Prioritizing Evaluation Resources to Support a Clean and Equitable Future

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ABSTRACT

Utilities face massive shifts as they both modernize their grids and provide equitable and customer-centric service, while also delivering existing services. Taken together, it can be overwhelming to achieve these goals with limited resources. To help meet this challenge, evaluators can play a crucial role in supporting these transitions by providing decision makers with key data and independent analyses. This can be achieved when evaluation planning efforts target research that can provide input on regulatory needs, programmatic needs, and strategic needs.

The authors of this paper explain how one utility, Xcel Energy, transformed their evaluation planning efforts from one that focused primarily on meeting regulatory needs to one that could also meet strategic programmatic needs. Its new evaluation planning approach allows evaluators an opportunity to assess its entire portfolio on a regular basis, limiting the utility's risk of strategic questions being unanswered. It then prioritizes research efforts against a list of strategic priorities to enable evaluation research to support strategic needs.

This paper will describe how the utility's prior evaluation planning efforts became outdated, what they did to address this problem, and the benefits and lessons learned associated with this new approach. Evaluation planners across the country can use this case study as an example of how to improve evaluation planning efforts by dedicating limited resources to that which can provide the greatest benefit to utilities as they move to a clean and equitable future.

Introduction

Many utilities perform evaluation on their demand side management (DSM) programs, but what evaluation looks like and how DSM programs within a portfolio are prioritized for evaluation vary across the country. Some states regulate how evaluation is performed, other states develop agreements with utilities regarding how evaluation is performed, and other states leave evaluation decisions entirely to each utility. This allows for varied approaches to suit local conditions.

In Minnesota, Xcel Energy operates its DSM programs with an understanding that process and net-to-gross evaluation will be performed and available publicly for review. However, the utility is responsible for proposing evaluation topics in each triennial plan filing. This paper presents how Xcel Energy is changing its evaluation planning approach to better support DSM and utility needs to become more comprehensive and strategic. This paper first presents Xcel Energy's original evaluation planning approach. It then presents the utility's updated evaluation planning approach, followed by its benefits and lessons learned in developing the approach. It concludes with considerations for other jurisdictions.

Historical Context

Prior to 2020, Xcel Energy Minnesota relied on a cyclical approach to select DSM programs for impact and process evaluation research. Using this approach, the utility selected a certain number of programs from 40+ programs delivered in Minnesota to be evaluated each year, and they would rotate the programs for evaluation over time. When a program was selected for an evaluation, the research

would be customized to answer program-specific questions and better understand how that unique program could improve its influence in the marketplace and improve customer experiences.

The cyclical approach to evaluation planning worked well for many years. Cycling through the programs for evaluation over time allowed the utility to have certainty that each program was given an opportunity to receive in-depth research and data-driven recommendations for program improvements. Additionally, by only selecting a few programs to be evaluated each year, the utility's overall budget for evaluation remained cost effective, and the project management burden for limited staff was manageable.

However, the cyclical approach also brought a number of challenges. First, as the number of DSM programs in the portfolio expanded, the cyclical approach created long evaluation cycles. Based on evaluation resources and the number of programs offered, most programs tended to be evaluated every six to eight years. Some programs that could really benefit from evaluation due to an immediate concern would need to wait for their turn in the cycle. This was particularly challenging in markets that were rapidly changing. Additionally, defining evaluations to be program-specific left little room for any portfolio-wide research. For example, evaluators were limited in their ability to understand how a group of programs served a particular customer type and/or how customers might interact between different programs, such as heating and cooling. Lastly, the cyclical approach did not allow research to focus on strategic needs. For example, as the utility brought on more renewable electric generation capacity, primarily through large wind power developments, it sought research on how their DSM programs could best support its transition to cleaner energy sources. Rather than focusing only on research relating to net impacts of their DSM programs, as in prior years, it started needing research to better understand how to optimize their DSM programs to support carbon reduction goals. The cyclical approach to evaluation planning meant that the DSM programs prioritized for evaluation in a particular year were not necessarily relevant to supporting these new utility-wide goals.

