

Engaging Customers in Digital Space, the Successes of Delivered Energy Insights *Gregory Romine, Eversource*

ABSTRACT

Digital engagement has always been a tricky needle to thread. Customers are inundated constantly with promotions and advertisements, especially in emails. Eversource has sought novel ways to digitally engage customers with their energy usage to drive energy saving behavior. One method Eversource leveraged is a delivered energy insight (DEI) email designed to provide customers with a monthly view into their usage history to help them notice changes in usage and behavior. DEIs contain three critical parts: an animated bar graph comparing the customer's usage for the current and previous year, usage information for the subsequent month of the previous year acting as a 'look ahead', and a seasonally relevant behavioral energy savings tip (which changes monthly). Additionally, DEI customers are provided with seasonal insights, showing overall usage during heating and cooling seasons with notes about relevant changes in weather from the previous year. The response has been positive, with 65-70 percent of recipients opening at least one DEI; high approval from embedded polling; and savings measurements for some segments. This paper will discuss those findings and the implications that they have for how we digitally engage with customers to encourage energy saving behaviors and program participation.

Introduction

Home energy reports (HERs) have been a proven method of behavioral based energy savings. HERs use social comparison – comparing customer usage to other similar customers – to drive a behavioral change. Home Energy reports can reduce electricity consumption by as much as 2.2% and natural gas consumption by 1.6% (Cornago 2021) and those savings can persist for years even after stopping the reports (Allcott 2014). While HERs generate savings, many evaluations don't take further objectives into consideration – customer satisfaction, education, or increased awareness (Stewart 2020).

In 2019 Eversource stopped sending out Home Energy Reports (HERs), citing a negative customer experience with the social comparison aspect. In the absence of HERs, the customer engagement team needed to create a new behavioral program and change behavioral outreach. Initial plans included variations on comparing historical usage delivered to customers via email focused on high usage seasons. The expectation was that feedback would still stimulate conservation behaviors, pressing on other psychological variables such as environmental concerns and price sensitivity (Karlin 2015).

New behavioral plans were abruptly shelved during the COVID pandemic and 2020 shelter in place policies. Eversource found increased residential usage during the summer of 2020, outstripping multiple years of historical usage. Any historical comparison would only emphasize that people were at home more and couldn't attain any meaningful savings. Instead, during that time the customer engagement team sought to reach customers with high bill alerts, designed to warn customers of large month over month billing changes during the summer of 2020 (Romine 2022).

Delivered Energy Insights (DEIs) were conceived to move past the HER neighborhood comparison and provide customers with a self comparison. They were designed as a test to see if

we could engage customers, improve satisfaction, and drive behavioral savings. Additionally, DEIs were also completely digital, moving away from mailings and going paperless.

Methods

Program Description

After seeing success with High bill alerts during the summer of 2020, we decided to design an email engagement program around actively showing customers how their usage changes over time and give them insight into their usage patterns year-round. Additionally, where the high bill alerts were price focused, DEI would compare usage amounts over similar monthly billing periods. We wanted to test if we could drive customer satisfaction and behavioral savings through a digital only program focused solely on a customer's own usage.

To measure program success we looked to examine engagement, satisfaction, and behavioral energy savings. We set up email design and mailing through Marketo, our marketing automation software. Send, open, and click through rates were measured and reported through the Marketo interface. We placed a quick thumbs-up poll in select emails to measure customer sentiment and we opened an email inbox for any customer responses. To measure potential behavioral savings, we planned to run the program as a randomized control trial (RCT) and have the results evaluated yearly by an external evaluation team.

Program Design

We planned to send DEI on a monthly cadence, with customers receiving them shortly after the end of their billing period. The month of the billing period end date would act as the month of the DEI, and their comparison would be with the previous year's usage with a comparable end date. We understood the comparison could be inexact and included this caveat in the DEI:

“We use your billing period from last year with an end date closest to your most recent bill. While the comparison covers a similar time frame, the number of days in your billing period and dates may vary slightly from year to year. “

The outline of a basic DEI has three key components. First, an animated bar graph comparing a customer's current billing period and a comparable billing period month from the previous year. See appendix for an example Customers are divided into five categories based on the percentage change in usage, with the current usage bar filling in relative to the previous – customers with a negative change saw the bar fill less than people who saw no change or a positive change. Second, usage from the next billing period of the previous year. This acts as a look ahead, alerting customers to any potential seasonally related changes. Third, customers are presented with behavioral tips and a call-to-action link for customers to learn more.

