

Staff Briefing Papers

Meeting Date August 14, 2025

Agenda Item 3**

Company Northern States Power Co. d/b/a Xcel Energy

Docket No. E999/CI-16-521

In the Matter of Updating the Generic Standards for the Interconnection and Operation of Distributed Generation Facilities Established Under Minn. Stat. § 216B.1611

Issues 1) Should the Commission grant the Joint Solar Association's (JSA) request to open an investigation into Xcel Energy's internal transmission study process which began in October 2023 and direct Xcel to cease this study process until it receives approval from the Commission?

2) Should the Commission amend the Minnesota Distributed Energy Resources Interconnection Process (MN DIP) to further clarify the Affected System Study process when the Transmission Owner is also the Area EPS Operator (e.g. Xcel Energy)?

Staff Derek Duran

Derek.Duran@state.mn.us

651-201-2206

✓ Relevant Documents

Date

Joint Solar Associations – Petition

December 13, 2024

DGWG Reports

February 11, 2025

Utility Response – Xcel

March 13, 2025

Utility Response – Otter Tail Power

March 13, 2025

Utility Response – Minnesota Power

March 13, 2025

Initial Comments – Joint Commenters

April 3, 2025

Initial Comments – Clean Energy Organizations

April 3, 2025

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

✓ **Relevant Documents**

Initial Comments – The Department of Commerce

Reply Comments – Xcel Energy

Reply Comments and Exhibit A – Clean Energy Organizations

Reply Comments – The Department of Commerce

Date

April 3, 2025

April 17, 2025

April 17, 2025

April 17, 2025

BACKGROUND

Before December 17, 2021, Xcel Energy and MISO used an agreed upon “ad-hoc” process to study Transmission System adverse system impacts caused by interconnected distributed energy resources (DERs) according to Sections 4.3.6-4.3.8 of the Minnesota Distributed Energy Resource Interconnection Process (MN DIP).

On December 17, 2021, Xcel filed a letter into the instant docket indicated that they had signed a MISO ASIS (affected system impact study) Agreement between themselves and MISO that formalized much of the ad-hoc process.

At the January 20, 2022, Agenda Meeting the Commission ordered (filed March 31, 2022) the MISO ASIS Agreement to be stayed until a comment period regarding the listed issues has concluded.¹ The Commission did not stay the prior-used ad-hoc process that MISO and Xcel were employing.

On February 17, 2022, the Commission filed a Notice of Comment Period asking if the Commission should take any further action related to the MISO ASIS Agreement between Xcel Energy and MISO. The Commission received initial and reply comments on March 21, 2022 and March 31, 2022, respectively. The Commission did not schedule an Agenda Meeting for this Notice.

On February 25, 2022, the Commission filed slides from the DGWG meeting on the same day that focused on the MISO ASIS Agreement, MISO’s own workgroup on the same topic, as well as the Notice filed on February 17, 2022. The Commission, along with other members of the DGWG encouraged members to attend the MISO workgroup which aimed to create a MISO-wide process regarding transmission affected system impact studies. In the meeting Commission Staff indicated that it may stay the MISO ASIS Agreement until MISO created its own MISO-wide process and to instead continue using the ad-hoc process until then.

On September 1, 2023, Xcel implemented its Internal Transmission Study (ITS) Process.

On October 1, 2023, MISO began implementation of the MISO DER AFS

On November 1, 2024, the DGWG held a meeting which, at the end of the meeting, included discussion over whether Xcel’s ITS is compliant with the MN DIP. Commission Staff instructed the respective members to meet outside of the meeting and to file a report with Commission Staff to be distributed to the rest of the DGWG.

¹ a) Whether the Agreement between Xcel Energy and the Midcontinent Independent
b) System Operator requires changes to MN DIP or to a tariff;
c) What those changes might be;
d) Whether any changes to the Agreement should be requested;
e) Whether any jurisdictional issues exist; and
f) Any other related issues

On December 13, 2024, two parties, Xcel, and the joint effort of Nokomis Energy, Enterprise Energy, Novel Energy Solutions, and Sunrise Energy Ventures submitted their report on the topic of Xcel's ITS to Commission Staff. Commission Staff then distributed the reports to the rest of the DGWG on December 27, 2024.

On December 13, 2024, the Joint Solar Associations² filed their petition.

On February 10, 2025, the Commission filed a Notice of Comment Period.

On February 11, 2025, the Commission filed the DGWG Reports into the record.

On March 13, 2025, Xcel, Ottertail Power, and Minnesota Power filed initial utility comments.

On April 3, 2025, the Joint Commenters³, the Clean Energy Organizations⁴, and the Department of Commerce filed initial comments.

On April 17, 2025, Xcel, the Clean Energy Organizations, and the Department of Commerce filed reply comments.

Overview of the Issue

In this proceeding, the Commission is being asked to determine whether Xcel Energy Internal Transmission Study (ITS) process is consistent with the MN DIP. Parties disagree on whether the MISO Distributed Energy Resource Affected System Study (MISO DER AFS) is sufficient and whether Xcel's ITS is allowed as an Affected System Study because Xcel is a Transmission Owner or Provider under the MN DIP.

Relevant Statute

Minn. Stat. . § 216B.17 provides:

Investigation.

On the commission's own motion or upon a complaint made against any public utility by the governing body of any political subdivision, by another public utility, by the department, by any 50 consumers of a particular utility, or by a complainant under

² Parties include Clean Energy Economy MN (CEEM), Minnesota Solar Energy Industries Association (MnSEIA), and the Coalition for Community Solar Access (CCSA)

³ Parties include Nokomis Energy, Clean Energy Economy MN, Enterprise Energy, Novel Energy Solutions LLC, Cooperative Energy Futures, Sunrise Energy Ventures LLC, and SunShare LLC

⁴ Parties include Clean Energy Economy MN (CEEM), Minnesota Solar Energy Industries Association (MnSEIA), and the Coalition for Community Solar Access (CCSA)

section 216B.172 that any of the rates, tolls, tariffs, charges, or schedules or any joint rate or any regulation, measurement, practice, act, or omission affecting or relating to the production, transmission, delivery, or furnishing of natural gas or electricity or any service in connection therewith is in any respect unreasonable, insufficient, or unjustly discriminatory, or that any service is inadequate or cannot be obtained, the commission shall proceed, with notice, to make such investigation as it may deem necessary. The commission may dismiss any complaint without a hearing if in its opinion a hearing is not in the public interest.

Note that the letter initiating this matter was not styled as a complaint of a violation but simply asked the Commission to open an investigation. Accordingly, the rules and process associated with complaints (i.e. a finding of jurisdiction and whether reasonable grounds to investigate) would appear not to apply.

Summary of Terms and Transmission Study Details

The Minnesota Distributed Energy Resource Interconnection Process (MN DIP) are the statewide interconnection standards under Minn. Stat. §216B.1611. Within the MN DIP, Sections 4.3 and 5.13 describes Affected System Study which include transmission studies. The background below summarizes the various transmission studies related to Xcel interconnection review. The MN DIP Glossary also provides definitions of Transmission Owner, Transmission Provider, and Affected System.

For the purposes of this Briefing Paper, Staff provides a summary of the following terms:

- The Xcel-MISO “ad-hoc” (ad-hoc process) approach to DER-Transmission studies which was used by Xcel and MISO up until October 1, 2023.
- The MISO Affected System Impact Study Agreement (MISO-Xcel Agreement) which was an agreement/process that was contemplated by Xcel and MISO but was never implemented because of a Commission stay. This agreement has also been called the MISO ASIS Agreement.
- The MISO DER Affected System Study (MISO DER AFS) is the MISO-wide process the ISO uses to study potential effects interconnecting DERs may have on the transmission system. This is the process was implemented on October 1, 2023 and is the process MISO uses today. Officially, this process is detailed in MISO’s Business Practice Manual – 015 Generation Interconnection (BPM-015-r26, New Section 8)⁵.
- The Internal Xcel Transmission Study (ITS) is similar to the MISO DER AFS in that it studies potential effects DERs may have on the transmission system, but it is a study process created by and for Xcel. The ITS process was implemented on September 1, 2023 and is the current transmission study process Xcel uses today, outside of the

⁵ MISO, Business Practice Manual 015 Generation Interconnection, accessible online at: <https://cdn.misoenergy.org/BPM-015%20Generator%20Interconnection49574.zip?v=20250116160413>

projects studied by MISO.

