**STATE OF MINNESOTA**
**PUBLIC UTILITIES COMMISSION**

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December 30, 2019

**In the Matter of Xcel Energy's Hosting Capacity Analysis Report** **Docket No. E002/M-19-685**

**COMMENTS OF FRESH ENERGY**

Fresh Energy appreciates the opportunity to provide comments pursuant to the Commission's November 15, 2019 *Notice of Comment Period* on Xcel Energy's (Xcel's) fourth annual Distribution System Hosting Capacity Analysis (HCA). Fresh Energy commends Xcel for making significant improvements to the HCA this year. We understand that this is an iterative process, and we appreciate the Commission's annual review and pointed direction to the Company to ensure the analysis provides value and is on the right trajectory.

*I. Does Xcel Energy's 2019 Hosting Capacity Analysis Report achieve the requirements outlined in the Commission's August 15, 2019 Order and Minn. Stat. §216B.2425, Subd. 8?*

The November 1, 2019 HCA filing and report demonstrate that Xcel has made efforts to comply with the Commission's August 15, 2019 Order (Order) to the extent currently possible. There are however a few areas where additional explanation is needed.

**Redaction of peak load data**

Xcel has significantly improved the value of the hosting capacity analysis, and adopted many recommendations made by stakeholders at the September 6, 2019 stakeholder meeting and in previous discussions, particularly requests for more data on the public-facing map via pop-up box and beginning to use actual daytime minimum load data (Order point 2). Fresh Energy has concerns about the redaction of peak load information from the map and tabular spreadsheet. Peak load is a key data point underpinning distribution system investment and is important for understanding potential opportunities for shaving or shifting peak load through DER deployment. In at least two other states where utilities perform hosting capacity analyses,

peak load data is publicly available.[1] California utilities additionally publish an annual load profile for each circuit and substation showing the maximum and minimum load for each day of the analysis year.[2]

**95 feeder mitigation analysis**

Xcel's discussion of the mitigation analysis of the 95 feeders that showed zero hosting capacity in the 2018 HCA was very useful for understanding relative efficacy and costs of mitigation options. We note that Xcel performed an aggregated analysis of the 95 feeders using a new mitigation assessment tool developed by EPRI, rather than an individual analysis (Order point 3.A). Fresh Energy is supportive of the Company's efforts to increase efficiency in the HCA process, but it would be helpful for stakeholders to have a better understanding of the mitigation assessment tool's accuracy. Does the mitigation tool provide error ranges for its outputs? Has EPRI or the Company compared the tool's results to individual engineering studies at a comparable feeder location?

Xcel was not able to provide data on the frequency at which the constraints on individual feeders occur[3] (Order point 3.B.1). Fresh Energy understands that obtaining this information would require the Company to have hourly load forecasts by feeder, which it does not yet have, and would require modifying DRIVE to perform an 8760 analysis rather than the two hour (peak and minimum load hours) analysis currently done. We understand that the proposed Advanced Planning Tool that Xcel is requesting certification of in the Integrated Distribution Plan (Docket 19-666) will enable feeder and potentially nodal-level load forecasting and DER scenario analysis.[4] We are eager to learn more about these capabilities and how and when this information will be used to improve the detail of the HCA.

Order point 3.B.2 asks Xcel to provide "The full range of mitigation options for an individual feeder, including DER capabilities, a range of potential costs for each of the mitigation options available, and a range of total costs." Fresh Energy believes the Company has provided an analysis of most traditional mitigations, but we encourage the Company to expand the list of potential mitigations to include the addition of load DERs – especially those that increase minimum daytime load, shift peak load, and be managed to provide grid support services. Such additions have the potential to increase hosting capacity and may be lower cost than the Tier 2 or Tier 3 mitigations Xcel identified.

**DRIVE Capabilities and Beneficial Electrification**

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[1] See New York State Electric and Gas Corporation's Hosting Capacity map, last accessed 12/29/19 (link) and Southern California Edison's Integration Capacity Analysis Map, last accessed 12/29/19 (link).
[2] See, for example, Southern California Edison's Integration Capacity Analysis Map, last accessed 12/29/19 (link).
[3] Xcel, Hosting Capacity Report, filed November 1, 2019 in Docket 19-685, page 32 (link).
[4] Xcel, Integrated Distribution Plan, filed November 1, 2019 in Docket 19-666, page 209 (link).

