BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

In the Matter of Xcel's 2019 Hosting Capacity Analysis Report

ISSUE DATE: July 31, 2020

DOCKET NO. E-002/M-19-685

ORDER ACCEPTING REPORT AND SETTING FURTHER REQUIREMENTS

PROCEDURAL HISTORY

On November 1, 2019, Xcel Energy (Xcel or the Company) filed its 2019 Hosting Capacity Analysis Report (2019 HCA Report).

On December 30, 2019, the Commission received initial comments from the Department of Commerce – Division of Energy Resources (the Department), Interstate Renewable Energy Council Inc. (IREC), and Fresh Energy.

On January 17, 2020, the Commission received reply comments from Xcel, the Department, and IREC.

On January 27, 2020, the Commission received supplemental comments from Xcel, the Department, IREC, and Fresh Energy, and comments from the City of Minneapolis.

On June 11, 2020, the Commission met to consider the matter.

FINDINGS AND CONCLUSIONS

I. Summary

The Commission accepts Xcel's 2019 HCA Report and finds that improved and additional information will be necessary in future reports. Therefore, the Commission provides direction for future HCA reports.

II. Background

The Electric Power Research Institute (EPRI) defines hosting capacity as the amount of distributed energy resources (DER) that can be accommodated on the existing system without

adversely affecting power quality or reliability under existing control configurations and without requiring infrastructure upgrades.[1] A hosting capacity analysis (HCA) evaluates a utility's distribution system to find locations where DER may interconnect, as well as mitigation measures that might enhance the distribution system's capacity to accommodate interconnection.

In 2015 the Legislature adopted Minn. Stat. § 216B.2425, subdivision 8, as follows:[2]

> Each [public utility that files Biennial Transmission Projects Reports and] that is operating under a multiyear rate plan approved under section 216B.16, subdivision 19, shall conduct a distribution study to identify interconnection points on its distribution system for small-scale distributed generation resources and shall identify necessary distribution upgrades to support the continued development of distributed generation resources, and shall include the study in its [Biennial Transmission Projects Report].

Xcel then began filing its distribution studies (commonly referred to as HCAs; the filings are commonly referred to as hosting capacity analysis reports, or HCA reports). Under the statute, the study must be conducted biennially, in odd-numbered years, and included in the utility's biennial transmission projects report. However, at parties' request, Xcel agreed to file this study annually, and therefore files its HCA reports separately from its biennial transmission projects reports.[3] The Commission issued orders reviewing Xcel's HCA reports in 2017 (2017 Order),[4] 2018 (2018 Order),[5] and 2019 (2019 Order),[6] each time establishing additional requirements for the subsequent HCA report.

III. Xcel's 2019 Study

As with prior HCA reports, Xcel continues to rely on EPRI's Distributed Resource Integration and Value Estimation (DRIVE) tool. The tool uses distribution system model inputs to analyze the capacity of distributed energy resources able to be accommodated at a location and determine when a set of potential issues might limit hosting capacity or require mitigation.

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[1] EPRI, *Impact Factors, Methods and Considerations for Calculating and Applying Hosting Capacity, 2018 Technical Update*, at v.

[2] Laws 1Sp2015, Ch. 1, Art. 3, § 22.

[3] *See In the Matter of Xcel's 2017 Hosting Capacity Study*, Docket No. E-002/M-17-777, Order Accepting Study and Setting Further Requirements, at 5, Ordering Paragraph 8 (July 19, 2018).

[4] *In the Matter of Xcel Energy's Biennial Transmission and Distribution Plan: Distribution System Study – Hosting Capacity Report*, Docket No. E-002/M-15-962, Order Setting Additional Requirements for Xcel's 2017 Hosting Capacity Report (August 1, 2017).

[5] *In the Matter of Xcel's 2017 Hosting Capacity Study*, Docket No. E-002/M-17-777, Order Accepting Study and Setting Further Requirements (July 19, 2018).

[6] *In the Matter of Xcel's 2018 Hosting Capacity Study*, Docket No. E-002/M-18-684, Order Accepting Study and Setting Further Requirements (August 15, 2019).

For the 2019 HCA Report, Xcel stated that it created 1,050 feeder models in its load flow program using GIS information. After creating the models and cleaning up any errors or abnormalities, Xcel analyzed the models using DRIVE, which performed the hosting capacity analysis.

