *Responses are in italics.*

- Where are the electric or gas savings to the system from the switch to electricity or gas from oil or propane? *It depends on your perspective, targets and goals. If you switch from fuel oil to electric, there would not be electric savings, but there would be net benefits if you ensure cost effectiveness. There also would be carbon benefits, which you could track separately or include among the avoided costs.*
- Fuel oil is more expensive, and it is harder for people to lose gas or electric service than it is for them to lose oil service. It is beneficial for low-income people to use a regulated utility like electric and gas because they have greater legal protections.
- Has anything been filed in order to obtain the Department of Public Utility’s (DPU’s) view on whether we can use utility dollars to support fuel switching? *Nothing has been filed. It is possible to file an advisory request, but otherwise it will be filed when the plan is submitted.*
- I would like to see a chart showing the benefit-cost ratio of installing a heat pump in an oil, gas, propane, and electric home. I think the non-energy benefits to a low-income person will be substantial, and should also be part of the plan. We should also consider valuing each ton of avoided carbon at \$100, as is done

- in Rhode Island. *It is not simple to establish four different baselines and the non-energy benefits to calculate this information. We will need to work with you on it.*
- There is a steady conversion of fuels to natural gas in the marketplace, so it might not make sense to support natural gas conversions. We should include data on free ridership.
  - What kind of response has there been on all electric homes? When they first came out everyone wanted them, but then electric prices went up. Some people also may not want electric stoves and driers. *For many people it is both a cost issue and a climate issue. They can use ductless heat pumps, and electric induction stoves are quite good. You can also bring in propane just for cooking.*
  - In addition to new buildings, are we looking at converting existing homes to efficient technologies too? *Yes.*
  - Efficiency Maine has incentives for “fossil fuel displacement.” It’s an interesting phrase.
  - In the last planning cycle we discussed having a “Zero-Net Energy” and “Photovoltaic (PV) Ready” tier for residential construction. That would be an even higher tier beyond all electric. *The tiers could support each other. We could have an all electric home that is also Zero Net Energy.*
  - What kinds of metrics might we use to decide among systems that are equally effective, where one saves more energy or is more cost effective, and the other does more to reduce GHGs? *That is a good question for consideration as we continue the discussion.*

## **NEW MEASURES/STRATEGIES: ACTIVE DEMAND MANAGEMENT, STORAGE, EVS, AND SOLAR**

Glenn Reed, EEAC Consultant, reviewed new measures and strategies related to active demand management, storage, EVs, and solar, providing background on the issue and potential innovative options. Slides from his presentation are available on the workshop materials website.

### Discussion

The group provided the following questions and comments about new measures and strategies related to active demand management, storage, EVs, and solar. *Responses are in italics.*

- What are the energy losses from putting electricity into a battery and then taking it out? And what are the estimates of GHG emissions from gas versus electric vehicles? We need to consider these issues, just as we consider line losses in bringing electricity to homes.
  - *We will get that information.*
  - *According to their website, the Tesla Powerwall has 92.5% round-trip efficiency.*

- The EPA and the Union of Concerned Scientists argue that the electricity grid is more efficient than most people think. Currently, an all-electric car has 25% of the emissions of a gas car. As the grid gets cleaner through offshore wind and other renewables, this number will continue to go down.
- We need the right regulations and price on carbon to make sure all these technologies work well for energy efficiency, demand management, and ratepayer cost. Otherwise our efforts won't work as well as they could.
- Even if we are not sure about the regulatory authority to provide incentives for some of these technologies, we can still think about co-delivery and using these technologies for targeting. *Clearly there are policy considerations for all of these technologies, and we need to consider there are others working in these spaces.*
- National Grid did not have a lot of uptake in its Solarize program in Rhode Island. A lot of people were interested in energy efficiency but not solar, and customer education was not as strong as it could have been. In the future the program will focus much more on education.
- Overall, these technologies are very exciting.
- What is the correlation between people who are interested in solar and those interested in energy efficiency?
  - It might be a negative correlation, since solar is a real tangible object while energy efficiency is invisible.
  - To get solar installed, you may first need to go through an energy audit, so they may actually be positively correlated. In addition, people may want to get more money for selling electricity back to the grid, even though they should instead be right-sizing their solar installation.
  - *We can look at how many people who went through the solar program pursued energy efficiency.*
  - *In Connecticut, you need to undergo an audit before you can access solar incentives and financing.*
- Because lighting is responsible for so much of the electricity savings, there may just not be much more we can do on the electric side. We should keep that in mind before we require people to do something like an energy audit. *Although opportunities may be more limited on the electric side, much of the cost in the home is space and water heating. There are still meaningful consumer and net benefits available.*