As the utility's strategic and DSM programmatic needs evolved over time, the challenges of a cyclical approach to evaluation planning began to outweigh its benefits. While results from each evaluation were still valuable, the lack of research on programs not selected for evaluation increasingly felt like lost opportunities that could result in programs falling behind the market. To address this, Xcel Energy began looking at its evaluation planning approach to identify if alternative approaches might better meet their needs for the Minnesota programs. Xcel Energy DSM managers reviewed various options, identified in this paper, and landed on a portfolio-wide approach, which the paper describes in the next section.

A New Strategic Portfolio-Wide Evaluation Approach

The paper's authors crafted the portfolio-wide evaluation approach for Xcel Energy. This approach was selected to overcome the primary challenges related to the cyclical approach identified in the prior section: long intervals between evaluations, limited capacity for cross-program research, and limited capacity to research strategic initiatives. The portfolio-wide evaluation approach is envisioned as relying on regularly updated market actor data, from both customers and trade partners, across all programs to provide consistent, high-level feedback on the entire DSM portfolio and as a tool to identify programs in need of in-depth research. As depicted in Figure 1, the approach is envisioned as a two-step process:

- **Quarterly Data Reporting:** First, it gives DSM managers and evaluators synthesized data from a variety of relevant sources to provide faster feedback on program performance from market actors. This data is to come from a variety of sources, such as customer surveys, trade partner surveys, and program tracking records. This can help DSM managers and evaluators understand how the market is reacting to its programs over time.

- **Annual Deep Dive Research:** Second, results inform where to prioritize evaluation resources for deep-dive research into areas of need, whether it be a particular program, group of programs, or customer types.

Figure 1. The Xcel Energy Portfolio Evaluation Approach

The paper's authors envisioned this approach in 2020, and it is being further developed during 2021-2023.The three-year development phase allows Xcel Energy to take time to build alignment within utility staff on this new approach and address any challenges that arise during the development phase. Xcel Energy is planning to fully utilize this approach during its next filed triennial DSM plan, effective in January, 2024. To be able to implement this evaluation planning approach by 2024, the papers' authors needed to (1) develop a means to create quarterly data reporting capabilities at Xcel Energy, (2) ensure data could be analyzed to identify areas in need of research, and (3) develop strategic criteria to support decision making around selecting projects for deep-dive research. The remainder of this section describes these efforts taken to date.

Quarterly Data Reporting

The portfolio evaluation approach relies on the ability to collect and analyze data across the portfolio. In 2021, the authors combed through existing data collection efforts conducted by the utility to identify what, if any, data could be used to inform program performance and evaluation needs. The authors narrowed in on the following types of existing data that could be synthesized together to provide on-going feedback to program managers across the DSM portfolio and inform evaluation planning needs:

- **Program experience survey:** This survey is fielded on a rolling basis to program participants after a customer completes a DSM program. It is relatively short and specific to DSM program experiences. It covers topics such as satisfaction with program experiences, sources of program awareness, and reasons why customers participated in the program.

- **Brand health tracker survey:** This survey is directed to all utility customers and includes questions around program awareness. While the awareness questions are not specific to particular programs, results can be segmented by customer types to provide applicability to particular types of programs. It is fielded every six months.
- **Energy use studies:** This survey asks utility customers about the types of equipment customers use in their facilities, and it can be analyzed to gauge market adoption of energy efficient technologies. This study is fielded bi-annually to residential customers and intermittently to small-to-medium business customers. The residential study has been fielded consistently for over a decade and can show longitudinal trends; however, the business study is less regular.
- **Attitude and use studies:** This survey asks customers about their attitudes towards energy and energy uses.
- **Program tracking data:** Program tracking data provides insights into program participation levels, energy savings, and budgets. Tracking data can also provide feedback into program interest based on the number of documented communication efforts taken place. This data can also be segmented to understand who is participating in programs.