Xcel noted that the HCA is one of several tools available to customers and developers to determine the viability of a potential DER site; the HCA focuses only on generation sources and does not include load characteristics from storage. Xcel explained that DRIVE does allow for load hosting analysis, such as electric vehicle charging stations or beneficial electrification, but argued that such analysis is better suited for the Company's integrated distribution plan (IDP) rather than the HCA.

Based on the DRIVE analysis, Xcel reported each feeder's minimum and maximum hosting capacity. These figures are intended to provide useful signals to a DER developer, indicating that a feeder may be able to accommodate a new generator with capacity below the minimum hosting capacity, and would not be able to accommodate a new generator with capacity above the feeder's maximum hosting capacity, without additional mitigation measures. A feeder might be able to accommodate a generator with capacity between the minimum and maximum, depending on a number of factors, including location. Xcel noted that there are various criteria that would limit hosting capacity; DRIVE is capable of analyzing thirteen limiting criteria and Xcel used eight of these criteria in the 2019 HCA. In the 2019 HCA Report, for each feeder, Xcel identified the criterion that was the primary constraint on hosting capacity.

Xcel stated that the 2019 HCA shows that 129 feeders, out of the 1,050 analyzed, have zero maximum hosting capacity; however, the methodology Xcel used for the DRIVE analysis considers potential DER in increments of 100 kW on certain sections, so there may be available capacity under 100 kW. In those cases, additional small-scale DER may be possible. Furthermore, 101 of the 129 feeders already have significant amounts of existing DER and have essentially exhausted the hosting capacity.

Additionally, Xcel explained that the HCA reflects the amount of hosting capacity available without any mitigations. Therefore, even if a feeder shows low hosting capacity, it is possible that higher levels of DER could be interconnected after implementing mitigation strategies.

As directed by the Commission's 2019 Order, Xcel stated that it had worked with EPRI to perform analysis on the 95 feeders that were shown to have zero hosting capacity in the 2018 HCA Report. Xcel stated that it was the first utility to use a new mitigation assessment tool developed by EPRI that attempts to automate the process of comparing potential mitigation strategies and suggesting solutions. This analysis suggested that various power factor adjustments could be a cost-effective solution to increasing capacity on certain feeders; other, more costly, mitigation solutions included regulator additions or reconductoring. Overall, Xcel found that the total cost for mitigating all issues on a feeder ranged from $75,000 to over $3.3 million per feeder; however, the majority of feeders could be successfully mitigated for under $300,000 per feeder.

Consistent with previous orders, Xcel made the results of its hosting capacity analysis available via a spreadsheet as well as on a public-facing, color-coded online "heat map." The heat map

shows areas marked in green, yellow, and red, indicating generic hosting capacity levels as of the time of the analysis of local feeders.

Xcel explained that it was not publicly disclosing certain data that could compromise system security or customer privacy. Feeders serving certain critical infrastructure categories or serving fewer than 15 premises were included on the tabular spreadsheet but excluded from the heat map. Xcel explained that the 15-premises threshold was the same that the Company applied to requests for aggregated customer energy use data (CEUD), and reasoned that feeders with few customers may provide insights into customer locations, potentially compromising confidentiality or security for those customers. Overall, Xcel excluded 115 feeders from the public heat map out of a total of 1,050 feeders included in the 2019 HCA.

Finally, Xcel's 2019 HCA provided a table identifying where it addressed each of the requirements of the Commission's 2019 Order.[7]

IV. Issues

The Commission received comments from parties on various topics, including (1) whether the Commission should accept the 2019 HCA Report, (2) whether the 2019 HCA Report and updates to Xcel's online heat map improve usefulness for customers and developers, and (3) whether modifications or clarifications are needed.[8]

A. 2019 HCA Report

1. Party Comments

Xcel requested that the Commission accept the 2019 HCA Report as compliant with Minn. Stat. § 216B.2425, subd. 8, and the 2019 Order.

Overall, no party recommended rejection of the report. The Department reviewed the report in detail and found that Xcel had satisfied both the substantive and procedural requirements of the statute and reasonably responded to all applicable ordering paragraphs from previous Commission orders. After receiving various information from Xcel through the comment process, the Department recommended that the Commission accept the 2019 HCA Report, and suggested several modifications and clarifications for future HCA reports, as discussed further below.

Several parties recommended that Xcel make a compliance filing to supplement the 2019 HCA Report, including notation of which feeders include actual versus assumed Daytime Minimum Load (DML) data. Parties argued that Xcel used actual DML for 25 percent of feeders, but continued to use an assumption of DML for the remaining feeders. Fresh Energy stated that this information is important to inform developers' use of the report.