## **DATA-DRIVEN CUSTOMER ACQUISITION AND ENGAGEMENT STRATEGIES**

### Presentation

Courtney Moriarta, EEAC Consultant, reviewed data-driven customer acquisition and engagement strategies, providing background on the issue and potential innovative options. Slides from her presentation are available on the workshop materials website.

## Discussion

The group provided the following questions and comments about data-driven customer acquisition and engagement strategies. *Responses are in italics.*

- When we think about using the Tennessee Valley Authority (TVA) program as a model, we should be careful to look at their low-income programs. I am concerned about the “on ramp” for low-income people with the TVA model. *The TVA program was only for market-based customers when it launched, but I know they wanted to bring low-income into it. Now would be good time to look at this issue, and see what progress they’ve made.*
- I am very glad to see the focus on data and IT.
- What is the TVA homeowner report shown on slide 43? If it provides customers with a score for where they are and guidance for improving their score, it seems really useful. It is vital for consumer to have that kind of information. *TVA felt strongly the customer needed a target, and they liked the idea of the “E Score” because it is customized to each customer’s house.*
- Before we begin the design process we need answers to earlier questions like: What are we coordinating? How many kinds of programs will feed into this? What is the customer experience we want? Customers might want different things like reducing costs or reducing GHGs. It is key to get the goals right.
- For TVA, was there a change in their energy savings attributed to the program? *We don’t know. We are working on getting a representative from TVA to talk to the PAs through a webinar and hope to get answers to questions like that, as well as a better understanding of the pain points they went through. Also, their program used to be implemented in a manner similar the Mass Save program, including direct install and free air sealing. They were installing major measures in 75% of the homes they worked with. This percentage did not change during the first year of the program in 2015, but in 2016 it increased. It seems like people are coming back incrementally to do more measures.*
- We do not know whether it is TVA’s new system driving people to come back. It might just be better sales training. Did TVA provide additional training for sales? *Yes, they had an integrated program transition that included training for contractors. Contractors love the program and feel like it made their lives much easier.*
- It will be key that “Do-It-Yourself-ers” be able to participate in this program. Customers should be able to incrementally improve their home themselves.

## **INNOVATIVE OPTIONS—CROSS-CUTTING BREAK-OUT DISCUSSIONS**

Participants broke into two small groups. Each group included Councilors, PAs and consultants. They were asked to address the following five questions:

- To what extent, are all 3 broad areas of potential innovative options important to pursue?

- Do the innovative options related to Whole Home/Building Approaches identified seem promising to the Councilors, and any more so than others (and why)?
- Do the innovative options related to New Measures/Strategies (including Renewable Heating/Fuel Switching and Active Demand Management, Storage, EVs, and Solar) seem promising to the Councilors, and any more so than others (and why)?
- Do the innovative options related to Data - Driven Customer Acquisition and Engagement Strategies seem promising to the Councilors, and any more so than others (and why)?
- What additional information regarding the options you see as most promising would be useful?

Each Councilor received a hand-out delineating all the potential innovative options from the Consultants' scoping paper. (See Appendix B: Innovative Options Hand-Out)

Dr. Raab facilitated one of these conversations and Toby Berkman facilitated the other. The facilitators requested that the Councilors in the small groups discuss these issues among themselves, at least initially, and ask for input from the PAs and consultants as needed. At the conclusion of the small group conversations, representatives from each group reported out a summary of their conversation.

The two groups were as follows:

Group 1 (with Mr. Berkman): Amy Boyd, Rick Malmstrom, Joe Dorfler (for Don Boecke), Deirdre Manning, Eric Beaton, Elliott Jacobson, Arah Schuur

Group 2 (with Dr. Raab): Lourdes Lopez (for Brad Swing), Larry Chretien, Paul Johnson, Charlie Harak, Bob Rio, Victoria Rojo, Fran Cummings (for Paul Gromer), Ian Finlayson

The groups' responses to the five questions are summarized below.

