

April 7, 2021

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place East, Suite 350  
St. Paul, Minnesota 55101

RE: **Comments of the Minnesota Department of Commerce, Division of Energy Resources**  
Docket No. E002/M-20-812

Dear Mr. Seuffert:

Attached are the comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

Northern States Power Company, d/b/a Xcel Energy's 2020 Hosting Capacity Analysis Report.

The report was filed on November 2, 2020, by:

Bria E. Shea  
Director, Regulatory & Strategic Analysis  
Northern States Power Company d/b/a/ Xcel Energy Services Inc.  
414 Nicollet Mall  
Minneapolis, MN 55401

The Department will provide its final recommendation in reply and/or supplemental comments once the Company responds to the Department's requests for additional information and evaluates the comments of other stakeholders. The Department is available to respond to any questions the Minnesota Public Utilities Commission may have on this matter.

Sincerely,

/s/ MATTHEW LANDI  
Rates Analyst

ML/ja  
Attachment



## Before the Minnesota Public Utilities Commission

### Comments of the Minnesota Department of Commerce Division of Energy Resources

Docket No. E002/M-20-812

#### I. BACKGROUND

On November 2, 2020 Xcel Energy (Xcel or the Company) filed its 2020 Hosting Capacity Analysis Report (the 2020 Report or HCA Report) as required by Minn. Stat. §216B.2425, subd. 8 (the Statute) and the Minnesota Public Utilities Commission's (Commission) July 31, 2020 Order in Docket No. E002/M-19-685 (the 2020 Order).<sup>1</sup>

Minn. Stat. §216B.2425, subd. 8, states:

Subd. 8. Distribution study for distributed generation. Each entity subject to this section 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 report required under subdivision 2.

The relevant portions of the 2020 Order listed the following requirements for Xcel's 2020 Report:

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.
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.

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<sup>1</sup> [Order Accepting Report and Setting Further Requirements](#), dated July 31, 2020, filed in Docket No. E002/M-19-685.

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 semiannual 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
- ...
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.
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
- ...
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.

Further, on December 2, 2020, the Commission issued its *Notice of Comment Period* (Notice). The Notice requested comments on the 2020 Report regarding the following topics:

- Does Xcel Energy's 2020 Hosting Capacity Analysis Report achieve the requirements outlined in the Commission's July 31, 2020 Order[footnote omitted] and Minn. Stat. §216B.2425, Subd. 8?
- Do the Hosting Capacity Analysis Report and updates to the Company's online map improve the usefulness for customers and developers? Are modifications or clarification needed?
- Are there other issues or concerns related to this matter?

Since there are no specific rules for Minn. Stat. §216B.2425, subd. 8 (the Statute), the Minnesota Department of Commerce, Division of Energy Resources (Department) examined Xcel's 2020 Report according to the Statute and the 2020 Order.

The Department offers the following comments in response to the Commission's Notice.

## II. DEPARTMENT ANALYSIS

### A. REQUIREMENTS OF THE STATUTE AND 2020 ORDER

As noted above, the first topic open for comment is whether the 2020 Report achieves the requirements outlined by the Statute and the 2020 Order. The Department's analysis relies on the Statute and the 2020 Order to determine the completeness of the 2020 Report.

The Department notes that Xcel's 2020 Report is bifurcated into a Compliance Filing that offers a summary of the 2020 hosting capacity analysis (HCA) report, and the actual 2020 HCA, which is Attachment A of the 2019 Report. While there are additional attachments in the filing, the two main substantive elements of the filing are the Compliance Filing and Attachment A.

#### 1. The Statute

Minn. Stat. §216B.2425, subd. 8 states that Xcel:

*...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 report required under subdivision 2.* [emphasis added].

The Department views the Statute as having two distinct requirements: (1) a substantive requirement, which is found in the *italicized* text above; and (2) a procedural requirement, which is found in the underlined text above.

Further, the completeness analysis of the substantive requirement of the Statute involves two components and requires answers to two questions:

- (1) Does the 2019 Report identify interconnection points on Xcel's distribution system for small-scale distributed generation resources, and;
- (2) Does it identify distribution upgrades that will help facilitate the development of distributed generation resources?

The Department concludes that the 2020 Report identifies a reasonable and sufficient amount of interconnection points on Xcel's distribution system<sup>2</sup> and identifies necessary distribution upgrades to support the continued development of distributed generation resources.<sup>3</sup> Therefore, the Department concludes that the 2020 Report is complete as far as the substantive requirement of the Statute is concerned.

The procedural requirement of the Statute directs Xcel to include the HCA in the Biennial Transmission Project Report. However, the Commission has previously determined that Xcel's HCA Report can be filed separate from the Biennial Transmission Project Report.<sup>4</sup> Therefore, the Department concludes that the procedural requirement of the Statute is satisfied.

## *2. The 2020 Order*

The Department reviewed the 2020 Order to determine what the Commission required Xcel to do for the 2020 Report and reviewed the 2020 Report to determine whether Xcel complied with the 2020 Order.

The Department provided the individual Order points above. The 2020 Order contains substantive requirements for the 2020 Report, requirements for Xcel's stakeholder outreach for the purpose of refining Xcel's use of HCA as an analytical tool in the process of DER interconnection, and requirements for Xcel's public-facing map. The Department's analysis of the 2020 Order and the 2020 Report first assesses the substantive requirements of the 2020 Order related to the 2020 Report, then assesses the stakeholder requirements, and last, addresses the requirements related to the public-facing map.

The Department's analysis here is limited in part due to the need to consider additional information not possible to obtain until other stakeholders have had an opportunity to file comments. Therefore, final conclusions as to whether the 2020 Report achieve the requirements of the 2020 Order will be provided in reply comments, once the Department has an opportunity to review stakeholder comments.

The following table summarizes the Department's categorization of the Order Points of the 2020 Order.