In addition to these data sources, the utility authors identified data gaps that Xcel Energy would like to fill and incorporate into a quarterly data reporting process. The primary gap is a method to collect feedback from trade partners on an on-going basis. This is an important gap to fill, since trade partners play a primary role in marketing energy efficient technologies and DSM programs to their customers, while often completing application forms on behalf of program participants. Additionally, Xcel Energy is discussing how to better include non-residential customer feedback on program experiences into its data analyses, since these customers are associated with limited response rates to existing surveys. Combining trade partner feedback and increased non-residential customer feedback along with the data points identified above would allow Xcel Energy to have a centralized place to analyze program experiences across the portfolio and across time.

Analyze results to identify areas in need of research

In 2022, the evaluation team will begin building out a dashboard to pull these datapoints together into one easily accessible place for both program managers and evaluators. The dashboard will not only help program managers and evaluators understand performance of individual programs and the overall portfolio, the dashboard is envisioned to be a key input for evaluation planners to identify areas in need of research (as shown in Figure 1 above). However, to ensure that the dashboard will support the identification of evaluation activities, the evaluation team needed to analyze data from the various sources mentioned above to understand how it could be used to support the portfolio-wide evaluation approach. During 2021, the evaluation team tested this planning approach by examining data from the existing data sources to determine if it could tease out programs that appeared to be over or underperforming in particular areas. To analyze whether existing data could help inform evaluation planning efforts, we looked at two main questions. First, we looked to see if we could see differences in the data across the portfolio. Second, we determined if we could see differences within one program over time.

To highlight one example of how we looked to see program differences across the portfolio, we examined participant satisfaction by program, using results from the program experience survey. The authors calculated the average satisfaction rate, along with a 90% confidence interval for each program, to determine if the satisfaction by program was statistically different than the satisfaction across all programs. In other words, the evaluation team analyzed whether each program performed over, under, or on-track with the average rating across the portfolio with regards to satisfaction. Figure 2 below shows the rating from each program compared to the average rating across the programs.
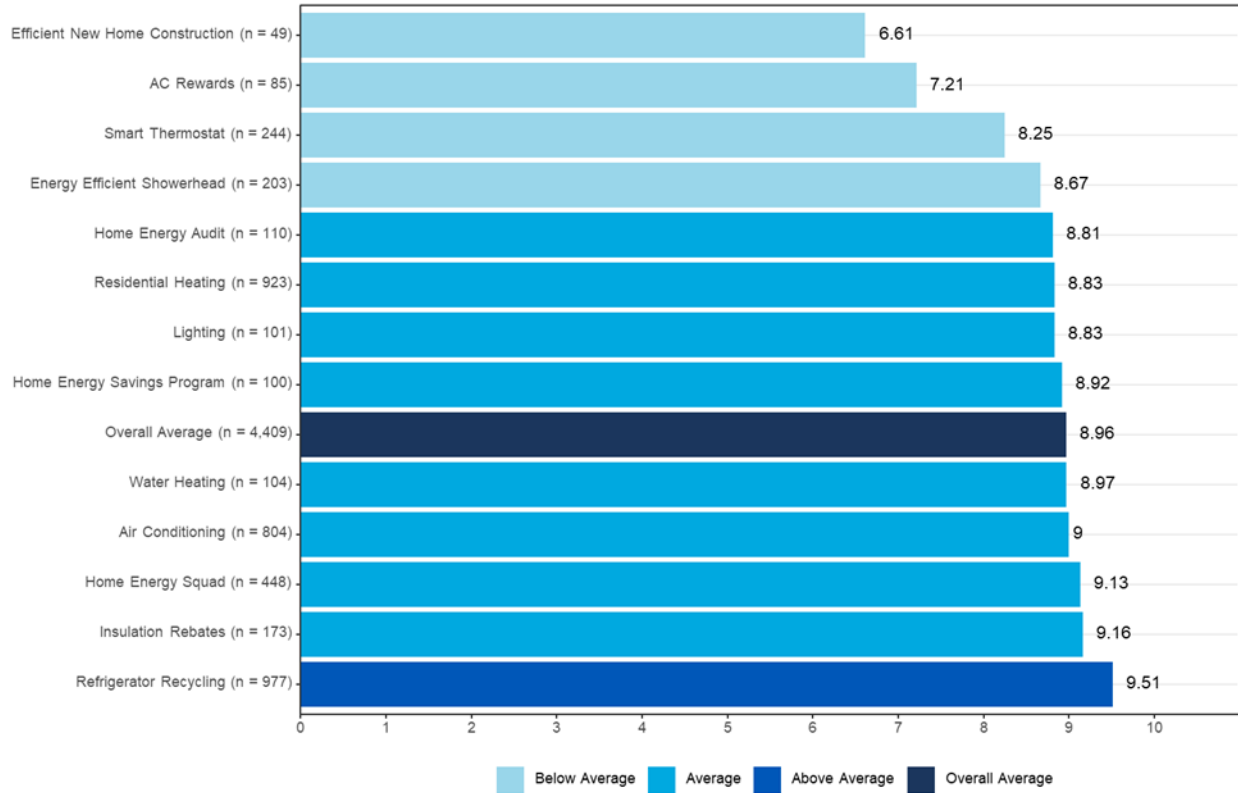
Figure 2. Program Satisfaction Comparison (*Source*: Xcel Energy Program Experience Survey, Q4 2019- Q1 2021)