### Importance of the three broad areas of potential innovative options

Members of Group 1 offered the following comments on the importance of the three areas of potential innovative options:

- All three areas are important.
- Home Energy Services (HES) is the core of program.
- Smart phones are key to meeting customers where they are.
- New measures are key to connecting our programs to GHGs and other programs.
- One issue with the HES program is that the customer's first contact has a financial incentive to encourage them to use the program. The customer might have more trust in the program if this person were impartial.

- Due to the history of the program, there are two models for the home auditor. Sometimes they have an incentive and provide additional services, and sometimes they do not. There is a tension between their impartiality and their ability to provide innovative, seamless service and not require the customer to bring in someone else.
- Quality control can be difficult. It might be better to have an online audit, and send few, higher quality people to perform the audit in person.
  - It also might be helpful for the utility PA to serve in an advisory capacity in the audits.
  - One challenge to these ideas is that PAs need to be very careful around issues of liability.

Members of Group 2 offered the following comments on the importance of the three areas of potential innovative options:

- All three areas are important (although some Councilors felt that data is more of a tool to serve the other two than co-equal).
- Data should drive measure selection, program designs, and customer segmentation strategies.
- We need to know a lot more and do customer segmentation.
- We need to move from a focus on kilowatt-therms to net benefits like carbon reduction. This could help open up new measures and program options.
- We cannot forget insulation and air sealing.

#### Innovative options related to Whole Home/Building Approaches

Members of Group 1 offered the following comments on innovative options related to Whole Home/Building Approaches:

- We should give customers a clear path and consistent rules. We should be able to tell them, “Here’s the problem, and here’s how to fix it.”
- We should try to get these innovative options in the plan while maintaining flexibility for the PAs. The future is unknown, and we need PA expertise to adapt and implement the programs effectively.
- One challenge is that we’re trying to move forward on two opposing impulses. On the one hand we want more simplicity in what we offer and to make it more streamlined, and on the other hand we want to offer more customized approaches and individual “hand holding.” It may be difficult to do both these things.
- Regulations, procedures, laws may (or may not) create challenges to some of these options.
  - We should think about how we can advocate for code changes, so we can have more of a “stick.”
  - We should get designers and builders at trainings.



- With the loss of lighting savings these measures may be less cost effective, but there may also be the potential for deeper savings.
- We need to balance the incentive to be innovative and the need to maintain customer trust. It would be helpful to have more information on the PAs' audit models and where they came from.

Members of Group 2 offered the following comments on innovative options related to Whole Home/Building Approaches:

- Councilors have concerns with the idea of HES audit as a “loss leader” for contractors. We want a program that works for contractors. We prefer thinking about how to integrate these programs with the contractors' business model and getting the incentives to contractors right.
- With better data, we should focus on high energy-user homes with more savings potential. We should also focus on communities — especially low-income communities — that have been overlooked.
- We should consider the possibility of a pay for performance savings in place of prescriptive programs.
- We should streamline the Heat Loan program and eliminate barriers to access. Heat Loans might also grow to include additional measures.
- We should provide serious new sales training. If the delivery model is changing then the people coming to customers' doors might be doing more selling.

#### Innovative options related to New Measures/Strategies

Members of Group 1 offered the following comments on innovative options related to New Measures/Strategies:

- Cyber-security issues need to be considered when thinking about many of the options related to active demand management, storage, EVs and solar.
- We might want to be measured on providing incentives for some of the options related to active demand management, storage, EVs and solar in our residential programs, and instead focus on providing incentives for commercial and industrial customers.
  - Higher income residential customers may not need the incentives we might provide.
  - If these kinds of incentives are cost-effective, we should still give the PAs flexibility in providing them.
  - For peak demand management, because of the nature of the distribution network some savings are only available through residential customers
- Education, providing information, and promotion will be key for the options related to active demand management, storage, EVs and solar.
- Peak demand is a significant source of energy costs and should be a core focus.
- There are regulatory and legal questions for some of these options.