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<sup>2</sup> 2020 Report, Compliance Filing, at 18. Xcel identified and included 1,050 feeders in the 2020 Report, while excluding 115 feeders from the public "heat map" based on confidentiality and security concerns. The Department notes that this is identical to Xcel's 2019 Report.

<sup>3</sup> Attachment A, at 26-28. Xcel's mitigation analysis identifies distribution system upgrades that increase hosting capacity, which would allow for the continued development of distributed generation resources.

<sup>4</sup> *Order Accepting Study and Setting Further Requirements*, July 19, 2018, Docket No. E002/M-17-777, Order Point No. 8. The Department notes that Order Point 9 of this Order requires Xcel to file the HCA Report on November 1. However, the 2020 Order directs Xcel to file the 2020 Report on November 2, 2020. When Commission Orders conflict, the Department interprets more recent Orders as superseding.

**Table 1. Department Categorization of the Commission’s July 31, 2020 Order Points**

Report Order Points	Stakeholder Order Points	Public-facing Map Order Points
2, 7, 8, 10, 13, 14, 15, 17, 18, and 24	4, 5, 9, 21, 22, and 23	6, 11, and 12

The Order Points not listed in the table above (1, 3, 16, 19, 20, and 25) do not create requirements for Xcel’s 2020 Report.

The Department does not review Order Point No. 22, however, as it creates requirements for Commission staff to oversee and facilitate a discussion with Xcel and stakeholders of the technical assumptions, limiting criteria, and thresholds used in Xcel’s HCA, and identifies various topics that such a discussion should address. The Department defers to Commission staff regarding whether the discussion held with Xcel accomplished the goals of this specific Order Point.

*a) Report Requirements*

The Department views Order Point Nos. 2, 7, 8, 10, 11, 13, 14, 15, 17, 18, and 24 as the substantive requirements of the 2020 Order. These Order points refer generally to the development and presentation of the 2020 Report.

*i. Order Point No. 2*

Order Point No. 2 required 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.

Xcel provided this information in a compliance filing dated August 20, 2020 in Docket No. E002/M-19-685. The compliance filing contained an Attachment that updated the 2019 HCA Tabular Results report so that it included a new column indicating whether Actual Daytime Minimum Load data was included.<sup>5</sup> The Department concludes that Xcel has complied with Order Point No. 2.

*ii. Order Point No. 7*

Order Point No. 7 required a discussion of how Xcel’s 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.

Xcel’s October 30, 2020 Annual Update Compliance in Docket No. E002/M-19-666 is responsive to this Order Point.<sup>6</sup> Xcel included a high-level discussion of how the DRIVE tool could be used to perform a load HCA analysis, and explained that while such an analysis could serve as a starting point to guide

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<sup>5</sup> Xcel Compliance Filing, dated August 20, 2020, Docket No. E002/M-19-685.

<sup>6</sup> See pages 25 – 27 of Xcel’s October 30, 2020 Annual Update Compliance in Docket No. E002/M-19-666

load interconnections, the individual characteristics of load may require additional analysis prior to interconnection. Xcel also provided additional information related to the use of the DRIVE tool to perform the load HCA and the limitations of the approach, explaining that load HCA would not consider available substation capacity, contingency capacity (N-1), or optimization of an area to best serve potential load.

Overall, Xcel concluded that load HCA analysis could be used as a starting point to assist beneficial electrification, such as helping interested parties determine the best location for a new public/commercial EV charging station that aligns with a major road corridor or area of interest, to target the location of a new building intended to be heated electrically, or to highlight opportunity for large-scale batteries to integrate into the system. The Department tentatively agrees that EVs and storage are topics that have the potential to be further explored in Xcel's HCA. The Department concludes that Xcel has complied with Order Point No. 7.

*iii. Order Point No. 8*

Order Point No. 8 required future HCA reports to 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 the submittal of the report to the extent practicable, and requires the information to be sufficient enough to provide developers with a starting point for interconnection applications.

The 2020 Report contains detailed hosting capacity information for most of Xcel's individual feeders, excluding only those feeders that are sensitive for privacy or security reasons, or feeders not owned by Xcel. This detailed information on a per-feeder and per-sub-feeder basis was also provided in a spreadsheet attached to the 2020 Report.

It is presently unclear whether the HCA is a useful starting point for developers. Based on review of the record, previous iterations of Xcel's HCA, it seems that HCA's usefulness for developers is limited. The HCA is performed annually, which is a limitation to its usefulness. A developer looking to interconnect in July 2021 is viewing a snapshot of Xcel's system from August 2020.<sup>7</sup> However, a close reading of Order Point 8 suggests that Xcel need only provide a reliable estimate...*at the time of the submittal of the report to the extent practicable*. At this time, based on a close reading of Order Point No. 8, the Department tentatively concludes that Xcel has complied with Order Point No. 8.

However, the Department caveats that this conclusion should be approached with the understanding that the best stakeholders to evaluate how useful the HCA is are those that use, would otherwise use the HCA if it were improved, or those stakeholders with more sophisticated knowledge and experience with DER interconnection that have an interest in ensuring that the HCA is useful. Accordingly, the Department will await other stakeholder comments before making a final determination.

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<sup>7</sup> 2020 Report, Compliance Filing, at 8.



*iv. Order Point No. 10*

Order Point No. 10 required Xcel to provide options for monthly, quarterly and semiannual HCA updates, including cost estimates.

Xcel provided conceptual costs and timelines for HCA potential future use cases in the Compliance Filing portion of the 2020 Report and in more detail in Attachment F of the 2020 Report. Xcel provided a summary of the costs and timelines for HCA potential future use cases, replicated in the table below.

