MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers: Volume 3

Meeting Date	Thursday, November 5, 2020		Agenda Item **5
Company	Xcel Energy		
Docket No.	**E002/M-20-406 In the Matter of Xcel Energy's annual report on safety, reliability, and service quality for 2019; and petition for approval of electric reliability standards for 2020**		
Issues	1. What action should the Commission take on locational equity metrics for reliability and service quality for Xcel Energy?		
Staff	Hanna Terwilliger	hanna.terwilliger@state.mn.us	651-201-2243
	Tera Dornfeld	tera.dornfeld@state.mn.us	651-201-2195

Relevant Documents	**Date**
Xcel Energy (20-406)	
Initial Filing – 2019 Annual Safety, Reliability and Service Quality Report	April 2, 2020
Xcel Energy – Comments	August 17, 2020
City of Minneapolis – Comments	August 19, 2020
Suburban Rate Authority – Comments	August 19, 2020
Department of Commerce – Comments	August 19, 2020
Environmental Law and Policy Center and Vote Solar – Comments	August 19, 2020
Suburban Rate Authority (SRA) – Reply Comments	September 2, 2020
Xcel Energy – Reply Comments	September 2, 2020
Fresh Energy – Reply Comments	September 2, 2020
Department of Commerce – Reply Comments	September 2, 2020
Department – Response to Reply Comments (late filed)	October 6, 2020

Contents

Introduction

Each year Minnesota's Investor Owned Utilities (IOUs) submit Safety, Reliability, and Service Quality (SQSR) Reports. For the past several years, Commission staff split the reports into two sections, one on the safety and reliability portions of the report, and one on the service quality portions of the report. For this year's reports, staff has added a third volume which addresses locational equity metrics for reliability and service quality for Xcel Energy.

Staff has provided a single set of decision options and recommendations for Volumes 1 – 3, of the briefing papers, the decision options are replicated in all documents.

Acronyms

AMI	Advanced Metering Infrastructure
ASAI	Average Service Availability Index
CAIDI	Customer Average Interruption Duration Index
CELI	Customers Experiencing Lengthy Interruptions
CEMI	Customer Experiencing Multiple Interruptions
EEI	Edison Electric Institute
ERT	Estimated Restoration Time
FLISR	Fault Location, Isolation, and Service Restoration
IEEE	Institute of Electrical and Electronics Engineers
IMS	Interruption Monitoring System
MAIFI	Momentary Average Interruption Frequency Index
MED	Major Event Day
OMS	Outage Management System
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCADA	Supervisory Control and Data Acquisition
SQSR	Service Quality, Safety, and Reliability

Background and Overview

The Commission's September 18, 2019 Order identifies future metrics on: "locational reliability" and "Equity – reliability by geography, income, or other relevant benchmarks"

(Equity Reliability) under the "Reliability" outcome of its Performance Metric docket for Xcel Energy, Docket No. 17-401.[1] Commission Staff indicated to Xcel before it filed its additional set of metrics that the locational reliability piece would be better examined in the Company's annual reliability report (the current docket.) Upon review of Xcel Energy's initial set of metrics filing in the Performance Metric docket[2], Staff determined the Equity Reliability metric was closely tied to locational reliability, and issued a Notice proposing to discuss both locational reliability and Equity-Reliability in the present docket.[3]

During later stages of the performance metrics docket, parties identified that the "Equity – service quality by geography, income, or other relevant benchmarks" metric was also a good candidate to examine in Xcel's annual SQR docket.

Staff created a proposal for reliability reporting, the original of which can be viewed as Attachment A in the April 20, 2020 Notice, which the Commission approved to put out for comment from interested parties in its Order accepting Xcel's 2018 reliability report. Staff then issued a notice asking for feedback on the proposal, along with input on the appropriate service quality data and measures of equity in the present docket.

Staff's notice focused on the data that should be collected to assess locational reliability, service quality, and the appropriate pieces of information to gauge equity. This initial goal was to collect data that would inform future metrics for the performance metrics docket. Staff recommended having the discussion in the service quality docket as some information pertaining to reliability is already collected here. While there is overlap between reliability and service quality information submitted in the annual reports and the data necessary to develop performance metrics for Xcel, the purpose of the data collection described below is to inform metrics for the PBR docket. Staff anticipates that while the data will be reported here, as future metrics are developed final metric reporting and public facing information may transition back to the PBR docket.

In approaching the issue of locational reliability, Staff realized a 'metric' on locational reliability does not exist. While utilities can look at the reliability of individual feeders, or regions, having a single metric that can look at whether there are regional variations in reliability is more challenging. Therefore, as a starting point Staff laid out a proposal for reliability *data* that could help inform a future *metric*. Part of the proposal was also for a public facing map that could allow stakeholders and members of the public view reliability at a more granular level then currently available. Staff also asked for input on service quality *data* that should be collected to gauge customer service quality.

In the record, summarized below, parties somewhat discussed data collection, but gave greater attention to the development of metrics for locational reliability and locational service quality, along with a public facing map. Given the complexity and novelty of developing metrics of this subject, as well as a lack of consensus among parties on service quality data and the display of information, Staff recommends the Commission focus this year on underlying data collection for reliability, and gather additional information on service quality, equity, and a public facing

[1] MN PUC, Order Establishing Performance Metrics (September 18, 2019), Docket No. E002/CI-17-401, Ordering Paragraph 1(b)(ii)(2&4)
[2] Xcel Energy, Proposed Metric Methodology and Process Schedule, October 31, 2019, Docket No. E002/CI-17-401
[3] MN PUC, Notice – Staff Recommendation on Equity Metric (November 12, 2019), Docket No. E002/CI-17-401

map through a technical workshop and subsequent comment periods. Staff recommends the next steps of this docket should focus around:

1. Collection of data already reported on a service territory wide level where increased granularity or detail would be helpful in assessing service quality
2. Development of a public facing map that displays reliability and service quality data, including a discussion of how a map would fits with the proposed "dashboard" in the performance metrics docket
3. A discussion of how to incorporate identified equity data with service quality and reliability data to create metrics
4. Discussion on party identified metrics

As the discussion shifts from data collection into metric development, it may be necessary to reach out to stakeholder involved in both the performance metrics docket and other dockets where locational reliability has emerged, such as Xcel's Integrated Distribution System Plan (IDP).