- In determining cost effectiveness, it matters how we bundle our programs. For some of these options that will be an important consideration.
- There is growing interest in the options related to active demand management, storage, EVs and solar, especially among young people.
- People want a one-stop shop for implementing these options.
- Overall, we really need these options to be part of the program. If they're not part of the program, they will be done badly. For example, wireless devices should be demand capable.

Members of Group 2 offered the following comments related to renewable hearing/fuel switching:

- We need data on the customer proposition, cost effectiveness, and GHG reductions related to each fuel switching option. We should look carefully at the relative cost-effectiveness and GHG analysis of conversion to gas and electric.
- Some Councilors oppose incentives for conversions to gas heat (because feel it's happening on own and don't need to use ratepayer dollars or because believe focus should be on lower GHG options like electrification or both) .
- The new construction option is particularly promising, although the number of new buildings may be relatively small. Replacement at equipment failure may also be promising.
- Promoting load of any one fuel may not fit within the cost-effectiveness requirements of the law, although it may accord with the Global Warming Solutions Act.

Members of Group 2 offered the following comments related to active demand management, storage, EVs and solar:

- Active demand management is very important. We should focus on creating an automated demand response, for example by putting automation into smart appliances and battery systems.
- There may be legislative issues with some of the options, for example EVs. We may want to confront the issue of changing the legislation. In the meantime, however, there is no reason we can't find a way to educate customers, coordinate, and co-deliver around these different technologies. These EE programs are perhaps the best place to help customers understand all their options.
- The audit could be expanded to cover all these options and technologies. This could even open up the possibility to return to homes that are already fairly energy efficient with more options for them.
- We should consider paying customers for increased efficiency and savings rather than on a per measure basis.

### Innovative options related to Data - Driven Customer Acquisition and Engagement Strategies

Members of Group 1 offered the following comments on innovative options related to Data - Driven Customer Acquisition and Engagement Strategies:

- There is no question we should be using data to better target customers, but we also need more information on the potential savings.
- We can use data both for outreach and for lowering costs.
  - We should continue using data to address back-end cost issues. We can build off the existing Eversource and National Grid programs.
  - Smaller PAs may have an advantage in managing their data, because they have less data to sort. On the other hand, they have different capabilities and resources than the larger PAs.
- We should consider whether to do a big overhaul of the system like TVA, or to aim for more incremental changes. Regardless of the approach, we need a larger vision for where we're going.

Group 2 did not discuss this question.

#### Additional information

Members of Group 1 offered the following comments, some of which addressed additional information that might be helpful in understanding or evaluating the various innovative options, and others which simply reflected on the group's conversation as a whole:

- We should not limit information on homes to energy efficiency. People want to know everything that's going on in their homes.
- Whatever we do, we should keep in mind the reality that there will be a transition period and savings may not be immediate.
- We should be unified on the goals but flexible in their implementation. These technologies hold a lot of promise but we don't know now which ones will be most fruitful.

Group 2 flagged places where additional information would be useful within responses to earlier questions (see above).

#### **PUBLIC COMMENT**

Dr. Raab opened the meeting for public comment, but no members of the public commented.

Arah Schuur, DOER, offered some final comments thanking the Councilors, consultants and PAs for their time and energy.

The group provided the following additional comments.

- In our breakout group it was extremely helpful when the PAs spoke out. PAs can help make sure the Councilors ideas are realistic in practice. The PAs and consultants should not hesitate to contribute.
- PAs can be especially helpful by naming barriers to implementing certain ideas, and identifying possible approaches to address those barriers.

Following these final comments, the meeting was adjourned.

## Appendix A: Attendance

The following councilors, consultants, program administrators, and DOER staff were in attendance.