We also planned for electric customers to receive an end-of-summer summary in the fall and for gas customers to receive an end-of-season summary at the end of the gas season. Summer summaries are split into two groups, depending on overall usage change, with customers using less energy overall receiving an extra headline and graphic. Customers are shown total usage comparisons and a percentage change along with a brief comparison on temperature changes between years. Again, customers also received a seasonal tip to prepare for

falling temperatures. Gas summaries were similarly structured but didn't include a tip or call to action. The gas summary also marked the end of gas reports until the beginning of the next gas season.

Residential customers were selected based on three broad criteria. Customers needed a valid email associated with their account, at least one full year of prior usage, and monthly usage rates between 100 kWh and 5,000 kWh. This selection criteria led to an initial pool of 417,682 customers in Massachusetts, 250,085 customers in Connecticut, and 217,072 customers in New Hampshire. Further division of potential customers along other characteristics such as usage quantile were not considered for a few reasons. First, the decreased statistical power of a digital only trial due to decreased open rates over traditional mailings meant we wanted to maximize customer numbers. Second, associated costs with a large-scale email trial would not increase from the maximized number of customers.

MIT's CEEPR group performed the statistical power calculations and determined a 50/50 split of available customers who matched the initial criteria into treatment and control would provide the greatest statistical significance for an RCT. They subsequently divided the available customers along available usage and demographic data and performed F-tests to ensure statistical indistinguishability. This provided an initial treatment pool of 208,841 customers in Massachusetts, 125,042 customers in Connecticut, and 108,536 customers in New Hampshire,

The first DEIs were sent in January 2021 and the program continues in Massachusetts and New Hampshire. In July 2022 we sent out a special heat wave alert email. This email did not contain any usage information but acted as a proof-of-concept for sending special emails outside of the regular cadence and showing dynamic, location-based weather information. The email showed an animated thermostat with advice for setting the thermostat to 78 degrees Fahrenheit and a weekly forecast that changed based on location and time viewed.

A second recipient wave was created in June 2023 to maintain the program and reach new potential customers. Customers in the second wave were also separated into a treatment and control by CEEPR using the same methods as the first wave with a 50/50 split. Total customers in the second wave are 192,591 in Massachusetts, 441,021 in Connecticut, and 121,263 in New Hampshire. The second wave has not been evaluated.

The program was terminated in Connecticut in 2023 and is being run as a marketing program.

Reception

Open Rates

Emails are designed and sent through Marketo, and opening rates are reported and updated through them via their interface. Typical open rates for Eversource emails are around 40-50 percent. The electric DEI open rates from January to December 2021 were low – 29 percent for Massachusetts, 32 percent for Connecticut, and 26 percent for New Hampshire. The reason for low rates is likely related to issues around proper delivery of all Eversource emails – many were being classified as spam for a brief period. These rates increased as the program ran, and in 2022 open rates were 44 percent for MA, 49 percent for CT, and 41 percent for NH and remained steady until the introduction of a second recipient wave in June. This caused a drop in overall open rates, with average open rates for the first half of the year of 47 percent for MA, 51 percent for CT and 43 percent for NH and open rates in the second half of the year of 40 percent

for MA, 39 percent for CT, and 33 percent for NH. Figure 1 shows the open rates for electric DEI.