While MISO and Xcel both have their own transmission study process, they are distinguished by the triggering criteria. Xcel also claims the intent of the studies are also different. Xcel filed the following table in their initial comments and in other materials.

Table 1: Differences Between MISO and Xcel Energy Transmission Studies⁶

	MISO DER AFS	Xcel Energy ITS
Where	Aggregate DER exceeds substation peak load by at least 1 MW	For Substations with 750 kW or more of interconnected DER, aggregate DER exceeds substation Daytime Minimum Load (DML) (but MISO trigger has not been met).
When	Quarterly as scheduled by MISO. Each substation studied separately, and the study fee applies per substation being studied.	Quarterly. All substations are studied together, and the study fee remains the same regardless of the number of projects participating. The fee is spread out to all participating projects in the study.
Why	Ensure reliability and deliverability of the regional transmission system.	Ensure reliability of Xcel Energy's transmission system, specifically for thermal or voltage issues. Ensures compliance with NERC regulations.

Summary of Transmission Study Timeline

The Xcel-MISO Ad-Hoc Process – Before Fall-2023

The ad-hoc process was the official DER transmission “affected system” study recognized by the PUC, Xcel, and MISO before the Fall of 2023. To Staff’s knowledge the understanding of how DERs could impact the transmission, especially at greater generation capacity levels, was still being studied broadly and was not yet of great concern prior to the 2020s. This warranted an ad-hoc process where interconnection projects would be studied on a case-by-case basis. Minnesota, and in particular, Xcel, was on the forefront of DER adoption in the MISO footprint and as DER adoption continued to increase, the two parties considered formalizing the ad-hoc process in an agreement. Currently, the most common reason for potential adverse impacts is potential reverse flow of electricity onto the transmission system. Potential for reverse flow is essentially when there is greater generation than there is load at a certain point of time.

The MISO-Xcel Agreement – Created in 2021 and Stayed by the Commission

The MISO-Xcel Agreement was worked on by Xcel and MISO in 2020 and 2021 in efforts to formalize the ad-hoc process that had been utilized to this point. On December 17, 2021 Xcel

⁶ Xcel Initial Comments, P. 18, March 13, 2025.

filed a letter⁷ to the Commission indicating that an agreement between the two parties had been reached. However, in a March 31, 2022, Order (from a January 20, 2022, agenda meeting) the Commission stayed the implementation of this agreement with one of the reasons being that Xcel did not work with the MN DER stakeholders enough in the formation of the agreement. In that Order, the Commission noted that it was not staying the ad-hoc process that been in use until this point. Additionally, the agreement was stayed “until a comment period regarding the following issues has concluded.”

The Commission filed a Notice of Comment Period on February 17, 2022, on if the Commission should “take any further action related to the Affected System Impact Study (ASIS) Agreement between Xcel Energy and the Midcontinent Independent Service Operator (MISO). In addition to that issue, the notice included a notice of a February 25, 2022, DGWG meeting on the topic. The Commission received initial and reply comments on March 21 and March 31 respectively, for this notice but the Commission did not hold an agenda meeting on the topic.

Staff believes the outcome of the February 25, 2022, DGWG meeting⁸ is pivotal to the misunderstandings and confusion around the MISO DER AFS as well as the ITS. This meeting included presentations from Xcel and MISO on the stayed MISO-Xcel Agreement. Additionally, MISO indicated that they were in the process of creating a MISO-wide transmission study process (to be later called the DER MISO AFS) and that they were hosting MISO Interconnection Process Working Group (IPWG) meetings throughout 2022 to work through the new framework. At least nine of the DGWG’s Lead Participant groups participated in the February 7 IPWG call, including representatives from MnSEIA.⁹

On March 4, 2022, Xcel filed a letter on MISO Review of DER Applications noting plans after the February 25 DGWG for the Company and MISO to continue to use the ad hoc process until that MISO-wide process took effect, rather than work to implement the MISO-Xcel Agreement. Xcel acknowledged that they thought the verbal order during the January 31, 2022, Agenda Meeting meant that the Commission stayed the ad-hoc process when that was not the intent. This misunderstanding may have further added to the confusion amongst parties at the time and later. Additionally, Commission Staff as well as Xcel encouraged the Minnesota DER industry to participate in the IPWG that MISO was hosting.

However, this understanding was not formalized in any Commission notice or report. In strictly looking at the formal record in Docket E999/CI-16-521 it would appear that there is an incomplete Notice of Comment Period and that the last Commission action was staying the MISO-Xcel Agreement. Thus, if only looking at the written record in the docket, Staff believes it is understandable that some parties may have been caught unaware when MISO began its MISO DER AFS process in the fall of 2023. While some may have been in attendance in that

⁷ Xcel Letter, December 17, 2021 in Docket E999/CI-16-521.

⁸ PUC, February 25, 2022, DGWG Meeting Slides, filed October 25, 2023 in Docket E999/CI-16-521.

⁹ Minutes, MISO Interconnection Process Workgroup (February 7, 2022). Accessible online at: <https://cdn.misoenergy.org/20220411%20IPWG%20Item%2001c%20Minutes%2020220207622961.pdf>

February 2022 DGWG meeting as well as the MISO IPWG, many representatives for parties have been replaced. It had also been roughly 18 months since that DGWG meeting when MISO began its footprint-wide transmission study process.

The MISO DER AFS (October 2023 – Present)

MISO began implementation of the MISO DER AFS on October 1, 2023, following a series of stakeholder meetings in the IPWG and MISO approval for the BPM. This is the current transmission study process MISO and Xcel use when DER interconnection projects trigger a need, based on MISO's requirements, for a transmission screen. When a project triggers a need for a transmission screen Xcel sends the required information to MISO. This is separate and distinct from Xcel's ITS.

To offer additional clarity, Staff offers a Decision Option for the Commission to affirm Xcel is authorized to incorporate the MISO DER AFS study process and results in its compliance with the MN DIP. (**Decision Option 1**).

Xcel's Internal Transmission Studies (ITS) (September 1, 2023 – Present)

Following the March 31, 2022, Commission Order, Xcel continued to use the ad-hoc process with MISO and also, like several DGWG Lead Participants, acted as a stakeholder in MISO IPWG. The outcome of the IPWG culminated in the MISO DER AFS which required a screening of all DER applications "where aggregate DER exceeds substation peak load by at least 1 MW". Xcel has worked with MISO in sending the project details to MISO as needed.

However, Xcel has indicated in their initial comments and in other filings that this threshold leaves a gap that may impact Xcel's equipment and ability to safely and reliably run their system. Xcel thus created their Internal Transmission Study process which is triggered "for Substations with 750 kW or more of interconnected DER, aggregate DER exceeds substation DML (but MISO trigger has not been met)."¹⁰ Xcel implemented their ITS process on September 1, 2023. Xcel's ITS, its implementation, its stated need, and its cohesion with the MN DIP is what this briefing paper and respective record is centered around.

November 1, 2024, DGWG Meeting

On November 1, 2024, the DGWG held a meeting primarily to discuss DER data and MN DIP timeline data as well as to organize working on various Commission Order points that had been tasked to the group. At the end of that meeting the topic of Xcel's and MISO's transmission studies was brought up. Staff directed the parties to meet outside of that meeting to discuss and work through any concerns or misunderstandings. The parties were also directed to send a report to Staff so that it can be disseminated amongst the rest of the DGWG. These reports were later filed into Docket 16-521 on February 11, 2025. Additionally, the Joint Solar

¹⁰ Xcel Energy, Initial Comments, P. 18, March 13, 2025.

Associations filed a petition into the same docket. These reports and petition were the impetus for the Notice of Comment Period and proceeding.

DISCUSSION

Joint Solar Associations' (also Clean Energy Organizations) Petition

Staff notes for clarity that the three parties¹¹ included under the Joint Solar Associations are the same three parties under the Clean Energy Organizations (CEO) moniker that filed initial and reply comments into the record. Due to "Clean Energy Organizations" usually representing more and different parties in other Commission dockets, Staff will henceforth refer to the parties as JSA or the JSAs to avoid confusion.