### Councilors

- Judith Judson (Chair)—DOER
- Joe Dorfler (for Maura Healey)—AGO
- Eric Beaton (for Chrystal Kornegay)—DHCD
- Lourdes Lopez (for Austin Blackmon)—City of Boston
- Larry Chretien—Mass Energy Alliance
- Paul Johnson—Small ESCOs (Greentek)
- Amy Boyd—Acadia Center
- Charlie Harak—NCLC
- Elliott Jacobson—Action Inc./LEAN
- Bob Rio—Associated Industries of MA
- Deirdre Manning
- Rick Malmstrom—Dana Farber
- Fran Cummings (for Paul Gromer)—Peregrine Energy
- Victoria Rojo—ISO-NE

### Council Consultants

- Eric Belliveau
- Margie Lynch
- Courtney Moriarta
- Glenn Reed

### Program Administrators

- Michael Goldman (Eversource)
- Amy Vavak (National Grid)
- Cheryl Harrington (Eversource)
- Leah Berger (Columbia Gas)
- Maggie Downey (Cape Light)
- Austin Brandt (Cape Light)
- Stephan Wollenburg (National Grid)
- Brenda Pike (Eversource)
- Bill Stack (Eversource)
- Laurie Pereira (Liberty)

### DOER Staff

- Arah Schuur
- Ian Finlayson

- Alex Pollard
- Alissa Whiteman
- Lyn Huckabee
- Emily Powers
- Matt Rusteika

## Appendix B: Innovative Options Hand-Out

### Innovation Opportunities for Workshop Discussion

Residential Workshop #1: September 26, 2017

#### *Whole Home/Whole Building Approaches*

- A clearer path for the customer requiring fewer steps, expediting approval processes, and offering single path and incremental options
- More consistent rules (incentives, delivery channels, etc.) between weatherization and HVAC work, helping customers take full advantage of program offers while meeting their own goals
- A sales-oriented model for HES contractors in which the audit is approached as a loss leader to generate more savings opportunities DEL the based on the customer's specific needs including customization and trade-offs
- Integration with the contractor's business model establishing business-friendly systems and incentive structures and rewarding innovative solutions that appropriately meet the customer's needs

#### *New Measures & Strategies: Renewable Heating/Fuel Switching*

- Principal focus is on switching to space and water heating equipment that is less expensive to operate, more efficient, and/or less carbon intensive
- Replacement scenarios
  - Water heating: heat pump water heaters (HPWHs) & tankless or condensing gas DHW
  - Furnaces: gas furnaces and boilers, and possibly ducted heat pumps
- Displacement scenarios
  - Typical when using ductless heat pumps
- New Construction
  - Opportunity to develop and promote a low load, all electric Residential New Construction Initiative offering

#### *New Measures & Strategies: Active Demand Management, Storage, EVs, and Solar*

- Wi-Fi thermostat control of cooling (and heating) loads
- Control of additional equipment

- Storage and electric vehicles as described below
- Storage incentives for active demand management
- Preliminary storage (and PV) assessments during the HES home energy assessments
- A combined solar PV/storage offer in collaboration with MassCEC
- Storage as a custom measure in the multi-family initiative
- An all-electric RNC initiative offer integrating storage
- Incentives provided for EV infrastructure such as more efficient charging stations
- EV owners as a market segment for targeted promotion of energy efficiency services
- EVs and smart-charging strategies for active demand management
- An integrated PV/storage solution
- Co-delivery of energy efficiency services with PV installation

#### *Data-Driven Customer Acquisition & Engagement Strategies*

- Stakeholder input on how and what use of technology could improve their experience with Mass Save
- Lessons learned from upgrade investments by National Grid and Eversource
- Best practices regarding use of technology from Tennessee Valley Authority, Arizona Public Service, and other PAs from outside Massachusetts
- Development and funding of comparable and consistent technology experiences for all Massachusetts ratepayers and PAs by completion of 2019-2021 plan period

#### *Breakout Group Discussion Guide*

- To what extent are all three broad areas of potential innovative options important to pursue? **(10 minutes)**
- Do the innovative options related to **Whole Home/Building Approaches** seem promising to Councilors, and any more so than others (and why)? **(15 minutes)**
- Do the innovative options related to **New Measures & Strategies, including Renewable Heating/Fuel Switching and Active Demand Management, Storage,**



**EVs, and Solar** seem promising to Councilors, and any more so than others (and why)? *(10 minutes)*

- Do the innovative options related to **Data-Driven Customer Acquisition and Engagement Strategies** seem promising to Councilors, and any more so than others (and why)? *(20 minutes)*
- What additional information regarding the options you see as most promising would be useful? *(5 minutes)*