**Table 2. Summary of Conceptual Costs and Timelines for HCA Potential Future Use Cases**

HCA or Interconnection Improvement	Timing (Years)	Project Cost	Incremental Labor (per year)
Quarterly HCA Updates	<1 (Q3 2021)	Manual Effort	\$375,000 - \$500,00
Integrate the HCA and Pre-Application Data Report	1	\$600,000 - \$1.2M	n/a
Field Data Collection	2-3	\$40M - \$48M	\$500,000 - \$700,000
<b><i>Relies on Field Data Collection</i></b>			
Monthly HCA Updates	3-4	\$1.4M – \$2.8M	\$375,000 - \$500,000
Integrate with MN DIP – Initial Screens	3	\$800,000 - \$1.6M	\$125,000 - \$175,000
Integrate with MN DIP – Supplemental Screens	1-2	\$800,000 - \$1.6M	\$125,000 - \$175,000

The discussion provided in the Compliance Filing and in Attachment F of the 2020 Report provides options for monthly, quarterly, and semiannual HCA updates, including cost estimates. The Department concludes that Xcel complied with Order Point No. 10.

*v. Order Point No. 13*

Order Point No. 13 required Xcel to make available a tabular report containing the sub-feeder results displayed on the 2020 hosting capacity map, and to make the tabular report available in the 2020 HCA proceeding, on Xcel’s hosting capacity webpage, and/or by email request.

Xcel provided sub-feeder results in Attachment C of the 2020 Report. Additionally, Xcel indicated that the tabular report can be exported from its website in .xlsx. format.<sup>8</sup> Xcel also explained that due to the size of the spreadsheet (50 MB), it is technically unable to provide the spreadsheet via e-mail. This technical limitation is through no fault of Xcel, and is instead a result of e-mail attachment size limits in most consumer e-mail software programs, such as Microsoft Outlook.<sup>9</sup> The Department expects that Xcel would simply direct any e-mail requests to its website, where the individual or organization could freely download the spreadsheet. Therefore, the Department concludes that Xcel complied with Order Point No. 13.

*vi. Order Point No. 14*

Order Point No. 14 required Xcel to 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 the developers' use of the report.

Xcel indicated that the heat map pop-up and feeder tabular report indicate whether the Daytime Minimum Load Value displayed is an actual or estimated value, and that it used actual Daytime Minimum Load values for 894 of 1,050 feeders.<sup>10</sup>

The Department reviewed the Tabular Report and Xcel's public-facing map and determined that this information is present. The Department concludes that Xcel complied with Order Point No. 14.

*vii. Order Point No. 15*

Order Point No. 15 required Xcel to publish the criteria violation and corresponding hosting capacity values for each HCA model run and location, and map with appropriate caveats in its 2020 HCA tabular report.

Xcel indicated that it prepared a separate tabular report for sub-feeder results, which provides all criteria threshold violations and corresponding hosting capacity values for each feeder segment.<sup>11</sup> However, Xcel also explained that the public-facing map continued to display only the primary violation due to size constraints in the pop-up field.

The Department reviewed Attachment C and concludes that it does provide all criteria threshold violations for each line segment. The Department's review of the public-facing map confirmed that only the primary violation is listed in some areas of Xcel's distribution system. However, in others, it appears that more than one criteria threshold violations are listed, as well as what appear to be

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<sup>8</sup> 2020 Report, Compliance Filing, at 8.

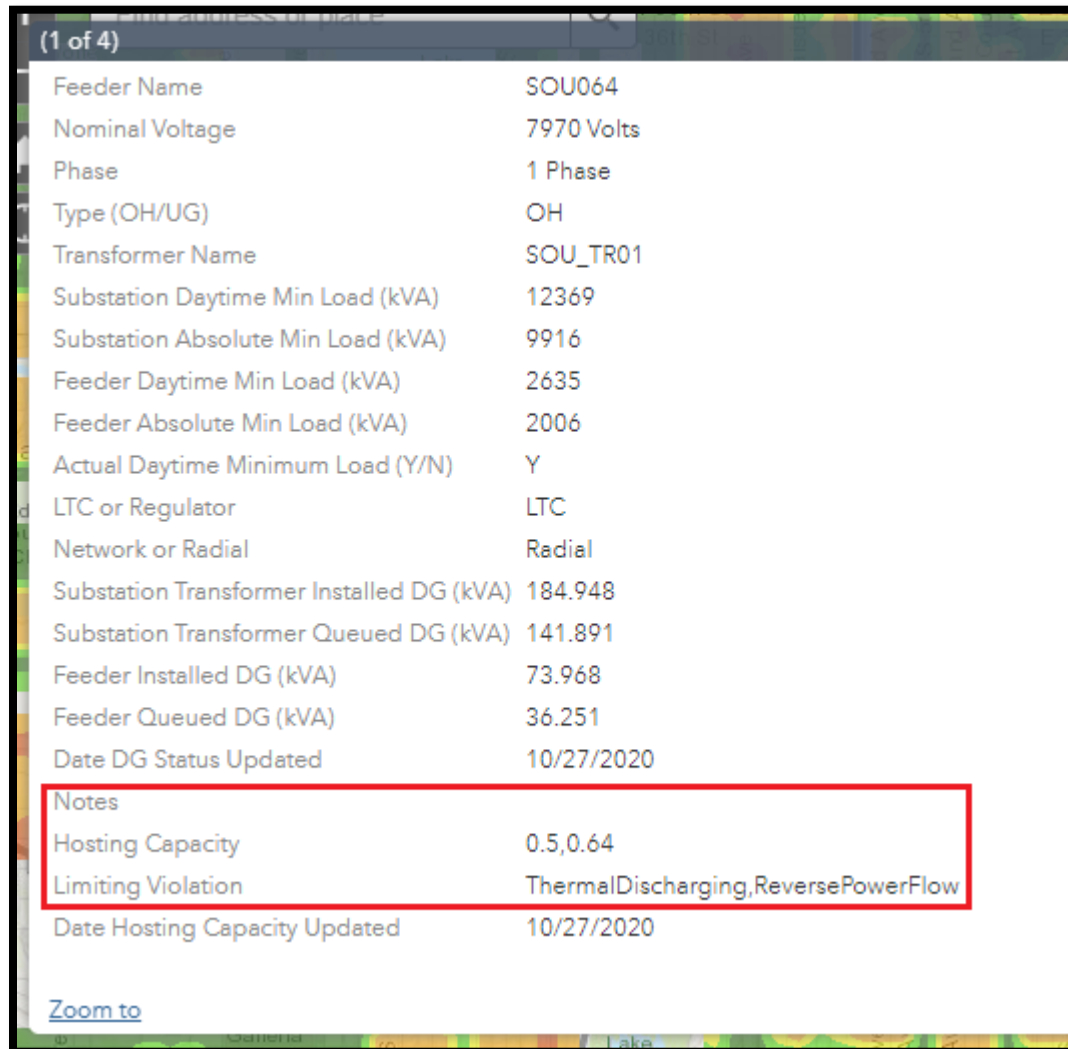
<sup>9</sup> <https://support.microsoft.com/en-us/office/send-large-files-with-outlook-8c698842-b462-4a4c-8d53-5c5dd04f77ef>