JSA alleges that Xcel (the Company) is inappropriately designating itself a "Transmission Provider" under the MN DIP. In so doing, JSA believes that Xcel's Internal Transmission Studies (ITS) process is not compatible with the MN DIP and that the Company did not receive Commission approval to begin these studies. Additionally, JSA alleges that by interpreting themselves as a Transmission Provider, the Company is able to make "unilateral changes to the MN DIP" and create a new interconnection process without Commission oversight.¹²

JSA states that the implementation of the ITS has been improper, unclear, and wide in its impact on DER projects, claiming the thresholds Xcel has set will "capture over 90 percent of projects currently in the interconnection queue ... adding months and significant financial hardship to interconnection processes."¹³

The JSAs request that the Company voluntarily stay its ITS process until it requests and receives approval from the Commission which Xcel has not done to-date. Since the Company has not complied with this request, The JSAs request the Commission formally order Xcel to stay the implementation of the ITS until it has been investigated received approval from the Commission (**Decision Option 2**). If the Commission does open an investigation, JSA requests that it be referred to the DGWG (**Decision Option 3 and 6**).

Topics and Party Responses

The Commission issued several topics and questions to consider in its February 10, 2025, Notice of Comment Period. The major questions in this proceeding are the following:

- Is Xcel a Transmission Provider under the MN DIP's definition and therefore also allowed

¹¹ Parties include Clean Energy Economy MN (CEEM), Minnesota Solar Energy Industries Association (MnSEIA), and the Coalition for Community Solar Access (CCSA).

¹² Joint Solar Associations, Petition, P. 5, December 13, 2024.

¹³ Joint Solar Associations, Petition, P. 2, December 13, 2024.

- to conduct Xcel-specific transmission studies?
- Is the Xcel ITS process prudent or necessary? If they are, does the MN DIP need to be modified to provide further guidance or transparency into the transmission study process?
- How should the Commission consider the impacts of the ITS regarding other state goals or programs?
- How should the Commission respond to the JSA's request to have Xcel order to stay their ITS and open an investigation into the matter?

MN DIP Interpretation: Transmission Impact Studies, Owners, and Providers

Staff notes that interpretation of Sections 4.3.6 – 4.3.8 of the MN DIP as well as the MN DIP definitions of Transmission Owner and Transmission Provider are in dispute. Staff also notes that this section is strictly about the applicability of Xcel qualifying as a Transmission Provider and allowing for transmission studies in general and not the prudence of Xcel's ITS.

Staff provides the direct language of the MN DIP below (*italics added for emphasis*):

Section 4. Study Process

- 4.3.6 In instances where the System Impact Study shows potential for Transmission System adverse system impacts, within five (5) Business Days following the identification of such impacts by the Area EPS Operator, *the Area EPS Operator shall coordinate with the appropriate Transmission Provider* to have the necessary studies completed to determine if the DER causes any adverse transmission impacts.
- 4.3.7 In order to remain in consideration for interconnection, an Interconnection Customer must return the executed Transmission System impact study agreement within fifteen (15) Business Days.
- 4.3.8 A Transmission System impact study, if required, shall be completed and the results transmitted to the Interconnection Customer in as timely a manner as possible after the transmission system impact study agreement is signed by the Parties. *The Area EPS Operator shall be responsible for coordination with the Transmission Provider as needed.* Affected Systems shall participate in the study and provide all information necessary to prepare the study.

Glossary Terms

Area EPS Operator – An entity that owns, controls, or operates the electric power distribution systems that are used for the provision of electric service in Minnesota.

Transmission Owner – The entity that owns, leases or otherwise possesses an interest in

the portion of the Transmission System relevant to the Interconnection

Transmission Provider – The entity (or its designated agent) that owns, leases, controls, or operates transmission facilities used for the transmission of electricity. The term Transmission Provider includes the Transmission Owner when the Transmission Owner is separate from the Transmission Provider. The Transmission Provider may include the Independent System Operator or Regional Transmission Operator.

Utility Response

The Company states that it is permissible under Sections 4.3.6, 4.3.7, and 4.3.8 of the MN DIP to conduct the ITS and that it complies with MN DIP provisions.¹⁴ Xcel claims that under the MN DIP definitions the Company is an Area EPS Operator, a Transmission Owner, and a Transmission Provider. Regarding being a Transmission Owner, Xcel simply states that “it owns or otherwise possesses an interest in the portion of the transmission system relevant to interconnection of DER systems that are interconnected in its service territory.”¹⁵ Similarly, Xcel states it “owns, leases, controls, or operates transmission facilities used for the transmission of electricity” and is therefore a Transmission Provider as well as the fact that if an entity is a Transmission Owner it is therefore also a Transmission Provider per the definition language.

Thus, the Company claims to be both the Area EPS Operator, and the Transmission Provider listed in MN DIP Sections 4.3.6, 4.3.7, and 4.3.8 in certain instances which then allows them to conduct their own transmission studies “where the System Impact Study shows potential for Transmission System adverse system impacts.”

Both Otter Tail Power (OTP) and Minnesota Power (MP) agree with Xcel’s interpretation of Transmission Owner and Transmission Provider and that the MN DIP clearly states that the Transmission Provider is allowed to conduct Transmission Impact Studies.¹⁶ Additionally, OTP notes that Xcel is registered as a Transmission Owner and Transmission Provider under North American Electric Reliability Corporation’s (NERC) active registry.¹⁷

Party Responses

JSA disputes this interpretation of the Transmission Owner and Transmission Provider. In their initial comments the JSAs note that Xcel has always been understood to be an Area EPS Operator but regarding the Company’s status as a Transmission Provider, the JSAs are not

¹⁴ Xcel Energy, Initial Comments, P. 6, March 13, 2025

¹⁵ Xcel Energy, Initial Comments, P. 6, March 13, 2025

¹⁶ OTP, Initial Comments, P. 2, March 13, 2025; MP, Initial Comments, P. 2. March 13, 2025

¹⁷ NERC Compliance Functional Registration, see Norther States Power (Xcel Energy) NRC ID# NCR01020, available at https://www.nerc.com/pa/comp/Registration%20and%20Certification%20DL/NERC_Compliance_Registry_Matrix_Excel.xlsx (accessed by OTP on March 12, 2025).

aware “of any stakeholder, including Xcel, who previously understood it to be in that role or would consider that a reasonable reading of the current MN DIP process.”¹⁸

JSA cites that if Xcel is both the Transmission Provider and the Area EPS Operator then the Company would be required to “coordinate with itself, unilaterally applying a criterion of its own making” and that if it was understood that Xcel could apply itself to both terms, “the MN DIP would have been drafted differently.”¹⁹ The JSAs add that “it is crucial to recognize that only one Transmission Provider can be designated at any given time” and that “it is not feasible for two distinct entities to simultaneously hold this position.”²⁰

The JSAs state that the “clear implication of [Xcel’s] interpretation is that ‘adverse system impacts’ under the MN DIP would have two different standards, applied by two different Transmission Providers” and point out that the MN DIP Study Process Workflow section does not have two difference processes for differing Transmission Providers.²¹ JSA also cites a 2012 document, Large Generator Interconnection Agreement (LGIA) between Xcel and MISO which defines Transmission Provider as MISO or successor entities.²²

The Joint Parties²³ states that Xcel “seems to meet the definition of Transmission Owner and Transmission Provider and the ITS [studies] seem to be [Affected] System Studies” but that Xcel is “evading the spirit and purpose of the MN DIP” and exploiting the fact that they are a Transmission Provider to be less transparent with their ITS as well as to avoid the rules laid out in the MN DIP.²⁴

The Department writes that the JSAs are correct in their understanding that MISO has traditionally been interpreted as the Transmission Provider and also cites the LGIA where MISO is determined to be the Transmission Provider. However, the Department states that a Commission investigation can help determine if Xcel can be both an Area EPS Provider as well as a Transmission Provider and that if that is indeed the case, the Commission would need to determine if the Xcel ITS process is justified.²⁵

Xcel responds to the parties’ citing of the LGIA stating those parties are searching for a proxy definition of Transmission Provider when the MN DIP already clearly outlines that definition. The Company adds that “in the context of that specific LGIA signed by MISO, MISO was performing the single role of being the Transmission Provider and therefore defining MISO as