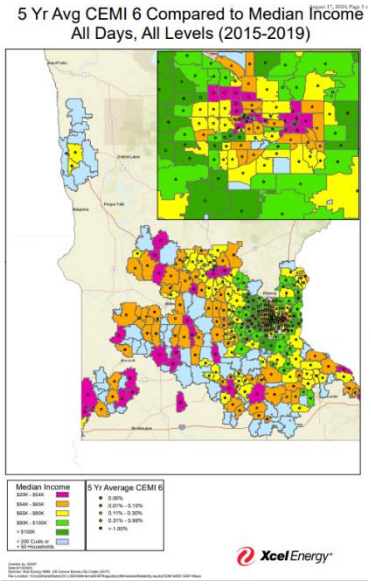
Party Comments

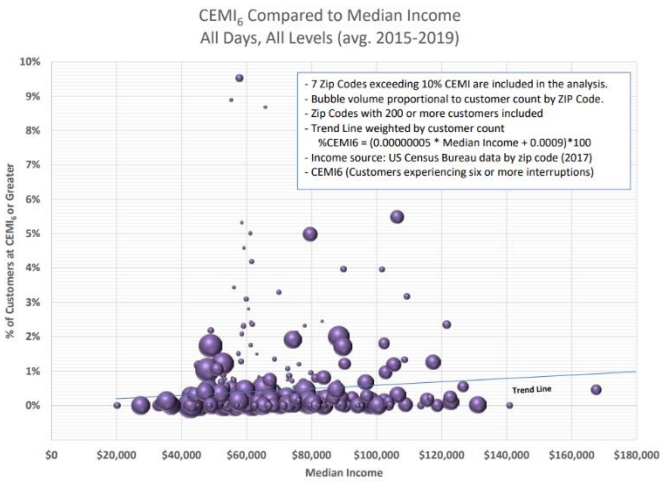
Locational Reliability

In Attachment A to the April 20, 2020 notice, staff proposed an extensive list of data based off information Xcel currently reports in its annual SQSR report, or has received in the process of other dockets involving distribution level reliability.

Xcel expressed concerns about the volume of data in Staff's proposal, and on privacy and security concerns associated with the information provided. Xcel noted similar data provided in the Company's request for certification of FLISR, Docket 17-775, was marked as not public due to security concerns. The Company expressed parallel concerns in the Hosting Capacity Analysis docket (19-685).[4] Instead of specific outage data, Xcel offered an alternative to staff's Attachment A, where it would provide maps and charts depicting reliability metrics like SAIDI, SAIFI, and CAIDI using a five year average of the metrics. Xcel presented examples of the 5-year average of SAIDI and CEMI mapped on top of median income, along with bubble charts showing trendlines on the same metrics. (See Attachments A through D of Xcel's Initial Comments for full sized images).[5]

[4] Xcel, Comments, p. 10
[5] Xcel, Comments, pp. 5-8





Xcel explained it could make similar charts and maps with other reliability or demographic metrics, but believed this format was superior for conveying equity in reliability. In reply comments, Xcel reiterated its preference to provide data in map format similar to its initial proposal, and indicated it would also provide the high-level data used to create the map at the zip code level as a downloadable spreadsheet.[6]

The City of Minneapolis (Minneapolis),[7] Fresh Energy,[8] and Environmental Law and Policy Center/Vote Solar (ELPC/VS)[9] supported Staff's reporting recommendations in Attachment A to the April 20, 2020 Notice. The Suburban Rate Authority (SRA) offered comments on communications around reliability, and additional information. Several parties recommended additional data points or suggested metrics related to reliability, listed in Table 1, in addition to Staff's proposal.

Table 1: Metrics and Additional Data

Proposed metrics or data in addition to original Attachment A	**Suggesting Party**
# of neighborhoods experiencing repeated outages by zip code/census tract and # of neighborhood outages[10]	Minneapolis
# of community critical services that lost grid power by type and location along with the # of times that each of these services lost power[11]	Minneapolis
Simplified reliability scoring system by feeder[12]	ELPC/VS; Fresh Energy

[6] Xcel, Reply, p. 12
[7] Minneapolis, Initial, p. 1
[8] Fresh Energy, Reply, p. 1
[9] ELPC/VS, Initial, p. 5
[10] Minneapolis, Initial, p. 1
[11] Minneapolis, Initial, p. 1
[12] ELPC/VS, Initial, p. 5; Fresh Energy, Reply, p. 1

5 – year view of reliability by feeder[13]	ELPC/VS; Fresh Energy
Metrics that where needed, expand on methods of informing and interactive communication with customers during and following outages, particularly in areas identified as Equity or "Energy Poverty" areas[14]	SRA
Metrics that identify smaller, e.g., neighborhood or feeder or socio-economic, areas of substandard performance in reliability and communication with customers. The SRA believes that even the zip code sub-areas hide areas that should be identified for improvements with averages from above-average service areas in the same zip code[14]	SRA
A metric that will combine relevant reliability measures relating to overhead, underground and mixed use of same in feeder or other relevant area[14]	SRA
Continued or expanded "metrics" or reporting requirements to identify those exceptional outage frequencies or durations, or other, e.g., extreme customer wait times in customer service that may expose a significant flaw that should be immediately remedied and sought to be reduced or eliminated in the future.[14]	SRA

