MINNESOTA
PUBLIC UTILITIES COMMISSION

Stakeholder Meeting on Xcel Energy's Interactive Service Quality Map and Equity Analysis

July 9, 2024, 9:00am – 12:00pm
Hybrid – Minnesota Public Utilities Commission
PUC Docket Numbers: E002/M-24-27; E002/M-23-452

Purpose

These meeting notes provide a non-attributable summary of the Minnesota Public Utilities Commission's (Commission) Stakeholder Meeting held on Tuesday, July 9, 2024. The meeting discussed Xcel Energy's (Xcel or the Company) Interactive Service Quality Map and Equity Analyses.

Background

As part of its investigation into performance metrics for Xcel, the Commission directed the Company to develop an interactive map that displays metrics related to reliability, service quality, and equity. Xcel filed its first map on April 1, 2022 as part of its annual Safety, Reliability, and Service Quality (SRSQ) report, and has filed an updated map annually since then. Along with demographic data, the map contains five metrics:

1. Customers Experiencing Lengthy Interruptions – 12 hours or longer (CELI-12);
2. Customers Experiencing Multiple Interruptions – 6 or more in a year (CEMI-6);
3. Percent of customers experiencing one or more involuntary disconnections in a year;
4. Conservation Improvement Program (CIP) low-income participation; and
5. Energy assistance program participation.

In its May 18, 2023 Order, the Commission required Xcel to conduct an analysis that examines whether there is a relationship between poor performance of the five identified metrics displayed on the interactive map and equity indicators. The Order required Xcel to file the analysis with its April 1, 2024 SRSQ report, along with any steps to rectify any disparities identified in the analysis.

On April 1, 2024, Xcel filed its Service Quality and Demographics Analysis and next steps with its 2023 SRSQ report in Docket E002/M-24-27. Separately, in Xcel's 2023 Integrated Distribution Plan (IDP), the Grid Equity Commenters (GEC) filed an analysis titled "Racial and Economic Disparities in Electric Reliability and Service Quality in Xcel Energy's Minnesota Service Area" (studies referred to as the two equity analyses).[1]

[1] GEC Analysis.

Meeting Goals

The goal of the meeting was to discuss the results of two equity analyses and actions Xcel proposed in response to the study results, as well as to build a shared understanding of potential next steps ahead of an additional comment period in Docket No. E002/M-24-27.[2]

Welcome and Overview

Hanna Terwilliger, Minnesota PUC Staff, welcomed participants to the meeting. A list of participating organizations can be found in the slide deck filed concurrently with these notes. Commission Staff provided an overview of past Commission decisions leading to the establishment of the map and the equity analysis, found on slides six through eight.

Presentations

Disconnections, Outages, and Equity Study by Dr. Brett Close from TRC[3] (See slides 9 through 26).

Dr. Brett Close from TRC presented the results of the study commissioned by Xcel to examine the relationship between disconnections, outages, and equity.

TRC's study built on Dr. Chan's[4] work by adding additional variables to correct for "omitted variable bias" and using a different methodology (nonparametric kernel smoothing regressions), which TRC explained, does not require relationships among variables to be defined linearly, with a constant slope, but instead, "it allows relationships to be curved lines or curved surfaces."

The key findings were:

1. Disconnections were higher in neighborhoods (Census Block Groups) with a higher percentage of People of Color (POC) households. Percent POC had the strongest impact on disconnections (after controlling for other variables).
2. Long outages (CELI-12) were higher in neighborhoods with a higher percent of People of Color, but only in neighborhoods with older homes.
3. After controlling for other variables, there was no clear pattern between CEMI and high POC census blocks.

[2] Docket No. 24-27 Notice of Comment Period.
[3] Docket No. 24-27 Xcel SRSQ Report, Part II. TRC study results start at p. 106.
[4] Docket No. 21-630 Just Solar Coalition Surrebuttal by Dr. Gabriel Chan.

Racial and Economic Disparities in Electric Reliability and Service Quality in Xcel Energy's Minnesota Service Area by Dr. Gabriel Chang and Dr. Bhavin Pradhan at the University of Minnesota (See slides 27-50.)