¹⁸ Clean Energy Organizations, Initial Comments, P. 3, April 3, 2025

¹⁹ Joint Solar Associations, Petition, P. 6, December 13, 2024

²⁰ Joint Solar Associations, Petition, P. 7, December 13, 2024

²¹ Clean Energy Organizations, Initial Comments, P. 3-4, April 3, 2025

²² Joint Solar Associations, Petition, P. 8, December 13, 2024

²³ Parties include Nokomis Energy, Clean Energy Economy MN, Enterprise Energy, Novel Energy Solutions LLC, Cooperative Energy Futures, Sunrise Energy Ventures LLC, and SunShare LLC

²⁴ Joint Parties, Initial Comments, P. 7, April 3, 2025

²⁵ The Department, Initial Comments, P. 3-5, April 3, 2025

the Transmission Provider would be appropriate.”²⁶

In response to JSA’s claim that no stakeholder understood this interpretation of Transmission Provider, not even the Company – Xcel cites a DGWG meeting Summary from 2017, one of the several meetings during the formation of the MN DIP, which they state makes it clear that the Transmission Provider can be MISO or the utility.²⁷ The specific language Xcel is referring to states the following:

The Transmission Provider definition can be Transmission Operator (usually, an ISO/RTO) or Owner (utility). States vary, but most often the Transmission Provider is ISO/RTO. The Transmission Provider coordinates the Transmission Impact Study and Transmission upgrades, if necessary.²⁸

Additionally, Xcel adds that their ITS is “only conducted when the distribution [System Impact Study (SIS)] for a project shows potential for adverse transmission impacts” which complies under Section 4.3.6 of the MN DIP. Xcel emphasizes that when aggregate DER is greater than the DML on a substation (the ITS threshold) backflow onto the transmission system is possible and must be studied.

In reply comments JSA reiterates their claim that the MN DIP definitions did not contemplate an entity being both the Area EPS Operator as well as the Transmission Provider and that if the Commission agrees with this interpretation that the “MN DIP, SIS Agreement, and the flowchart would have to be changed to accept the argument that there are two different Transmission Providers, applying two different standards, using two different processes, for the same project at the same time under the same MN DIP section.”²⁹ JSA also points out that Xcel does not define itself as a Transmission Provider in its tariff despite defining itself as an Area EPS Operator.

Staff Analysis

Staff does not believe an investigation is necessary to determine if Xcel qualifies under the MN DIP’s definition of a Transmission Provider. It is clear to Staff that Xcel is an entity “that owns, leases or otherwise possesses an interest in the portion of the Transmission System relevant to the Interconnection” and is also an entity that “that owns, leases, controls, or operates transmission facilities used for the transmission of electricity” and is therefore a Transmission Owner and Provider respectfully.

Staff does not believe references to definitions of Transmission Provider in other documents

²⁶ Xcel Energy, Reply Comments, P. 3-4, April 17, 2025

²⁷ Xcel Energy, Reply Comments, P. 4-5, April 17, 2025

²⁸ Staff Notes that Xcel quoted the DGWG Meeting Summary #3 which is in the Meeting #4 filing in Docket E999/CI-16-521 on September 29, 2017

²⁹ Clean Energy Organizations, Reply Comments, P. 2-3, April 17, 2025

and jurisdictions such as the LGIA and other documents are relevant to this proceeding when an explicit definition can be found in the MN DIP itself.

The citation to the Meeting Summaries of the DGWG in 2017 (the foundation blocks in the creation of the MN DIP) also makes it clear that a utility was understood to mean Transmission Provider even if that is not “usually” the case and that most of the time it would mean the ISO or RTO. Additionally, the referred to MN DIP Study Process Workflow only refers to “Transmission Provider” not to MISO specifically, so the same requirements are still applied to either acting Transmission Provider in the study process.

Staff does recognize that the language around the Area EPS Operator coordinating with the appropriate Transmission Provider when they are the same entity may be confusing or seem inappropriate on its first read, but Staff believes that this scenario was clearly foreseen by the MN DIP architects based on the DGWG meeting notes. Staff does not believe it is crucial to the interconnection process that the two terms must reflect two different entities. However, Staff does recognize there is opportunity for uncertainty and/or delay when the standard requires coordination between two entities that are in fact one entity. For example, some exploration could be done regarding the deadline requirements of the necessary “coordination” requirements between an Area EPS Operator and the appropriate Transmission Provider when they are the same entity. That said, while Staff believes further clarity that while the possibility of the two terms reflecting the same entity could be had, Staff does not believe it is crucial for the interconnection process that the MN DIP be amended to say as much at this time.

Prudency or Necessity of the Xcel ITS

The Commission Notice requested Xcel detail the differences between their ITS and the MISO DER AFS, the stated need for their ITS as a separate process from MISO, and a technical explanation with data and examples to justify that need.

Xcel begins by claiming that the Xcel ITS is not only permissible under the MN DIP but required by the MN DIP as well as by NERC. To start, Xcel differentiates their study from MISO’s in stating that there is a gap in the analysis left between MISO threshold for a study (where aggregate DER exceeds substation peak load by at least 1 MW) and DERs that don’t impact the transmission system. Xcel claims that there are DER interconnection projects that don’t meet MISO’s threshold for study but still have potential adverse impacts on the transmission system and that their ITS is targeting those projects. Xcel specifies that their ITS is triggered for projects that interconnect on substations with 750 kW or more of interconnected DER and aggregate DER exceeds substation DML (but MISO trigger has not been met). Staff provides Table 1 listed in the Background to clarify the different situations of each study.

Table 1: Differences Between MISO and Xcel Energy Transmission Studies³⁰

³⁰ Xcel Energy, Initial Comments, P. 18, March 13, 2025.

	MISO DER AFS	Xcel Energy ITS
Where	Aggregate DER exceeds substation peak load by at least 1 MW	For Substations with 750 kW or more of interconnected DER, aggregate DER exceeds substation DML (but MISO trigger has not been met).
When	Quarterly as scheduled by MISO16. Each substation studied separately, and the study fee applies per substation being studied.	Quarterly. All substations are studied together, and the study fee remains the same regardless of the number of projects participating. The fee is spread out to all participating projects in the study.
Why	Ensure reliability and deliverability of the regional transmission system.	Ensure reliability of Xcel Energy's transmission system, specifically for thermal or voltage issues. Ensures compliance with NERC regulations

The Company emphasizes that MISO's study is done to ensure the reliability of the RTO; whereas Xcel's ITS is done to ensure the reliability of their specific transmission system and in particular, thermal and voltage issues. Xcel adds that MISO chose their threshold for "simplicity and transparency", but that MISO also acknowledged "that DER penetrations other than peak load can be studied by individual Transmission Owners" citing a MISO IPWG presentation.³¹ Xcel also adds that the studies are not duplicative – any one particular interconnecting project will only be studied for transmission impacts by one entity, MISO or Xcel. If a project meets MISO threshold for study, Xcel will not conduct the ITS in addition. Xcel also adds that if MISO's threshold included when aggregate DER exceeded the substation DML, they would not have a need for the ITS.³²

Xcel claims that this gap left out by the MISO DER AFS still needs to be studied as the DERs under Xcel's threshold do show potential risk for adverse system impacts on the transmission system and therefore need to be understood before interconnecting. The Company states that these studies and information discovery is required to remain compliant with NERC. Xcel states that NERC develops reliability standards for the transmission grid, which, upon approval by FERC, "become mandatory and enforceable in the United States."³³

Xcel references NERC Standard FAC-002-4 which Xcel states requires the Company to "study the reliability impact of interconnecting new generation or transmission to be compliant with applicable NERC Reliability Standards as well as regional and Transmission Owner planning criteria."³⁴ Xcel also attached the NERC Standard FAC-011-4 in Attachment B of their comments which the Company claims "requires that Xcel Energy's transmission system remains between all thermal and voltage facility ratings."³⁵

³¹ Xcel Energy, Initial Comments, P. 17, March 13, 2025

³² Xcel Energy, Initial Comments, P. 18, March 13, 2025

³³ Xcel Energy, Initial Comments, P. 4, March 13, 2025

³⁴ Xcel Energy, Initial Comments, P. 4, March 13, 2025

³⁵ Xcel Energy, Initial Comments, P. 5, March 13, 2025

The Company also references NERC TPL-001-5 which requires annual studies to ensure voltage and thermal limits are maintained for a variety of scenarios and that Xcel's ITS achieves this analysis in determining risks on the transmission system. Xcel adds that if the ITS "studies are not performed, transmission operators may be put in a position where they cannot mitigate voltage deviations or thermal overloads caused in part by DER generation" which "could lead to significant compliance risk or risk to the transmission system."³⁶ Xcel reiterates that their ITS is necessary to "demonstrate compliance to NERC, which is also a NERC requirement."³⁷

Lastly, Xcel states that their Transmission Operations group has observed "real-time concerns" during summer loading in areas of high DER penetration which can cause low voltage on the transmission system because of the DERs absorbing VARs (reactive power) and "pulling down area voltage."³⁸ The Company states that there need to be elements which can be adjusted or identified to change the area voltage and that the ITS being conducted before interconnection ensures that maneuverability.