Minneapolis sought additional information on a neighborhood level, and for critical community services.[15] In reply, Xcel explained a neighborhood level would be difficult due to a lack of knowledge of boundaries, but census or zip code was possible. Xcel added it was interested in Minneapolis's desire to have information on critical community services, but needed more information to properly define customers who provide essential services.[16]

In reply comments, Fresh Energy agreed with ELPC/VS suggestion for a simplified scoring metric depicting reliability, but recommended such a metric could be further developed by stakeholders for Xcel's next report. FE also recommended a phased in approach to locational reliability on a feeder level basis, starting with 2 years in 2021 and progressing to 5 years by 2024. Fresh Energy suggested as Xcel rolls out its advanced metering infrastructure (AMI), the Commission revisit locational reporting requirements once more granular data is available.[17]

The Department did not offer feedback in initial comments, preferring first to read other party positions before giving its own thoughts. In reply comments, it indicated more discussion is needed before moving forward on any aspect of staff's proposal, especially pertaining to the security and privacy issues raised by Xcel.[18]

[13] ELPC/VS, Initial, p. 5, Fresh Energy, Reply, p. 2
[14] SRA, Reply, p, 8
[15] Minneapolis, Initial, p. 1
[16] Xcel, Reply, p. 14-15
[17] Fresh Energy, Reply, pp. 2-3
[18] Department, Reply, p. 3

The Suburban Rate Authority (SRA) discussed whether Xcel should take additional steps to communicate outage update information to customers beyond its website. It also asked for a display of reliability by overhead vs underground facilities. However, Xcel noted it would be difficult to create two distinct metrics that would be of value to the public. SRA focused on Xcel's communications with customers during outage and emergency situations, and how those channels could be improved.[19] In response, Xcel indicated it was open to additional paths of communications, and the possibility of providing additional detail.[20]

Staff Analysis

Staff wishes to clarify the intended audience for the data in Attachment A from the April 20, 2020 notice. The data in Subparts 1 and 2 of the original Attachment A are intended as data to help stakeholders understand the complexity of distribution level reliability, and formulate a set of metrics, not for general public consumption. Subpart 3, a public facing map, would be for public consumption, however as discussed in a subsequent section, more discussion is needed around what such a map would look like.

Staff's original reliability data proposal was based off data either currently reported to the Commission, or that it has received as parts of other dockets. This information could assist the Commission and stakeholders in developing any additional metrics, targets and goals for the performance metrics docket, as well as be valuable in other proceedings where parties have requested further examination of reliability and equity. Some of this information (such as feeder names or customer counts) may be appropriate to classify as non-public, in line with Xcel's existing practices in its annual service quality docket,[21] but participants in the dockets should be able to access the information with a signed NDA or other proper protections. Feeders with low customer counts may also be appropriate to exclude, if they meet the 15 x 15 aggregation standard. Staff recommends revisiting this issue after the Commission has discussed distribution level data security in Docket 19-685 (Xcel's hosting capacity report).

However, Staff does acknowledge the information under Subpart 1 of attachment A is likely to be quite voluminous in nature, and similar information could be surmised with higher level summaries of outage cause by type. Staff offers a revised Subpart 2 of Attachment A, found in both "clean" and "redline" versions at the end of these briefing papers, which would essentially be a more detailed and complete version of Xcel's *"worst performing feeder"* summary provided each year, with the addition of primary outage cause breakdowns. Subpart 1 would be eliminated. Staff used Xcel's categories from its compliance filing to last year's SQR reports. The first set of data could be filed with Xcel's next service quality report due April 1, 2021.

SRA made recommendations on improvement of customer communications during system emergencies, and the establishment of a metric to track this, along with other metrics. Some of SRA's proposed metrics were also proposed (but not adopted) in the PBR docket. Staff notes Xcel reports on estimated restoration time accuracy in its annual service quality reports (see Volume 1). Additionally, customers can opt to receive outage update notifications from Xcel via text, email, or voice, of which Xcel provided an update on preferred methods, with 721,129

[19] SRA, Initial, pp. 4-5
[20] Xcel, Reply, p. 13
[21] See, for example, Attachment E, Worst Performing Feeders, where feeder/substation are obscured as security data, but other information is available

requests to receive email notification, 722,367 requests for text notification, and 286,568 requests for voice notification. 20,625 customers have opted out of notification, and customers can also opt to receive multiple forms of notification.[22] It is unclear what additional types of communication SRA is asking for, and if the average customer desires information about outages beyond when the power is estimated to be restored. Staff suggests SRA may wish to review Xcel's service quality filing, have additional dialogue with Xcel, and comment on whether additional steps are necessary in next years' service quality docket, where current statistics on outage notification are located.

Parties, including Xcel, focused the substance of their discussion around reliability metrics rather than reliability data. Given many of these are new proposals, and in some cases need additional definitions (for example, a definition of what constitutes a "critical community service") Staff recommends examining any locational or equity in reliability metrics at a technical workshop or subsequent notice for comments, after the initial set of data above is filed. As the discussion moves from data collection to inform metric development into actual metric formation, it may be necessary to reengage with a broader group of PBR stakeholder participants. Staff thinks good initial frameworks have been set, but need additional refinement before solidifying metrics.