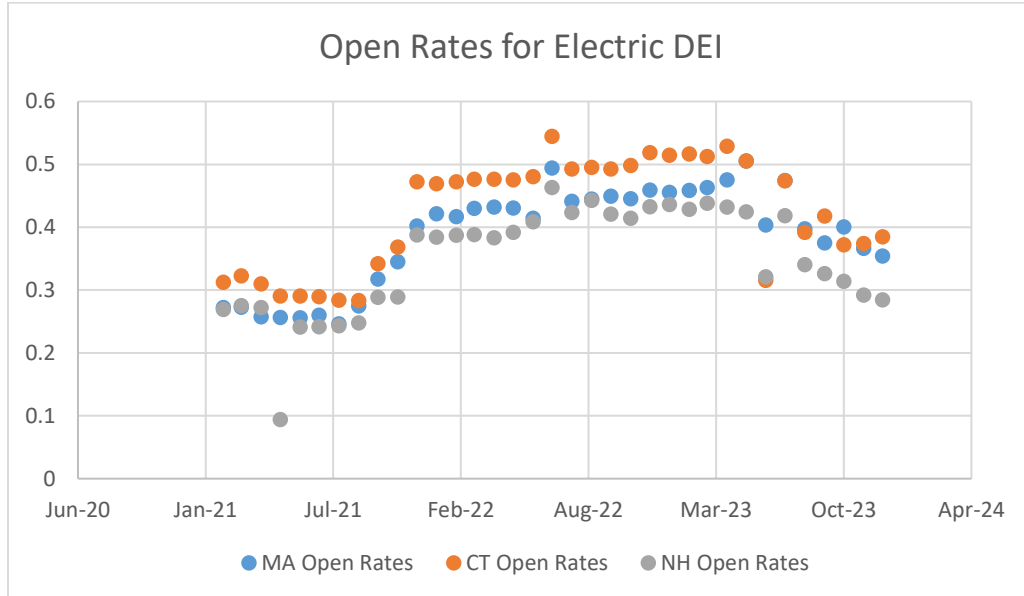


Figure 1. Open rates for electric DEI over the course of the DEI program.

Gas DEI open rates were similarly low in the first gas season, with open rates of 21 percent for MA and 28 percent for CT. During the 2021-2022 gas season, open rates increased to 39 percent for MA and 43 percent for CT and increased again during the 2022-2023 season to 46 percent for MA and 50 percent for CT. Figure 2 shows the open rates for gas DEI.

Additionally, over the course of the program 65-70% of customers have opened at least one insight.

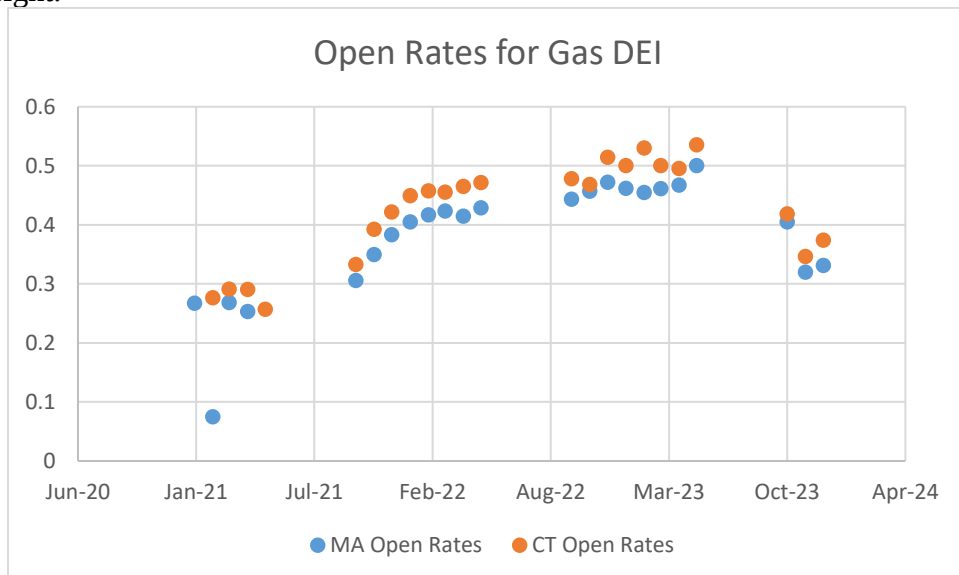


Figure 2. Open rates for gas DEI over the course of the DEI program.