The paper's authors found that four programs performed below the portfolio average, and one program performed above the average. The authors performed a similar analysis across a variety of satisfaction questions to determine if certain programs consistently were above or below the averages. We found the same four programs consistently underperformed compared to the others. This indicated that these four programs could be good candidates for focused research in the future to better understand what changes could be made to help improve satisfaction ratings.

The paper's authors also analyzed one program in detail to determine if we could see differences in program factors over time. The authors wanted to test this approach to understand if program managers and evaluators would be able to easily see any programmatic and market changes within the data. To test this concept, the authors looked specifically at the Xcel Energy Home Energy Savings Program (HESP), which targets income-qualified populations. Figure 3 below shows that the average satisfaction for the Home Energy Savings Program increased each year. The authors also see that the portfolio average increased from 2019 to 2020; however, the portfolio average decreased in 2021. Because this analysis was based on January-June 2021 data, this finding was seen as an early indicator that HESP may be beginning to perform above average compared to the rest the portfolio in 2021. The authors also coupled this data with data from other surveys to show the prevalence of energy efficient technologies and program awareness among low-income populations. While the authors did not have access to this data at the time of this analysis, future analyses could track these data overtime to identify any changes.
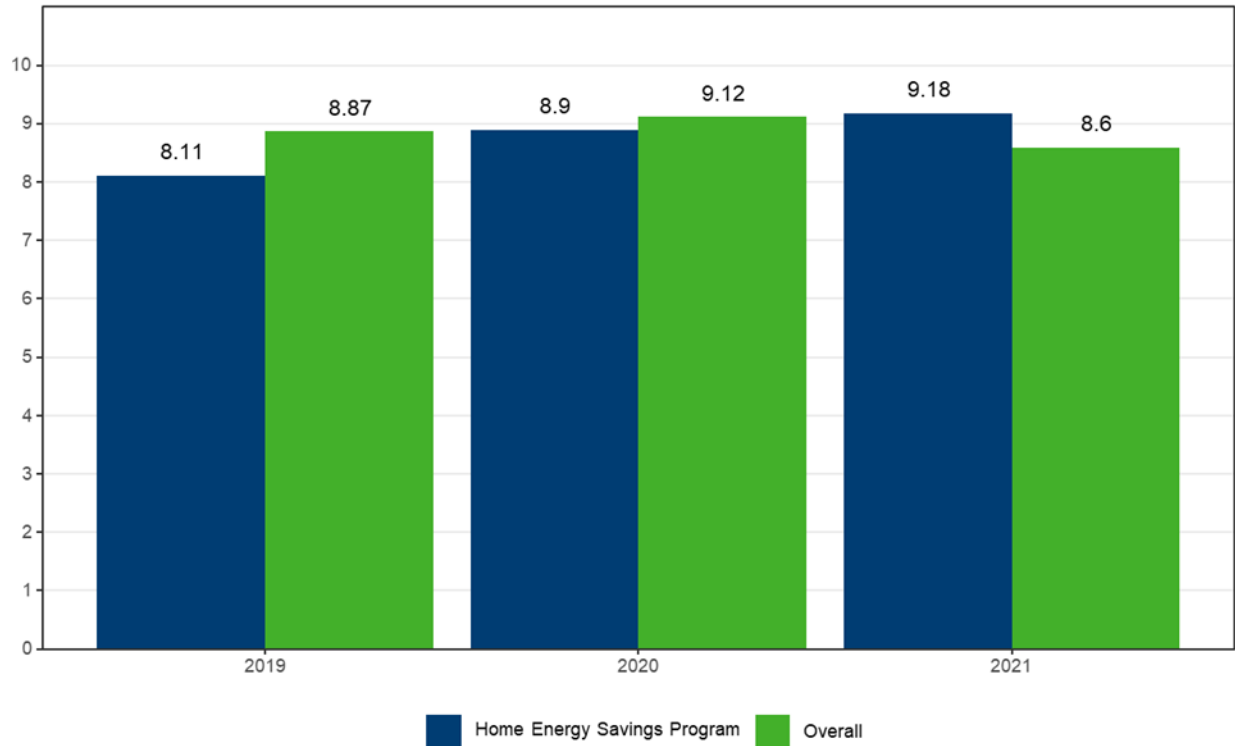
Figure 3. Home Energy Savings Program Satisfaction by Year