The study relied on four data sources capturing service quality, demographics, disadvantaged communities, and hosting capacity and used three methodologies (descriptive analysis, hypothesis testing, and regression models).

Dr. Chan explained how the study was similar to and different from the TRC study. Methodologically, both studies present descriptive analysis in the form of charts that visualize disparities. Both studies also apply a form of regression analysis (smoothed regression in the case of the TRC study and linear regression in the case of the Chan/Pradhan study). Unlike the TRC study, the Chan/Pradhan study incorporates additional analysis of disparities between disadvantaged communities and non-disadvantaged communities (as defined by the Climate and Economic Justice Screening Tool) and analyzes census block groups in the top 10% of population of people of color compared to others using difference-in-means hypothesis testing. Both studies analyzed long-duration outages, multiple outages, and disconnections. The TRC study also incorporated participation in affordability programs and the Chan/Pradhan study incorporated analysis of hosting capacity.

Dr. Chan discussed that despite methodological differences, both studies find very similar results. Both studies found that involuntary disconnections were conducted more frequently among census block groups with a higher proportion of people of color, both overall and within communities with similar income levels. Both studies also found that long-duration outages were more common in census block groups with a higher proportion of people of color. Finally, both studies did not find evidence of disparities in the experience of multiple outages.

The key findings were:

1. There is a correlation between POC households and a higher number of disconnections.
2. Disadvantaged communities and high POC neighborhoods have higher CELI.
3. There is a higher hosting capacity in disadvantaged and high POC communities.

Dr. Chan sees the next two steps for analysis as:

1. How can the study's results inform policy?
2. Is it possible to update the study annually with a 5-year rolling average?

Questions and Discussion on the Analyses

Q: Why did TRC use vintage homes as a variable?

A: The vintage of homes was used as a proxy for the age of the distribution system, and where undergrounding was more likely to have occurred. Home vintage could also act as a proxy for other variables that may be related to disconnections, like wealth.

A: While disparities are "historically entrenched," work can be done by utilities to help. While housing vintage may begin to provide a way to consider long-standing inequalities in current decision-making processes, here, housing age is not used to explain away other disparities.

Q: The Equity Mapping effort is cutting edge. We can use population density as a proxy variable for grid reliability. Is there a way to improve analysis by incorporating grid characteristics?

*PUC Staff noted it is difficult to align grid data, which is usually depicted at the feeder or substation level, with demographic data that can be used to examine disparities.

A: Yes, there is depending on what you want to see.

A: It must stay at fixed effects. Fixed effects are a statistical technique to address things that are not measured but that do not change within a model that has repeated observations over time, equivalent to having a different intercept for each group of observations with the same fixed effect. This has the effect of controlling for the impact of everything that is constant over time for each entity, even though it is not measured and put explicitly into the model. In the case of Chan and Pradhan, they used a county fixed effect, even though the observations were at the census block group level, so the model was the county that census block group is in. This means it controls for a lot less because there isn't nearly as much that is shared across a whole county than across a block group or tract. Because grid elements, like circuits, don't coincide directly with census boundaries, it would be more difficult to control for them with fixed effects within the context of the model.

A: There is grid variation within Minneapolis, so it is better to use census blocks. However, neither study was set up to analyze grid investments.

A: Xcel is considering what should be put on the map but avoiding unhelpful studies.

Discussion: The map is helpful/useful but setting two – three extra helpful metrics in the comment period would be useful. To this point, participants added:

- Data on the lived experience may be helpful. For example, since CELI and CEMI metrics are discussing the individual customer experience, we may like to focus on those and include additional experiential elements like, where do trucks roll after a storm and where might customers shelter during outages?
- The map in and of itself is not a metric.
- There should still be an incentive attached to performance through the Performance Based Ratemaking (PBR) process in Docket No. E002/CI-17-401.
- Findings from the map should impact the Integrated Distributed Plan (IDP) too.

Q: Is it possible to compare similar data points from other utilities to Xcel?