Ottetail supports Xcel's claim that there may be a need to study DERs that MISO's threshold does not capture. Ottetail states that beyond any capacity/thermal related issues DERs may have, voltage level is "generally not included in MISO models".³⁹ Ottetail claims that MISO studies "generally assess transmission voltage levels of 100kV or higher" and that lower voltage transmission systems are typically analyzed by Transmission Owners. Ottetail adds that the 1 MW threshold can still have a "significant impact on lower voltage transmission systems and adverse impacts could go unnoticed" which may lead to reliability issues if they are not able to study these effects.⁴⁰

Party Responses

JSA and the Joint Parties claim that transmission studies may be necessary, but that Xcel has not adequately demonstrated the need for them or that they are required to meet NERC standards.⁴¹ The Joint Parties add that the information Xcel provided regarding the NERC requirements had not been revealed or disseminated in any prior filing until now.⁴² On the NERC requirements, both parties question Xcel's claim that the NERC standards require their ITS process to be compliant. The parties ask if that means MISO, in choosing not to include aggregate DER being greater than DML as a criterion for their MISO DER AFS, are not compliant with FERC.

³⁶ Xcel Energy, Initial Comments, P. 16, March 13, 2025

³⁷ Xcel Energy, Initial Comments, P. 5, March 13, 2025

³⁸ Xcel Energy, Initial Comments, P. 16, March 13, 2025

³⁹ Ottetail Power, Initial Comments, P. 4, March 13 205

⁴⁰ Ottetail Power, Initial Comments, P. 4, March 13 205

⁴¹ Clean Energy Organizations, Initial Comments, P. 17, April 3, 2025

⁴² Joint Parties, Initial Comments, P. 7, April 3, 2025

The Joint Parties also note that while Xcel states that it noticed a “gap” in the MISO DER AFS the Company did not appear to be too worried about this gap in the 2017-2022 timeframe when this DML threshold was not in place. The Joint Parties continue, stating that both the ad-hoc process and the MISO-Xcel Agreement did not include the DML threshold unique to Xcel’s ITS.⁴³ The JSAs also claim that the DML threshold was “rejected” by MISO.⁴⁴

The JSAs cite IREC in a DGWG meeting on battery storage systems stating “that evaluating systems based on unrealistic operating assumptions can lead to overestimated grid impacts” and that “using granular data that more accurately represented what was actually occurring on the system, the capacity at a particular point on the grid nearly doubled.”⁴⁵ The JSAs also posit that the “DML is not, and will not ever, occur during the afternoon in summer months when solar generation systems are generating most of their energy” indicating that it is not an appropriate threshold.⁴⁶

Xcel Response

In reply comments, Xcel clarifies that the Company and MISO coordinate and divide the “duty to study the reliability impact in the context of DER interconnection applications” which means MISO not using the referenced DML for their MISO DER AFS process does not mean they are not compliant with NERC.⁴⁷ The Company cites NERC FAC-002-4 which Xcel claims “makes mandatory the study of the reliability impact of a DER by each Transmission Planner.” The Company lists the corresponding language:

FAC-002-4

R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end user Facilities and (ii) existing interconnections of generation, transmission, or electricity end-user Facilities seeking to make a qualified change as defined by the Planning Coordinator under Requirement R6.

Xcel states that “both MISO and Xcel Energy are a Transmission Planner” and that MISO is the Planning Coordinator. The Company adds that through coordination between the two groups, they are collectively meeting the NERC requirements.⁴⁸

Xcel claims that the requirement to perform a study is triggered when the DER interconnection application seeks to make a “qualified change” as defined by MISO:

⁴³ Joint Parties, Initial Comments, P. 7, April 3, 2025

⁴⁴ Clean Energy Organizations, Initial Comments, P. 17, April 3, 2025

⁴⁵ Clean Energy Organizations, Initial Comments, P. 12, April 3, 2025

⁴⁶ Clean Energy Organizations, Initial Comments, P. 12, April 3, 2025

⁴⁷ Xcel Energy, Reply Comments, P. 17, April 17, 2025

⁴⁸ Xcel Energy, Reply Comments, P. 17, April 17, 2025

MISO BPM-020-r31

Existing interconnections of transmission facilities or electricity end-user facilities seeking to make a qualified change on the transmission system needs to report the qualified change to the MTEP Portal. The qualified change is defined as: i) transmission system topology change; ii) protection configuration change that could negatively impact contingency performance, short circuit, or dynamic performance; iii) change the electrical characteristics of a circuit (i.e., change of impedance, current transformers) that could negatively impact contingency performance, short circuit, or dynamic performance.

On whether the DER applications discussed in this proceeding meet the “qualified change” designation and whether there is potential for Transmission System adverse system impacts the Company provides the following passage in their reply comments:⁴⁹

DER interconnection applications that cause back-flow on to the transmission network meet these criteria under category ii or iii [of the qualified change definition]. Xcel Energy very often needs to adjust relay settings (transmission protection configuration) to accommodate these DER interconnections to account for power injection at the end of a feeder rather than solely a load. Also, the electrical characteristics of a circuit with the addition of a current injection device (inverter) will often change the Thevenin equivalent impedances seen by the transmission system. Further, the additional power injection from a DER can change the flow on the line and very likely impact the contingency performance. The backflow in excess of DML onto the transmission system has the potential for Transmission System adverse system impacts. A study needs to be performed to determine whether there in fact will be any adverse system impacts. NERC has provided related guidance and requirements regarding the bulk system, and Xcel Energy is obligated to follow these standards.

Regarding the JSA claim that the DML will never occur during peak generation times, the Company states that with large PV, “there is always a potential for DER PV to produce at full capacity during DML” and adds that “this is roughly what happens on spring days in Minnesota when we have mild temperatures with very low load on our system while also having clear sunny days which will provide a full solar output” and is the reason they use DML relative to aggregate DER as a threshold to study.⁵⁰

Is Commission Approval Required and/or should the MN DIP be Modified

The JSAs claim that this ITS process must be approved by the Commission according to Minn. Stat. § 216B.03. The JSAs allege the statute requires that every rate made, demanded, or received by any public utility to “be just and reasonable” and that Minn. Stat § 216B.02, subd. 5

⁴⁹ Xcel Energy, Reply Comments, P. 18, April 17, 2025

⁵⁰ Xcel Energy, Reply Comments, P. 18, April 17, 2025

broadly defines rate to include any rules or practices affecting any compensation, charge, fare, toll, rental, tariff, or classification. The JSAs declare there “is no dispute [the ITS process] is a rule or practice that affects Xcel’s charges and tariff” and is therefore also a rate that must be justified to and approved by the Commission because a charge is included in the process.⁵¹

The Joint Parties also allege that Xcel is “[evading] the spirit and purpose of the MN DIP” in implementing the ITS process without Commission approval. The Joint Parties quote the purpose of the MN DIP which was intended to “establish a “a practical, efficient interconnection process that is easily understandable for everyone involved” and would give “maximum possible encouragement of distributed energy resources” and that Xcel’s ITS is not easily understandable to everyone involved.⁵²

The Joint Parties posits that Xcel “has never provided a document containing all of the thresholds, rules, process, timelines, and costs for the ITS, as would be found in the ASIS Agreement, DER AFS, or the MNDIP” and disagree that Xcel has adequately informed the MN DER industry despite the PowerPoint slides they have cited.⁵³ The Joint Parties add that the information Xcel has provided in this proceeding is “extremely valuable” and can help “form the basis of any necessary MN DIP amendments.”⁵⁴

The Department also believes the information found in the record is valuable in understanding Xcel’s ITS process more fully. The Department shares the opinion that Commission must evaluate whether Xcel’s justification for this new process, separate from the traditional MISO process, is appropriate and reasonable before amending the MN DIP.”⁵⁵

Xcel Response

In reply comments, Xcel contends that the ITS process has properly been implemented and is consistent with the MN DIP as it is currently written.⁵⁶ The Company states that neither JSA nor the Joint Parties specify the specific amendments necessary to make the ITS process compatible with the MN DIP other than clarifying how the queues are managed under the MN DIP. Xcel pushes back against claims that the Company tried to amend the MN DIP regarding the ITS process and were not approved by the Commission. Xcel states that those amendments were related to the MISO-Xcel Agreement and not their ITS process.