[7] Xcel 2019 HCA Report, Attachment C (November 1, 2019).

[8] *See* Current Docket, Notice of Comment Period (November 15, 2019).

2. Commission Action

Although the HCA report is not subject to approval, the Commission reviews it for compliance with the requirements of statute and past orders, and takes the opportunity to provide guidance for future studies. Identifying changes that can improve the quality of the study furthers the statute's underlying policy objectives, and the Commission appreciates the thorough and incisive analyses of the parties and their continuing participation in this ongoing process.

Having carefully reviewed the record, the Commission concurs with the Department that the 2019 HCA Report complies with all applicable requirements, and will therefore accept the report. However, the Commission finds that improved and additional information and more meaningful stakeholder engagement are necessary in future reports. Therefore, consistent with past HCA orders, the Commission will identify areas for additional focus in Xcel's next HCA.

The Commission will also direct Xcel to submit a compliance filing within 30 days including notation of which feeders had actual Daytime Minimum Load data incorporated in the 2019 HCA. This information allows developers to better evaluate the effect of actual versus estimated DML on a feeder's hosting capacity. Additionally, the Commission will direct Xcel to incorporate this information in future HCA reports.

Finally, per the Department and Xcel's request, the Commission will incorporate items from previous HCA orders that are still operational into this order.

B. Use Case or Purpose of the HCA

1. Party Comments

Xcel suggested that the Commission may want to clarify the purpose of the HCA. In Xcel's opinion, the HCA report is intended to provide some insight into potential feeder hosting capacity, but is "only one tool among several"[9] used in planning DER integration. Other parties argued that the HCA should be used to combine various sources of information and streamline interconnection.

a. Integration of HCA and Pre-Application Report Data

Xcel stated that one of the most common stakeholder requests was integration of the HCA with the pre-application data report process for potential interconnection customers. Together, these two items provide a baseline determination of whether DER interconnection in a particular location is viable. According to Xcel, although there would be clear benefits to integrating pre-application data with the hosting capacity map, there would also be significant costs and barriers. For example, additional functions would need to be added to the map, and some information would need to be excluded for security and privacy reasons. Additionally, Xcel stated that new coding functions would need to be created to access the data via the HCA map; currently, data is manually collected and scrubbed for errors. Xcel stated that significant engineering time would be needed to implement and upkeep the large amount of data that would be involved.

[9] Xcel reply comments, at 2 (January 17, 2020) (italics omitted).

Additionally, Xcel suggested that a fee may need to be implemented for access to a combined hosting capacity map and pre-application report tool to cover the cost of integration.

The Department and IREC argued that Xcel should provide a specific plan to integrate information contained in the pre-application data report and the HCA, including a cost estimate and potential timeline, to allow stakeholders and the Commission to fully weigh the merits of the plan. IREC also argued that Xcel could provide some distribution system data on the map now, without complicated or costly technology upgrades.

The Department agreed with Xcel that the HCA likely could not be used to substitute for the entire pre-application process, but stated that the two should be used to inform one another. The Department suggested that some amount of integration could result in process efficiencies and cost savings, and reiterated in its supplemental comments that Xcel should quantify potential costs to allow for evaluation.

Fresh Energy did not take a position on integrating the pre-application data report with the HCA, but suggested that other changes should be made first to increase the usefulness of the HCA. However, Fresh Energy was interested in Xcel's view of what would be required to integrate the two information resources for potential interconnection customers.

b. Inclusion of Load and Generation Analysis

Xcel's 2019 HCA Report results considered only DER generation, and did not include load characteristics of DER devices such as energy storage. IREC argued that the HCA would be more useful if it included both load and generation analysis, because both will be required for a transition to a low-carbon economy. IREC stated that the HCA map is an important tool for understanding where the best opportunities exist for placing new DER load and DER generation.

Fresh Energy also argued that new DER load will be necessary to achieving Minnesota's energy goals, including energy storage, electric vehicles, and heating electrification. Fresh Energy stated that the DRIVE tool is capable of modeling load characteristics of DERs, and that it is important to begin incorporating this information into the HCA.

