

STATE OF MINNESOTA  
BEFORE THE  
PUBLIC UTILITIES COMMISSION

Katie Sieben  
Joseph K. Sullivan  
Valerie Means  
Matt Schuerger  
John Tuma

Chair  
Commissioner  
Commissioner  
Commissioner  
Commissioner

In the Matter of Proposed Changes to the  
Minnesota Distributed Energy Resource  
Interconnection Process or Agreements  
Identified by Distributed Generation  
Workgroup subgroups

DOCKET NO. E-999/CI-16-521  
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**COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL INC. ON  
PROPOSED CHANGES TO THE MINNESOTA DISTRIBUTED ENERGY RESOURCE  
INTERCONNECTION PROCESS OR AGREEMENTS IDENTIFIED BY  
DISTRIBUTED GENERATION WORKGROUP SUBGROUPS**

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The Interstate Renewable Energy Council, Inc. (“IREC”) appreciates the opportunity to provide these comments regarding whether the Commission should adopt changes to the Minnesota Distributed Energy Resource Interconnection Process (“MN DIP”) or Agreements (“MN DIA”) identified by Distributed Generation Workgroup (“DGWG”) subgroups. After a public meeting to review the subgroups’ reports and recommendations on May 20, 2021, the Commission on July 16, 2021 issued its Notice of Comment Period seeking public comment on suggested changes to the MN DIP/DIA and related issues.<sup>1</sup>

IREC is a 501(c)(3) non-partisan, non-profit organization working nationally to build the foundation for the rapid adoption of clean energy and energy efficiency to benefit people, the economy, and our planet. IREC has been actively involved in the development of the MN DIP since first petitioning the Commission for the adoption of revised interconnection procedures in 2015. IREC’s petition sought to ensure that Minnesota’s electric customers can access clean energy through an efficient and cost-effective interconnection process. Since then, we have been actively involved in the DGWG and other related proceedings implementing and interpreting the MN DIP. In particular, IREC was an engaged participant in most of the DGWG subgroups whose proposals are now before the Commission. IREC provides these comments based on our experience participating in the subgroups, working on the MN DIP for years, and informed by our experience working on interconnection issues nationwide.

## **I. Introduction**

Before providing comments on the specific working group proposals, it is helpful to first acknowledge the context in which these proposals have come about and the issues that have

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<sup>1</sup> MN Pub. Util. Comm., Dkts. E999/CI-16-521 & E999/CI-01-1023, In the Matter of Updating the Generic Standards for the Interconnection and Operation of Distributed Generation Facilities Established under Minn. Stat. § 216B.1611, Notice of Comment Period (July 16, 2021).

spurred these conversations. The truth is that Minnesotans are eager to continue investing in customer-owned or subscribed clean energy resources. That interest is continuing to drive a high volume of interconnection applications, for both rooftop installations and community solar projects. But the process for interconnecting those projects in Xcel Energy's territory is failing to meet customer demand. Indeed, the issue has become so significant that individual Xcel customers have taken the remarkable step of directly complaining to the Commission about their inability to access clean solar energy.<sup>2</sup> The newly adopted MN DIP contains a number of provisions that have worked successfully in other states to keep interconnection applications moving smoothly, but those provisions need to be fully utilized by the utility, with the support of adequate staffing, for them to be effective. The MN DIP also does not go far enough to keep up with this demand in at least two important ways.

First, the MN DIP fails to require the utility to perform its responsibilities in a time-efficient manner. The timelines adopted in the MN DIP are substantially longer than the time needed to process applications for small projects in high-penetration solar states. For example, while the MN DIP allows up to 20 days for review of a complete application<sup>3</sup> -- and Xcel typically takes every one of those days *on average* (that is, this means Xcel likely often exceeds the timeline for individual projects)<sup>4</sup> -- other utilities can process similar applications in just a handful of days. For example, in California, PG&E recently reported that, on average, it can

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<sup>2</sup> See, e.g., MN Pub. Util. Comm., Dkt. 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 ("Dkt. E999/CI-16-521"), Public Comment Submission by Dorothea Hrossowyc (Aug. 3, 2021) (describing extreme delays and exorbitant costs when attempting to install small residential solar).

<sup>3</sup> MN DIP § 2.2.3.

<sup>4</sup> MN Pub. Util. Comm., Dkts. E999/CI-16-521 & E,G-002/M-12-383, Xcel Energy Compliance Filing-Quarter Two 2021 Report, p. 6 (Aug. 16, 2021).

process projects <30 kW in just 2.7 days.<sup>5</sup> The MN DIP also lacks any consequences for a utility that fails to keep up with even these modest expectations. There are no aggregate accountability mechanisms, nor is the dispute resolution process functioning effectively for individual disputes.<sup>6</sup> The other important timeline context is that Xcel Energy has chosen to interpret provisions related to timelines and efficiency in the most sluggish manner possible, opting out of opportunities to utilize more efficient processes and also seeing timelines as more of a minimum performance target than a maximum.<sup>7</sup> Indeed, as demonstrated by Xcel’s most recently filed timeline compliance report, the company’s *average* timeline compliance is always within a few days of the MN DIP timeline, and often exceeds it.<sup>8</sup> The result is that the timelines for interconnection are extremely slow for customers of all types, resulting in a high level of

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<sup>5</sup> CA Pub. Utils. Comm., Rule 21 Interconnection Program Evaluation, p. 54 (Mar. 2021), available at [https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/rule21/rule-21-interconnection-program-eval\\_2021.pdf](https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/rule21/rule-21-interconnection-program-eval_2021.pdf).

