414 Nicollet Mall
Minneapolis, MN 55401

February 2, 2024

—Via Electronic Filing—

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

RE: REPLY COMMENTS
IN THE MATTER OF UPDATING THE GENERIC STANDARDS FOR THE INTERCONNECTION AND OPERATION OF DISTRIBUTED GENERATION FACILITIES ESTABLISHED UNDER MINN. STAT. §216B.1611
DOCKET NO. E999/CI-16-521

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy, submits these Reply Comments in response to Comments submitted by parties on January 19, 2024 in the above referenced docket. We appreciate the opportunity to respond to parties' Comments regarding proposed changes to the Minnesota Distributed Energy Resource Interconnection Process to enable additional customer-sited distributed energy resources up to 40 kW.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service lists. Please contact Amber Hedlund at amber.r.hedlund@xcelenergy.com or (612) 337-2268 or me at jessica.k.peterson@xcelenergy.com. or (612) 330-6850 if you have any questions concerning this filing.

Sincerely,

/s/

AMBER HEDLUND
MANAGER, REGULATORY PROJECT MANAGEMENT

Enclosures
cc: Service Lists

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Hwikwon Ham	Commissioner
Valerie Means	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF UPDATING THE GENERIC STANDARDS FOR THE INTERCONNECTION AND OPERATION OF DISTRIBUTED GENERATION FACILITIES ESTABLISHED UNDER MINN. STAT. §216B.1611	DOCKET NO. E999/CI-16-521 **REPLY COMMENTS**

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits these Reply Comments in response to Comments submitted by parties on January 19, 2024 in the above referenced docket. We appreciate the opportunity to respond to parties' Comments regarding proposed changes to the Minnesota Distributed Energy Resource Interconnection Process (MN DIP) to enable additional customer-sited distributed energy resources up to 40 kW.

On November 1, 2023, three parties submitted Proposals besides the Company, including Dakota Electric Association (Dakota Electric), the Minnesota Rural Electric Association (MREA), and the Minnesota Solar Energy Industries Association (MnSEIA). Several parties, including the Company, provided comments regarding these proposals: All Energy Solar (All Energy), Coalition for Community Solar Access (CCSA), Dakota Electric, Department of Commerce (Department), MnSEIA, Nokomis Energy (Nokomis), and United States Solar Corporation (US Solar).

Parties seem to agree that the MN DIP should be modified to allow for two separate queues in some way for interconnection (see comments by All Energy, Dakota Electric, Department (on a pilot basis), and MnSEIA). However, these opinions diverge when it comes to how the two separate queues should be treated.

The 2023 Legislation gave the Commission the authority to determine what is necessary to allow for an increased amount of small distributed energy resources (DER) and how to give them priority over larger projects in the queue. At Xcel Energy, our residential and small business customers have been blocked from interconnection due to costly distribution upgrades. These customers continue to reach out to the Company asking why they are unable to proceed, including nineteen parties commenting in Docket No. E002/C-23-424 on this very issue. Regardless of changes to the interconnection queue, these customers will continue to have upgrade costs, but we have an opportunity to impact certain feeders today, to reserve capacity so this phenomenon does not continue. Establishing a priority queue alone would not be sufficient to maximize small DER interconnection, since capacity constraints in the Company's system will expand over time to additional areas as they become saturated with large DER. To address this issue, our proposed changes to the MN DIP must allow reserving capacity for small DER so that customer-sited DER up to 40 kW will not be prohibited from interconnecting in the future.

The Company recognizes that addressing capacity constrained feeders is also needed, in fact, DER interconnection issues are currently being addressed in several other Commission dockets, including the Integrated Distribution Plan (IDP) (Docket No. E002/M-23-452) and DER System Upgrade Program (Docket No. E002/M-23-458), among others. The IDP aims to grow and prepare for new and increased loads through system upgrades in the five-year planning period and addresses advanced grid infrastructure and grid improvements. Many of these strategies could take years to be put in place, compared to a much shorter implementation timeframe and immediate impact of the small DER capacity reservation the Company is proposing in this proceeding. The DER System Upgrade Program, to be approved by the Department of Commerce will help fund upgrades to increase available capacity for small DER in already constrained areas. As required by legislation, any new capacity created by the upgrade projects (to be approved by the Department) that the Company implements will be reserved for small DER projects.

Additional programs created by the 2023 Legislation include the new Non-Legacy Community Solar Garden (CSG) Program and the 3 percent Distributed Solar Energy Standard (DSES). While all these programs may have conflicting priorities – whether to prioritize customer-sited small DER, projects that help meet the DSES, or CSGs and other larger projects – we believe the legislative intent was to give a high priority for small, customer-sited DER above these other priorities. Our Proposal in this proceeding was made with that goal in mind.

The Company provides further responses to parties' comments in the remainder of this Reply.

REPLY COMMENTS

I. 2023 MINNESOTA LEGISLATION

The 2023 Minnesota Legislation established significant changes and new programs that fundamentally impact the Company's solar programs and DER interconnection. Many of these legislative changes are interrelated and generally aim to increase solar energy resources, but with specific goals of doing so in different ways. Many parties commented about the intent of the legislation and whether it was achieved by the Initial Proposals. However, as each piece of new legislation addresses different types of DER and has specific goals, their priorities may conflict with each other.

We acknowledge the importance of taking all pertinent factors into account together holistically as modifications are made to the DER interconnection process and programs. When doing so, we believe that the Commission should prioritize allowing customer-sited projects up to 40 kW to have queue priority and to the "maximum extent feasible" enable these types of DER projects to be reviewed and approved within the MN DIP guidelines. The Company believes that its proposal as filed on November 1, 2023 here is aligned with this public interest approach.

Table 1 below provides an overview of the pertinent new legislation.

