

MEMORANDUM

To: Energy Efficiency Advisory Council

From: NSTAR Electric Company, NSTAR Gas Company and Eversource Gas Company of Massachusetts, each d/b/a Eversource Energy
Liberty Utilities (New England Natural Gas Company) Corp. d/b/a Liberty
Fitchburg Gas & Electric Light Company d/b/a Unitil
The Berkshire Gas Company

Date: February 23, 2021

Re: **Responses to Questions on Behavior Initiatives**

GAS PA QUESTIONS

Gas PA Question 1: Behavior programs normally take a few years to overcome first year costs to reach a run rate that is cost effective, do you feel that the core initiative was given the appropriate amount of time to succeed? If so, how was this determined?

Based on their analysis and experience, Liberty, Unitil (Gas), and Berkshire (collectively, the “BLU PAs”) each affirm that their respective core initiatives were given the appropriate amount of time needed to review cost-effectiveness and to succeed.

Liberty commenced the offering in the winter of 2019 and ran it through February 2021. The start up costs were not paid all at once but were spread out across the duration of the offering. Liberty observed negative therm savings for the time period that it provided Home Energy Reports (“HERs”). Liberty consulted with the HER vendor to assess the likelihood of the program showing positive savings going into the second gas season, after an initial poor performance. The vendor provided information on directional savings from other offerings with similar performing gas waves (waves showing negative savings in the first winter). Based on this information, which estimated a low likelihood that the program would show positive savings for the coming heating season, Liberty determined that it was not prudent to move forward with the initiative.

Unitil Gas commenced the offering in 2019 and ran it through the end of 2020. Start-up costs were shared between Unitil’s New Hampshire and Massachusetts territories, as well as between gas and electric offerings; there were no additional start up costs in 2020. The initiative’s performance was less successful in 2020 than in 2019, and though costs were reduced significantly, there were no savings or benefits, and thus the offer was not cost-effective. The poor performance led Unitil to re-evaluate in mid-2020. Unitil’s experience, combined with the mixed experience of other PAs, was sufficient to determine that the initiative would not be successful and that it would not be prudent to continue to offer it.

Berkshire’s HERs initiative launched in October 2014 and ran through January 2019 with the original vendor, and then ran with a new vendor for the 2019-2020 heating season. Berkshire consistently sought to increase savings through the years, even switching to a different vendor to achieve greater savings. This amount of time is sufficient to assess the current and likely future success of the Berkshire HER effort.

Gas PA Question 2: What were the 2020 budgets, savings, and BCRs for each program?

LIBERTY	<u>Spending</u>	<u>Lifetime Savings (therms)</u> ¹	<u>BCR</u>
Planned	\$50,126	53,395	1.75
Actual	\$187,388	0	0

UNITIL (GAS)	<u>Spending</u>	<u>Lifetime Savings (therms)</u>	<u>BCR</u>
Planned	\$26,640	30,313	1.86
Actual	\$15,787	0	0

BERKSHIRE	<u>Spending</u>	<u>Lifetime Savings (therms)</u>	<u>BCR</u>
Planned	\$111,430	125,608	1.84
Actual	\$35,575	0	0

Gas PA Question 3: Were measured savings in 2020 (and previous years if applicable) statistically significant?

Liberty sent out HERs to 24,483 customers (half of residential customers) and had a control group of 14,196 customers. Liberty’s measured gas savings (-7,872 therms) never achieved statistical significance (at the 95% confidence interval) in any given month or in aggregate for 2020. The measured cumulative percent savings rate for Liberty’s behavioral initiative was -0.07% in Massachusetts. The CI (confidence intervals) show that, at worst, the initiative saved -0.52% and at best saved 0.39%.