A: Yes, if the data is available, but there may be data from other electric utilities in other states.

A: Other utilities may not report disconnections at the same granularity as Xcel. For example, Indiana University is studying disconnections across the country, but there are not comparable

metrics. Xcel has produced a similar Gas Service Quality map, and data on disconnections by ZIP code is filed every six months in Docket E,G999/PR-YR-2.

*PUC Staff noted that the equity analysis relies on publicly available census data; therefore, data compatibility with the census block geography allows the analysis to be possible.

Break (10:15-10:30am)

Equity Analysis, Program Information, and Proposed Plans by Michael Renman for Xcel Energy (See slides 54 – 59.)

Next, Xcel Energy presented two potential solutions for decreasing inequities in reliability, specifically for customers experiencing outages of 12 hours or more (CELI-12):

1. An enhanced vegetation management program; and
2. A targeted undergrounding proposal.

The programs are described on slides 54 through 59.

Q: Were solutions discussed other than vegetation management and undergrounding, and why were they ruled out?

A: Rebuilding lines to current standards with new components which have higher strength and shorter repair times when they do fail was discussed, but these lines are still exposed to elements/trees. As a solution for reliability, rebuilt lines are not as good as undergrounding. To this extent, lines above ground have 5x number of outages as compared to underground. Fault Location, Isolation, and Service Restoration (FLISR) was discussed as a solution, but it is primarily useful for large feeders and is not as easy to target affected census blocks.

Q: If Xcel were to propose the Enhanced Vegetation Management Program or Targeted Undergrounding Proposal, what would the next process steps be?

A: The best place would be for the Commission to direct development of the proposals in the instant Safety, Reliability, and Service Quality (SRSQ) docket. Timing would depend on Order release in the instant docket. Vegetation management proposal could be filed relatively quickly in the SRSQ docket.

Q: What is the current cycle for vegetation management?

A: Management is dependent on system voltage but tends to follow a five-year cycle. Xcel may return to areas more quickly, depending on the number of customers needing service.

Q: For vegetation management, is Xcel currently on schedule across the service area?

A: The Company is not sure and would need to follow up with the Vegetation Management team.

Q: What can Xcel do to change storm response?

A: The Company currently prioritizes restoration efforts based on outage size so that the greater number of customers are restored in the shortest amount of time. There is likely an opportunity for changes in storm restoration prioritization, but most long outage durations are determined by the damage caused by the number of trees down after a storm. A challenge for modifying storm restoration prioritization is that the Company does not have the visibility to everything going on, because there are more outages than crews.

Q: Does vegetation management policy consider temperature by census block group? Does tree trimming impact the urban heat island effects because of how trees can offer shade?

A: No, the Company does not currently consider urban heat islands or temperature trends in our vegetation management approach. We are aware of the existing heat island maps. Generally tree trimming (as opposed to tree removal) would not significantly exacerbate urban heat island effects.

Q: Would Xcel consider measuring tree trimming and temperature?

A: This would require seeking the average temperature on hot days in low-income census blocks. The Company has not yet considered incorporating these elements – heat islands and tree trimming – on the map.

Targeted Outreach Proposal re: Affordability Program Participation by Nora Lindgren and Diedra Howard for Xcel Energy (See slides 60 – 64.)

Problem: Affordability programs can address part of the problem of disconnections but does not alone solve the problem that disconnections are higher in high percent POC census blocks.

Thesis: Neighborhoods where more POC live may experience more disconnections for the following reasons:

1. A higher rate of non-payments in high-POC neighborhoods;
2. Disparities in disconnection policy; and
3. Disparities in how people in different neighborhoods access payment plans.

Existing Solutions: The billing system does not have a link to census blocks, but the Company can use a workaround for targeted outreach. Xcel uses multiple outreach methods, because one method does not work for everyone. Xcel's proposed Auto Bill Credit program in Docket E002/M-24-173 will help. Auto-enrollment for GAP and PowerOn has been decreasing disconnections. Xcel is exploring income self-attestation. Xcel is discussing upfront forgiveness during non-Cold Weather Rule (CWR) months.