Xcel argued that the Integrated Distribution Plan, not the HCA, is the appropriate place to address DER load, because the two analyses are distinct and specific information about load characteristics would be necessary for the information to be relevant and useful. Additionally, Xcel noted that publishing load maps could compromise grid security and customer privacy and security. However, Xcel stated that it was open to discussion about conducting a beneficial electrification study – outside the HCA – if the Commission sees it as useful for achieving state energy policy goals.

2. Commission Action

The Commission concurs with parties that more detailed information about potential costs is needed in order to thoroughly evaluate whether pre-application report data should be integrated in some way with the HCA. Consequently, the Commission will direct Xcel to collaborate with stakeholders in evaluating the costs and benefits associated with a hosting capacity analysis that

would remain an early indicator of possible locations for interconnection, replace or augment initial portions of the interconnection process, or automate interconnection studies.

Furthermore, Xcel must continue to work with stakeholders to identify opportunities to integrate the HCA and the pre-application report data and screening processes in future iterations of the HCA.

Xcel has identified certain data that could be published with no limitation, including Transformer Name, Transformer Absolute Min, Load Tap Changer (LTC) or Regulator, Feeder Absolute Min, and Network or Radial. Because that data is currently available and would not require significant or costly technology improvements, the Commission will direct Xcel, to the extent practicable, to include those items on the HCA map and in downloadable spreadsheet format, starting with the 2020 HCA.

The Commission will also adopt a long-term goal for Xcel to use the HCA for interconnection processing, in place of the initial review screens that are currently used in the Simplified and Fast Track options in the Minnesota DER Interconnection Process (MN DIP) for this purpose. This echoes a similar discussion that took place in Xcel's recent IDP docket.[10] Although this use of the HCA will take time and resources to accomplish, it is important to take future steps with this goal in mind. Xcel should work with stakeholders to refine the hosting capacity analysis, and may seek further cost and timing clarification from the Commission as questions arise.

The Commission agrees with parties that increased DER load will be a factor in achieving Minnesota's energy goals, and it may be useful to include certain load analysis along with generation data in the HCA. However, more information is needed about the costs and benefits of this potential integration. Therefore, in its 2020 IDP compliance filing, the Commission will direct Xcel to provide a discussion of how the HCA can be used to assist state energy policy goals related to beneficial electrification, including detail on how a load hosting analysis would be done, an estimate of the resources that would be required, and the specific information the Company could provide.

C. Frequency of update

1. Party Comments

Several parties suggested that updating the HCA more often than annually would be valuable and would make the information more relevant to developers and customers. Xcel agreed in principle but stated that the cost of increasing frequency may outweigh the benefit.

IREC noted that there is a lag between when the HCA is conducted and when results are released, and argued that because feeder configurations, load data, and DER penetration may change in the intervening months, the results are unreliable. IREC suggested that more frequent, targeted updates, focused on areas where changes are occurring on the distribution system, may

[10] *In the Matter of Xcel Energy's Integrated Distribution Plan and Advanced Grid Intelligence and Security Certification Request*, Docket No. E-002/M-19-666, Order Accepting Integrated Distribution Plan, Modifying Reporting Requirements, and Certifying Certain Grid Modernization Projects (order forthcoming).

provide benefits to customers and developers without resulting in significantly increased labor or costs for the Company. In response, Xcel noted that the Company would need to change its current HCA process in order to implement targeted updates because currently, the work is scheduled for the summer months and other projects are timed and prioritized accordingly.

The Department noted that in the 2019 HCA stakeholder feedback process, a number of parties requested monthly updates. Xcel agreed to include a proposal in the 2020 HCA Report for monthly, quarterly, and semi-annual updates, with detailed information on costs.

2. Commission Action

First, as agreed to by Xcel, the Commission will direct Xcel to provide options in the 2020 HCA Report for monthly, quarterly and semi-annual HCA updates, including cost estimates. Although more frequent updates would undoubtedly be preferred by developers, it is important to gain a full understanding of the associated costs before determining whether the frequency or scope of HCA updates should change. For now, the Commission will direct Xcel to file its 2020 HCA Report on November 2, 2020.

D. Granularity of HCA

1. Party Comments

IREC and Fresh Energy stated that although the DRIVE tool provides data at the line segment and sub-feeder levels, Xcel only publishes a summary spreadsheet at the feeder level and does not identify where on a particular feeder capacity is located. Parties argued that additional granularity would make the results more useful. Xcel responded that it does not provide sub-feeder data for security and privacy reasons; furthermore, the HCA is only intended as a high-level first step in the interconnection process. Xcel argued that providing more precise data to the public could lead developers to believe that DER could be accommodated in a certain location, when an actual interconnection study is the only way to make that determination.