Unitil Gas’s measured gas savings never achieved statistical significance (at the 95% confidence interval) in any given month or in aggregate across the program. The measurement shows treated customers were using 0.01% more than control group customers, but the “real” number could be anywhere between using 0.9% more and 0.9% less gas than the control group. While the measured savings and the statistical significance are two different pieces of information, in this case, both the measured savings are negligible (and negative) and there is no statistical significance (*i.e.*, ability to attribute the difference between treatment and control groups to the HER offer).

Berkshire’s 2019-2020 winter heating season offering had 9,408 treatment households and 4,698 control households. The panel regression model suggested that the households in the treatment

¹ Each of the BLU PAs included savings in the quarterly reports based on initial results; however, given the lack of statistical significance, each BLU PA will be adjusting annual and lifetime savings to zero.

group saved an average of 0.45846 therms per month with a clustered standard error of 0.32142 and a 95% confidence interval between -0.171519 and 1.088441 therms (or a saving of 0.31% per month). The analysis found that this difference is statistically not significant. Since the savings measured were not found to be statistically significant, they cannot be used to validate program results.

Gas PA Question 4: How do you plan to you replace the relatively inexpensive and plentiful savings created by the behavior program?

While the BLU PAs planned for meaningful annual savings in behavior offerings, the savings did not turn out to be plentiful. For Liberty in particular, the negative savings cost more than the projected budget. The BLU PAs note that while the Residential Behavior core initiative had meaningful planned annual savings, behavior has a one-year measure life, and thus it does not constitute a significant portion of lifetime savings or benefits. The planned lifetime savings for Residential Behavior represented 1.97 percent of the total planned residential lifetime savings for Liberty, 3.06 percent for Unitil Gas, and 5.13 percent for Berkshire. Each BLU PA is continuing to focus on other residential core initiatives that are achieving strong participation and savings in 2019-2021. As of Q4 2020, in the residential sector, Liberty has achieved 73 percent of its three-year planned lifetime savings, Unitil Gas has achieved 66 percent, and Berkshire has achieved 79 percent; therefore, all three of the BLU PAs are on track to achieve their residential lifetime savings goals in 2019-2021 notwithstanding any changes to the behavior initiative.

Gas PA Question 5: Where do you plan to you move the money that was earmarked for the program?

Liberty has overspent in the behavior initiative and is already over-budget in the residential sector. Unitil Gas's behavior initiative represented only two percent of its annual budget for the residential sector, and there is not enough remaining funding to require moving the funds to another specific effort. Berkshire has focused efforts and funding toward other core initiatives in the Residential Existing Buildings program that are facing higher than expected spending as a result of the pandemic and yield significantly greater cost-effective savings, namely Residential Coordinated Delivery and Residential Retail.

Gas PA Question 6: Did you explore a deemed savings approach?

None of the BLU PAs explored deemed savings for HERs in planning for the 2019-2021 three-year plan because measuring savings using a randomized control trial behavior design is the industry standard for behavior offerings. Liberty notes that, given the size of the treatment and control groups, it expected to run a traditional offering that produced savings from regression analysis. For Liberty and Unitil Gas, there were no positive measured savings between the treatment and control group, and therefore, while deemed savings could overcome the question of statistical significance, it would not overcome the lack of any actual *perceivable, measured* difference between the treatment and control groups. The BLU PAs are also concerned that a deemed approach is unlikely to be seen as appropriate by the EM&V consultants. While measurement of savings could be addressed in part with a deemed savings approach, this would not fully address the ability of HERs to lead to significant savings for the BLU PAs who do not

have longstanding cohorts in their treatment groups like PAs who commenced HERs earlier. As noted in the Eversource responses below, cohorts launched in recent years were not achieving the same savings rate at maturity that Eversource had seen with previous cohorts (some of the newer gas cohorts actually produced negative savings).

The PAs will continue to look for ways to cost-effectively influence customer behavior and achieve savings and will examine whether there are different ways to deliver and measure behavioral savings in the future. The PAs will also look toward other marketing efforts and new customer engagement platforms in order to influence customer behavior.