Proposal: The largest issue is related to payment arrangements and downpayment requirements, which are considered too high and inflexible for some households. Stakeholder meeting participants asserted that changing these aspects is fully within control of Xcel. The most important changes would be:

1. Strategic use of the $500k underperformance penalty in the currently open Dockets E002,G002/CI-02-2034 and E002,G002/M-12-383 (Xcel's Quality of Service Plan Tariff); and
2. Offering more flexibility in payment plans.

The two Equity Analyses can identify trends but not the cause of inequities. The Company wants another study to find reasons for higher disconnections in neighborhoods with a higher percent POC.

Response: There is support for Xcel's efforts to increase program participation. It is important to study benefits and ensure that disconnections are accomplishing what we think they're accomplishing.

Q: A study to find out the causes of disparities would be helpful, but it would be difficult, because disparities are systemic. A study on solutions might be more helpful and could measure the cost-benefit for different solutions, for example, a targeted or a blanket moratorium. There are a lot of studies on disconnection causes but not disconnection prevention benefits, i.e. a study on what actions could reduce bad debt.

A: COVID was a natural experiment in that data were generated to examine the impact of a widespread moratorium on disconnections.

Q: What are the algorithms that identify customers that have not received assistance, are carrying past due balances, and reside within targeted communities?

A: Disconnections are based on the amount and age of the past due balance and therefore requires coordination with Accounts Receivable. Xcel does not have information at the census block level, but instead by zip code. The Company cannot measure how many people live in a house.

Q: Could Xcel use the algorithms/data points from the studies displayed today?

A: The Company could do that; the goal is better identification of customers at-risk for disconnection.

Q: What is "demonstrated enrollment success?"

A: Xcel pointed to the TRC study that shows higher POC neighborhoods also enroll in programs at higher rates.

Q: How might we build on success of or increase enrollment in existing programs to help customers who face disconnection? For example, there are Energy Assistance Program (EAP) applications that are not approved quickly, as well as EAP customers that do not utilize utility-specific affordability programs like PowerOn.

A: Some suggestions include:

1. Expanding PowerOn auto-enrollment to non-gas customers

2. Lowering payment arrangement downpayments
3. Changing in the existing ECO/CIP Income Qualified programs in Xcel's 2024-2026 Triennial, including:
    a. More outreach with the Home Energy Squad
    b. More partnering with community-based organizations
    c. Removing landlord/tenant barriers
    d. A mobile home pilot removing pre-qualifications and including program navigation support
    e. Cross-marketing with other programs

Q: Is one of the considerations to treat POC customers differently, i.e. cultural competency training for customer service staff and hiring more POC staff?

A: Xcel has existing equity efforts that include hiring more POC staff, cultural competency training, and integrating equity into the design of various programs.

Q: Might it be useful to have qualitative information from talking to impacted individuals?

A: Xcel is considering discussions with impacted individuals.

Procedural Considerations

Participant Response: Across so many proceedings, data is filed in so many different places. We need to make sure maps and results don't get lost across other dockets. This is important considering there are five dockets for affordability and disconnections, and five for reliability.

Q: Can Xcel streamline reporting in the IDP?

*PUC Commission Staff responded that it would need approval from the Commission, but that is possible.

Q: There is an idea that enabling participation from community organizations could be made easier if there was one central place to place all service quality, etc. and then the central place, like an additional database, linking to the dockets.

*PUC Commission Staff responded that the Commission has instituted several annually recurring docket numbers (i.e. the two parts of the Annual Service Quality dockets' number will always first reflect the current year and then end with the same number). Also, the Commission's website has a new "Dockets Open for Public Comments" page and has a video on how to search in eDockets. Additional information or demonstration videos could be placed on the Commission's website.

Q: Can Xcel speak to running out of space in the map?

A: Xcel's GIS specialist says that platform layers are maxed out, i.e. it can only show three years of data at a time on the existing map platform. The Company would need to think through how to go forward. The existing map was built on older software and could be migrated to a new platform. Then Xcel could display both additional years and metrics.