Poll Response

Seasonal summary emails had an embedded ‘thumbs up’ poll that asked if the customer found the information helpful. While the number of respondents was low, the responses were overwhelmingly positive. In October 2021, the electric summary poll had a 1-2.5% response rate in recipients, with 2,398 respondents in MA with 95 percent approval, 1,902 respondents in CT with 93 percent approval, and 2,300 respondents in NH with 95 percent approval. In October 2022, there were 2016 respondents in MA for with a 91 percent approval, 939 respondents in CT with 96 percent approval, and 779 respondents in NH with 81 percent approval. Gas customers were polled in May 2023, with fewer respondents (781 for MA and 263 for CT) but with 95 percent approval.

Email Response

There was a larger initial email response to energy insights that has slowed as the program has progressed, from approximately 600 responses in 2021 to 200 in 2023. Categories of customer response included, positive reaction to the DEI, frustration about energy use changes, attempts to explain why their energy changed, general negative sentiment about Eversource, and suggestions for email improvements. The most popular improvement request was for the inclusion of weather data, with more energy savvy customers asking for comparisons of heating degree days. Customers also requested number of days per billing period (especially if the difference in usage was stark), average daily usage and inclusion of any non-weather issues that prompted the usage changes (e.g., the customer installed a new heat pump).

Comparisons with Customer Satisfaction

The randomized control trial nature allowed the customer team to compare customer satisfaction data for customers who received DEIs to those who did not. The customer team examined customers from the Eversource relationship survey from 2021 to 2023 and compared responses. Overall customer satisfaction for recipients across all three states was higher but not statistically significant. Customer satisfaction was 6.41 (out of 10) for customers who received DEI and 6.33 for those who did not. In CT the satisfaction was 5.60 to 5.57, in MA it was 7.16 to 7.00, and in NH it was 6.97 to 6.91.

Further comparisons along four measured attributes – efforts to develop energy supply plans for the future, actions to take care of the environment, variety of energy program offered, and involvement in the community – showed again small overall increases among customers who received DEI (figure 3). Figures 4-6 show the measure attributes across individual states.