<sup>10</sup> 2020 Report, Compliance Filing, at 6.

<sup>11</sup> 2020 Report, Compliance Filing, at 8.

corresponding hosting capacity values. The Department provides an illustration of this in the Figure below, and highlights the information at issue in the red box contained in the figure.

**Figure 1. Pop-up Box of Xcel's Public-facing HCA Map – Criteria Threshold Violation Example**



(1 of 4)

Feeder Name	SOU064
Nominal Voltage	7970 Volts
Phase	1 Phase
Type (OH/UG)	OH
Transformer Name	SOU_TR01
Substation Daytime Min Load (kVA)	12369
Substation Absolute Min Load (kVA)	9916
Feeder Daytime Min Load (kVA)	2635
Feeder Absolute Min Load (kVA)	2006
Actual Daytime Minimum Load (Y/N)	Y
LTC or Regulator	LTC
Network or Radial	Radial
Substation Transformer Installed DG (kVA)	184.948
Substation Transformer Queued DG (kVA)	141.891
Feeder Installed DG (kVA)	73.968
Feeder Queued DG (kVA)	36.251
Date DG Status Updated	10/27/2020
Notes	
Hosting Capacity	0.5,0.64
Limiting Violation	ThermalDischarging,ReversePowerFlow
Date Hosting Capacity Updated	10/27/2020

[Zoom to](#)

The Department requests that Xcel clarify whether it was unable to provide all criteria violation and corresponding hosting capacity values in the pop-up field of its public-facing map. If it was unable to do so, the Department requests that Xcel explain what the nature of the technical limitations are that preclude it from providing all criteria violation and corresponding hosting capacity values in the pop-up field of its public-facing map.

*viii. Order Point No. 17*

Order Point No. 17 is future-oriented and requires Xcel to 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, once the Commission determines the Use Case for Xcel's future HCAs.

The Department notes that the Commission has not yet determined the use case for Xcel's future HCAs. Xcel indicated that it is committed to complying with this Order Point in a subsequent HCA filing.<sup>12</sup> The Department will evaluate compliance with this Order Point once the Commission determines the use case for Xcel's future HCAs and once Xcel develops a corresponding data validation plan, solicit written feedback from stakeholders, and includes the final plan in the next HCA report.

*ix. Order Point No. 18*

Order Point No. 18 required Xcel to 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, and further, in subpart a of this Order Point, required Xcel to separately evaluate and justify each privacy and security concern, so as to provide a full description and specific basis for withholding the information.

Xcel provided a discussion of security and confidentiality considerations in Section 3 of its Compliance Filing portion of the 2020 Report. Xcel also provided a more detailed discussion of these issues in Attachment E of the 2020 Report.

The Department reviewed the discussion in Section 3 of Xcel's Compliance Report and Attachment E of the 2020 Report. The Department notes that there is an ongoing process of evaluating customer confidentiality and privacy concerns in Docket Nos. E,G999/M-19-505 and E,G999/CI-12-1344. The Department is also attempting to obtain subject matter expertise on these issues in an ongoing Request for Proposal process. The Department, through a subject matter expert, plans to provide a report and recommendations on customer confidentiality and privacy issues as it pertains to the use of and third-party access to customer energy use data.

*x. Order Point No. 24*

Order Point No. 24 required Xcel to file the 2020 HCA Report on November 2, 2020, which it did. The Department concludes that Xcel complied with this requirement.

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<sup>12</sup> 2020 Report, Compliance Filing, at 6.

*b) Stakeholder Outreach Requirements*

*i. Order Point Nos. 4 and 5*

Order Point No. 4 required Xcel to 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.

Order Point No. 5 directed Xcel to continue working with stakeholders to identify opportunity to integrate the HCA and the MN DIP pre-application and screening processes in future iterations of the HCA.

Xcel indicated that its three Stakeholder Workshops in September 2020 were organized to explore long-term uses cases for the HCA in accordance with Order Point Nos. 4 and 5.<sup>13</sup>

Xcel provided details of its September workshops in its Compliance Filing and in Attachment D2.<sup>14</sup> The Department reviewed the workshop materials and Xcel's characterization of each of these three workshops. At this time, the Department concludes that Xcel complied with Order Point Nos. 4 and 5, but notes that other stakeholders' feedback on Xcel's stakeholder outreach are important for the Commission to consider, should any offer their perspective on Xcel's September workshops.

*ii. Order Point No. 9*

Order Point No. 9 suggests that Xcel should work with stakeholders to refine the hosting capacity analysis, after having adopted a long-term goal to use the hosting capacity analysis in the interconnection process's fast track screens. It also allows Xcel to seek cost and timing clarification from the Commission.

Xcel indicated that its September 2020 Workshops addressed the long-term goal of using the HCA in the MN DIP Fast Track screens. The Department reviewed the workshop materials and Xcel's characterization of these three workshops and concludes that Xcel complied with Order Point No. 9. Again, however, the Department notes that other stakeholders' feedback on Xcel's stakeholder outreach are important for the Commission to consider, should any offer their perspective on Xcel's September workshops.