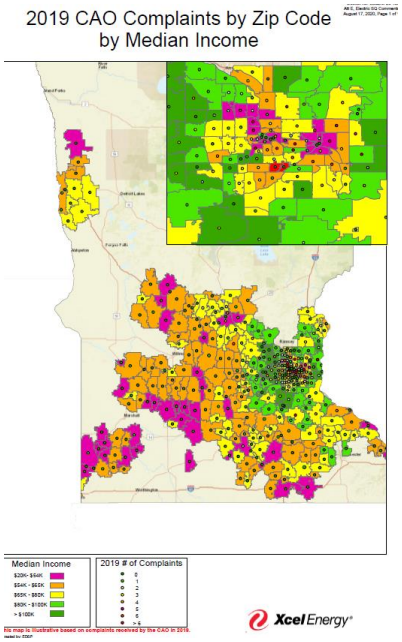
Locational Customer Service Quality

In the April 20, 2020 notice, Staff asked for comments on the, "appropriate pieces of data to gauge locational customer service quality." Staff notes the original metric from the PBR docket relates to equity in service quality over locational service quality, but in order to determine which service quality data are best combined with equity metrics, Staff has distinguished it here as "locational service quality."

Minneapolis, SRA, Environmental Law and EPLC/VS), and Fresh Energy proposed new service quality metrics that should be included. The Department of Commerce summarized other groups' comments and requested further discussion before offering their recommendation.[23] Xcel Energy presented an option for consideration similar to its proposal from the performance metrics docket, where it mapped complaints made to the Commission's consumer affairs office against median income. Comments focused on the granularity of data to be visualized in both the section on service quality metrics and the section on equity.

Xcel produced a service quality map showing customer complaints to the CAO, by zip code, in relation to median income (complaints were not separated by type). Xcel stated that they chose customer complaints for their demonstration map because complaints had potential to vary by location and Xcel has access to the address of complainants. Xcel's finished map, (see larger version in Attachment E To Xcel's initial comments) does not appear to show a relationship between income and complaints, but also indicates most zip codes have relatively few complaints.[24]

[22] Xcel, Initial Filing, pp. 58-59
[23] Department, Reply, p. 4
[24] Xcel, Comments, p. 8



Finally, Xcel offered another option, exploring customer satisfaction using the results of a J.D. Power survey coupled with demographic data, but noted they are unable to disclose any results from the J.D. Power survey.[25]

In reply comments, Xcel Energy outlined their intention to create maps that have a meaningful format, are understandable to the average customer, show an appropriate range of data that are not shown elsewhere, that are cognizant of security concerns, and can be overlaid with other data. In a statement that addresses these aims and comments, the Company stated:

> "We are open to presenting reliability and service quality information in a variety of visual formats, but believe these sample maps are easy to understand, enable easy comparisons between geographic areas, and meet the intent of illustrating equity in reliability and service quality.[26]"

Parties proposed different customer service quality metrics, as outlines in Table 2.

Table 2: Proposed Service Quality Metrics

Proposed Service Quality Metric	**Group**
Energy Assistance enrollment (absolute # & % of customers)[27]	ELPC/VS; Fresh Energy
Energy Efficiency participation (absolute # & % of customers)[28]	ELPC/VS; Fresh Energy
Involuntary Disconnections (absolute # & % of customers)[29]	ELPC/VS; Fresh Energy; City of Minneapolis

[25] Xcel, Comments, p. 9
[26] Xcel Reply Comments p12 (September 2, 2020)
[27] ELPC/VS, Initial, p. 6; Fresh Energy, Reply, p. 3
[28] ELPC/VS, Initial, p. 6; Fresh Energy, Reply, p. 3
[29] ELPC/VS, Initial, p. 6; Fresh Energy, Reply, p. 3; Minneapolis, Initial, p. 2

The SRA focused on the reliability aspect of the notice and did not comment on the service quality rules as defined in 7826.1400-.2000. Instead, the SRA conceptualized "service quality" as reliable energy provision. Of note, the SRA does discuss measurement of "communication with customers" but only as related to communication outage and restoration information.[30] Xcel replied that it could discuss additional methods, beyond the several channels it currently employs, to communicate outage information with customers. More, the Company said it could explain principles of electricity delivery that may influence reliability. At present, Xcel does not track customer communication about outages by zip code (thus, mapping is not feasible).[31]

The City of Minneapolis, Fresh Energy, and ELPC/VS all recommended using disconnection data to gauge locational customer service quality. Fresh Energy and ELPC/VS also supported analyzing additional data to expand the picture service quality beyond disconnections to also include energy affordability and disconnections. Xcel responded it could report energy efficiency and assistance programs but again, not at the feeder level. ELPC/VS asked for any service quality maps to make comparisons to historic data, however Xcel noted that may be unnecessary, as stakeholders could view previous maps.

The Department summarized other groups' comments but did not make recommendations of their own. Indeed, the Department noted that presenting information on energy efficiency and assistance are departures from what is normally discussed in the SQR docket. Thus, they would like more discussion on expanding the scope of SQR before making a recommendation (and stated that such a path was indirectly supported by ELPC/VS and SRA). The Department suggested a technical workshop.[32]

Staff Analysis

Staff (as well as introductory comments provided by ELPC/VS) notes similar metrics to those identified above were discussed in Xcel's Performance Metric docket (17-401), but under the "affordability" section. Therefore, Staff suggests the Commission decline to adopt the metrics related to energy affordability as proposed, and instead focus more on customer service metrics that were proposed in the PBR docket, such customer communications with the utility, complaints, or billing center accuracy. The Commission could also look to other data reported in the service quality docket, such as service extension times or meter reading performance. Staff concurs with the Department that other PRB-based data are out of the scope of the present docket.