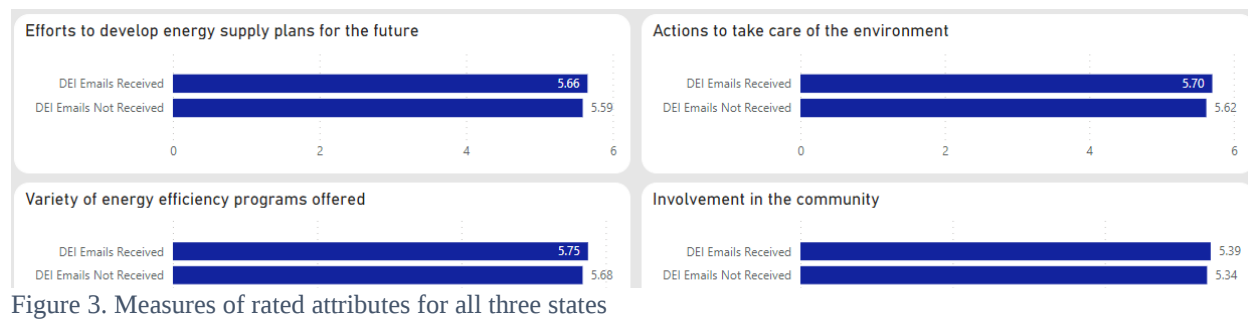


Figure 3. Measures of rated attributes for all three states

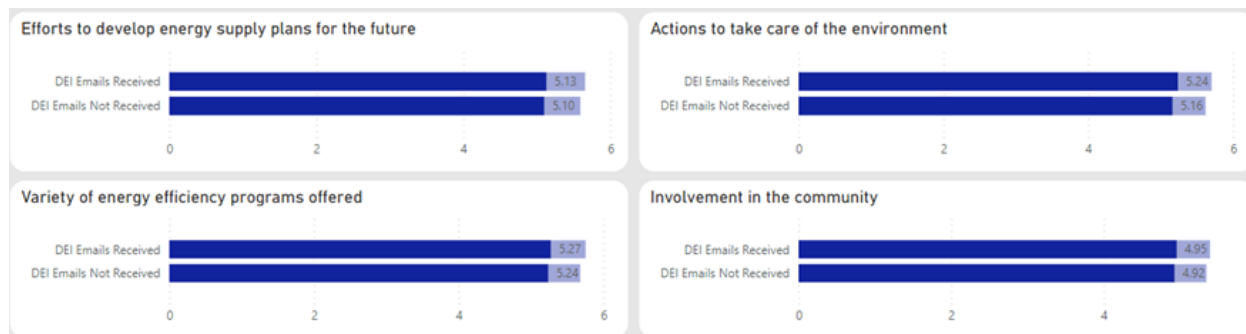


Figure 4. Measure of rated attributes for Connecticut. State averages are shown in dark blue, averages across all three states are shown in light blue. Overall ratings in Connecticut are lower than the three-state average.

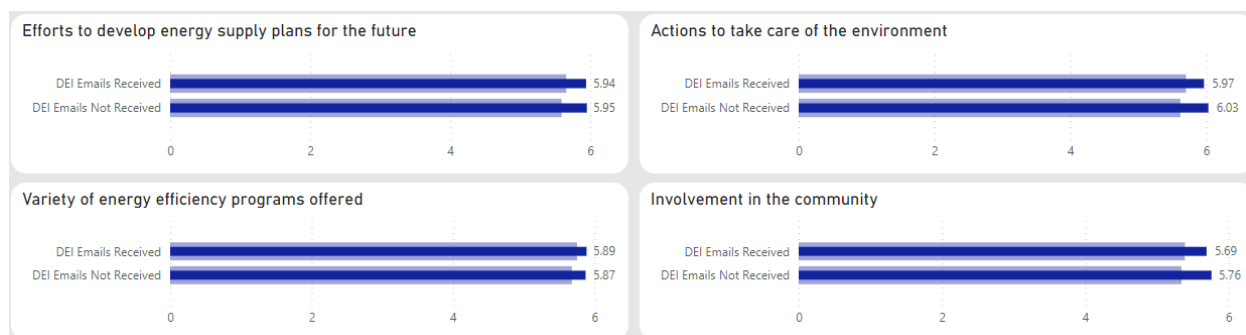


Figure 5. Measure of rated attributes for Massachusetts. State averages are shown in dark blue, averages across all three states are shown in light blue. Overall ratings in Massachusetts are higher than the three-state average.

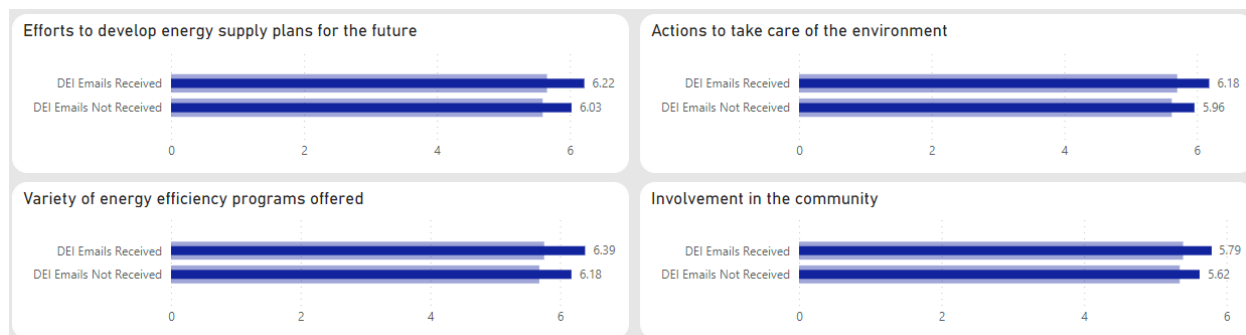


Figure 6. Measure of rated attributes for New Hampshire. State averages are shown in dark blue, averages across all three states are shown in light blue. Overall ratings in New Hampshire are higher than the three-state average.