Table 1: 2023 Legislative Action Summary

Statute	Description & Relevant Dockets	Overview
H.F. 2310 Article 12, Section 75	Queue priority for DER up to 40 kW Docket No. E999/CI-16-521	The new legislation directed the Commission to open a proceeding to establish interconnection procedures that allow customer-sited distributed generation projects up to 40 kW be processed according to MN DIP schedules and have priority over larger projects that may otherwise enjoy superior positions in the processing queue. This is the subject of the Company's Proposal here and the current Reply Comments.
216C.378	Distributed Energy Resources System Upgrade Program Docket No. E002/M-23-458	The new legislation created a DER System Upgrade Program under Minn. Stat. § 216C.378, allocated $10 million for such system upgrades, and directed the Company to file with the Department by November 1, 2023 a plan how to use the allocated funds for infrastructure investments. By law, the funded system upgrades must maximize the number and capacity of DER projects up to 40 kW. On November 1 the Company filed its Proposed Program Plan. Under this Plan, the $10 million was proposed to be used to address six areas of capacity constraint. Our filing pointed out that to address the total of 26 capacity constrained feeders and the total of 38 capacity constrained substation transformers identified in July 2023, it would cost over $153

Statute	Description & Relevant Dockets	Overview
		million and take several years to implement. (Proposed Program Plan, at pages 10-11). Accordingly, the $10 million only addresses a small portion of the current capacity constrained areas. The current lack of DER hosting capacity on specific feeders and substations has been caused in large part by the CSG program.
216B.1641	Non-Legacy LMI Community Solar Garden (CSG) Program Docket No. E002/M-23-335	The new legislation also created a Non-Legacy Low-to-Moderate Income (LMI) CSG program that is administered by the Department. Under this new program, CSGs can now be up to 5 MW in size. Also, the "adjacent county rule" that applies in the Legacy CSG program so that each subscriber needs to be in the same or adjacent county as the CSG, does not apply to the new CSG program. Once this program opens up, the Company anticipates that many CSG applications will be submitted in areas not currently capacity-constrained. Unless the Commission acts in a timely way to preserve DER hosting capacity for customer-sited projects up to 40 kW, these new CSGs might take away DER hosting capacity from these other projects. Once DER hosting capacity is used by other DER projects, as shown in our Proposed Program Plan in Docket No. E002/M-23-458, it can be very expensive to create new DER hosting capacity.
216B.1691 Subd. 2h	Distributed Solar Energy Standard (DSES) Docket o. E002/M-23-403	The new legislation further created the new 3% DSES under Minn. Stat. §26B.1691, Subd. 2h, which means that by the end of 2030, at least 3 percent of the Company's total Minnesota retail electric sales must be generated from distributed solar energy generating systems less than 10 MW in size unless the Commission modifies or delays the requirement as authorized by this statute. To the extent that DER hosting capacity is used by projects in furtherance of the DSES, this takes away hosting capacity that otherwise could be available for customer-sited projects up to 40 kW. Similarly, to the extent that DER hosting capacity is used by CSG projects, this takes away hosting capacity that otherwise could be available for DSES projects, and vice-versa.

As shown in the above table, there are significant public interest decisions for the Commission to make, and this includes how to prioritize the following for the finite amount of DER hosting capacity available on any specific feeder and substation:

1. Customer-sited DER up to 40 kW.
2. Projects that would help fulfill the 3 percent DSES.
3. CSGs and other larger projects.

The Company believes that it would be consistent with the public interest to give highest priority to customer-sited DER up to 40 kW, as was set forth in our November 1, 2023 Proposal in this docket. There are two primary reasons:

1. The new law favors customer-sited projects up to 40 kW to be processed and interconnected.

The law states as follows:

> *No later than September 1, 2023, the commission shall open a proceeding to establish interconnection procedures that allow customer-sited distributed generation projects up to 40 kilowatts alternating current in capacity to be processed according to schedules specified in the Minnesota Distributed Energy Resources Interconnection Process, giving such projects priority over larger projects that may enjoy superior positions in the processing queue.*[1]

The Company disagrees with comments such as CCSA's statement that "the legislation was not intended to limit which DER projects can interconnect to the grid in the first place."[2] The only way to process small DER applications consistent with the MN DIP schedules is if there is available DER hosting capacity. Not reserving DER hosting capacity for these projects would prevent the Commission from fulfilling this legislative mandate. The Company therefore fundamentally disagrees with comments from CCSA, the Department, MnSEIA, US Solar, and Nokomis stating that the new law does not support reserving DER hosting capacity for customer-sited projects up to 40 kW.[3]

The new law appears to be driven by constituent complaints about not being able to install PV rooftop systems due to the lack of DER hosting capacity. We have heard of several customers reaching out to state legislators about their inability to have rooftop solar systems installed. This has also been the subject of several customer complaints to the Consumer Affairs Office. Further, nineteen parties, in addition to Xcel Energy, submitted comments regarding the Complaint filed in Docket No. E002/C-23-424.[4] Many of these comments expressed frustration with the distribution system not having enough hosting capacity available on specific feeders/substations to interconnect residential rooftop DER systems. While we share that frustration, we disagree on the reasons. The lack of hosting capacity has not been caused by the Company's unwillingness to allow DER interconnections. In fact, the opposite is true. The Company has made great efforts in alignment with the Minnesota interconnection process to interconnect large amounts of DER, especially CSGs

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[1] House File 2310 (Law 2023, Ch. 60). Art. 12; Section 75.
[2] Initial Comments by CCSA (pg. 3).
[3] See Initial Comments by CCSA (pg. 3), Department (pg. 13), MnSEIA (pg. 9), US Solar (pg. 2), and Nokomis (pg.2)
[4] *In the Matter of the Formal Complaint and Request for Relief by the Minnesota Solar Advocates against Northern States Power Company*.

which are relatively large and in some areas are pervasive. As a consequence, feeders and substations in certain areas are now saturated with DER. This means that the only way to accommodate additional DER safely and reliably in these locations is to make significant upgrades to our network at a cost that is too high for individual residential rooftop DER projects to move forward.