IREC argued that publishing the location of distribution lines is important so that customers can identify the line segment to which they interconnect. Currently, Xcel's map shows blocks of color rather than actual locations of lines, and pop-up boxes with more location-specific information. IREC noted that major utility HCA maps elsewhere in the country provide the actual locations of distribution lines.

Additionally, IREC and Fresh Energy recommended that Xcel provide a unique name or number for each line segment in the spreadsheet and on the map, and publish the location of lines on the map so that customers can identify the location corresponding to the HCA data. Parties argued that this would improve precision and that simply listing the minimum and maximum hosting capacity on the feeder is too large of a range for results to be useful to customers and developers.

2. Commission Action

The Commission agrees with parties that providing more precise information in the HCA map and spreadsheet would be beneficial. Although these resources are not the final word on whether DER interconnection is possible at a particular location, giving customers and developers access to more precise data would allow them to make informed decisions about whether to pursue a

project before investing significant time or resources into the planning process. However, the Commission also recognizes that it may not be practicable for Xcel to include granular data for every line segment in its system, for technical, privacy, or security reasons.

Therefore, in its 2020 HCA Report, Xcel must, to the extent practicable, include a unique name or number for each line segment in the maps' pop-up boxes and show the actual locations of distribution system lines instead of broad blocks of color on the HCA map. Additionally, starting in November 2020, Xcel must make available a tabular report containing the sub-feeder results displayed on the 2020 hosting capacity map. This report shall be available in the docket, on the hosting capacity webpage, and/or by email request.

E. Criteria threshold violations

1. Party Comments

IREC recommended that Xcel publish all of the threshold violation criteria evaluated by the DRIVE software. IREC explained that the result of the HCA is the quantity of DERs that can be added to a line segment without violating any of the criteria thresholds, but the HCA report data would be more useful if the actual threshold violations were published; then, customers would know whether the violations could be addressed through DER system design or if a distribution system upgrade would be needed in order to interconnect. According to IREC, providing data on all of the violations would allow customers to design appropriate DER systems while avoiding costly and time-consuming interconnection studies or system upgrades.

IREC noted that in the past, Xcel published only the quantity of potential DER currently possible without mitigations; for the first time in 2019, Xcel also published the primary limiting factor. IREC stated that although this information is welcome, it is not as useful as publishing data on each violation because if the primary limiting factor can be addressed, customers still do not know the available hosting capacity before reaching the next limiting factor.

IREC argued that because the DRIVE software already performs the criteria threshold violation analysis, publishing this information would not increase costs to Xcel and would substantially increase the overall value of the HCA.

In response, Xcel stated that it was willing to consider this suggestion and provide an update in the 2020 HCA Report, but noted that reporting criteria threshold violations would still not provide straightforward direction to customers. Xcel explained that mitigation for a certain violation could affect other violations, complicating the results of the analysis.

Fresh Energy argued that it would be reasonable for the HCA report to include all relevant data that the DRIVE software already provides, and that threshold criteria violation data would be relevant. To address Xcel's concern, Fresh Energy suggested including a disclaimer on the HCA map noting that hosting capacity is likely to change depending on mitigations performed.

The Department supported IREC's recommendation but acknowledged that the information may not be as useful as parties hope. The Department stated that developers using the HCA are sophisticated and likely to understand the implications of the information and potential effects of

mitigations on hosting capacity, and agreed with Fresh Energy that a disclaimer to that effect would be helpful.

2. Commission Action

The Commission agrees with parties that publishing criteria threshold violations beyond the primary limiting factor is valuable. This would help customers and developers gain a preliminary understanding of mitigations that could potentially be performed on particular line segments in order to implement DER where hosting capacity may not otherwise exist. Since this information is already created by the DRIVE software, the Commission will direct Xcel to publish it in the 2020 HCA Report. Although the implications of the information may be complex, the Commission believes that developers have a relatively sophisticated understanding of the variables involved, and including appropriate caveats in the HCA report will prevent misunderstandings.

F. Accuracy and Sensitivity Analysis

1. Party Comments

IREC supported the accuracy check in the 2019 HCA, but suggested that more frequent and granular HCA and further data validation efforts were necessary. IREC raised concerns that the HCA results were inaccurate more than half the time when compared to actual interconnection studies. IREC suggested that the Commission work with stakeholders and the Company to ensure that the accuracy assessment is robust, representative, and thorough.