Regarding the JSA’s assertion that the ITS process is legally a “rate” and requires Commission approval under Minn. Stats. § 216B.02, subd. 5, § 216B.1611, § 216B.03, § 216B.05, and § 216B.16, the Company cites the Commission’s September 24, 2024, Appellate Brief on the

⁵¹ Clean Energy Organizations, Initial Comments, P. 12, April 3, 2025

⁵² Joint Parties, Initial Comments, P. 7-8, April 3, 2025

⁵³ Joint Parties, Initial Comments, P. 8, April 3, 2025

⁵⁴ Joint Parties, Initial Comments, P. 9, April 3, 2025

⁵⁵ The Department, Initial Comments, P. 4, April 3, 2025

⁵⁶ Xcel Energy, Reply Comments, P. 14, April 17, 2025

Technical Planning Standard (TPS) Appeal from Docket No. E-002/C-23-424. Xcel contends the arguments made by MnSEIA in that proceeding are very similar, legally, to JSA's arguments made in this proceeding.

Xcel claims that based on the Commission's reasoning in its TPS Appellate Brief, "these statutes are not applicable to the ITS and do not prohibit the use of the ITS."⁵⁷ The Company adds that Minnesota Court of Appeals rejected arguments that the many statutes cited by MnSEIA required a different result.⁵⁸ Xcel states that the "Commission determined that the TPS aligns with Xcel Energy's approach to identify and address system limitations and that this approach fosters interconnections rather than violates state law" and that "by analogy, the same reasoning applies to the Company's implementation and use of the ITS."⁵⁹

Clarifying Questions and Opportunities for Input; ITS Details

The Commission Notice asked if the ITS is permissible, would it be beneficial to include stakeholder input on the exact parameter, deadlines, and details of the process.

The Joint Parties posed a few clarifying questions regarding its use of the DML as a threshold to study. They state that the DML "can be determined without a system impact study, so the transmission study could be performed at almost any stage in MNDIP" and that this should allow Xcel to conduct its own transmission studies on an as-needed basis.⁶⁰

The Joint Parties also point out that if Xcel is both the Area EPS Operator and the Transmission Provider, does Xcel still get 5 business days to coordinate with itself according to MN DIP Section 4.3.6? The Joint Parties also point that the MN DIP requires Xcel to host "a single administrative queue" and that Xcel's ITS process appears to create a new queue for substations in addition to feeders. The Joint Parties claim this "fundamentally changes the order in which projects are studied, and appears to be in conflict with MNDIP."⁶¹ The Joint Parties also claim that Xcel has offered little rationale for the exact timing and quarterly process of the ITS. The Joint Parties conclude that these are just a few questions that would be worked through in a Commission-led or DGWG-led process to determine the specific edits needed to include the process in the MN DIP.

Xcel Response

⁵⁷ Xcel Energy, Reply Comments, P. 11, April 17, 2025

⁵⁸ Staff notes the Court of Appeals' April 14, 2025, decision upheld the Commission's action; however, on May 14, 2025, MnSEIA petitioned the Minnesota Supreme Court for further review. The Minnesota Supreme Court declined further review of this case on June 25, 2025.

⁵⁹ Xcel Energy, Reply Comments, P. 12, April 17, 2025

⁶⁰ Joint Parties, Initial Comments, P. 9, April 3, 2025

⁶¹ Joint Parties, Initial Comments, P. 8, April 3, 2025

Xcel responds to the Joint Parties specific questions in their reply comments.⁶² Regarding the question of queues, the Company clarifies that it will use the same queue process as is used for the MISO DER AFS which is also the same as the ad hoc process. Xcel cites Section 1.8.3 of the MN DIP: “The Area EPS Operator shall maintain a single, administrative queue and may manage the queue by geographical region (i.e. feeder, substation, etc.).” Xcel emphasizes that the queue in these transmission study processes is managed by geographic area while separately managed by feeder and by substation. Additionally, Xcel adds that projects undergoing an ITS or MISO DER AFS process will not prevent projects in queue from undergoing a Distribution SIS.

Regarding Xcel quarterly study processing, the Company explains that the cadence “is the most efficient way of conducting these studies and that this saves developers’ expense and leads to a predictable schedule.”⁶³ On the ITS details and parameters in its entirety Company states that “the ITS process is still in its infancy” and suggest that Company be allowed to gain more real-world experience before engaging in further discussions to modify the process. Xcel suggest that allowing for this period will provide more insights into what should be remain the same and what could be modified.⁶⁴

Considerations for other State Goals

The Joint Parties state that the ITS will impede “progress in fulfilling the legislature’s intent to interconnect distributed generation in a transparent and efficient process to give maximum possible encouragement of distributed energy resources” citing the Distributed Solar Energy Standard (DSES) program as specific program that will be slowed.⁶⁵

The JSAs assert that the ITS threshold will capture over 90 percent of projects currently in the interconnection queue.⁶⁶ JSA highlights the direct impact the ITS will have on the Low-to-Moderate Income Community Solar Garden (LMI CSG) Program and the DSES and suggests that Xcel provide an analysis of the number of feeders and substations where projects between 5 and 10 MWs would trigger its transmission study process.

The Department states that a large portion of distributed interconnection applications in Xcel’s service territory will be subject to a costly transmission study even when the concern has not triggered a MISO review and study” and that the process “has adversely impacted the LMI CSG program and other interconnection projects.”⁶⁷ The Department states that the Commission should strongly consider the impact of Xcel’s transmission studies on interconnection related and state goal related programs.

⁶² Xcel Energy, Reply Comments, P. 14, April 17, 2025

⁶³ Xcel Energy, Reply Comments, P. 19, April 17, 2025

⁶⁴ Xcel Energy, Initial Comments, P. 25, March 13, 2025

⁶⁵ Joint Parties, Initial Comments, P. 10, April 3, 2025

⁶⁶ Joint Solar Associations, Petition, P. 2, December 13, 2024

⁶⁷ The Department, P. 6, Initial Comments, April 3, 2025

Xcel disputes the claims that 90 percent of the current interconnection queue will be impacted by the ITS. The Company states that “242 substations within the Company’s Minnesota service territory, approximately 7 percent of substations have been subject to an ITS, and approximately 17 percent of substations have been subject to a MISO study” which amounts to 24% of all substations.⁶⁸ Xcel also acquiesced with the JSA’s request of providing an analysis of how many feeders and substations for projects between 5 and 10 MWs would trigger the Company’s ITS. The Company provides Table 2 which lists 37 substations.

Table 2 – Substations Likely Needing an Internal Transmission Study (DER>DML)

AVN	BEG	BLF
BIS	BLH	BLL
BUR	CGR	CHE
DOC	EKO	FAP
FRM	FSL	GLD
HAS	HEC	HUG
KIM	LAP	LIN
MAP	MYN	ORO
PBE	SAK	SAR
SCL	SDX	SJO
SMT	STO	VIL
WAB	WCS	WKN
YAM		

Ultimately, Xcel states that the primary purpose of the MN DIP is “to allow for safe and reliable interconnections” and that “this cannot be compromised by attempting to achieve some other noteworthy goals or efforts, as the Department and [JSA] group seem to suggest.”⁶⁹ Xcel adds that meeting the clean energy goals of the state is a function of the Integrated Resource Plan (IRP) and Integrated Distribution Plan (IDP).