It's worth noting customer satisfaction and customer email response tend to be more acutely affected by strong negative events, such as rate increases and outages. The increase in negative responses received through the DEI inbox during these events suggests customers have an increased sensitivity and frustration to any messaging around these times. To better characterize changes in customer sentiment, changes in customer reaction during and after these events should be examined as well.

Measuring Behavioral Program Savings

Guidehouse has performed evaluation of the DEI program for 2021, 2022, and 2023. Massachusetts was evaluated across all three years, with no statistically significant behavioral savings. Percent savings for electric customers did increase across all three years, going from -0.05% to 0.06% between 2021 and 2023. Gas customer savings were 0.14% in 2021, 0% in 2022, and 0.20% in 2023.

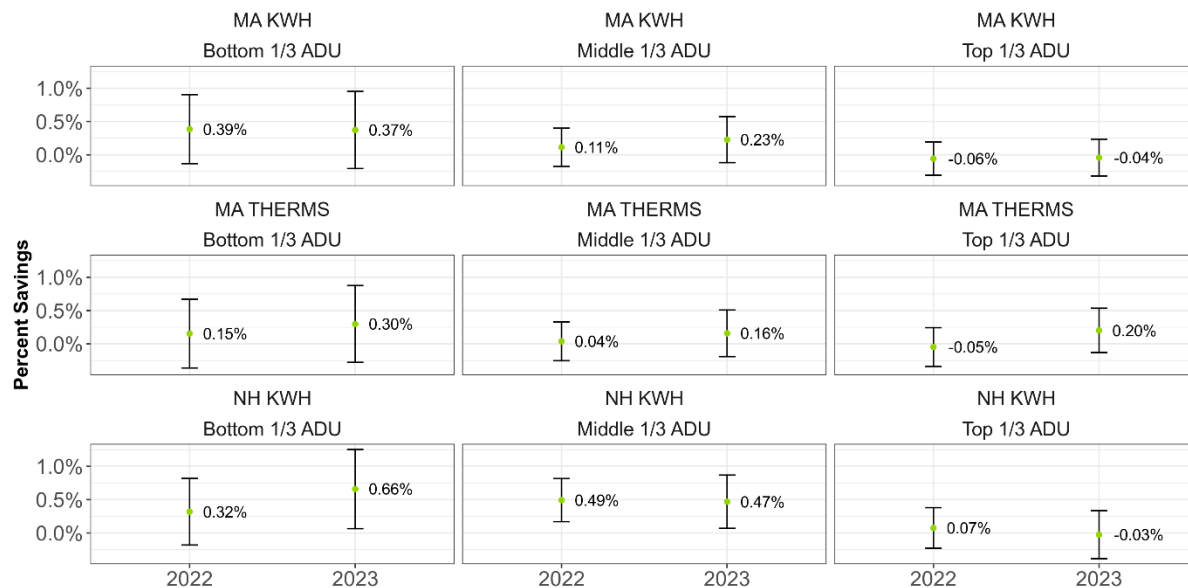


Figure 7 Measurements of usage tercile for MA and NH from 2022 and 2023. Usage terciles are <11.82 kWh ADU, 11.82 to 21.52 kWh ADU, and >21.52 kWh ADU for MA and <15.33 kWh ADU, 15.33 to 25.05 kWh ADU, and >25.05 kWh ADU for NH (Guidehouse 2024).

Connecticut was evaluated for 2021 and 2022, with no statistically significant behavioral savings. Electric savings were 0.05% in 2021 and 0.11% in 2022. Gas savings were 0.11% in 2021 and 0.28% in 2022.

New Hampshire was evaluated for 2022 and 2023, with statistically significant savings in 2022. Electric savings were measured as 0.27% in 2022 and 0.25% in 2023. In 2023, the bottom of the 90% confidence interval is -0.001%.