By performing these tests on the existing data, we found that the data could be used to inform how the overall program performs and how individual programs perform. That said, it also found that several programs had a small sample size within the Product Experience Survey and were not included in analyses from a statistical perspective. As the survey is fielded over time, the number of respondents will increase across the portfolio, and Xcel Energy will be able to assess more of its programs through a statistical lens, thus providing a clearer picture of which programs should be targeted for future research. Additionally, this data can be combined with data from other sources using the dashboard to show program performance more robustly across the portfolio. The dashboard, which Xcel Energy plans to develop in 2022, will provide a means collect data from various sources into one place for easy reference. As part of that process, and an important step in 2022, will be to prioritize the myriad of datapoints that Xcel Energy could include in its dashboard. To facilitate the data prioritization exercise, Xcel Energy plans to prioritize data that provides direct feedback on portfolio-level and program-specific objectives. As referenced in Figure 1 above, these results can then be considered along with strategic research needs to select areas that could benefit from more in-depth research.

Criteria to Provide Strategic Direction of Evaluation Resources

Xcel Energy plans to combine results from the dashboard analysis with an analysis of its strategic priorities to ensure research is aligned with its strategic needs. To do so, the evaluation team interviewed management-level staff throughout Xcel Energy's organization in January 2020 and identified 10 factors to consider when choosing evaluation research. Once identified, Xcel Energy scored each program against these factors to determine whether research on particular programs could inform strategic directions. It also applied different weights to each factor to help guide its analysis of which programs to select for research. Xcel Energy assigned weights to each factor based on internal

consensus of their relevance to meeting portfolio-wide goals. The 10 factors selected to inform evaluation planning are presented in the bullets below:

1. **Ability to better understand load shifting and beneficial electrification.** While legislation removing prohibition of fuel switching in Minnesota was not passed until 2021, there was significant stakeholder interest in the topic prior to the company's 2021-2023 triennial plan filing. Xcel Energy believed it was necessary to prepare for a time when this issue might be impacted by changes to state carbon mitigation policies, local government and stakeholder expectations, and utility customer demand. Research is needed to better understand these opportunities and ensure DSM programs are optimized prior to any potential increased demand of related offerings.

