

## Staff Briefing Papers

<b>Meeting Date</b>	<b>Thursday, February 13, 2025</b>	<b>Agenda Item 1*</b>
Company	Northern States Power Co. d/b/a Xcel Energy	
Docket No.	E999/CI-16-521	
	<b>In the Matter of Updating the Generic Standards for the Interconnection and Operation of Distributed Generation Facilities Established Under Minn. Stat. § 216B.1611</b>	
Issues	Should the Commission approve the Technical Subgroup’s proposed changes to the State of Minnesota Distributed Energy Resources Interconnection Process (MN DIP) regarding adding new study screens for unintentional islanding?	
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 <b>Relevant Documents</b>	<b>Date</b>
Dakota Electric Association – Comments	December 18, 2024
Otter Tail Power Company – Comments	December 18, 2024
Interstate Renewable Energy Council – Comments	December 18, 2024
Minnesota Power – Comments	December 18, 2024
Xcel Energy – Comments	December 18, 2024
Minnesota Rural Electric Association – Comments	December 18, 2024
Department of Commerce – Comments	December 19, 2024

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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.

## BACKGROUND

On July 17, 2023, in its Order, the Commission directed the Distributed Generation Working Group's (DGWG) Technical Subgroup (TSG) to do the following:

[The TSG shall] convene to examine the possibility of unintentional islanding caused by interconnection of DERs. As part of the examination, the TSG will identify additional screens that utilities can perform to assess the risk of unintentional islanding, and determine if there are less costly alternatives to Voltage Supervisory Reclosing for addressing any perceived risk. The TSG will seek feedback from the DGWG during this examination, and file in Docket No. E999/CI-16-521 a report with its findings and recommendations by July 31, 2024.

On November 17, 2023, the DGWG held an informational meeting on unintentional islanding with presentations from experts from Sandia National Labs, Interstate Renewable Energy Council (IREC), and electric power research institute (EPRI).<sup>1</sup>

On April 15, 2024, the Commission extended the deadline for the task created in the Xcel Rate Case to December 31, 2024, via Commission Order in Docket 16-521.

The TSG met five times through May, June, and July and submitted a report of the group's findings and recommendations to Staff on August 26, 2024 in Docket 16-521.

On November 1, 2024, the TSG presented their findings and recommendations to the DGWG. Slides of that meeting were filed in Docket 16-521 on November 12, 2024.

On November 17, 2024, the Commission filed a Notice of Comment Period on the TSG's proposed recommendation.

On December 18, 2024, Dakota Electric Association (Dakota), Otter Tail Power Company (OTP), Xcel Energy (Xcel), Minnesota Power (MP), Interstate Renewable Energy Council (IREC), Minnesota Rural Electric Association (MREA) all filed comments.

On December 19, 2024, the Department of Commerce (the Department) filed comments.

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<sup>1</sup> Slides of this meeting were filed on March 21, 2024, in Docket No. E999/CI-16-521

The TSG for this topic includes the following:

Table 1: TSG Member List (Unintentional Islanding)

Organization	Representative	Role
MREA	Kristi Robinson	Convener
Dakota Electric	Alex Nelson	Participant
Xcel Energy	Ryan Pierce, Dean Schiro	Participant
Otter Tail Power	Cody Anderson, Dylan Stupca	Participant
Minnesota Power	Paul Helstrom, Kai Syck, Craig Talbot, Brian Clement, Jason Christoff	Participant
Nokomis	Julian White, Reigh Walling	Participant
IREC	Brian Lydic	Participant
EPRI	Tom Key, Wei Ren, Aminul Huque	Participant
SANDIA	Michael Ropp	Participant
Individual	Steve Coleman	Participant

### Unintentional Islanding Primer

A primer from an NREL paper on what islanding is and why it is important:

An island is a condition in which a DER continues to energize a portion of the power system when it is electrically isolated from the utility source. If unplanned, this *unintentional islanding* condition could become harmful to connected equipment because the DER might not be designed to maintain frequency and voltage without a utility source. In addition, the unintentional island could present a hazard to utility workers or other people in the area who are unaware of the electrically energized island.<sup>2</sup>

## DISCUSSION

The TSG presented their recommendations to the DGWG on November 1, 2024 after working on the topic as a group from May through July of 2024. The general feedback at the meeting was positive and appreciative of the group's efforts. The TSG noted that the group accomplished two out of three goals the Commission had tasked them with. The group had gained a better understanding of the possibility that DERs under the current interconnection process may cause unintentional islanding. The group also developed screens utilities can perform to assess that risk and ultimately mitigate that risk. The group did not determine or explore less costly alternatives to Voltage Supervisory Reclosing (VSR) but plans to continue its work into 2025 toward that end.

The recommendations proposed by the TSG is adding the following under the Supplement

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<sup>2</sup> From "A Primer on the Unintentional Islanding Protection Requirement in IEEE Std 1547-2018" by Narang, Gonzalez, and Ingram. [Link to Source](#)

Screens section of the MN DIP: **(Decision Option 2)**

3.4.4.4 Unintentional Islanding and Reverse Power Screen: the Area EPS Operator shall give due consideration to the following assessments to identify any system impacts or potential safety risks related to unintentional islanding and / or the effects of reverse power flows on the system through the application of this screen.