As an example, we note the September 21, 2023 submission of Minn Solar (a solar rooftop developer), which we have included as Attachment A. Minn Solar explains how DER hosting capacity for rooftop systems is no longer available in certain areas due to CSGs and how this problem will be compounded with Non-Legacy CSGs, which can be up to 5 MW in size and will not be subject to the "adjacent county" rule. The Company believes it would be important that the Commission implement small solar capacity reservation as soon as possible to help prevent available hosting capacity being assigned to CSGs.

Some parties argue that such a carve-out would conflict with other statutory programs such as Solar For Schools[5], and Solar on Public Buildings[6] The Solar on Public Buildings program (Minn. Stat. § 216C.377, Subd. 5) does not allow projects over 40 kW, and therefore our proposed carve-out would help these types of applications. The Solar for Schools program (Minn. Stat. § 216C.375, Subd. 5) allows projects up to 1 MW in the Xcel Energy service territory. To the extent to which the Commission wants to elevate the priority of Solar for Schools applications to be consistent with the public interest, the Commission can determine that these applications also will be placed in the priority queue and be subject to the same type of capacity reservation as small DER projects.

The Company also notes the mischaracterization of the issues by CCSA, which argues that there currently are DER congestion constrained areas and that therefore the Company's proposal is insufficient.[7] CCSA argues that the solution is more investment into the grid. The Company's proposal aims to prevent the spread of the type of DER congestion, that left unchecked, would prevent more customer-sited projects up to 40 kW from interconnecting. As noted above, for system constrained areas where the DER hosting capacity is already consumed, infrastructure upgrades such as in the Proposal submitted in Docket No. E002/M-23-4\58 will need to be completed to allow further interconnection in these areas.

[5] See Initial Comments by All Energy Solar (pg. 2), MnSEIA (pg. 9), and US Solar (pg. 2).
[6] See Initial Comments by All Energy Solar (pg. 1), MnSEIA (pg. 9)
[7] Initial Comments by CCSA (pg. 3).

2. The new law encourages the interconnection of projects up to 40 kW to the "maximum extent feasible"

The new legislation provides a specific legislative goal to the "maximum extent feasible" to enable all DER projects with a nameplate capacity of up to 40 kW to be reviewed and approved within 43 business days. Minn. Statute § 216C.378, Subd. 2, provides that the DER System Upgrade Program (Docket No. E002/M-23-458) must be designed to achieve various goals, including the following, to the "maximum extent feasible":

- Enable all DER projects with a nameplate capacity of 40 kW AC to be reviewed and approved by the utility within 43 business days; and

- Minimize interconnection barriers for electric customers seeking to construct net metered facilities for on-site electricity use.

The Company acknowledges that these statutory provisions are from the statute applicable to the Company's Proposed Program Plan on how to spend the $10 million in upgrades described in the table above. But, these specific provisions are not tethered to the funding. Instead, they can be read as part of the overall public interest policy of the state and provide guidance to the Commission on how to address competing policy issues.

Once a large DER is interconnected to the Company's distribution network it can be in place for a long time – possibly several decades. When a CSG uses DER hosting capacity, this can impair or economically prohibit the interconnection of on-site generation. CSGs or other DER projects that effectively and permanently take away hosting capacity from future on-site generation up to 40 kW may not be consistent with the public interest, as the timeline to interconnect these small projects may approach infinity, which is well beyond the 43-day goal in the statute.

The Company's August 28, 2023 Response in the CSG dockets (Docket Nos. E002/M-13-867 and E002/M-23-335) addressed the friction between the new law provisions, including the need to maximize DER hosting capacity for systems up to 40 kW and how Non-Legacy LMI CSGs may be in conflict with this (Minn. Stat. §216C.378); and, the new legislative requirement for the Company having at least 3 percent of total retail electric sales from DER solar energy generating systems in the Company's service territory and how Non-Legacy LMI CSGs may conflict with this (Minn. Stat. §216B.1691, Subd. 2h). Although parties who filed comments in the CSG docket did not engage in any discussions on the substance of these public interest issues, the Company believes the Commission should address them. Specifically in

this docket, the Commission can determine that the 2023 Legislation prioritized small DER projects and approve our proposal to reserve capacity for them in the priority queue.

II. INTEGRATED DISTRIBUTION PLAN

The Company's IDP explains that we are beginning to consider more proactive and tailored investments that enable the clean energy transition, including by supporting the interconnection of generating DER like rooftop solar to the system. In addition, the IDP provides a placeholder estimate in the five-year budget for proactive system upgrades to increase DER hosting capacity if approved by the Commission. It also describes grid modernization systems and techniques necessary to use advanced technologies that are rapidly changing in the field.

As it relates to this docket, the IDP provides a forecast of significant adoption of large, front of the meter (FTM) solar adoption in the first ten years of the plan forecast. As All Energy Solar noted in their Comments[8], the behind the meter (BTM) forecast does not show dramatic growth until 2040. This is not a reflection of minimal growth of small DER resources, rather they are growing at a different rate than larger DER resources as a result of the new non-Legacy CSG program and the DSES both of which have defined capacity opportunities in statue (as noted above). In fact, the forecast data shows that BTM adoption is expected to continue at a rate between 50 and 70 MW per year between now and 2040.

The IDP also compared our current planning processes with a 50 percent planning limit as suggested by our Proposal for the Small Solar Queue. The 50 percent planning limit showed a higher upgrade cost during the near term as a result of the higher rate of FTM adoption – it is less accommodating of large FTM adoption compared to our current Technical Planning Standard (TPS). However, it also shows consistently lower forecasted upgrade costs after 2040 when compared to the TPS. This is because the 50 percent planning limit will have allowed room for small BTM adoption during the time period when the rate of BTM adoption is expected to significantly increase.