Beneficial electrification is a key policy priority for Fresh Energy and other clean energy advocates in Minnesota as well as for the state. The Pollution Control Agency recently initiated the Clean Cars Minnesota rulemaking to accelerate electrification of the transportation sector[5] and the 2018 Minnesota Energy Efficiency Potential Study highlighted the importance of efficient electric space heating for maximizing efficiency opportunities and meeting Minnesota's climate goals.[6]

Order point 5.A asks Xcel to "provide a complete analysis of the DRIVE tool, including the following…A report on the evolving capabilities of the DRIVE tool and whether it is capable of incorporating the technologies included in the broadened definition of DERs, including a discussion of how Xcel's hosting capacity analysis can be used to assist state energy policy goals related to beneficial electrification."

Xcel's discussion of the DRIVE tool makes it clear that DRIVE can model load characteristics of DERs like battery storage and electric vehicles.[7] The Company states that load characteristics were not modeled due to the low penetration of battery storage on Xcel's system in Minnesota.[8] Fresh Energy believes it is important to begin incorporating load DERs into the HCA sooner than later. Doing so will enable superior planning for a high-electrification future and promote common understanding of issues such as the relationship between hosting capacity and increases in load or changes in load profile.

We believe there are at least two types of load DER modeling under discussion: 1) modeling hosting capacity, as currently done, with the addition of load characteristics of DERs installed at the time of modeling, and 2) modeling hosting capacity under various scenarios of DER deployment, including both generation and load DERs. The first may not be critical to do until deployment levels warrant, but the second appears quite important for informing integrated distribution planning and identifying comprehensive mitigations for areas of limited hosting capacity. Fresh Energy understands that the Company's proposed Advanced Planning Tool will provide sophisticated forecasting and DER scenario capabilities. If the Company acquires the Planning Tool on the currently proposed schedule (late 2020), we recommend that these capabilities are incorporated into the 2021 HCA.

**DRIVE Methodology**

Order point 7.A asks Xcel to provide "Updates on the appropriateness of the methodological choice of the hosting capacity analysis, a discussion of ability to obtain more detailed secondary voltage equipment data, and the types of DERs being interconnected in future reports." Fresh

[5] Minnesota Pollution Control Agency, Clean Cars (link).
[6] Minnesota Department of Commerce, Minnesota Energy Efficiency Potential Study: 2020–2029, December 4, 2018, page 102 (link).
[7] Xcel, Hosting Capacity Report, filed November 1, 2019 in Docket 19-685, page 6 (link).
[8] *Ibid.*

Energy is interested in learning more about the new DRIVE methodology Xcel and EPRI have developed which combines the large centralized and small distributed methods.[9] We have asked Xcel to provide stakeholders with more information about the combined mythology and an opportunity to provide feedback before the Company decides whether or not to use the combined method for the 2020 HCA.

Fresh Energy appreciates the Company's discussion of its ability to obtain secondary system data. We are glad to hear that Xcel plans to use advanced metering infrastructure, which Xcel is proposing to deploy as part of the AGIS initiative, to help to collect this data "in the near future."[10] It would be helpful to know whether the combined DRIVE method discussed above requires secondary system data, which data points AMI is capable of collecting, whether ADMS and other software are currently set up to manage this data, and what the Company's timeline is for gathering the data via AMI.

II. *Does the Hosting Capacity Analysis Report and updates to the Company's online map improve the usefulness for customers and developers? Are modifications or clarifications needed?*

In response to the 2018 HCA, Fresh Energy emphasized the importance of addressing developer feedback that the HCA was of little value to developers in siting projects.[11] The 2019 hosting capacity report is significantly improved, and we acknowledge Xcel's work to address many of the concerns raised by stakeholders in previous proceedings. There remain several issues that limit the HCA's real-world usefulness, including the frequency of data updates and the granularity of the analysis.