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<sup>13</sup> 2020 Report, Compliance Filing, at 14-15.

<sup>14</sup> 2020 Report, Compliance Filing, at 14-16. See also Attachment D2.

*iii. Order Point Nos. 21 and 23*

Order Point No. 21 requires Xcel to implement its 2020 stakeholder engagement plan as outlined in the 2019 Report, provides the results of its 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.

Order Point No. 23 similarly requires Xcel to 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.

Details of Xcel's 2020 stakeholder engagement plan can be found in Xcel's 2019 HCA reply comments.<sup>15</sup> Xcel stated that its June workshops are summarized in Attachment D1 and relate to its 2020 stakeholder engagement plan.<sup>16</sup> Additionally, Xcel described how the feedback it received from its stakeholder process was implemented in the 2020 Report in its Compliance Filing and in Attachments D1 and D2.<sup>17</sup>

The Department reviewed the workshop materials and Xcel's characterization of its stakeholder process, and concludes that Xcel complied with Order Point Nos. 21 and 23. Again, however, the Department notes that other stakeholders' feedback on Xcel's stakeholder outreach are important for the Commission to consider, should any offer their perspective on Xcel's stakeholder engagement plan, and its June and September 2020 workshops.

*c) Public-facing Map Order Points*

*i. Order Point No. 6*

Order Point No. 6 directs Xcel, in future reports and 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.

The Department reviewed both the public-facing map and the feeder Tabular Results and notes that the information contains the information required by Order Point No. 6. The Department concludes that Xcel complied with Order Point No. 6.

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<sup>15</sup> Xcel Reply Comments, dated January 17, 2020, Docket No. E002/M-19-685, at 23-24.

<sup>16</sup> 2020 Report, Compliance Filing, at 24.

<sup>17</sup> 2020 Report, Compliance Filing, at 13-17. See also Attachments D1 and D2,

*ii. Order Point No. 11*

Order Point No. 11 requires Xcel, to the extent practicable, to include a unique name or number for each line segment in the maps' pop-up boxes.

The Department reviewed the public-facing map and notes that there is not a unique name or number for each line segment in the maps' pop-up boxes. Xcel stated that "due to technical limitations, [it] was not able to include a unique name or number for each line segment in the HCA map pop-ups."<sup>18</sup> Xcel further explained the following:<sup>19</sup>

Each sub-feeder section of the HCA map can include many individual line segments. To implement this addition, line segments would need to be aggregated for each sub-feeder section of the HCA map. Such aggregation requires a methodology for determining what line segment should be displayed with an ID without cluttering the entire pop-up box. The Company will continue to explore technical solutions with a hope to implement the segment identification in future updates.

The Department concludes that while Xcel did not comply with this Order Point, it provided a reasonable explanation for why it was currently unable to do so. The Department expects that Xcel will continue to explore technical solutions to this issue and endeavor to include a unique name or number for each line segment in the maps' pop-up boxes in future HCA reports.

*iii. Order Point No. 12*

Order Point No. 12 requires Xcel, to the extent practicable, to show the actual locations of distribution system lines instead of broad blocks of color on the HCA map.

The Department reviewed Xcel's public-facing map and notes that there are not system lines instead of broad blocks of color. Xcel stated that showing actual locations of distribution system lines "would risk grid security and customer privacy, confidentiality and security"<sup>20</sup> and provided the following explanation in Section III of the Compliance Filing:<sup>21</sup>

An unblurred map would clearly lay out the electrical connectivity configuration of the electric distribution grids. The unrestricted dissemination of information – providing the location of the Company's major loads, and distribution facilities serving those loads – would render the grid unnecessarily vulnerable. The increased threat of cyber and

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<sup>18</sup> 2020 Report, Attachment A, at 23.

<sup>19</sup> 2020 Report, Attachment A, at 23.

<sup>20</sup> 2020 Report, Compliance Filing, at 8.

<sup>21</sup> 2020 Report, Compliance Filing, at 18.

physical attacks should be mitigated by not publicly displaying the exact feeder lines in the HCA map throughout our territory.

The Department notes that Xcel also discusses this issue in Attachment E. The Department notes that the Commission opened a Commission Investigation on Grid and Customer Security Issues Related to Public Display or Access to Electric Distribution Grid Data in Docket No. E999/CI-20-800 on October 30, 2020. Issues such as the display of actual system lines are expected to be discussed in the context of that proceeding, and as such, the Department does not discuss this issue further in this proceeding.

The Department concludes that while Xcel did not comply with this Order Point, it provided a reasonable explanation for why it was currently unable to do so. Further discussion of this issue and other security-related issues will be addressed in Docket No. E999/CI-20-800.

#### *B. USEFULNESS FOR CUSTOMERS AND DEVELOPERS*

The second topic open for comment asks whether the 2020 Report and updates to the public-facing map improves the usefulness for customers and developers, and further asks whether modifications or clarification are needed.

The Department notes that the parties best positioned to answer this question are customers and developers who use Xcel's HCA or have an interest and subject matter expertise in using the map effectively. The Department lacks subject matter expertise on this topic, but notes that there exists information in the record that discusses whether the HCA and the public-facing map are useful for developers.

The Department previously concluded that, based on a close reading of the 2020 Order, Xcel's HCA is a reliable estimate of the available level of hosting capacity at the feeder and sub-feeder levels. While that may be the case, there exists opportunities to improve the HCA should the Commission desire to improve it through actions such as requiring more frequent updates. Toward that end, Xcel has committed to conducting the HCA on a quarterly basis beginning in Q3 2021.<sup>22</sup>

Further, Xcel provide extensive information regarding improvements and refinements that stakeholders stated would improve the HCA and the public-facing map.<sup>23</sup>

In particular, based on the Department's review of Xcel's fifth stakeholder Workshop, held on September 10, 2020, it seems that the HCA is currently underutilized by stakeholders and that underutilization seems related to the perception of the HCA's usefulness and an uncertainty as to

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<sup>22</sup> 2020 Report, Compliance Filing, at 19.