After addressing existing constraints, the total forecasted costs through the 30-year forecast for the TPS and 50 percent planning limit scenarios differ by less than five percent. The most significant difference, however, is who has to pay the costs. In either case, the distribution system does not have the capacity to accommodate the

[8] Initial Comments by All Energy Solar (pg. 4).

BTM and FTM solar adoption expected over the next 30 years. Due to the existing cost causation principle, the TPS case allocates more upgrade costs to the BTM customers and reduces costs for the large FTM developers over the long term compared to adopting our Proposal here filed on November 1, 2023. The 50 percent case comparatively increases the cost allocation for the large FTM developers but decreases the costs allocated to the BTM customers over the same forecast period.

III. RESPONSE TO COMMENTS

A. Priority Queue is Different than Moving Applications Ahead in Queue

In response to Nokomis Comments[9], the Company describes the difference between the parallel review process and a priority queue below. After the Commission's March 31, 2022 Order was issued in this docket, the Company expanded its parallel review process to all project sizes in areas where there are no known capacity constraints and where the proposed project does not trigger a capacity constraint. When there is a capacity constraint, projects are still reviewed sequentially. Screening and engineering review still consider the queue position of the project and all DER ahead of that project in the queue. Currently, the queue position of every project is based on the date of receipt of a complete application. Part of the Company's Proposal is essentially to change the queue date of DER applications that require a system impact study to the date an application starts the study based on its queue position relative to other projects that are not in the priority queue. The queue dates of DER applications in the study queue would only be to track the order of the study queue for those types of projects. Their capacity would not be considered for determining cost responsibility in any technical review or study for any other project that is studied prior to them.

This would benefit some small DER applicants who apply on feeders with queues of large DER applications. For example, consider a feeder with 1 MW of existing DER, a 1 MW CSG currently being studied (first in queue), and five 1 MW CSGs (5MW total) later in queue waiting to be studied. In the current parallel review process, if there is no known capacity constraint, a new small DER application submitted after these would be reviewed in parallel with the 1 MW CSG currently in study, but the review would still consider all 7 MW either in operation or ahead of it in queue. Under Xcel Energy's Proposal, the small DER applicant would still be reviewed in parallel with the 1 MW CSG currently in study, but the review would only consider 2 MW of DER installed or ahead in queue.

[9] Initial Comments by Nokomis (pg. 2).

Unfortunately, this would not benefit the small DER applicants who apply on capacity constrained feeders taking into account existing DER and DER currently being studied. The small DER applications would be processed faster, but, as further explained below, without a capacity reservation they would still be responsible for the distribution upgrades on the capacity constrained feeders, which may make their interconnection economically prohibitive and not practical.

B. Priority Queue plus Capacity Reservation Must Go Hand-in-Hand

Several parties recommended the capacity reservation to be removed from the Company's Initial Proposal.[10] However, the most effective way to accomplish the objective of prioritizing small DER to the maximum extent feasible can only be done through establishing a priority queue and allotting set capacity to the priority queue. A priority queue without an allotment of capacity will allow small DER to bypass large DER in the queue waiting to be studied, but will not resolve the capacity constraint issues for the small DER. For example, if a feeder has 5 MW of available capacity and a 5 MW CSG receives an interconnection agreement to connect to the feeder, every subsequent small DER applicant after that interconnection agreement is executed would face cost prohibitive distribution upgrades. This would effectively prevent the timely interconnection of small DER and this constraint may last for decades or into perpetuity.

Without a capacity reservation, we will continue to see more and more distribution feeders and substations become oversaturated with large DER, and ultimately leaving no additional capacity for small DER to interconnect unless if significant and costly upgrades are undertaken. This lack of capacity will continue to be a barrier for interconnection and cause frustration for our customers who wish to install solar on their home. Now is the time to take action to set a capacity allocation on feeders and substations that have yet become oversaturated.

Establishing a separate queue alone, without a capacity reservation, is unlikely to achieve any longer-term benefits. All Energy suggest that if a capacity reservation is approved, it should be determined by feeder by the Commission before implementation.[11] However, we believe the number of resources necessary to treat each feeder separately will be burdensome and complex for all parties and may create unintended delays to the interconnection process.

[10] See Initial Comments by All Energy Solar (pg. 5), CCSA (pg. 2), Department (pg. 13), MnSEIA (pg. 10), Nokomis (pg. 3), and US Solar (pg. 2).
[11] Initial Comments by All Energy Solar (pg. 10).

C. Option to Pilot

The Department has proposed that the Company pilot two queues for 18-24 months before widespread adoption. In their Comments, beginning at page 10, the Department suggests that we pilot two queues since other utilities may not require separate queues due to lower DER levels and since new technology and other developments may alter the need for a two-queue system in the future. The Company disagrees that it is necessary to create a pilot when there are processes in place to adjust the MN DIP in an ongoing fashion. As an alternative approach, the Commission can order two queues as proposed by the Company, and later order something different if circumstances warrant a change in approach. The 18–24-month timeframe of the proposed pilot appears to be arbitrary.