In its 2019 HCA Report, Xcel noted that in the 2018 HCA Report, it had completed a sensitivity analysis that looked at varying certain factors on multiple feeders, as directed by the Commission. In 2019, Xcel explained that there had been no change to the sensitivity analysis calculation; therefore, the Company did not repeat the sensitivity analysis for the 2019 HCA Report because the results would have been redundant.

The Department agreed with Xcel's conclusion that performing the sensitivity analysis would have been redundant, and based on information from the 2018 HCA Report, also noted that the specific variables used for the sensitivity analysis would not be useful in the real world. However, the Department asked Xcel to comment on whether other variables could be used for sensitivity analysis that could meaningfully increase hosting capacity.

In response, Xcel discussed certain variables that could potentially be used, but suggested that those resources would be better focused on more substantive improvements such as increasing the frequency of analysis. The Department concurred, concluding that performing sensitivity analysis on additional factors would not be useful.

2. Commission Action

Generally, the more accurate the HCA is, the more useful it is to customers and developers; however, the level of accuracy when compared to full interconnection studies will also depend on how the HCA report is intended to be used, how frequently it is updated, and the level of granularity, as discussed above. Xcel must develop a corresponding data validation plan for

HCA results to replace fast track review screens in the long term, solicit written feedback from stakeholders on the draft plan, and then include the final plan in the 2020 HCA Report.

The Commission concurs with the Department that performing sensitivity analysis on additional factors would not be useful; therefore, the Commission will not require Xcel to perform a sensitivity analysis for the 2020 HCA Report.

G. Privacy and Security Considerations

1. Party Comments

The 2019 Order directed Xcel as follows:

> In spreadsheet format, Xcel shall provide hosting capacity data by substation and feeder, with appropriate disclaimers about the data's accuracy, precision, and timeliness. The data shall include, when available, peak load, daytime minimum load, installed generation capacity, and queued generation capacity.[11]
>
> Xcel shall provide the same information in its public-facing hosting capacity map, 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.[12]

Fresh Energy noted that certain peak load data withheld by Xcel in the 2019 HCA Report is made publicly available by utilities in California and New York, and asked Xcel to comment on whether the legal framework in Minnesota is different from other states. Fresh Energy and IREC argued that peak load is a key data point and is important for understanding DER deployment opportunities. In response, Xcel stated that the legal and policy frameworks are different in other states, and that different states have different positions on whether the public interest outweighs security and privacy risks.

IREC argued that Xcel's redaction and withholding practices were inconsistent with the 2019 Order because Xcel had withheld an overly broad set of data and not adequately explained its reasoning. Furthermore, IREC argued that Xcel had incorrectly applied its standard for redacting customer data and had redacted data unrelated to a customer's energy use; IREC stated that only peak load and daytime minimum load could be redacted, and that the HCA results should be public. Xcel argued that all details of customers' grid connections should be treated with caution, not only information on energy usage.

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[11] *In the Matter of Xcel's 2018 Hosting Capacity Study*, Docket No. E-002/M-18-684, Order Accepting Study and Setting Further Requirements, ordering paragraph 2(B), at 14 (August 15, 2019).

[12] *Id.*, ordering paragraph 2(C), at 14.

The Department stated that although existing legal frameworks provide little concrete guidance on what data should be withheld, Xcel had reasonably relied on previous Commission orders on related topics and state and federal guidelines. The Department concluded that Xcel had complied with the 2019 Order regarding privacy and security concerns.

Overall, Xcel argued that security concerns continue to increase, and further dialogue is necessary in order to address parties' concerns about privacy and security issues. Xcel suggested that customers, experts, and other utilities should also be included in the discussion.

2. Commission Action

The Commission believes that additional discussion on privacy and security issues is necessary before it can determine whether peak load data should be protected or made public. The Commission will direct Xcel to further explore and explain issues related to whether the result of Xcel's HCA should be redacted to protect customer privacy or security. Specifically, Xcel must separately evaluate and justify each privacy and security concern and provide a full description and specific basis for withholding information.

Clearly, stakeholders are interested in this topic, and the Commission believes that including additional parties, experts, and utilities in the discussion will ultimately improve the outcome. The Commission will delegate authority to the Executive Secretary to issue notices, set schedules, and designate comment periods to further discuss grid and customer security issues related to public display or access to grid data, including, but not limited to distribution grid mapping, aggregated load data, and critical infrastructure. The Commission anticipates consideration of the record and comments within 12 months.