Multiple groups proposed collecting disconnection data in the present docket. However, Staff believes that the details related to which types of disconnection data would be visualized was not fully developed. Furthermore, in the performance metrics docket, disconnections are already included under the affordability section, to be discussed as part of a dashboard. Therefore, the Commission may find that further discussion is needed to ascertain the purpose of collecting a third set of disconnection data. Such a finding would be in alignment with suggestions made by the Department.

[30] SRA, Initial, p. 2; Reply, p. 8
[31] Xcel, Reply, p.
[32] Department, Reply, p. 4

Staff recommends the either a technical workshop, or a notice for comment on which of the data currently reported under Minn. Rules 7826 could be expanded to a higher granularity.

Equity

In the April 20, 2020 notice, Staff specifically asked for comments on the, "appropriate pieces of information to overlay with reliability and customer service quality data to gauge equity."

Stakeholders discuss reporting locational data related to race, income, and housing status/type. However, consensus was not reached on which metrics should be used to depict equity spatially. In addition to the differences among comments shown in the Proposed Equity Overlays table below, ELPC/VS advocated for overlays of census layers but did not specify the type of information that should be overlaid. The Department summarized others' comments.

Table 3: Proposed Measures of Equity

Proposed Equity Overlay	**Group**
Median income	SRA; Xcel; Fresh Energy
Percent households at or under federal poverty level by census tract	Fresh Energy; Minneapolis
Percent Race /Ethnicity populations by census tract	Fresh Energy; Xcel; Minneapolis
Housing Status / Type by census tract	Fresh Energy

Comments by the City of Minneapolis[33]; the Suburban Rate Authority (SRA)[34], and Fresh Energy[35].

Fresh Energy noted that the equity overlays they have suggested are freely available in the 2010 Census and American Community Survey 5-year estimates. More, Fresh Energy also pointed out that there are existing geographic equity indicator sets (e.g. the Minneapolis Green Zones criteria).[36]

Staff Analysis

Parties seemed generally aligned on using measures of income and race to gauge equity, although there was not consensus on the exact metric, or granularly (discussed below). Staff recommends further discussion on the exact presentation of equity overlays to combine with service quality and reliability data. As mentioned above, this could be accomplished through a technical workshop or further notice and comment

Data Granularity and Security/Privacy

Data granularity and data security and privacy were brought up by parties in the docket, however consensus was not reached on the appropriate granularity for locational reliability data, locational service quality data, or for equity metrics, nor for how to display the data. (e.g. feeder, zip code, census block). Table 4 gives examples of party positions on data granularity.

[33] Minneapolis, Initial p. 2
[34] SRA, Initial. P. 5
[35] Fresh Energy, Reply, p. 3
[36] Fresh Energy, Reply, p. 3

Table 4: Examples of reporting granularities

Party	Metric/Data	Granularity	Public Availability
Staff Proposal	Reliability Data	Feeder, including city with primary location	Some data may be non-public
Staff Proposal	Map	Feeder/neighborhood level	Some data may be non-public
ELPC/VS; Fresh Energy	Reliability Data	Feeder AND Census tract/zip code	Public
ELPC/VS; Fresh Energy	Disconnections, Energy Assistance, Energy Efficiency Participation	Feeder AND Census tract/zip code	Public
Minneapolis	Reliability Map	Feeder areas	Public
Minneapolis	Disconnections	Zip code or census tract	
SRA	Outage data	The smallest measurable subgroup area of Xcel Service	Not discussed
SRA	Outage Communications	Zip codes, municipalities, or homogenous socio-economic areas	Not discussed
Xcel	Reliability Map – SAIDI, SAIFI, CAIDI	1,000 meters x 1,000 meters	Public
Xcel	Service quality	Zip Code	Public

ELPC/VS requested data at the feeder level and census tract or zip code level. Fresh Energy agreed. Fresh Energy also stated the importance of providing information at greater granularity than zip code, suggesting the census tract, to show variation within a single zip code. The SRA argued repeatedly for increased granularity and proposes measurement of, "underperforming sub-areas that repeatedly impact an identifiable neighborhood or sub-group within a zip code or larger municipality. By including feeder locations (Att. A at 2a-e), staff attempts to get at such a metric.[37]" The City of Minneapolis agreed with other commenters, recommending that disconnection data be displayed by zip code or census tract. They also highlighted the work of the MPCA, emphasizing that an interactive map, like the MPCA's What's in My Neighborhood map that is searchable by many features, would be desirable. The Department summarized others' comments.

In their comments, Xcel showed CAO complaint, SAIDI, and CEMI data at the zip code level (citing privacy concerns related to visualizing data at the feeder level).[38] In response to comments indicating preference for increased granularity, Xcel Energy stated that their Bubble Charts aimed to display population density in each zip code. The Company also replied that they could provide data at 1,000m x 1,000 meter but not at the neighborhood level (lack of access to data) and explained concerns with displaying feeder level data:

> We made a purposeful decision not to illustrate data in a feeder format. Presenting information at the feeder level raises significant and complex security, privacy, and confidentiality issues for both the grid and our customers. These issues have been

[37] ELPC/VS Initial Comments p4 (August 19, 2020).