D. Statements on Other States

MnSEIA provides several examples in its Initial Comments of how other utilities have used advanced interconnection processes.[12] Some of these are the same examples that MnSEIA provided in their Proposal. As already clarified in our Initial Comments,[13] MnSEIA had made incorrect statements and referenced an outdated procedure from 2008. Additionally, MnSEIA did not provide a specific reference to the Massachusetts or Illinois screening processes to easily locate and verify the claims made in their Initial Comments. The Company is concerned that MnSEIA may have made other misinterpretations of the procedures used in the other states they mentioned in their Comments and does not see any technical basis for considering the MN DIP to be outdated based on those minor differences. For example, MnSEIA also incorrectly stated in its comments: "In Massachusetts, systems under 15 kW that use certified inverters are only screened to confirm that added aggregate DER does not exceed more than 15% of the annual peak load as measured at the substation circuit breaker."[14] In reviewing the Massachusetts Interconnection Tariff,[15] that is in fact not the only screen. As stated in Section 3.1 part b of the tariff for the Simplified Process, "Company completes review of all screens. When the Company verifies Facility equipment passes Screens 1, 2, 3, 4, and 5 in Figure 1 if a radial EPS, the project shall follow the Simplified process." Screen #5 is the "Service Type Screen," which Note 2 identifies: "This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including the service transformer

[12] Initial Comments by MnSEIA (pgs. 8-9).
[13] See Xcel Energy (pgs. 7-8).
[14] Initial Comments by MnSEIA (pg. 8).
[15] M.D.P.U. 55A, 1468, and 375 issued by the Eversource, National Grid, and Unitil Energy Companies, effective September 15th, 2021. https://www.mass.gov/info-details/interconnection-filings-and-tariffs#5.-interconnection-tariff-

configuration and service type to limit the potential for creating unacceptable voltage imbalance, over-voltage or under-voltage type conditions, or service equipment overloads on the Company EPS due to a mismatch between the size and phasing of the energy source, service loads fed from the service transformer(s), and the service equipment ratings." This is very similar to the current Simplified Process in the MN DIP.

The Company believes pointing out these minor differences in screening criteria is distracting and not constructive towards addressing the timeline delays for projects that would fail that screening criteria. The Company believes the applications that fail these criteria account for most of the applications that experience delays in the current process.

CCSA's Comments reference recent regulations by the commissions in New Jersey and Maryland involving proactive system upgrades to increase capacity for DER.[16] It is important to consider how those upgrades are funded. Other than the new legislative requirements in Minn. Stat. § 216C.378 for funding $10 million to a DER System Upgrade Plan and the recently created cost-sharing plan for certain costs up to $15,000, Minnesota rules and the MN DIP require that any interconnection upgrades are paid by the cost causer. The New Jersey Proactive System Upgrade Plan[17] appears to recover the costs of those upgrades through the ratepayers, except for applicants who wish the project to be accelerated and would contribute to the funding of the project based on the size of the proposed DER project. The referenced Maryland Hosting Capacity Upgrade Plans appear to be similarly structured to the New Jersey plans, but also have more specific cost sharing and allocation mechanisms that are not applicable to certain interconnection customers who would have to pay all interconnection costs. The Massachusetts Provisional System Planning Program subsidizes necessary EPS upgrades due to high DER penetration through the ratepayers by reviewing upgrade proposals from the Utility. Although it does apparently seek to reimburse ratepayers over time. The Company believes exploring cost allocation methods and giving the utility more flexibility to identify efficient upgrades would have benefit, but does not see how this would meet the requirements of this proceeding. The Company recommends that the CCSA bring this discussion to the Distributed Generation Working Group (DGWG) if it wants to further address this issue.

[16] Initial Comments by CCSA (pg.4).
[17] N.J.A.C. Section 14:8-5.12, part d. NJ Board of Public Utilities Notice. March 2, 2023. Revised Notice: Interconnection Proposed Rule Language. Docket QO21010085: https://publicaccess.bpu.state.nj.us/CaseSummary.aspx?case_id=2109704

E. Advancing Innovative Solutions

All Energy has proposed the Company initiate pilot programs to develop and advance innovative solutions including advanced inverter settings.[18] The Company would first like to emphasize the statements it made in its DER Upgrade Program filing in Docket No E002/M-23-458 regarding the practicality of certain innovative solutions, such as storage programs, power control systems, advanced inverter functions, or DERMS. The Company thought it impractical to study and evaluate those innovative solutions in time for the required filing date of the Program Plan. In fact, the Company stated: "Our Program Plan, using traditional upgrade solutions, does not mean the Company is opposed to deploying or piloting more innovative solutions. The Company's strategy for this filing is to present its proposal to fund projects with a high certainty of success and to continue efforts to study innovative solutions."[19] Further, the Company has addressed advanced interconnection as part of the IDP proceeding[20] and provided a preliminary analysis of flexible interconnections and necessary technologies as part of Docket No. E002/M-23-458.[21]

The Company suggests that the topic of innovative technology solutions continue to be of continued discussion as part of the IDP process, and parties can advocate that this issue also be discussed at DGWG to explore options that have not been part of this record. It should not be further addressed by the Commission as part of the current comment cycle.

F. Sized to Load

All Energy Solar and MnSEIA have suggested that projects up to 200% of customer load to be considered as customer-sited projects.[22] The Company has proposed the use of the 120% standard that is the Minnesota standard. This 120% standard in Minnesota is set forth in the following:

- Minn. Stat. § 216B.164, Subd. 4c, requiring Individual System Capacity Limits of 120 percent for specified net metering projects. Xcel Energy net metering tariff defining "Individual System Capacity Limits" at tariff sheet 9-1, which applies the 120% cap to most net metering rate codes.

[18] Initial Comments by All Energy (pg. 7).
[19] See the Company's Proposed Program Plan (pg. 16).
[20] See Docket No. E002/M-23-452, Xcel Energy 2023 Integrated Distribution Plan, Part 2, Appendix E: Distributed Energy Resources, System Interconnection, and Hosting Capacity.
[21] See the Company's Proposed Program Plan (pgs. 15-21).
[22] See Initial Comments by All Energy (pg. 6) and MnSEIA (pg.7).

- Minn. Stat. § 216B.1641, Subd. 1 (b), Legacy CSG program with a maximum subscription size of 120% of average annual consumption of electricity. Legacy Community Solar Garden subscription maximum has a cap of 120%, see tariff sheet 9-65, and 9-70.

- Minn. Stat. § 216C.375, Subd. 5, Solar for Schools Program, requiring a 120% cap on PV system size. Solar*Rewards for Schools has a project cap of 120%. See tariff sheet 9-100, and 9-103.