One notable aspect from the 2023 evaluation was the separation of electric customers by pre-period tercile. Usage for customers in the bottom two usage terciles (less than 11.82 kWh ADU and 11.82 to 21.52 kWh ADU) experienced greater -- significant or near significant (at the 90% confidence interval) -- savings than customers in the top usage tercile (Figure 7). Massachusetts customers in the top tercile had negative savings in both 2022 and 2023, and customers in the top tercile in New Hampshire trended downward.

Discussion

The traditional primary metric of success of a behavioral program is a measurement of energy savings. The DEI program has shown positive trends, but no clear statistically significant savings measurements aside from New Hampshire in 2022. Lower usage customers alone might achieve savings if taken alone, but the top usage tercile demonstrates no change. This runs

contrary to where HERs are typically successful, focusing on the behavior of higher use customers. This could be an effect of a push towards electrification. As an example, according to the U.S. Department of Transportation, Americans drive 13,476 miles per year, or 36.92 miles per day on average. This translates to approximately 11.81 kWh per day to charge the car to replenish the range driven for a standard EV. This amount of energy would power a 60-watt incandescent bulb for about 200 hours. Guidehouse 2024 also notes saturation of behavioral space, increased efficiency of products such as light bulbs, and an increase in overall efficiency messaging as potential external drivers for a lack of savings as well. The increase in efficiency messaging may explain why we see differences in savings numbers between MA and NH. Massachusetts had a 2023 plan budget of 360.7 million, while the NH plan budget was 44.7 million.

Delivered energy insights did not have a significant effect on customer satisfaction measurements. There were slight positive changes across all three states, but those trends also changed with overall popularity. Increased positive perception, and trustworthiness leads to increases in program participation (Glavin 2022). The decline of email engagement for customers from mid-program peaks warrants concern and demonstrates a potential for experimentation in content changes to capture and sustain customer attention.

Conclusion

Delivered energy insights haven't delivered the energy savings of the traditional home energy reports, and customer engagement through the DEI program has fallen off over 2023. The lack of a social comparison, saturation in behavioral messaging, and increase in efficient products could all explain the lack of savings. The declines in engagement should be remedied through further work on the reports themselves, taking advantage of the digital nature to provide more relevant information in a timely fashion. This will become even more important with the roll out of advanced metering infrastructure (AMI) in Massachusetts.

Considerations in the absence of savings are to move away from the RCT model and provide insights to all available customers. Based on responses to high bill alerts and initial responses to DEIs, we believe customers benefit from having their data provided to them. At this time there is no indication that DEIs will include a social comparison aspect if the trial continues.

Declining open rates in 2023 indicate a need to maintain "freshness" in customer communications and perhaps offers options for experimentation and upgrades to capture and sustain attention. Subject line changes are a consideration to drive open rates again, particularly after changes to the body of an email. A/B testing of headers and subject line rotation can be used to drive increased open rates. Currently, headline personalization only utilizes a customer name and further personalization should be considered.

Insights have not changed much from the first emails in 2021. Among initial responses to insights were requests for more information, particularly weather information and number of billing days. This relevant information will be included in a more modular version of the insights. We have also begun to look beyond behavioral tips. In 2024, messaging has changed to include suggestions for customers to consider purchases of energy efficient products and home upgrades that would provide savings beyond behavioral changes in addition to behavioral tips. We are also working to identify certain subsegments of customers (renters and owners, heat pump and EV owners, weatherization candidates) and providing insights more specific to their needs. Given the move towards pushing customers to other programs, effects on participation in those other programs will need to be examined as well.

Massachusetts will be rolling out (AMI) to customers in 2025. With that will come a wealth of customer data and insights that will be used to enhance the customer experience. While many of these will be passively available to customers, it will be necessary to draw attention to them for customers to yield the benefits. Insights could be an effective tool for that, providing more detailed usage information, monthly peaks, accurate monthly usage instead of billing period usage, and more. We can also use insights to push customers to engage with more intricate AMI features on our website and through apps on their smartphone. In addition to increased insights available for customers, detailed usage information and usage curves can be used to categorize customers and provide insights based on specific usage patterns. We are aware other utilities have run similar programs as they developed AMI infrastructure, and we will look to build on their successes.