[38] Data mapped in Xcel's Comments (August 17, 2020); response and justification for zip code level in Xcel's Reply Comments p12-16 (September 2, 2020).

discussed at length in relation to our Hosting Capacity Analysis (HCA), most recently submitted in Docket No E002/M-19-685."[39]

Staff Analysis

As evidenced by the table above and party comments, better definitions around data granularity, along with associated data security or privacy concerns are necessary, especially with the development of service quality metrics, and any broadly accessible public facing displays such as an interactive map. It is also important to realize that determining how to line up things like feeder level reliability with the appropriate equity overlays at a census or zip code level will be necessary to ensure accurate analysis. Staff recommends this be discussed in either a technical workshop or through notice and comment.

Staff notes in the one area it is recommending the Commission move forward, reliability data, it recommends following current procedure for data security, as noted in that section. Depending on future conversations around data granularity and privacy/security, the Commission could always amend practices in the future.

Public Facing Maps

Staff's Attachment A from the April 20, 2020 notice contemplated an interactive map that could display reliability or service quality data along with equity overlays. All parties supported some kind of interactive map, but differed what information it should display, and in what format, and at what granularity. As noted in the reliability section above, its Xcel offered static maps and charts depicting one reliability or service quality metric, and one demographic overlay, median income. Xcel also indicated it was open to an interactive map, as originally proposed by Staff in its April 20, 2020 notice, but with five-year averages by feeder, and only showing the general location of feeders for security purposes.[40]

ELPC/VS, Minneapolis, and Fresh Energy advocated for an interactive approach to data presentation, including maps and data downloads. Minneapolis recommended presenting information both in table format, and as an interactive map where users can locate areas with recurring reliability concerns.[41] Fresh Energy similarly recommended a downloadable "attribute table" for a selected area, along with a list of other map requirements:

1. Be updated regularly (at least annually) as part of the Service Quality Report;
2. Not require creation of an account to view;
3. Have layers for different data sets, including reliability performance and economic/ demographic data (see response to question 3 below), which viewers can select and deselect;
4. Show lines for feeder locations, and indicate substation locations;
5. Enable popup boxes that show viewers key equity and locational reliability data for any specific point on the map;

[39] Xcel Energy Reply Comments p12 ability to provide data at 1,000m x 1,000m; p14 response to City of Minneapolis's request for neighborhood data; p12 quote regarding feeder level (September 2, 2020).
[40] Xcel, Initial, p. 10
[41] Minneapolis, Initial, p. 2

6. Enable the "attribute table" function to allow viewers to see and download underlying data for a specific view window.

ELPC/VS recommended any map be updated regularly, and contain a comparison to past reliability information to help identify trends. They indicated the map should contain various layers that uses can turn off and on to view various reliability and service quality metrics combined with demographic data.[42]

Staff Analysis

As in prior sections, while there is some high-level agreement among parties, critical details need to be fleshed out ahead of the creation of a public facing-map. For example, multiple parties discussed showing reliability with a time component, but disagreed on the best way to do so. In addition, because these comments are for development of data referred by the PBR docket, there needs to be further discussion about how maps may or may not be coordinated with Xcel's possible PBR dashboard. This is another section where Staff recommends further discussion and record development.

Party and Staff Recommendations

Fresh Energy provided a redline of Staff's original Attachment A as a proposal to move forward with the next steps in the docket. Staff has included it as Attachment. Fresh Energy's proposal adopts recommendations from ELPC/VS's initial comments, and some suggestions by the City of Minneapolis. **Decision Option 22** adopts Fresh Energy's Proposal

SRA had high level metric recommendations, but also noted a wiliness to continue discussion. It did not provide specific decision options.

Xcel recommended further dialogue before adopting any recommendations, as did the Department. **Decision Option 21** would delegate authority to the executive secretary to continue next steps in the docket.

Staff makes two recommendations: 1) adopting a modified subsection 2 of its original attachment A on reliability data, as recommended in the locational reliability section, and 2) convening one or more technical workshops and/or additional notice and comment periods to develop better shared understandings around locational service quality, equity metrics, and how to display information. Staff notes part of the challenge in this docket was a lack of consistent participation by parties. Aside from Xcel and the Suburban Rate Authority, no party offered initial *and* reply comments. Consistent participation from parties through the next steps will be key to developing metrics in a timely fashion.

Ahead of a technical workshop Staff anticipates preparing a set of questions for Xcel and interested stakeholders based on the information provided in the record thus far. The workshop would help build shared understanding ahead of a comment period on similar topics.

Decision Option 20 adopt a modified Attachment A
Decision Option 21 delegates authority to the executive secretary to continue next steps in the docket.

[42] ELPC/VS, Initial, p. 7

Decision Options (Combined from Volumes 1 – 3)

1. Accept Xcel Energy's, Otter Tail Power's, and Minnesota Power's annual Safety, Service Quality, and Reliability reports for 2019. *(Department, OTP, MP, Xcel)*

Volume 1 (Reliability)

2. Require utilities to make a compliance filing, within 30 days of the order, with data as follows: *(Staff)*
    a. Xcel Energy: causes of sustained customer outages, by service center for 2019, as a spreadsheet, (.xlsx).
    b. Minnesota Power:
        i. interruptions to the bulk power system for 2019
        ii. causes of sustained customer outages, by service center for 2019, as a spreadsheet, (.xlsx);
        iii. The highest number of interruptions experienced by any one customer (or feeder, if customer level is not available).
        iv. The longest experienced interruption by any one customer (or feeder, if customer level is not available).

3. Require Xcel Energy to continue quarterly status reports on efforts to improve reliability in the Southeast Work Center. *(Staff)*

4. Grant a variance to MN Rule 7826.0500 Subpart 1.G. for Minnesota Power, Otter Tail Power, and Xcel Energy. Require utilities to file a summary table that includes the information contained in the reports, similar to Attachment G in Xcel's filing.