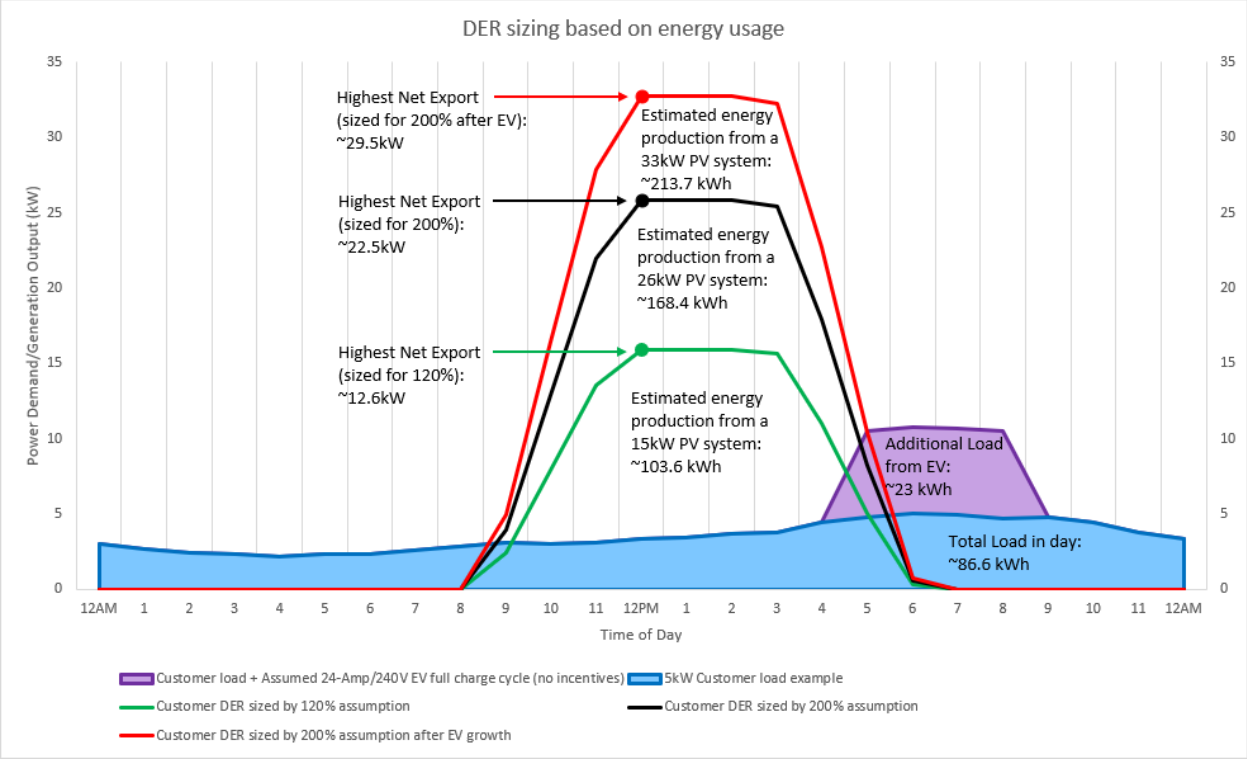
- Minn. Stat. § 216C.377, Subd. 5, Solar for Public Buildings Program, requiring a 120% cap on PV system size.

- Xcel Energy Solar*Rewards requirement of compliance with the 120% cap to receive incentive payments for projects up to 40 kW. See, tariff sheets 9-16, 9-36, and 9-49.03.

The Company believes that Minnesota precedent with a 120% cap should be followed here. From a technical perspective, the larger a behind-the-meter (BTM) DER interconnection project is in relation to its onsite load, the more impacts it would have on the electric power system. Increasing this cap would result in more upgrades for BTM DER applications, which will delay those interconnection projects and result in a negative customer experience. These upgrades are due to the existing distribution secondary circuit designs, including the service transformer sizes and secondary conductor lengths between the service transformer and the customer's meter, which were designed and sized to serve the expected load, not the expected generation. The figure below provides a high-level example of sizing PV systems based on energy usage and demonstrates the potential for system impacts from increasing the cap. Note the data and calculations are from a single day only,[23] not the entire year, the bold lines/curves are the power consumed/generated by hour (in kW), and the area under the curves are the total energy consumed/generated over time in kWh (power multiplied by time). The area under the load consumption curves are shaded and the area under the PV system generation output curved are not shaded to clarify the energy consumed by the load from the energy produced by the PV.

[23] The values in the chart were estimated from feeder load from a particular day and scaled to the size of a typical 5kW customer. These values will vary seasonally, by weather, and by day of the week. PV system sizes and production will also vary seasonally, by weather, and by technical specification, such as panel tilt and direction.

Figure 1: DER Sizing Based on Energy Usage



The 120% ratio is a reasonable assumption to allow customer to generate their own power and to keep the net power flows on the secondary circuit closer to the power flows the secondary circuits were designed for.

MnSEIA commented that "…sizing a project to 120% of its load will likely not be sufficient to meet load, especially as more consumers electrify their heating and transportation needs in the future."[24] However, there are procedures in place in the MN DIP for customers to apply for material modifications of their existing DER installation to add additional DER if their annual consumption is increased by electrification or changes in usage patterns. The Company also notes there is no mechanism in MN DIP or Minnesota state statutes to require removal of DER if annual consumption is decreased through energy efficiency, changes in usage patterns, or miscalculation of estimated annual energy consumption. While the Company can track the billing to ensure the credit of customer production does not exceed 120%, that would not address the potential technical impact of the reduced load.

[24] Initial Comments by MnSEIA (pg. 7).