2. **Optimization of comprehensive offerings.** Because Xcel Energy wants to align their programs with improved customer journeys and experiences, it will be increasingly important to understand how to optimize project hand-offs between staff and expand abilities to connect a wider range of services together. To support this effort, staff suggested focusing research on programs that offer more comprehensive opportunities.

3. **Optimized offerings that support complex decision-making and deep savings.** As Xcel Energy will need to rely more heavily on programs that focus on deep savings to make up for an anticipated reduction in lighting savings as 2030 approaches, it can prioritize researching DSM programs that offer such savings opportunities (Center for Energy and Environment et al, 2018). These opportunities tend to reflect fewer actual projects, but they result in individual projects accounting for larger savings opportunities. As such, it will be important that these programs are optimized to ensure the upfront work can deliver savings when needed.

4. **Data analytical capabilities and offerings.** During the latter part of the 2021-2023 triennial, an AMI infrastructure deployment roadmap will be finalized for Minnesota. As such, Xcel Energy is considering how it can best use the AMI data once it is available to benefit its programs. Staff suggested research focused on the programs that can most benefit from using AMI data and/or focused on programs that rely heavily on data analysis to identify any lessons learned that can be applied to AMI analysis planning efforts. This is especially important because Xcel Energy has chosen an AMI solution that includes substantial distributed intelligence capabilities that could complement existing and emerging DSM programs.

5. **Monetary costs to running energy efficiency programs.** Xcel Energy needs to ensure it is always spending its money wisely. Staff suggested that program budgets be used as criteria to help prioritize programs to be evaluated, as programs that comprise a larger portion of the budget present greater risks if that money is not being used effectively.

6. **Energy savings goals.** Programs that generate a larger percentage of the portfolio energy savings goals were also deemed important for research, since the entire portfolio relies on these programs heavily to meet its goals.

7. **Programs with opportunities for greater participation.** Some staff reported that research planning efforts should determine whether any programs show opportunities for greater participation. If so, then Xcel Energy should focus research efforts on understanding what can drive greater participation. Focusing on these types of programs can help ensure the entire portfolio remains healthy.

8. **Defined research needs.** Staff sometimes also identify specific research needs. This may include questions relating to new technologies, uncertain savings, or implementation challenges. Planning efforts need to also allow opportunities for these specific research needs to be addressed.

9. **Stakeholder needs.** Staff identified some programs as being of particular importance to the strategic relationships it has with stakeholders. Therefore, to sustain positive relationships over time, it is important to ensure related programs are operating well.
10. **Evaluation history.** Historically, Xcel Energy has relied on a rotating cycle for scheduling its evaluation planning efforts. As a result, there are several programs that have not been evaluated recently. Staff expressed a desire to include evaluation history in its planning efforts to ensure smaller programs are not overlooked.

These 10 factors were used to select evaluations for the 2021-2023 triennial, and they will be used in the future to support the portfolio-wide evaluation approach. As shown in Figure 1 above, starting in 2024, Xcel Energy expects to analyze programs using these criteria along with the dashboard results to select areas for in-depth research. The in-depth research could target a part of program, a group of programs, or a particular customer type. The research would be intended to inform how programs can improve, and once implemented, results of which would then be able to be tracked through the dashboard. It is expected that these strategic factors will serve as a starting place to inform future evaluation planning efforts, and they will be revisited annually to ensure they stay relevant to the strategic direction of the portfolio and company. Additionally, Xcel Energy expects that the weighting of the factors may vary in the future even if the priorities remain static.

Benefits of the New Portfolio-Wide Evaluation Approach

While Xcel Energy is building out this strategy during 2021-2023, Xcel Energy staff expect the portfolio-wide approach can bring many benefits to the utility. In this section, we identify benefits for both DSM managers and evaluators. It is followed by lessons learned, to date, from developing this approach.