5. Require utilities to provide the reliability (SAIDI, SAIFI, CAIDI, MAIFI, normalized/non-normalized) for feeders with grid modernization investments such as Advanced Metering Infrastructure (AMI) or Fault Location Isolation and Service Restoration (FLISR), to the historic 5-year average reliability for the same feeders before grid modernization investments.

<u>Minnesota Power</u>

6. Set Minnesota Power's 2020 Reliability Standard at the IEEE benchmarking 2nd Quartile for medium utilities. Require a supplemental filing to Minnesota Power's 2020 SQSR report 30 days after IEEE publishes the 2020 benchmarking results, with an explanation for any standards the utility did not meet. *(Staff)*

7. Set Minnesota Power's Reliability Standards for 2020 at the levels described below. *(MP)*

	SAIDI	SAIFI	CAIDI
IEEE Benchmarking Average	124.8	1.12	109.80

8. Set Minnesota Power's Reliability Standards for 2020 at the 2016 levels. *(Department)*

	SAIDI	SAIFI	CAIDI
2016 Standard	98.19	1.02	96.26

Otter Tail Power

9. Set Otter Tail Power's 2020 statewide Reliability Standard at the IEEE benchmarking 2nd Quartile for medium utilities. Require a supplemental filing to Otter Tail Power's 2020 SQSR report 30 days after IEEE publishes the 2020 benchmarking results, with an explanation for any standards the utility did not meet. *(Staff)*

10. Set Otter Tail Power's Reliability Standards for 2020 at the following levels. *(OTP)*

	SAIDI	SAIFI	CAIDI
All MN Customers	94.00	1.00	94.00

11. Set Otter Tail Power's Reliability Standards for 2020 at the following levels. *(Department)*

Work Center	SAIDI	SAIFI	CAIDI
Bemidji	70.64	1.26	56.06
Crookston	69.33	1.19	58.26
Fergus Falls	55.97	1.11	60.33
Milbank	75.49	1.82	41.48
Morris	55.78	1.01	55.23
Wahpeton	57.24	1.13	50.65

Xcel Energy

12. Set Xcel Energy's 2020 statewide Reliability Standard at the IEEE benchmarking 2nd Quartile for large utilities. Require a supplemental filing to Minnesota Power's 2020 SQSR report 30 days after IEEE publishes the 2020 benchmarking results, with an explanation for any standards the utility did not meet. *(Staff)*

13. Set Xcel Energy's Reliability Standards for 2020 at the following levels. *(Xcel)*

	SAIDI	SAIFI	CAIDI
Statewide	109	0.99	111

14. Set Xcel Energy's Reliability Standards for 2020 at the following levels. *(Department)*

Work Center	SAIDI	SAIFI	CAIDI
Metro East	89.78	0.84	103.94
Metro West	79.37	0.79	100.37
Northwest	85.86	0.75	113.01
Southeast	94.82	0.76	122.04

Volume 2 (Service Quality)

15. Require Xcel Energy further clarify call center data in their 2020 SQSR Reports. Specifically, discuss the Company's efforts to improve the reliability of its Customer Resource System[43] (*DOC*) and explain why IVR is included in reporting for calls answered within 20 sec threshold. (*Staff*)
16. Direct utilities to report the following in their service quality reports due April 1, 2021:
    a. Yearly total number of website visits;
    b. Yearly total number of emails received;
    c. Categorization of email subject, including categories for emails related to assistance programs and disconnections as part of reporting under rule 7826.1700. (*Staff*)
17. Require a compliance filing within 30 days from the date of the Order from each utility in which engagement plans related to Emergency Medical Account status are explained. (*Staff*)
18. Direct utilities, after consultation with Department and Commission staff, to file revised categories for reporting complaint data. Delegate authority to the executive secretary to approve additional report categories, with the goals of having them in place by the April 1, 2021 report filing. (*Staff*)
19. Delegate authority to the Executive Secretary to approve Xcel's, MP's, and OTP's public facing summaries. As part of this approval, Staff may communicate with utilities and stakeholders to refine the language and content in the summaries. (*Staff*)

Volume 3 (Locational and Equity)

20. Xcel shall file the information listed in the revised Attachment A with its Safety, Service Quality, and Reliability report due April 1, 2021. *(Staff)*

21. Delegate authority to the executive secretary to convene one or more technical workshops to further develop the record, and to issue notices as appropriate. *(Staff, Department, Xcel)*

22. Adopt Fresh Energy's recommendations as outlined in Attachment B *(Fresh Energy)*

23. Take some other action

[43] Department's Response Comments to Xcel Energy p5 (October 6, 2020).

Clean Revised Attachment A: Locational/Equity Reliability Staff Proposal

1. Xcel shall provide the following information, as a downloadable .csv or .xlsx file, by feeder, for the calendar year. Xcel may exclude feeders that meet the 15/15 aggregation standard.
    a. Reliability reporting region where the feeder is located
    b. The substation the feeder is on, with its full name
    c. The city or area in which the feeder is primarily located
    d. The number of customers on the feeder, including the proportion of residential to commercial and industrial
    e. Whether the feeder is overhead or underground
    f. SAIDI, SAIFI, and CAIDI, normalized (IEEE 1366 Standard) and with Major Event Days
    g. Number of outages, total customer outages, and total customer-minutes-out for the following situations:
        i. All levels, All Causes included
        ii. Bulk Power supply - All causes, distribution, substation, transmission substation, and transmission line levels
        iii. All levels, no "planned' cause, includes bulk power supply
        iv. All levels, "planned" cause only, includes bulk power supply
    h. Number of outages, total customer outages, and total customer-minutes-out in the following primary outage cause categories, normalized and non-normalized
        i. Equipment - OH
        ii. Equipment - UG
        iii. Lightning
        iv. Other
        v. Power Supply
        vi. Planned
        vii. Public
        viii. Unknown
        ix. Vegetation
        x. Weather - Non-Lightning
        xi. Wildlife