With the increasing push to paperless billing, the focus on online tools to help monitor usage, and plans for AMI infrastructure, it is important to have digital programs to drive customer awareness and engagement. In the absence of a social comparison, and with a massive shift to electrification, achieving behavioral savings seems unlikely. However, with some work, the structure of Delivered Energy Insights, providing customers with information about how they use energy, can be used to drive engagement, and satisfaction and increase customer awareness of utility plans and how they can participate.

Acknowledgements

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Thanks to Casey Clark for her work on measuring the effect of DEI on customer satisfaction.

Appendix

Sample DEI

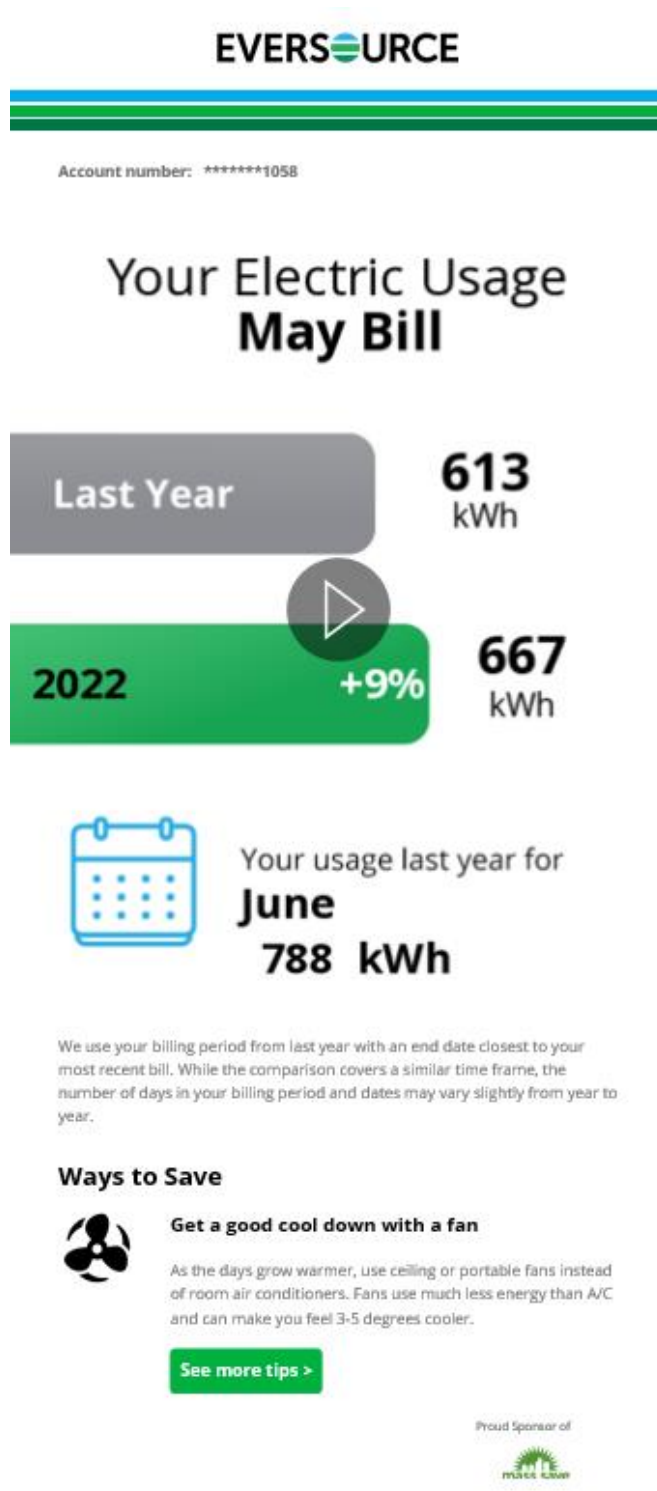


Figure 8 sample DEI email with usage graph, look ahead, and tip.

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