<sup>23</sup> 2020 Report, Attachment D2. Attachment D2 summarized Xcel's three stakeholder workshops held in September 2020 to obtain feedback on the potential future use cases for its hosting capacity analysis. These stakeholder workshops also elicited feedback regarding what improvements stakeholders perceived as necessary or desirable to improve the usefulness of the HCA and the public-facing map.



whether the information presented in the HCA can be relied upon as a starting point in the interconnection process.<sup>24</sup> The workshop's exploration of how frequent the HCA would need to be updated for stakeholders to find the HCA useful also suggested that at a minimum, annual and even semi-annual frequencies of updates were insufficient to provide a reliable estimate of the available level of hosting capacity of the feeder and sub-feeder levels.<sup>25</sup> While moving to a quarterly basis as Xcel has proposed represents an improvement, the workshop participants chose monthly updates as the frequency at which they would perceive the HCA as providing a reliable estimate of hosting capacity.<sup>26</sup>

Xcel also surmised that more frequent updates, as well as combining the public-facing map with the Pre-Application Data Report, and including additional information related to the interconnection queue in the Pre-Application Data Report, would improve the usefulness of the HCA and the public-facing map:<sup>27</sup>

The workshop participants agreed that Xcel Energy's current HCA can provide sufficient information and reliable estimates to be a starting point for interconnection, as long as it is updated more frequently. The participants identified the ideal cadence as monthly. In general, the participants thought that combining the HCA map with the Pre-Application Data Report would increase efficiency and improve the selection of suitable project sites. We also received feedback that the HCA/Pre-Application Data Report should provide more information about the interconnection queue, so applicants would know if there will be delays because of large projects ahead in queue or opportunities to speed-up the Application. Similarly, we heard that the HCA/Pre-Application Data Report should indicate whether system upgrades or mitigations are needed for interconnection.

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<sup>24</sup> Xcel HCA Stakeholder Workshop 5, dated September 10, 2020. Accessed at: <https://www.youtube.com/watch?v=4ZNZryy9nVU>. See participant poll and subsequent discussion between 32:58 and 49:20, approximately. This first set of poll questions was designed to elicit an understanding of how often and whether the HCA is used, whether the HCA is detailed enough to provide reliable estimates of hosting capacity at the feeder and sub-feeder level, and whether the HCA provides sufficient information to make preliminary decisions regarding applying for interconnection. The poll results, subsequent discussion, and feedback suggested that stakeholders are not using the HCA that often with the primary reason being uncertain whether the HCA could be relied upon to provide accurate information. One stakeholder commented that it had approached a land owner for a potential DER interconnection project based, in part, on the hosting capacity purportedly available on the feeder at that location. Upon conducting further engineering analysis, however, the project would have to use two feeders instead of one.

<sup>25</sup> See discussion between 49:20 and 54:48.

<sup>26</sup> 2020 Report, Attachment D2, at 7-8.

<sup>27</sup> 2020 Report, Attachment F, at 1.

The Department reiterates its observation from our December 30, 2019 Comments on Xcel's 2019 HCA in Docket No. E002/M-19-685:<sup>28</sup>

[T]he HCA is only as useful as stakeholders deem it to be so. By design, the HCA is intended to be a tool available for use in the orderly development of distributed energy resources (DERs) on Xcel's system. If the stakeholders interested in DERs do not find value in using the HCA, then it is at best an experiment that the Commission is asking Xcel's ratepayers to fund. At worst, it is a superfluous and wasteful step that adds no meaningful value to the DER interconnection process. It is therefore essential that the stakeholder community derive value from the HCA, and Xcel expediently and reasonably develops its potential to provide that value.

The plain language of Minn. Stat. §216B.2425, subd. 8, requires the HCA to aid in the development of DERs in Minnesota. At this point in the stage of development of Xcel's HCA—its third iteration[footnote omitted]—the HCA should be useful and valuable to stakeholders to a reasonable extent.

Now on its fourth iteration, and with feedback from stakeholders that would improve the usefulness of the HCA, the Department argues that the time may be ripe to implement some of the modifications that stakeholders have identified as improving the usefulness of the HCA and the public-facing map, consistent with the Commission's goals for the HCA.

The question, in the Department's view, is whether the costs to implement some of these modifications are reasonable. The Department addresses this topic in the following section.

### *C. OTHER TOPICS OR CONCERNS*

The third topic in the Commission's Notice asks whether there are other issues or concerns related to Xcel's HCA. The Department addresses the future use cases for Xcel's HCA and the costs associated with implementing modifications thereof.

#### *1. Order Point No. 9 – The Long-Term Goal of the HCA*

In Order Point No. 9, the Commission adopts a long-term goal to use the hosting capacity analysis in the interconnection process's fast track screens. This long-term goal should orient Xcel's efforts around modifying the HCA in future iterations. Xcel assigned Use Case 3 as "Replacing or Augment Fast

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<sup>28</sup> Department Comments, dated December 30, 2019, Docket No. E002/M-19-685, at 7.

Track Initial Review or Supplemental Review.” The Department interprets Use Case 3 as the future use case that most closely aligns with the Commission’s long-term goal of the HCA.<sup>29</sup>

Xcel’s discussion of for HCA potential future use cases includes both modifications that stakeholders have stated would make the HCA more useful and modifications Xcel stated are necessary to implement the Commission’s long-term goal.<sup>30</sup> However, the Department is concerned here primarily with modifications necessary to implement the Commission’s long-term goal.

Toward that end, Xcel indicated that the HCA could theoretically be used to replace two screens of the Initial Review Screens (of which there are eleven screens), but concluded that there was limited value in using the HCA in these two screens.<sup>31</sup> Xcel instead proposed to automate the Initial Review Step, but that this automation would not leverage the HCA.<sup>32</sup> While Xcel indicated there was potential for improving the timelines involved in this step of the interconnection process, these improvements are unrelated to the HCA.