Redline Attachment A: Locational/Equity Reliability Staff Proposal

~~1. Xcel shall provide, on an annual basis, a list of all sustained outages greater than 5 minutes in length with the following information:~~

- ~~a. Customers Out~~
- ~~b. Duration of outage, in actual minutes~~
- ~~c. Customer Minutes Out~~
- ~~d. Feeder ID~~
- ~~*e. Substation*~~
- ~~*f. City or area in which the feeder is primarily located*~~
- ~~g. Reliability reporting region~~
- ~~h. Outage Level~~
- ~~i. Primary Event Index~~
- ~~j. Whether or not the event was excluded as a major event day under the IEEE~~
- ~~k. The primary cause of the outage~~
- ~~l. The start day, month, *and year* of the outage~~

2. Xcel shall provide the following information, as a downloadable .csv or .xlsx file, by feeder, for the calendar year. Xcel may exclude feeders that meet the 15/15 aggregation standard.
   a. Reliability reporting region where the feeder is located
   b. The substation the feeder is on, with its full name
   c. The city or area in which the feeder is primarily located
   d. The number of customers on the feeder, including the proportion of residential to commercial and industrial
   e. Whether the feeder is overhead or underground
   f. SAIDI, SAIFI, and CAIDI, normalized (IEEE 1366 Standard) and with Major Event Days
   g. Number of outages, total customer outages, and total customer-minutes-out for the following situations:
      v. All levels, All Causes included
      vi. Bulk Power supply - All causes, distribution, substation, transmission substation, and transmission line levels
      vii. All levels, no "planned' cause, includes bulk power supply
      viii. All levels, "planned" cause only, includes bulk power supply
   h. Number of outages, total customer outages, and total customer-minutes-out in the following primary outage cause categories, normalized and non-normalized
      i. Equipment - OH
      ii. Equipment - UG
      iii. Lightning
      iv. Other
      v. Power Supply
      vi. Planned
      vii. Public
      viii. Unknown
      ix. Vegetation
      x. Weather - Non-Lightning
      xi. Wildlife

~~3. A publicly available online map showing reliability by feeder that allows interested individuals to zoom in to a neighborhood level, and if possible, the ability to have pop-ups that indicate, except to the extent that publicly disclosing this data would violate specific data privacy requirements or pose a significant security risk to Xcel's system or its customers. If Xcel withholds any information on this basis, Xcel shall provide the Commission with a full description and specific basis for withholding the information, including any Trade Secret claims.~~

Attachment B: Fresh Energy Redline of Staff Proposal

1. Xcel shall provide, on an annual basis, a list of all sustained outages greater than 5 minutes in length with the following information:
    a. Customers Out
    b. Duration of outage, in actual minutes
    c. Customer Minutes Out
    d. Feeder ID
    e. Substation
    f. City or area in which the feeder is primarily located
    g. Reliability reporting region
    h. Outage Level
    i. Primary Event Index
    j. Whether or not the event was excluded as a major event day under the IEEE
    k. The primary cause of the outage
    l. The start day, month, *and year* of the outage
2. Xcel shall provide the following information, as a downloadable .csv or .xlsx file, by feeder, and census tract or zip code for the calendar year:
    a. Reliability reporting region where the feeder is located
    b. The substation the feeder is on, with its full name
    c. The city or area in which the feeder is primarily located
    d. The number of customers on the feeder, including the proportion of residential to commercial and industrial
    e. Whether the feeder is overhead or underground
    f. SAIDI, SAIFI, and CAIDI, normalized (IEEE 1366 Standard) and with Major Event Days
    i. Compare current year SAIDI, SAIFI, and CAIDI to prior-year data starting in 2021, adding one year of prior reporting history until reaching a 5-year comparison in 2024
    g. Number of outages, total customer outages, and total customer-minutes-out for the following situations:
        ix. All levels, All Causes included
        x. Bulk Power supply - All causes, distribution, substation, transmission substation, and transmission line levels
        xi. All levels, no "planned' cause, includes bulk power supply
        xii. All levels, "planned" cause only, includes bulk power supply
    h. Involuntary disconnections (absolute number and as a percentage of customers)
    i. Customer counts participating in energy assistance programs (absolute number and as a percentage of customers)
    j. Customer account participating in utility energy efficiency programs (absolute numbers and as a percentage of customers)
3. A publicly available online map showing reliability by feeder that allows interested individuals to zoom in to a neighborhood level, and if possible, the ability to have pop-ups that indicate, except to the extent that publicly disclosing this data would violate specific data privacy requirements or pose a significant security risk to Xcel's system or its customers. If Xcel withholds any information on this basis, Xcel shall provide the Commission with a full description and specific basis for withholding the information, including any Trade Secret claims. This map shall:
    a. Be updated regularly (at least annually) as part of the Service Quality Report;
    b. Not require creation of an account to view;
    c. Have layers for different data sets, including reliability performance and economic demographic data (see response to question 3 below), which viewers can select and deselect;
    d. Show lines for feeder locations, and indicate substation locations;

e. Enable popup boxes that show viewers key equity and locational reliability data for any specific point on the map;

f. Enable the "attribute table" function to allow viewers to see and download underlying data for a specific view window.