Requests to Stay the ITS Process and Open an Investigation

The JSAs and Joint Parties both request that the Commission stay Xcel’s ITS process while either the Commission or the DGWG further investigate the process (**Decision Options 2, 3, and 6**).

The Joint Parties add that “if the Commission believes it worthwhile to develop an evaluation period while the ITS continues, Joint Parties might agree to a version of that, if the ITS is also referred to the DGWG for study, and the process is strictly limited.”⁷⁰ The Joint Parties further requests that the evaluation “focuses on the delays and transmission upgrades recommended through the ITS” and that if few or no transmission upgrades are recommended by the ITS that

⁶⁸ Xcel Energy, Initial Comments, P. 14-15, March 13, 2025

⁶⁹ Xcel Energy, Reply Comments, P. 20, April 17, 2025

⁷⁰ Joint Parties, Initial Comments, P. 11, April 3, 2025

the practice be sunset.

The Department supports that the Commission open an investigation into Xcel's ITS process and determine whether it is justified "in light of increased cost and delayed completion of projects and whether the MN DIP would require modification to reflect a justified change."⁷¹ The Department did not specify if the ITS process be stayed while the investigation takes place nor if the DGWG should investigate the process or if it should be investigated by some other means.

Xcel does not support staying their ITS and reiterates that it is required to comply with both MN DIP and NERC requirements.⁷² The Company also states that "no commenter has proposed anything close to a viable alternative to the current ITS for complying with NERC regulations" and that the "Commission should have before it a potentially viable alternative proposal before engaging the DGWG to discuss proposed alternatives to the current ITS."⁷³

Staff Analysis

MISO DER AFS

Staff believes that the current study practice of the MISO DER AFS was thoroughly explained in the background section of these Briefing Papers. Staff understands that there may have been confusion between the MISO DER AFS, the Xcel-MISO Agreement, and the ad-hoc study process between MISO and Xcel and that the Commission could have been more direct in voicing its stance in the written record. However, Staff believes that Xcel's practice of referring DERs that may have adverse transmission system impacts to MISO for its DER AFS process complies with Sections 4.3.6 through 4.3.8 of the MN DIP. To clear up any confusion on the matter, supporting Decision Option 1 will solidify the Commission's stance on the matter.

Compliance with MN DIP and Prudency

Xcel makes many claims regarding the ITS compliance with the MN DIP as with NERC. The Company claims the following to be true in this record:

- The ITS is needed to meet NERC compliance;
- Interconnecting DERs that meet Xcel's ITS threshold, but not MISO's threshold, constitute a "qualified change" as listed in NERC FAC-002-4 and MISO's definition of the term;
- That MISO agrees with Xcel's assessment that these projects are indeed a "qualified change";
- That MISO agrees that MISO's and Xcel's two separate transmission studies, together

⁷¹ The Department, P. 6-7, Initial Comments, April 3, 2025

⁷² Xcel Energy, Initial Comments, P. 26, March 13, 2025

⁷³ Xcel Energy, Reply Comments, P. 22, April 17, 2025

- through coordination, meet NERC compliance; and
- That there are periods where aggregate DER on a substation is greater than the substation's DML, exhibiting a risk for reverse flow onto the transmission system.

If all of the above is indeed true, then the reasoning and justification for Xcel's ITS appears convincing, prudent, and compliant with the MN DIP. Using NERC compliance as a proxy for prudence appears sound given that NERC standards represent the minimum standards for transmission reliability.

However, Staff does not believe the record fully supports the conclusion that the above claims are verifiably true. Mainly, several of the factors rely upon Xcel's claims that MISO agrees with them. While this may very well be the case, the record does not have any indication of MISO's opinion. Commission Staff reached out to MISO regarding whether Xcel's depiction of the two parties' relationship regarding complying with NERC and Xcel's determination that the ITS DER projects constituted a "qualified change" are accurate. MISO declined to comment on the matter.

This matters because Staff specifically believes that actions needed to be compliant with NERC to be convincing reasoning. In this particular case, for example, Xcel cites NERC FAC-002-4 which requires the Transmission Planner (Xcel and MISO in this case) and Transmission Coordinator (MISO) to study the "reliability impacts of: ... electricity end-user Facilities seeking to make a qualified change as defined by the Planning Coordinator under Requirement R6."⁷⁴ The key term here is "qualified change" and it is defined by the Planning Coordinator which is MISO in this case. Xcel cited MISO's definition of "qualified change" earlier and also explained their reasoning why the DERs relevant to the ITS constitute a "qualified change". However, Staff believes that this determination and reasoning requires MISO's confirmation, more so than the Commission's acceptance, since NERC identifies the Transmission Coordinator as the definition creator.

However, the record does not include confirmation from MISO that they agree with this interpretation of "qualified change". Additionally, the record also does not include MISO's confirmation that Xcel's depiction that the two parties collectively meet NERC compliance, together, through the coordination between MISO's studies and Xcel's studies combined. This would resolve the question that the JSAs and the Joint Parties pose which asks that if the ITS threshold is needed to meet NERC compliance, then why does MISO not also require the same threshold to meet NERC compliance. The record does show that before MISO implemented its DER AFS, Xcel tried to have their current ITS threshold that includes DML included process, but that MISO declined out of what Xcel's states was a "desire for simplicity and transparency". Notably, it was not out of a desire to meet NERC compliance.

Xcel also cites FERC TPL-001-5 which requires yearly studies to ensure voltage and thermal limits on the system are maintained for a variety of outage scenarios and that the ITS performs

⁷⁴ NERC: FAC-002-4 – Facility Interconnection Studies. <https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-002-4.pdf>.

this type of analysis. Staff acknowledges that this study may be required for NERC and that the ITS may have a dual purpose of accomplishing this NERC requirement and studying the respective impacts interconnecting DERs may have on the transmission system. However, this dual purpose does not necessarily justify subjecting interconnecting DERs to the ITS as the annual study could be conducted for NERC compliance separate from the DER projects.

Xcel also claimed that there is a risk of aggregate DER, especially large PV, on a substation to be produce full capacity during DML pointing to spring days with mild temperatures with low system loads but full sun. This, again, may also prove convincing reasoning for the ITS but Xcel did not provide any data to back up this claim.

Xcel stated that they observed “real-time concerns” during summer loading in areas of high DER penetration which can cause low voltage on the transmission system because of the DERs absorbing VAR’s (reactive power) and “pulling down area voltage.”⁷⁵ Staff wonders if this is still an ongoing issue now that 1547-2018/2020 advanced inverters have been required for interconnection as of January 1, 2024.

Ultimately, the reasoning for Xcel’s ITS process may appear convincing, but the record is lacking in some key areas to verify this reasoning. Broadly, Staff agrees that Xcel is a Transmission Provider per the MN DIP definition, and that the Company is allowed to study for potential Transmission System adverse system impacts according to Section 4.3.6 of the MN DIP. Whether or not the ITS is capturing “adverse system impacts” still needs to be confirmed.

On Whether to Investigate, Stay, or Review the ITS

Investigation

Due to the above-described lack of confirmation on key pieces of information, Staff believes there may be merited to at least obtain further information and review of the claims made by Xcel, especially as it pertains to NERC compliance. At the very least it may provide greater transparency on the process which appears to be lacking.

If the Commission can gain greater confidence or certainty from Xcel regarding the NERC compliance and other prudency or merit arguments, either through a written report, at the agenda meeting, or otherwise, Staff believes it would not be in the interest of the Commission to initiate a formal investigation (**Decision Option 4**).

If the Commission deems the merit arguments to be inadequate or lacking, the Commission may choose to open a formal investigation into Xcel’s ITS practice (**Decision Option 3**). If the Commission chooses to investigate the ITS, it may also utilize the DGWG in this effort.