3.4.4.4.1 Whether synchronous Distributed Energy Resources are interconnected to the same circuit and what islanding protection schemes are proposed or currently exist.

3.4.4.4.2 Whether the proposed Distributed Energy Resource includes protection that addresses unintentional islanding or equivalent functionality as deemed appropriate by the Area EPS Operator.

3.4.4.4.3 Whether the impact of reverse power flows on the existing grid infrastructure negatively affects its ability to operate safely and reliably with active cogeneration and bi-directional power flows.

**3.4.5** If the proposed interconnection passes the supplemental screens in sections **Error! Reference source not found.**, **Error! Reference source not found.**, **and Error! Reference source not found.**, **and 3.4.4.4** above, or if the proposed interconnection fails the screens, but the Area EPS Operator determines that the DER may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the interconnection shall proceed as follows:

**3.4.5.1** If the proposed interconnection passes the supplemental screens in sections **Error! Reference source not found.**, **and Error! Reference source not found.**, **Error! Reference source not found.**, **and 3.4.4.4** above and does not require construction of facilities by the Area EPS Operator on its own system, the Area EPS Operator shall provide the Interconnection Customer an executable Interconnection Agreement within five (5) Business Days.

In their initial comments, Dakota added what they claimed were de minimus changes in line with the TSG's recommendations and recommended Section 3.4.2 be amended in the following way: **(Decision Option 3)**<sup>3</sup>

3.4.2 The Interconnection Customer may specify with the written agreement and deposit the order in which the Area EPS Operator will complete the supplemental review screens. The order specified shall be at the level of sections 3.4.4.1, 3.4.4.2, **and 3.4.4.3, and 3.4.4.4.**

All parties who commented on the record supported the TSG's recommended changes to the

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<sup>3</sup> Dakota Electric, Initial Comments, P. 2, December 18, 2025

MN DIP. This includes the Department, MREA, OTP, MP, Xcel, Dakota, and IREC (**Decision Option 2**).<sup>4</sup>

IREC adds that while they support the changes the screens are broad in nature and leaves “significant discretion to the utility and therefore lacks the transparency that would be required through a more specific procedure.”<sup>5</sup> IREC therefore recommends that the Commission accept the recommendations if the Commission also orders “further investigations within two years to determine a) how well screen 3.4.4.4 is being implemented by the utilities, b) whether the screen has resulted in a reduction of Voltage Supervisory Reclosing, and c) specific and transparent screening processes that could be put in place to improve this screen” (**Decision Option 4a-c**).

IREC also recommends that the Commission continue to explore the screening processes identified by the TSG members such as EPRI’s IPRAT (Island Probability Risk Assessment Tool) and a potential 3.4.4.4 screen on Islanding and Reverse Power.

Xcel supports the TSG’s recommendations but notes that their tariffs must be updated to reflect the new requirements and provide guidance to stakeholders on the implementation of the additional screens. Xcel requests a 30 day period from the issuance of any Order to amend their tariffs (**Decision Option 5**).<sup>6</sup>

Dakota notes that they will also have to update their tariff for these changes and for changes made in prior MN DIP changes.<sup>7</sup>

### STAFF ANALYSIS

Staff acknowledges the work the TSG, the rest of the DGWG, and outside experts put into the process that led to these recommendations. Staff also supports **Decision Option 2**, that the TSG’s recommendations be accepted as well as Dakota’s de minimus changes (**Decision 3**). In the November 1, 2024 DGWG meeting the TSG recognized that their work on unintentional islanding was not done yet and that they planned to continue their work in 2025. To that end, Staff agrees with IREC that the group can continue to explore the screening process while it works on the VSR alternative component of their task. Additionally, Staff agrees that the new screens could be evaluated in two years to both measure their success as well to determine if any changes or iterations should be made (**Decision Option 4**).

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<sup>4</sup> The Department, MREA, OTP, MP, Xcel, Dakota, IREC, Initial Comments, December 18, 2025.

<sup>5</sup> IREC, Initial Comments, P. 2, December 18, 2025

<sup>6</sup> Xcel Energy, Initial Comments, P. 4, December 18, 2024

<sup>7</sup> Dakota Electric, Initial Comments, P. 2, December 18, 2025

### DECISION OPTIONS

1. Deny the TSG's recommended changes to the MN DIP regarding unintentional islanding.
2. Approve the TSG's recommended changes to the MN DIP regarding unintentional islanding. (*the Department, Xcel, MREA, Dakota, MP, OTP, IREC*)
3. Approve Dakota Electric's recommended changes to Section 3.4.2 of the MN DIP. (*Dakota*)
4. Direct the DGWG to investigate and provide a report on the following topics within 2 years from the date of this order: (*Staff interpretation of IREC's recommendation*)
  - A. How well screen 3.4.4.4 is being implemented by the utilities
  - B. Whether the screen has resulted in a reduction of Voltage Supervisory Reclosing
  - C. Specific and transparent screening processes that could be put in place to improve this screen.
5. Require each rate-regulated utility to file its amended tariffs reflecting the MN DIP changes within 30 days of the Commission Order.