G. Storage

All Energy Solar states that the Company has "overlooked how battery storage would fit into the paradigm of 'size to load limitations'" and supports amending the MN DIP to no longer treat energy storage and DER capacity on a combined basis.[25]

Xcel Energy views energy storage systems (ESS) or battery ESS (BESS) simply as another Inverter-based-Resource (IBR). The majority of ESS applications tend to be for backup power or self-consumption because it simply does not add to the aggregate KWac size of a BTM application. There is no barrier to customer's choosing to apply with an ESS based system and export to the system. However, it is and should be evaluated just as any other IBR that is exporting to the grid. So if a customer chooses to apply for an ESS based system and export to the grid it would simply need to be evaluated as such.

Consider All Energy's comment at pg. 6: "The MN DIP's current treatment of storage and solar does not assist with issues in capacity constrained areas. Interconnection applicants in Chisago and Scandia have been waiting for three years to add non exporting storage to their existing solar array so that they may self-consume their own energy and reduce their export. Unless improved, MN DIP will continue to prevent the beneficial deployment of BESS technology that could be used to reduce strain on the grid in capacity constrained areas." This is good point and should be taken into consideration. The MN DIP application queue does not currently allow BESS only applications to have any sort of priority over other applications. Xcel Energy would support revising MN DIP language to also allow for BESS applications that are sized to local load to also enter a priority queue. Any such proposed change to the MN DIP, however, should be vetted first through the DGWG. That being said, it may already be considered eligible for the priority queue as proposed, assuming that it meets the definition of less than 40kW and sized to 120% of customer energy consumption.

However, All Energy adds onto this point by stating: "We encourage amending the MN DIP to equitably give priority to those consumers limiting their export on to the grid with battery storage by including a tier for Non-Exporting interconnections in the priority queue." It would not be feasible for a BESS system to reduce or create a non-exporting PV system as there would be no sort of mechanism for the Utility to confirm that the system would never export to the grid. Simply charging a battery does not change a PV system to a non-exporting system. If All Energy wants to further pursue this proposal, it should be through the DGWG.

[25] Initial Comments by All Energy Solar (pgs. 7, 9).

H. Dakota Proposal

The comments submitted by Dakota Electric have proposed a similar approach to the other utilities to create and process two separate queues, one for larger than 40 kW, and one for less than 40 kW. However, their approach seems would differ slightly in that they would include all existing and queued DER in any required studies for DER larger than 40 kW, while allowing all less than 40 kW applications to be processed ahead of larger DER. This approach seems reasonable due to their relatively smaller volume of DER applications and would be consistent with the Company's proposed changes. However, this exact process would not be feasible for us, due to higher penetration of DER and areas within our territory that are already constrained or approaching our limit. As such, it seems that the proposed changes to MN DIP to create two separate queues would work for both the Company and Dakota Electric and would allow for utilities with a lower volume of DER applications to continue processing applications in the most efficient way that works for them and their customers.

CONCLUSION

The Company appreciates the opportunity to provide this Reply to Comments submitted on our proposed changes to MN DIP. Providing a capacity reservation for small DER solar up to 40 kW is a policy decision that the Commission has the authority to make, as they review and balance several other 2023 Legislative goals and programs.

We continue to believe we have presented a reasonable proposal to the Commission to prioritize the interconnection of small DER up to 40 kW, as was specified in the 2023 Legislation. The Company supports the following: Approval of the redline changes for MN DIP proposed in our November 1, 2023 Proposal.

Additionally, we would suggest the DGWG take up the topic of energy storage as well as advanced grid alternatives as part of the ongoing work to enhance and modify the MN DIP in the interest of Minnesota.

Dated: February 2, 2024

Northern States Power Company

From: MinnSolar
To: [redacted]
Cc: Staff, CAO (PUC); Info, Energy (COMM)
Subject: Poor Minnesota Solar Policy for Xcel Customers
Date: Thursday, September 21, 2023 7:32:59 AM
Attachments: image001.png

Good morning [redacted],

Thanks for the phone inquiry on solar power for your farm. I know you were optimistic about turning to solar for your farm to reduce energy costs and to take advantage of current federal tax credits or grant programs for solar. Unfortunately as I mentioned on the phone if you are a rural Xcel Energy customer it is highly unlikely that you are able to build even the smallest of systems. As I mentioned I would look up and send you the Xcel capacity map for you area, see attached, which shows there is no capacity making solar or any renewable energy project for your farm impossible.

As I mentioned being a rural Xcel customer is unfortunate. If you were located elsewhere you would typically have a rural electric cooperative instead and then have no problem pursuing a solar project for your farm but the rural Xcel customers have been trampled over by the large solar garden developers who have exhausted nearly all substation capacity. The saddest part is Xcel Energy tried to implement a capacity carveout a few years ago to retain some of this capacity for the residents of Minnesota but even the Minnesota solar advocacy groups rejected as it appears they want to protect the large solar developers instead and if you look their board members are mainly made up of these large solar developers as well. This rejection of the capacity carveout took part in the Public Utilities workgroup and to make it even worse these solar advocacy groups and developers were able to push state policy change this spring to allow the solar garden developers to build 5 times larger systems and removed the contiguous county requirement for their projects to ensure that they can scramble to take any remaining solar capacity left in the state on Xcel Energy lines.

I'm sorry that I don't have better news for you. Just typical government/big business politics here and no one at the state has stepped in to protect the residents. Farmers in the state should have pushed back on these projects at county permitting level many years ago now.

[redacted]
MinnSolar Inc.
[redacted]

From: [redacted]
Sent: Tuesday, August 15, 2023 9:52 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Poor Minnesota Solar Policy reply

Paul,
Thank you for bringing this concern to our attention. We appreciate you copying the Public Utilities Commission Consumer Affairs team, as they are the more appropriate venue through which to surface this discussion.