Staying of the Xcel ITS Process

⁷⁵ Xcel Energy, Initial Comments, P. 16, March 13, 2025

The JSAs and Joint Parties recommend that the ITS Process be stayed while it is investigated. Xcel disagrees on reliability grounds and the Department did not indicate its preference.

While it remains unclear whether the Xcel ITS is prudent, if what the Company claims is true regarding its necessity on reliability and NERC compliance grounds, there could be a reliability risk on either the distribution system or transmission system. Additionally, this process has already been in place for nearly two years since its implementation on September 1, 2023. For these reasons Staff finds inadvisable to stay the ITS process while it is being investigated.

The Joint Parties also suggest that the Xcel ITS be sunset if an evaluation proves that few or zero upgrades are recommended by the ITS. Staff disagrees with this. However, if an evaluation shows that a very small subset of the total projects studied result in an upgrade requirement, then analysis could be done to see if there are more commonality factors present in those identified project studies that could then be applied to the ITS threshold or screen. This could potentially make the ITS process less wide-reaching.

Review

Outside the decision to formally investigate the merits of Xcel's ITS, the Commission may still request further information from Xcel and to still have the ITS practice reviewed for transparency, implementation, accessibility, MN DIP edits for clarity and guidance, and potential for an evaluation period.

The Commission may choose to order Xcel to file a report addressing the information that may be lacking in the record as well to provide greater details and transparency regarding the operation and implementation of the ITS.

Staff recommends, at minimum, the following be included in the report, filed 30 days from the Commission Order: **(Decision Option 5)**

- a) A complete description and detailing of the full Xcel ITS process including the thresholds, rules, process, timelines, and costs
- b) Technical evidence or reasoning, with supporting data, on why the ITS-related DERs may have adverse impacts, including how they may constitute a "qualified change" under MISO's definition of qualified change per NERC FAC-002-4 as well as further reasoning for the other cited NERC standards
- c) Evidence with supporting data of potential backflow onto the transmission system where DERs are greater than DML (e.g. during springtime)
- d) Xcel's plan to evaluate the ITS after [X Time Period], the metrics the process will be measured against, the reporting requirements the Company will file between now and the evaluation.
- e) Any other information the Executive Secretary considers necessary for the investigation.

If the Commission chooses to require Xcel to file a report to the Commission, it may also require Xcel to present the contents of the report to the DGWG as well as other matters regarding implementation, transparency, and evaluation (**Decision Option 6**). Staff recommends the following provisions and topics be included and deemed in scope of the DGWG:

- a) Xcel shall present the contents of the proposed report in the first DGWG meeting following the Order. Additionally, if a report is filed, parties may submit relevant questions and clarifications to Commission Staff who will relay them to Xcel to have answered at the DGWG meeting.
- b) The Executive Secretary will also determine the appropriate next steps in the review.

The following topics may also be included in DGWG meetings:

- a) Potential changes to the structure or details of the ITS process
- b) When an evaluation period may be appropriate and what measures or metrics to be included in that evaluation
- c) Any recommended MN DIP edits that may be appropriate regarding the ITS process
- d) Actions that may increase transparency into the ITS process or indications to interconnection customers that an ITS or MISO DER AFS may be required

Staff recommends **Decision Option 5 and 6** to achieve greater transparency and understanding of Xcel's ITS process.

Transparency of Xcel's ITS Process

If the Commission chooses not to stay the Xcel ITS process and there will not be immediate changes following a report or the start of an DGWG investigative process, Staff believes it is important that the current ITS process be more clearly laid out and accessible to interconnection customers.

Xcel claims that they broadcasted the implementation of the ITS process as well as its threshold requirements relative to MISO's DER AFS, in various filings prior to its implementation. Staff agrees on this point and that the prospect for the potential need of an ITS for a given DER project should not have been surprising to the developer community.

However, Staff believes that how exactly the ITS was going to work in practice and what the process consisted of was not well communicated nor very accessible to interconnection customers. The responses from the developer community in how enlightening this record-development process has been is indicative of this opacity. Staff agrees with the JSAs and Joint Parties that this process has not met the MN DIP goal of being of a having an interconnection process that is "easily understandable for everyone involved."

Staff suggests that Xcel be required to include the full details, procedures, costs, various deadlines and schedules, a summary of the justification of the necessity of the ITS process, and a table listing the substations likely needing an ITS that is updated monthly, be made publicly available on Xcel's interconnection webpage (**Decision Option 7**).

Staff also notes that it should be possible to include additional information on feeder and substation datasets on the Hosting Capacity Analysis (HCA) map that indicates potential likelihood or need for a MISO DER AFS or Xcel ITS. Even an indication that the last DER studied on the feeder or substation required a MISO or Xcel transmission study may prove useful to interconnection customers (**Decision Option 8**). This could potentially be a topic for discussion in the DGWG or other investigation.

Miscellaneous

Staff notes that the DGWG has the topic of "flexible interconnection" on its agenda and that a potential future use case to consider may include a using a flexible interconnection agreement as a mitigation to any adverse system impacts on the transmission system by having the DERs curtail when DER production is greater than load.

Staff identifies that some parties in this record used quotes from a DGWG member in recording of a DGWG meeting on a separate topic (non-export systems). Staff would like to reiterate that the efficacy of the DGWG is built on trust and that the group is meant to foster communication and collaboration on various DER topics between parties. Quoting a member from one of the meetings and putting it into the record breaks that trust. As a rule, the reports and filings that come from the DGWG can be referenced in the record but the specific discussions during the meetings should not be. If a party wants to use DGWG members to support their arguments, Staff suggests having that party sign onto party comments in support or to have that DGWG member file into the record on behalf of their own party.

DECISION OPTIONS

1. Xcel is authorized to incorporate the MISO DER AFS study process and results in its compliance with the MN DIP. (Staff Alternative)
2. Order Xcel to stay the ITS process until it receives approval from the Commission after investigation. (JSA and JSA)
3. Open an investigation of the ITS and delegate authority to the Executive Secretary to proceed in the instant docket or a new docket. (JSA)
4. Decline to investigate Xcel's use of the ITS at this time. (Xcel)
5. Require Xcel to file a report, 30 days following a Commission Notice, to the Commission that includes, at minimum, the following:
 - a) A complete description and detailing of the full Xcel ITS process including the thresholds, rules, process, timelines, and costs
 - b) Technical evidence or reasoning, with supporting data, on why the ITS-related DERs may have adverse impacts, including how they may constitute a "qualified change" under MISO's definition of qualified change per NERC FAC-002-4 as well as further reasoning for the other cited NERC standards
 - c) Evidence with supporting data of potential backflow onto the transmission system where DERs are greater than DML (e.g. during springtime)
 - d) Xcel's plan to evaluate the ITS after [X Time Period], the metrics the process will be measured against, the reporting requirements the Company will file between now and the evaluation.
 - e) Any other information the Executive Secretary considers necessary for the investigation.
6. Delegate authority to the Executive Secretary to refer the review of Xcel's Internal Transmission Studies to the Distributed Generation Work Group. After review, the DGWG may file recommendations with the Commission on a timeline to be determined by the Executive Secretary. (JSA, Joint Parties)

[If the DGWG is tasked with review of the Xcel ITS, Staff also recommends the following]
(Staff suggestion)

- a) Xcel shall present the contents of the proposed report in the first DGWG meeting following the Order. Additionally, if a report is filed, parties may submit relevant questions and clarifications to Commission Staff who will relay them to Xcel to have

answered at the DGWG meeting.

- b) The Executive Secretary will also determine the appropriate next steps in the review.
 - c) The following topics may be included in DGWG meetings:
 - i. Potential changes to the structure or details of the ITS process
 - ii. When an evaluation period may be appropriate and what measures or metrics to be included in that evaluation
 - iii. Any recommended MN DIP edits that may be appropriate regarding the ITS process
 - iv. Actions that may increase transparency into the ITS process or indications to interconnection customers that an ITS or MISO DER AFS may be required
7. Require Xcel to include the full details, procedures, costs, various deadlines and schedules, as well as a summary of the justification of the necessity of the ITS process be made publicly available on Xcel's interconnection webpage. Included in this publication is a table listing the substations likely needing an ITS that is updated monthly.
8. Require Xcel to include whether a substation is likely to need a an ITS in their Hosting Capacity Analysis (HCA) and complementary map.