Additionally, the Commission will request that the Commissioner of Commerce seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide a recommendation on privacy and security in the next hosting capacity report proceeding and to participate in related analysis and stakeholder engagement, and subsequently bill those expenses to Xcel pursuant to Minn. Stat. § 216B.62, subd. 8.

H. Stakeholder Engagement

1. Party Comments

The 2019 Order directed Xcel as follows:

> Xcel shall work with stakeholders to improve the value of Xcel's hosting capacity analysis, including but not limited to the provision of more detailed substation, feeder, and other equipment data in its public-facing hosting capacity map.[13]

Fresh Energy commented that the 2019 HCA was significantly improved compared to previous years' reports, and that Xcel had worked to address many of the concerns raised by stakeholders.

[13] *Id.*, ordering paragraph 2(A), at 14.

The Department argued that although the stakeholder process for the 2019 HCA was a reasonable starting point, additional engagement would be needed in future HCAs. Consequently, the Department requested that Xcel provide a preliminary plan for engaging additional stakeholders for involvement in the 2020 HCA process.

The Department, Fresh Energy, and IREC agreed that stakeholder outreach should occur during the beginning phases of the HCA process so that the report could be more responsive to stakeholder feedback.

Xcel noted that despite its stakeholder communication efforts during the 2019 HCA process, stakeholder response was less than the Company had hoped for. Xcel discussed its preliminary plans for the 2020 HCA process, including beginning stakeholder outreach in early March with a session to discuss a new DRIVE combined methodology, and holding a second stakeholder session in April or May to engage on technical assumptions, inputs, and HCA tools.

2. Commission Action

The Commission agrees with parties that Xcel's 2019 stakeholder process was reasonable, but in future years, Xcel should endeavor to engage additional stakeholders. The Commission will direct Xcel to implement its 2020 stakeholder engagement plan as outlined in the Company's filings in the present docket.

Additionally, the Commission shares parties' concern that many stakeholder suggestions were not ultimately incorporated into the 2019 HCA Report. The Commission anticipates that, in future years, engaging stakeholders earlier in the process will allow Xcel to be more responsive to stakeholder input; more information on this process will be useful in future HCA reports. Consequently, the Commission will direct Xcel to discuss the results of the stakeholder process as part of the 2020 HCA Report, including an overview of feedback and suggestions provided by stakeholders, whether Xcel included the feedback and suggestions in the 2020 HCA Report, and an explanation for any feedback and suggestions received but not incorporated into the 2020 HCA Report.

At the Commission meeting, parties discussed options for facilitation of stakeholder meetings, and concern was raised that on some topics, the Company and parties have been unable to come to meaningful agreement. The Commission believes that it would be beneficial for Commission staff to facilitate certain discussions between Xcel and stakeholders. Therefore, Commission staff will oversee and facilitate a discussion with Xcel and stakeholders of the technical assumptions, limiting criteria, and thresholds used in Xcel's HCA, including the specific topics listed in ordering paragraph 22. The Commission will also direct Xcel to provide the results of this stakeholder discussion in its 2020 HCA Report, including an overview of the feedback and suggestions provided by stakeholders, and whether the feedback and suggestions were included in the report.

ORDER

1. The Commission accepts the 2019 Hosting Capacity Analysis Report filed by Northern States Power Company d/b/a Xcel Energy and finds that the filing satisfies the

requirements of the Commission's Order Accepting Study and Setting Further Requirements (August 15, 2019) in Docket No. E002/M-18-684 [the 2019 HCA Order].

2. The Commission directs Xcel to submit a compliance filing within 30 days including notation of which feeders had actual Daytime Minimum Load data incorporated in the 2019 DRIVE HCA.

3. The Commission finds that improved and additional information is necessary in future HCA reports, as set forth below.

4. Xcel shall collaborate with stakeholders in evaluating the costs and benefits associated with a hosting capacity analysis able to achieve the following objectives:

    a. Remaining an early indicator of possible locations for interconnection;

    b. Replacing or augmenting initial review screens and/or supplemental review in the interconnection process; and/or

    c. Automating interconnection studies.

5. Xcel is directed to continue working with stakeholders to identify opportunities to integrate the HCA and the MN DIP pre-application and screening processes in future iterations of the HCA.