EVERSOURCE QUESTIONS

Eversource Question 1: What are the savings assumptions for the new behavior program? Measure life, other TRM values?

In 2019, the per customer savings for Home Energy Reports (“HERs”) were as follows:

- Electric: 95.1 kWh
- Gas: 0.865 MMBtu

For the purpose of the potential study and planning, Eversource is making a conservative assumption that Delivered Energy Insights will produce half as much savings, on the basis that Delivered Energy Insights are designed to be partially a behavioral program, and partially a marketing program intended to drive participation in other energy efficiency programs. As with the HERs initiative, Eversource anticipates that savings will take two years to reach their maximum savings rate (in other words, these savings will not be achieved until 2022). Eversource would assume that the following savings per customer for the new behavioral program would be achieved in 2022:

- Electric customer: 45.55 kWh
- Gas customer: 0.428 MMBtu

The actual savings will be determined by an evaluation of the Delivered Energy Insights initiative that is underway and will be completed prior to filing the 2022 annual report.

Eversource has assumed no other changes to TRM values. Measure life for the behavioral portion of the savings is still assumed to be one year.

Eversource Question 2: What are the savings impacts on 2021 and for 2019-2021 overall?

Electric savings: In the 2019-2021 plan, Eversource projected that the HER initiative would produce 166,110 Annual MWh of electric savings, representing 10% of the portfolio annual savings and 1% of the lifetime savings. In the 2019-2021 plan, planned savings for 2021 were 59,530 annual MWh. Although the HER initiative was discontinued in 2019, the savings from HER continue to persist, and have now been evaluated and preliminary results are available. The projected HER electric savings for 2019-2021 are 121,949 MWh; this includes the preliminary evaluated final year savings from HER in 2019, the preliminary evaluated persistence savings from HER in 2020, and extrapolated persistence savings from HER in 2021 assuming the same decay rate as the prior year. In addition, the expected behavioral savings from the new Delivered Energy Insights initiative are expected to be approximately 5,072 MWh in 2021. The Delivered Energy Insights savings represent half of the savings per customer for 2022 modeled by the potential study, with the understanding that the new initiative will take time to ramp up; in addition, savings are adjusted to account for the number of customers that will be treated with the Delivered Energy Insights. Collectively, these savings for 2019-2021 are expected to be 127,021 MWh, or 76% of planned savings from the behavioral initiative.

Gas savings: In the 2019-2021 plan, Eversource projected that the HER initiative would produce 3,594,739 therms of gas savings across the three years, representing 16% of the portfolio annual savings and 1% of lifetime savings. In the 2019-2021 plan, planned savings for 2021 were 1,203,646 annual therms. As with electric, the HER initiative was discontinued in 2019, but gas savings from HER are expected to persist after the discontinuation of the HER initiative. The projected HER gas savings for 2019-2021 are 2,903,553 therms: this includes the preliminary evaluated final year savings from HER in 2019, the preliminary evaluated persistence savings from HER in 2020, and extrapolated persistence savings from HER in 2021 assuming the same decay rate as the prior year. In addition, the expected behavioral savings from the new Delivered Energy Insights initiative are expected to be approximately 143,997 therms in 2021. As with electric, the Delivered Energy Insights savings represent half of the savings per customer for 2022 modeled by the potential study, with the understanding that the new initiative will take time to ramp up; in addition, savings are adjusted to account for the number of customers that will be treated with the Delivered Energy Insights. Collectively, these savings for 2019-2021 are expected to be 3,047,549 therms, or 85% of planned savings from the behavioral initiative.

Eversource Question 3: What are the costs, including unit cost per annual unit of energy, for the new program?

There are no longer any labor or technology costs associated with the behavioral initiative as all labor costs of the offering have been reallocated to marketing. The behavior initiative is expected to incur up to \$50,000 in vendor costs to assist with email capabilities. If split equally between electric and gas, this cost would amount to \$0.59/MWh and \$0.02/therm.