Instead, Xcel indicated that “the Supplemental Review is more aligned with HCA results than the Initial Review, and offers the greatest potential for future usage.”<sup>33</sup> Xcel explained that the Supplemental Review contains 13 different screens where a pass or fail is given, and of those 13 screens, five of them have the potential to be replaced by HCA results using the following thresholds within DRIVE: primary over-voltage, primary voltage deviation, thermal for DER, unintentional island, and reverse power flow thresholds.<sup>34</sup> Xcel also indicated that these screens are performed “about five times less often per year than the Initial Review Screens, reducing the need to update feeder models and HCA results more frequently in comparison.”<sup>35</sup> Xcel also explains on page 11 of Attachment F that “the Primary System verification benefits the usefulness of the hosting capacity analysis and enable its potential use within the MN DIP Supplemental Review Screens.”

Xcel then provided the following figure to illustrate the potential use of HCA data in the Supplemental Review process:

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<sup>29</sup> The Department notes that Xcel also interprets Use Case 3 as the future use case that most closely aligns with the Commission’s long-term goal: “[Use Case 3] also aligns with the long-term goal the Commission set for the HCA in our 2019 HCA proceeding, for the HCA to be used in the Fast-Track Screens in the MN DIP (Order Point No. 9).” See Attachment F, at 17.

<sup>30</sup> 2020 Report, Compliance Filing, at 19-22. See also Attachment F, Use Case 3, at 17-20.

<sup>31</sup> 2020 Report, Attachment F, at 18.

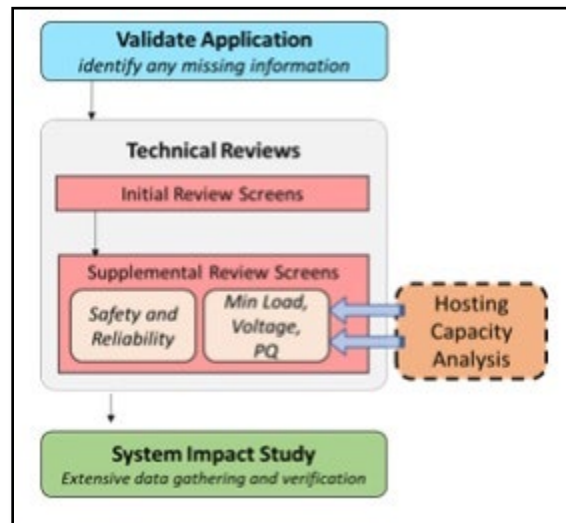
<sup>32</sup> 2020 Report, Attachment F, at 18.

<sup>33</sup> 2020 Report, Attachment F, at 19.

<sup>34</sup> 2020 Report, Attachment F, at 19.

<sup>35</sup> 2020 Report, Attachment F, at 19.

**Figure 2. Hosting Capacity Analysis in the Technical Review Process**



Xcel also explained that “in order to efficiently use HCA results in the Supplemental Reviews, the frequency of the analysis would have to be increased first.”<sup>36</sup>

In the Department’s view, use of the HCA in the Supplemental Review Screen of the MN DIP is the use case most closely aligned with the Commission’s long-term goal. However, there are several unanswered questions related to this use case.

The Department has the following questions about this potential use of the HCA data in the Supplemental Review Screen of the MN DIP:

- (1) How often would feeder models need to be updated in order to implement this modification to the Supplemental Review Screen?;
- (2) Does the proposed quarterly cadence of updating the HCA accomplish the frequency of updates to the feeder models required to implement this modification?;
- (3) What primary and secondary field data validation efforts, if any, are needed to implement this modification?;
  - a. Please explain the following statement from page 11 of Attachment F: The Primary System verification benefits the usefulness of the hosting capacity analysis and enable its potential use within the Supplemental Review Screens of the MN DIP.
- (4) If primary and secondary verification are needed, what portions of those actions are related only to this modification?
- (5) What is the timeline to implement this modification?
  - a. Why is the timeline to implement this modification not able to occur prior to Q3 of Year 4 (presumably Q3 of 2025) (referring to Figure 5 of Attachment F)?

<sup>36</sup> 2020 Report, Attachment F, at 20.

- b. Why did Xcel state that the “Supplemental Screens would also require the Monthly HCA updates to be fully functional”<sup>37</sup> when it previously stated the Supplemental Screens are performed “about five times less often per year than the Initial Review Screens, reducing the need to update feeder models and HCA results more frequently in comparison”<sup>38</sup>?**

The Department requests that Xcel provide answers to each of these questions in reply comments.

*2. Costs of Implementing the Commission’s Long-term Goal*

Xcel stated that the conceptual cost of automating the Fast Track Supplemental Screens is approximately \$800,000 to \$1.6 million.<sup>39</sup> Additionally, Xcel explained that an Engineer would be needed to validate results, apply engineering judgment, and troubleshoot issues at an ongoing cost of approximately \$150,000 per year.<sup>40</sup>

Further, in Table 4 on page 23 of Attachment F, despite its explanation on pages 19 and 20, Xcel indicated that the following activities are required to automate the Supplemental Review Screens of the MN DIP, including the timeline, one-time cost and annual ongoing cost estimates:

**Table 3. Conceptual Costs and Timeline of Automating MN DIP Supplemental Screens**

Project Component	Timing (Years)	One-Time Costs	Annual Ongoing Costs
Foundational Data – Primary System	2-3	\$27M - \$32M	\$250,000 - \$350,000
Foundational Data – Secondary System	2-3	\$13M - \$16M	\$250,000 - \$350,000
Automation of Systems/Processes for Monthly HCA	1.5-2	\$1.4M - \$2.8 M	\$375,000 - \$500,000
Automation of Supplemental Screen Process	1-2	\$800,000 - \$1.6M	\$125,000 - \$175,000
<b>Supplemental Screen Total</b>	3	\$42.2M - \$52.4M	\$1M - \$1.375M

The Department notes that the first three components are not discussed in Xcel’s explanation of using the HCA in the Supplemental Review Screens of the MN DIP. The Department’s request for information above is designed to elicit an explanation of what these three project components are and if they are necessary in order to use the HCA in the Supplemental Review Screens of the MN DIP.