6. In future HCA reports, Xcel is directed, to the extent practicable, to include on the HCA map and in downloadable spreadsheet format the following data: Transformer Name, Transformer Absolute Min, Load Tap Changer (LTC) or Regulator, Feeder Absolute Min, and Network or Radial.

7. In its 2020 IDP Compliance Filing, Xcel must provide a discussion of how Xcel's hosting capacity analysis can be used to assist state energy policy goals related to beneficial electrification including detail on how a load hosting analysis would be done, an estimate of the resources that would be required, and the specific information the Company could provide.

8. Xcel's future HCA reports must be detailed enough to provide developers with a reliable estimate of the available level of hosting capacity at the feeder and sub-feeder levels at the time of submittal of the report to the extent practicable. The information should be sufficient to provide developers with a starting point for interconnection applications.

9. The Commission adopts a long-term goal to use the hosting capacity analysis in the interconnection process's fast track screens. Xcel should work with stakeholders to refine the hosting capacity analysis. Xcel may seek cost and timing clarification from the Commission.

10. In its 2020 HCA Report, Xcel must provide options for monthly, quarterly and semi-annual HCA updates, including cost estimates.

11. In its 2020 HCA Report, Xcel must, to the extent practicable, include a unique name or number for each line segment in the maps' pop-up boxes.

12. In its 2020 HCA Report, Xcel must, to the extent practicable, show the actual locations of distribution system lines instead of broad blocks of color on the HCA map.

13. Starting in November 2020, Xcel must make available a tabular report containing the sub-feeder results displayed on the 2020 hosting capacity map. This report shall be available in the docket, on the hosting capacity webpage, and/or by email request.

14. In its 2020 HCA Report, Xcel must include the precise number of feeders with actual and estimated Daytime Minimum Load data and note the feeders with estimated Daytime Minimum Load on the tabular spreadsheet to inform developers' use of the report.

15. In its 2020 HCA tabular report, Xcel must publish the criteria violation and corresponding hosting capacity values for each HCA model run and location, and map with appropriate caveats.

16. The Commission does not require a sensitivity analysis for the 2020 HCA.

17. Following a Commission determination of the Use Case for future HCA reports, Xcel must develop a corresponding data validation plan for HCA results, solicit written feedback from stakeholders on the draft plan, and then include the final plan in the next HCA report.

18. Xcel must further explore and explain issues related to whether the result of Xcel Energy's hosting capacity analysis should be redacted for customer energy use data (CEUD) privacy and security concerns.

    a. Xcel must separately evaluate and justify each privacy and security concern, so as to provide a full description and specific basis for withholding the information.

19. The Commission hereby delegates authority to the Executive Secretary to issue Notice(s), set schedules, and designate comment periods to further discuss grid and customer security issues related to public display or access to grid data which includes, but is not limited to distribution grid mapping, aggregated load data, and critical infrastructure. The Commission anticipates consideration of the record and comments within 12 months of this order.

20. The Commission requests that the Commissioner of Commerce seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide a recommendation on privacy and security in the next hosting capacity report proceeding and to participate in related analysis and stakeholder engagement, and subsequently bill those expenses to Xcel pursuant to Minn. Stat. § 216B.62, subd. 8.

21. Xcel must implement its 2020 stakeholder engagement plan as outlined in the docket. In the 2020 HCA Report, Xcel must provide the results of the stakeholder process, including an overview of the feedback and suggestions provided by stakeholders, whether the feedback and suggestions are included in the 2020 HCA Report, and an explanation for any feedback and suggestions received but not included in the 2020 HCA Report.

22. Commission staff are directed to oversee and facilitate a discussion with Xcel and stakeholders of the technical assumptions, limiting criteria, and thresholds used in Xcel's HCA. The discussion should address:

    a. Thresholds for what constitutes a significant change in configuration, load, or generation to warrant rebuilding a feeder model;

b. Use of the Maximum Tap Regulators in Over/Under-Voltage Analysis setting;

c. Analysis assumptions for Primary Voltage Deviation;

d. Other voltage analysis issues identified in IREC's opening comments;

e. Limitations on Unintentional Islanding; and

f. Other topics identified by stakeholders for review.

23. In its 2020 HCA Report, Xcel must provide the results of the stakeholder discussion, including an overview of the feedback and suggestions provided by stakeholders, and whether the feedback and suggestions are included in the 2020 HCA Report.

24. Xcel Energy must file the 2020 HCA Report on November 2, 2020.

25. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

Will Seuffert
Executive Secretary