Eversource Question 4: What percent of customers do you have email addresses for?

Eversource has validated email addresses for 55% of all Massachusetts customers, both electric and gas, with accounts one year or older. The breakdown of total customers and validated email addresses between fuel types is shown below:

- Electric:
 - Total customers with accounts one year or older: 1,047,480
 - Total accounts with validated email addresses: 561,639
 - % of electric accounts with email addresses: 54%
- Gas:
 - Total customers with accounts one year or older: 226,242
 - Total accounts with validated email addresses: 142,894
 - % of gas accounts with email addresses: 63%

Note that Eversource further refines the list of customers with validated emails to exclude those who have opted out of emails, as well as those who fall outside typical usage patterns, but this reduces the percentage of customers available for Delivered Energy Insights communications only slightly.

Eversource Question 5: What is the number of households enrolled in the current treatment group?

In total, there are 272,001 households in Massachusetts enrolled in the new Delivered Energy Insights program, 208,841 electric and 63,160 gas.

Eversource Question 6: How many were enrolled before?

928,028 Massachusetts households received treatment over the lifetime of the HER program. In 2019, 514,641 households across Massachusetts received HER reports.

Eversource Question 7: To the extent the program is smaller than the previous iteration:

a. How will you replace the relatively inexpensive savings in your Three-Year Plan assumptions?

Eversource is not planning to replace savings from HER for 2020-2021, but savings from HER will persist over this period, as noted in the response to Eversource Question 2.

b. What is the justification for reducing the scale of a cost-effective program from the portfolio?

Eversource expects that savings generated from Delivered Energy Insights will be as cost-effective, if not more, than HERs. Eversource's new approach to the behavioral initiative was undertaken in response to the EEAC's request for innovation beyond tweaks to the HERs offering. Given how many customers were included in the HERs experiment as either treatment or control, it would not have been possible to conduct a randomized control trial for alternative communications at a scale that would lead to statistically observable savings in a reasonable amount of time. Additionally, cohorts launched in recent years were not achieving the same savings rate at maturity that Eversource had seen with previous cohorts (some of the newer gas cohorts actually produced negative savings). This could be an indication that the sort of normative comparison messaging that has been a staple of behavioral programs since their inception is no longer resonating with customers. As it can take a significant amount of time in market before behavioral communications start producing observable savings, Eversource felt it was important to start testing alternatives to get ahead of the game.

Eversource Question 8: To the extent there will be underspending in this core initiative, where will you move the dollars?

Eversource is considering using these funds to test additional incentives for moderate income heating, pre-weatherization barrier mitigation, facilitating weatherization among property owners with multiple 2-4 units, and/or using these resources to fund a translator when needed for customers with Limited English Proficiency.

Eversource Question 9: We understand that Eversource is using only email as the means of customer interaction, what is the savings assumption difference between traditional mail and bill inserts versus the current approach? (understanding that email was also used in the Oracle program)

With HERs, savings generated via email only were estimated to be less than half of traditional mail; however, it would be incorrect to make a similar assumption for Delivered Energy Insights. The initiative is altogether different from HERs in terms of the customized usage information shown, unique calls to action, and overall digital experience provided. Eversource would not be able to execute a behavioral initiative via bill inserts. Due to system limitations, Eversource cannot target a specific list of accounts numbers to receive a bill insert; targeting would have to be done at a less granular, geographic level. Hence, Eversource would not be able to assign customers to treatment and control groups in a way that ensures statistical balance.

Eversource Question 10: Will you continue this approach in 2022?

Yes. The design of the Delivered Energy Insights emails allows for flexibility and innovation in both content and execution, so Eversource plans to further stratify the experience for different customer types. Eversource will also continue to introduce new visual representations of customized usage data and interactive email experiences to keep customers engaged, in addition to testing the impact of varying report frequency (for example, bi-monthly emails during periods when customers have the greatest ability to produce savings).