**Granularity**

As Xcel notes, hosting capacity is significantly influenced by the location of DER on a feeder, especially a generator's proximity to a substation.[12] Other locational factors can influence hosting capacity as well, including characteristics of DER and load on the feeder and feeder operation. The usefulness of the HCA as a tool to direct DER investments to preferable locations on the grid therefore greatly depends on granular and precise results.

DRIVE produces sub-feeder and nodal level results. Xcel has included sub-feeder results in the online HCA map, but has not illustrated nodal level results due to security and privacy concerns.[13] However, sub-feeder results are not included in the tabular report, and it is not

[9] Xcel, Hosting Capacity Report, filed November 1, 2019 in Docket 19-685, page 11 (link).
[10] *Ibid.*
[11] Fresh Energy, Comments filed February 28, 2018 in Docket 18-684 (link).
[12] Xcel, Hosting Capacity Report, filed November 1, 2019 in Docket 19-685, page 13 (link).
[13] Xcel response to IREC Information Request 3, December 17, 2019.

clear exactly how sub-feeder is used across the service territory. Fresh Energy is interested in learning (in Reply Comments if possible) how sub-feeder is defined, and if a consistent definition is used for every feeder.

**Frequency**

The current HCA is a snapshot in time of Xcel's distribution system. Xcel performs the analysis in the summer and publishes the report on November 1. Last year, the HCA was approved by the Commission on May 30. Thus, some elements of the HCA are three or more months out of date at the time of publishing and may be 11 months out of date at the time of approval. This significantly reduces the usefulness of the HCA for customers and developers. In order to attain the

Fresh Energy is pleased to see that the Company plans to update installed and queued DER data on the hosting capacity map at least once before the 2020 HCA is published.[14] We are eager to understand more about how efficient that mid-year update process could be and would like to see DER data updated more frequently, at least quarterly, in future HCAs. Similarly, we would like to better understand the potential for mid-year updates to other factors including load and feeder configuration, and whether targeted updates just for the most-changed nodes could balance the need for accuracy with the desire for efficiency.

**Summary of Recommendations**

Fresh Energy will provide additional recommendations in Reply Comments, once the Company responds to our requests for additional information and after evaluating the comments of other stakeholders. As an initial matter, we recommend that the Commission adopt the following requirements:

1. Xcel shall host a stakeholder meeting by May 1, 2020 to describe the combined Large Centralized and Small Distributed DRIVE method, its functionality and limitations, and to collect feedback from stakeholders on whether this method should be used for the 2020 HCA.
2. If Xcel acquires and integrates the currently proposed Advanced Planning Tool by the end of 2020, Xcel shall:
    a. Begin to use feeder-level load forecast and DER scenario planning capabilities in the 2021 HCA.
    b. Begin to provide load DER hosting capacity results in the HCA map and tabular formats.
    c. Host at least one stakeholder meeting in the spring of 2021 to describe the tool's functionality and collect stakeholder feedback on the most useful scenarios to model for the HCA.

[14] Xcel response to IREC Information Request 19, December 17, 2019.

Fresh Energy requests the Company expand its discussion of several issues below in Reply Comments to help stakeholders understand the opportunities and current barriers to improving the HCA through increased frequency, granularity, and transparency.

1. Does Minnesota's legal framework for protected data differ greatly from that of New York or California? Why should peak load data be redacted here while it is required to be public in those states?
2. Does the mitigation tool provide error ranges for its outputs? Has EPRI or the Company compared the tool's results to individual engineering studies at a comparable feeder location?
3. What is the Company's plan to gather secondary system data via AMI? Please discuss whether the new combined DRIVE method requires this data, which data points AMI is capable of collecting, whether ADMS and other software are currently set up to manage this data, and the timeline for collection.
4. How is "sub-feeder" defined for the purposes of the HCA map (e.g. by length or other characteristic), and is a consistent definition used for every feeder?
5. What resources would be required for mid-year or quarterly updates to DER data? For other factors including load and feeder configuration changes?

Thank you for the opportunity to comment on the 2019 hosting capacity study. Fresh Energy looks forward to continuing the robust discussion with Xcel and stakeholders about what the hosting capacity analysis should achieve and how to ensure an efficient and useful product.

*/s/ Isabel Ricker*
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