<sup>37</sup> 2020 Report, Attachment F, at 22.

<sup>38</sup> 2020 Report, Attachment F, at 19.

<sup>39</sup> 2020 Report, Attachment F, at 19.

<sup>40</sup> 2020 Report, Attachment F, at 20.

Additionally and as aforementioned, Xcel explained that the Primary System verification benefits the usefulness of the hosting capacity analysis and enable[s] its potential use within the MN DIP Supplemental Review Screens. In response to PUC Information Request 1, Xcel indicated the following regarding the Primary System verification:<sup>41</sup>

[T]he primary system aspect of the conceptual field data verification initiative outlined in the HCA filing is directly comparable to the data verification being performed for ADMS. However, the project we outlined for the HCA would result in additional verification than what we are planning to support ADMS. We note however, the ADMS would benefit from improved data accuracy and the additional data validation process.

**The Department requests that Xcel explain how the Primary System verification it plans to do for its Advanced Distribution Management System (ADMS) project is related to the Primary System verification it would need to do in order to implement the use of the HCA in the Supplemental Review Screens of the MN DIP. Further, the Department requests that Xcel precisely explain what the costs are for these two different approaches to Primary System verification are, and indicate what, if any, the *incremental* costs are for performing the Primary System verification for the goal of using the HCA in the Supplemental Review Screen of the MN DIP.**

The Department believes that more precise and clear explanations from Xcel regarding these questions will help the Commission determine whether its long-term goal of the HCA is cost-effective.

Toward that end, given Xcel's claim that the use of the HCA in the Supplemental Screen of the MN DIP Process could save "nearly 1,000 hours of engineering time per year (based on the 300+ reviews needed)"<sup>42</sup> **the Department requests that Xcel quantify the potential savings associated with using the HCA in the Supplemental Review Screens of the MN DIP. The Department also requests that Xcel identify any further savings that may result from using the HCA in the Supplemental Review Screens of the MN DIP, including savings experienced by developers, and to quantify those savings if they exist.**

Such information will help the Commission have a better idea of the costs and savings associated with implementing its long-term goal of using the HCA in the interconnection process's fast-track screens.

The Department does not have any other issues or concerns related to this matter at this time.

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<sup>41</sup> Xcel Response to PUC Information Request No. 1, dated January 25, 2021, at 4.

<sup>42</sup> 2020 Report, Attachment F, at 19.

### III. DEPARTMENT RECOMMENDATIONS

The Department appreciates the opportunity to comment on Xcel's 2020 Hosting Capacity Analysis Report.

The Department requests the following additional information from Xcel:

1. The Department requests that Xcel clarify whether it was unable to provide all criteria violation and corresponding hosting capacity values in the pop-up field of its public-facing map. If it was unable to do so, the Department requests that Xcel explain what the nature of the technical limitations are that preclude it from providing all criteria violation and corresponding hosting capacity values in the pop-up field of its public-facing map.
2. The Department requests that Xcel provide responses to the following questions related to its use of the HCA in the Supplemental Review Screen of the MN DIP Process:
  - a. How often would feeder models need to be updated in order to implement this modification to the Supplemental Review Screen?;
  - b. Does the proposed quarterly cadence of updating the HCA accomplish the frequency of updates to the feeder models required to implement this modification?;
  - c. What primary and secondary field data validation efforts, if any, are needed to implement this modification?;
    - i. Please explain the following statement from page 11 of Attachment F: The Primary System verification benefits the usefulness of the hosting capacity analysis and enable its potential use within the MN DIP Supplemental Review Screens.
  - d. If primary and secondary verification are needed, what portions of those actions are related only to this modification?
  - e. What is the timeline to implement this modification?
    - i. Why is the timeline to implement this modification not able to occur prior to Q3 of Year 4 (presumably Q3 of 2025) (referring to Figure 5 of Attachment F)?
    - ii. Why did Xcel state that the "Supplemental Screens would also require the Monthly HCA updates to be fully functional"[footnote omitted] when it previously stated the Supplemental Screens are performed "about five times less often per year than the Initial Review Screens, reducing the need to update feeder models and HCA results more frequently in comparison"[footnote omitted]?
3. The Department requests that Xcel explain how the Primary System verification it plans to do for its Advanced Distribution Management System (ADMS) project is related to the Primary System verification it would need to do in order to implement the use of the HCA in the Supplemental Review Screens of the MN DIP. Further, the Department requests that Xcel precisely explain what the costs are for these two different approaches to Primary System verification are, and indicate what, if any, the *incremental* costs are for performing the

**Primary System verification for the goal of using the HCA in the Supplemental Review Screen of the MN DIP.**

- 4. [T]he Department requests that Xcel quantify the potential savings associated with using the HCA in the Supplemental Review Screens of the MN DIP. The Department also requests that Xcel identify any further savings that may result from using the HCA in the Supplemental Review Screens of the MN DIP, including savings experienced by developers, and to quantify those savings if they exist.**

The Department will provide its final recommendation in reply comments and/or supplemental comments once the Company responds to the Department's requests for additional information and evaluates the comments of other stakeholders.

/ja



### **CERTIFICATE OF SERVICE**

I, Linda Chavez, hereby certify that I have this day served copies of the following document on the attached list of persons by electronic filing, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

### **MINNESOTA DEPARTMENT OF COMMERCE – COMMENTS**

Docket Nos.   **E002/M-20-812**

Dated this **7th** day of **April, 2021**.

/s/Linda Chavez

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