Regards,

Energy Information Center
Direct: 651-539-1886 (*leave a message*)
Email: energy.info@state.mn.us (*preferred*)
COMM: Website: mn.gov/commerce
Home Energy Guide: https://mn.gov/commerce/energy/conserving-energy/home-energy-guide/
Minnesota Department of Commerce, State Energy Office, Division of Energy Resources
85 7th Place East, Suite 280, St Paul MN 55101
NOTE: the fax number has been disabled

From: MinnSolar <sales@minnsolar.com>
Sent: Saturday, August 12, 2023 8:30 AM
To: Info, Energy (COMM) <energy.info@state.mn.us>
Cc: Staff, CAO (PUC) <consumer.puc@state.mn.us>
Subject: Poor Minnesota Solar Policy

The Minnesota Department of Commerce Energy Department should be doing something to try and protect the rights of Minnesota residents mainly being Xcel Energy customers to have the ability to build even small net metering solar systems for their homes, farms, or businesses. I've be fighting for this for several years now and according to Xcel Energy they are on my side as they have proposed a few years ago now a capacity carveout which would retain say 20% capacity of the substations for the residents/rate payers of Minnesota to build net metering solar for their homes, farms or businesses. The problem seems to be that this policy change would need to go thru the PUC DG workgroup which is headed up by MNSEIA and other solar garden developers who want to protect their financial interests with the development of as many solar gardens as possible rather than doing the right thing and providing some capacity for the residents of Minnesota. I've gone round and round with MNSIEA on this but it appears that their board members and financial backing

comes from the solar garden developers so they won't support something that may cut their development down. MNSIEA's last executive director even used his position in MNSIEA to email its members to vote for a large garden developer that was running for state representative and right after that then left MNSIEA to go work for that developer. Someone at the state should be stepping in to protect the residents of the state.

[redacted]
MinnSolar Inc.
[redacted]

CERTIFICATE OF SERVICE

I, Christine Schwartz, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

DOCKET NO. E999/CI-16-521

Dated this 2nd day of February 2024

/s/

Christine Schwartz
Regulatory Administrator

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Cheri	Lenzmeier	cheril@mvec.net	Minnesota Valley Electric Cooperative	125 Minnesota Valley Electric Dr Jordan, MN 55352	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Carl	Linvill	clinvill@raponline.org	Regulatory Assistance Project	50 State Street Suite #3 Montpelier, VT 05602	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Phillip	Lipetsky	greenenergyproductsllc@gmail.com	Green Energy Products	PO Box 108 Springfield, MN 56087	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jody	Londo	jody.l.londo@xcelenergy.com	Xcel Energy	414 Nicillet Mall 7th Floor Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
William	Lovelace	wlovelace@minnkota.com	Minnkota Power Cooperative	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Brian	Lydic	brian@irecusa.org	Interstate Renewable Energy Council, Inc.	PO Box 1156 Latham, NY 12110-1156	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Richard	Macke	macker@powersystem.org	Power System Engineering, Inc.	10710 Town Square Dr NE Ste 201 Minneapolis, MN 55449	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Natalie	McIntire	natalie.mcintire@gmail.com	Wind on the Wires	570 Asbury St Ste 201 Saint Paul, MN 55104-1850	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Matthew	Melewski	matthew@nokomisenergy.com	Nokomis Energy LLC & Ole Solar LLC	2639 Nicollet Ave Ste 200 Minneapolis, MN 55408	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, MN 55120	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tim	Mergen	tmergen@meeker.coop	Meeker Cooperative Light And Power	1725 US Hwy 12 E. Suite 100 PO Box 68 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pontius	Mike	mpontius@mnpower.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis	350 S. 5th Street Room M 301 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Luther	Miller	Luther.C.Miller@xcelenergy.com	Xcel Energy	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Jeff	O'Neill	jeff.oneill@ci.monticello.mn.us	City of Monticello	505 Walnut Street Suite 1 Monticelllo, MN 55362	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Wendi	Olson	wolson@otpco.com	Otter Tail Power Company	215 South Cascade Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Cezar	Panait	Cezar.Panait@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Dean	Pawlowski	dpawlowski@otpco.com	Otter Tail Power Company	PO Box 496 215 S. Cascade St. Fergus Falls, MN 565370496	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Mark	Rathbun	mrathbun@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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John C.	Reinhardt	N/A	Laura A. Reinhardt	3552 26th Ave S Minneapolis, MN 55406	Paper Service	No	OFF_SL_16-521_Official Service List PUC
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_16-521_Official Service List PUC
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Isabel	Ricker	ricker@fresh-energy.org	Fresh Energy	408 Saint Peter Street Suite 220 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

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Kay	Schraeder	kschraeder@minnkota.com	Minnkota Power	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Rafi	Sohail	rafi.sohail@centerpointenergy.com	CenterPoint Energy	800 LaSalle Avenue P.O. Box 59038 Minneapolis, MN 554590038	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Beth	Soholt	bsoholt@cleangridalliance.org	Clean Grid Alliance	570 Asbury Street Suite 201 St. Paul, MN 55104	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Marcia	Solie	m.solie@bcrea.coop	Brown County Rural Electrical Assn.	24386 State Hwy. 4, PO Box 529 Sleepy Eye, MN 56085	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Bryant	Tauer	btauer@whe.org	Wright-Hennepin	6800 Electric Dr Rockford, MN 55373	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Robert	Walsh	bwalsh@mnvalleyrec.com	Minnesota Valley Coop Light and Power	PO Box 248 501 S 1st St Montevideo, MN 56265	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Roger	Warehime	roger.warehime@owatonnautilities.com	Owatonna Municipal Public Utilities	208 S Walnut Ave PO BOX 800 Owatonna, MN 55060	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Terry	Wolf	terry.wolf@mrenergy.com	Missouri River Energy Services	3724 W Avera Dr PO Box Sioux Falls, SD 571098920	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Brian	Zavesky	brianz@mrenergy.com	Missouri River Energy Services	3724 West Avera Drive P.O. Box 88920 Sioux Falls, SD 57108-8920	Electronic Service	No	OFF_SL_16-521_Official Service List PUC