Benefits for DSM Managers

The portfolio-wide evaluation approach is expected to provide both portfolio managers and program managers a variety of benefits. First and foremost, it is expected to provide a centralized place that can anchor relevant data across a variety of existing data sources. Currently DSM managers access to survey and program data results are scattered across a variety of sources, mostly in PowerPoint presentations relating to unique survey results. The dashboard will provide a central location for program managers to find relevant data for all their programs in one place. The dashboard will also allow program managers to select certain datapoints to show data most relevant to them.

Additionally, the portfolio-wide evaluation approach allows DSM managers to assess their programs whenever and wherever they want, since they would have direct access to the dashboard. This can be particularly helpful because they will be able to look at the data when they know program changes have been made and/or major market changes have occurred. This can allow them to easily see the impacts changes are having in the market and course correct program implementation quickly if, and when, data indicates a need to do so.

Lastly, the portfolio-wide evaluation approach allows DSM managers to receive more comprehensive and consistent feedback on their programs. This is starkly different from the prior cyclical approach, whereby managers might need to wait eight years before receiving holistic feedback on a program. While the dashboard results will not provide in-depth findings, it will at least serve as a high-level and consistent assessment of program performance.

Benefits for Evaluators

The portfolio-wide approach also provides evaluators with many benefits. Similar to some of the benefits mentioned for DSM managers above, it allows evaluators to have a pulse on all programs across the portfolio, not just ones up for evaluation based on a particular cycle of evaluations. By having a pulse on all the programs, it limits the potential risk of allocating research funds to particular programs within a year because evaluators know it will still collect information across all of the programs.

The portfolio-wide approach, as envisioned, is also cost effective as it relies on existing data sources to feed the dashboard. While Xcel Energy expects the overall Minnesota DSM evaluation budget to modestly increase relative to spending on cyclical evaluations, Xcel Energy expects the incremental value of the portfolio-wide data collection effort to far exceed the overall incremental costs to support new data collection efforts and portfolio-wide data analyses. This serves to improve the value of existing survey efforts and minimizes potential for duplication of efforts. It also allows for evaluation resources to remain focused on the more targeted research identified through the annual prioritization exercise.

Lastly, the portfolio-wide evaluation approach includes an annual prioritization exercise that can target research to areas in need. Those needs can be identified through the dashboard and the assessment of the 10 strategic factors presented in the last section. By focusing evaluation to areas of need, evaluators know that its research will have direct implications for programmatic or strategic direction. At times, the prioritization exercise might result in a particular program needing a full impact or process evaluation. Other times, the prioritization exercise might indicate a need to research a particular customer group, such as understanding how income-qualified customers can better participate in DSM programs. The prioritization exercise might also indicate a more narrowed approach, such as conducting user experience testing on audit materials. Regardless of the prioritization exercise results, evaluators will know that the research is being selected due to a particular need, rather than a regulatory obligation.

Lessons Learned in Developing this Approach

While Xcel Energy staff are looking forward to the benefits the portfolio-wide evaluation approach will bring to the organization, transitioning to this new evaluation approach is not without challenge. Xcel Energy deliberately developed a three-year roll out of this approach to provide time to identify and address any challenges that may arise through its development. This section presents challenges we have experienced to date and lessons learned to overcome these challenges.

First, when the authors started discussing this approach with Xcel Energy managers, it was seen as a large deviation from its prior evaluation approach. While staff were excited by its potential, they also saw risk in doing something new and different. To reduce potential risk of a new evaluation approach, Xcel Energy developed a three-year roll out to seek alignment between staff in various ways. First, the authors needed to seek alignment around the type of data that could be available and included in the dashboard. The authors also needed to determine whether there was interest and ability to collect new data that might not be currently available. The authors also needed to seek alignment around how to read programmatic variability, knowing that some variability might be statistically significant, and some might not. To address all of these alignment concerns, the authors are holding a series of meetings in 2021 and 2022 with relevant staff to discuss these topics in-depth to ensure evaluators and managers agree on the best methods to build out this approach.

Additionally, the evaluation team identified several challenges relating to data, data access, and data collection methods. With regards to data, the evaluation team found that the utility had limited data on some market actors, such as trade partners. The inability to consistently collect data from this group of market actors presented risk to fully understanding portfolio performance. Regarding data access, evaluators needed to identify a means to easily access data across a variety of data collection efforts to build out the dashboard. While evaluators had seen these data previously, it did not have access to the

raw data which would be required to build out the dashboard. Lastly, evaluators needed to assess survey methods used to collect data included in the dashboard, so they could be comfortable knowing that dashboard results could hold up to regulatory scrutiny. Addressing these data-related challenges requires close collaboration with the utilities' market research team, who field many of the survey efforts that would feed into the dashboard. Not only do the authors need to identify what data is required and how to transfer the data, the authors are collaborating with them on identifying opportunities to address the methodological challenges identified, such as increasing response rates and mitigating response bias.

Lastly, the authors are finding opportunities to sync these development efforts with on-going activities including staffing changes, new customer experience initiatives, and shifts in data collection efforts unrelated to the portfolio-wide evaluation approach. To address these shifts, the authors need to provide Xcel Energy staff time to balance the evaluation approach transition with their other work. It also means that we need to be flexible, since changing leadership can bring new direction and as more is learned about data accessibility.

Conclusions

The Xcel Energy portfolio-wide evaluation approach improves on its prior evaluation approach, a cyclical approach, because it provides evaluators and program managers analysis on all the DSM programs on a regular basis, instead of analyzing a limited number of programs each year. It also provides an opportunity to align evaluation resources with utility and portfolio-wide strategic priorities, thereby providing research to help support the utility meet its carbon reduction goals. While it is likely the portfolio-wide evaluation will increase the overall evaluation budget, the value to Xcel Energy outweighs the incremental costs, and the value of existing survey data collection efforts are increased. With the new portfolio-wide evaluation approach, Xcel Energy will be better positioned to understand customer experiences with all its DSM programs and meet its strategic goals.

The Xcel Energy portfolio-wide evaluation approach provides an example of a new approach that can offer program managers and evaluators immediate feedback on program experiences and an opportunity to target research efforts based on both programmatic and portfolio-wide strategic needs. Other utilities can use these results in a variety of ways. At a minimum, it serves as a reminder for utilities, or state agencies, to assess whether their current evaluation planning approach continues to serve their needs and/or future needs. While not all states and regulatory environments can support such a shift, the authors expect all utilities could benefit by asking the following questions about their evaluation planning efforts:

- What are their objectives for evaluation?
- Is their evaluation approach meeting their evaluation objectives?

Asking these questions will become increasingly relevant as DSM programs adapt from focusing on energy savings to focusing on meeting future carbon goals. It also provides an example of how the party responsible for defining evaluation cycles, whether a utility or a state agency, can prioritize evaluation resources based on strategic needs to target evaluation resources where they will be most impactful. Questions to consider include:

- What factors should be included in a prioritization exercise?
- What strategic customer or policy issues could evaluation support?
- What portfolio-wide strategic initiatives could evaluation support?

Additionally, these findings can provide utilities with an example of how they can rely on various data points collected through multiple channels to inform an understanding of program performance. To

better understand applicability of this type of approach, utilities and regulators would want to ask the following questions:

- Do additional market actor surveys exist?
- How relevant are other data points to their DSM programs?
- How is that data collected and do data collection methods meet regulatory needs?

Finally, regardless of the selected evaluation planning approach taken, these findings underscore the importance of collaboration and a thoughtful rollout when implementing new approaches in a heavily regulated industry. Without taking time to build alignment with leadership and alignment across departments, the authors would not be able to develop this new approach in a way that ensures accuracy, reliability, and usability. The importance of collaboration was not only important to the success of the transition, but it will also be key to helping the utility transition to meeting evolving objectives in support of a clean and equitable future.

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