<sup>6</sup> See, e.g., MN Pub. Util. Comm., Dkt. E,G002/M-12-383, In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of Amendments to its Natural Gas and Electric Service Quality Tariffs (“Dkt. E,G002/M-12-383”) & Dkt. E,G002/M-02-2034, In the Matter of an Investigation and Audit of Northern States Power Company’s Service Quality Reporting (“Dkt. E,G002/CI-02-2034”), Order Accepting Filing and Denying Request to Exclude Complaints (Feb. 18, 2021); see also, e.g., MN Pub. Util. Comm., Dkt. E,G002/M-12-383 & Dkt. E,G002/M-02-2034, Comments of Christina Clarke (Aug. 10, 2020) (customer comment documenting inability to interconnect solar with Xcel); MN Pub. Util. Comm., Dkt. E,G002/M-12-383 & Dkt. E,G002/M-02-2034, Comments of Novel Energy Solutions (July 1, 2020) (documenting problems with Xcel); see also *supra*, footnote 2..

<sup>7</sup> For example, MN DIP contains a provision that allows a utility to prepare a good-faith cost estimate for minor upgrades instead of a facilities study, but we recently learned that Xcel Energy has not been utilizing that process and instead has been sending even very small projects to a full facilities study for minor upgrades. Xcel Response to Fresh Energy Information Requests No. 21 and 22, provided as Attachment A (showing that Xcel has not utilized the cost estimate process in Fast Track or Supplement Review a single time, instead sending all projects needing upgrades to a more time consuming and expensive Facilities Study). The novel interpretation by Xcel that has led to the hold process is described below in Section II.A.

<sup>8</sup> MN Pub. Util. Comm., Dkts. E999/CI-16-521 & E,G-002/M-12-383, Xcel Energy Compliance Filing-Quarter Two 2021 Report (Aug. 16, 2021).

customer frustration and disappointment and notably slower market development than is likely necessary.

The second weakness is that the MN DIP and broader Minnesota PUC policy lack provisions to enable interconnection upgrade costs to be efficiently and fairly shared by customers and other beneficiaries. This weakness has two primary consequences. First, it can effectively halt interconnections altogether on circuits or substations when upgrades of a certain size are triggered that no project can afford to fund individually. And, it also results in a slower interconnection process because cost sharing mechanisms can be key to enabling systems to be evaluated collectively instead of on an individual, case-by-case basis. The fact that upgrades are beginning to be required more and more frequently is of course the core driver, but in IREC's opinion, the fact that upgrades are needed would not necessarily trigger a crisis if there are reasonable mechanisms in place to enable those upgrades to be identified, funded and constructed in a timely manner.

The final, but perhaps most critical, point of context is that these issues are largely only occurring in Xcel Energy's territory. Indeed, the Commission itself has recently expressed significant concern with Xcel's handling of the interconnection process. The erroneous manner in which Xcel has decided to interpret the MN DIP and their proposals in the subgroups suggest a particular disinclination to facilitate community solar projects and the customers they serve.<sup>9</sup>

In light of these concerns, IREC comments here to ask the Commission to investigate and take decisive action on the issues outlined below. Minnesota is at a point of crisis in DER interconnection delays in Xcel's territory. Each issue currently before the Commission relates to

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<sup>9</sup> See discussion in Section II.A on serial studies and the hold process, and the discussion in Section III.B for more on how their proposals seek to disfavor community solar customers.

these ongoing problems: group studies, queue management, and dispute resolution. Here, IREC asks the Commission to take action to (1) reform Xcel Energy's study process by developing a clearly defined, mandatory group study process applicable in certain conditions, and to also consider adopting a parallel study process and a long-term effort to proactively upgrade the distribution system; (2) adopt a set upgrade fee for small projects; (3) reject Xcel's unfounded planning limits and capacity reservation caps which will likely hurt more than they help; and (4) clarify the accessibility of the CAO's complaint procedure to interconnection customers and require more work on improving the dispute resolution process.

## **II. Solutions for More Efficient Study Processes for Larger Scale Projects**

In Xcel's territory, the timeline for obtaining an interconnection agreement for projects requiring an interconnection study is untenably long in areas where there is the greatest customer interest. According to Xcel's July 2021 queue report, over 40 feeders in Xcel territory have waits of over 2.5 years to get an interconnection agreement, with the three most congested feeders having waits of 15.6, 16.4, and 17.3 years.<sup>10</sup> The DGWG convened two working groups to evaluate potential solutions to this problem. The Subgroup on Interconnection Review in Queues (the "Queue Subgroup") evaluated one potential solution, the parallel study concept, and the Cluster Study Subgroup considered group or cluster studies. IREC participated in both subgroups with the goal of finding meaningful solutions that could quickly begin to address the severe queue backlog and study delays in Xcel's territory. What the DGWG working group process revealed is that real and significant changes to the interconnection process are necessary if Minnesota wants to continue to develop customer-sited renewable energy at even a modest

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<sup>10</sup> Xcel Energy, July 1, 2021 Queue Report, *available at* [https://www.xcelenergy.com/staticfiles/xeresponsive/Working%20With%20Us/How%20to%20Interconnect/QueueReport\\_07012021.xlsx](https://www.xcelenergy.com/staticfiles/xeresponsive/Working%20With%20Us/How%20to%20Interconnect/QueueReport_07012021.xlsx).

pace. The subgroups also made clear that it is unlikely that the parties are going to reach consensus on those solutions, and thus that active engagement by the Commission is going to be necessary to fix this problem. Following some background information, the following subsections discuss three different, non-exclusive solutions the Commission could consider, each of which would help alleviate queue backlogs and get more projects interconnected.

**A. Background on MN DIP and the current study process in Xcel’s territory**

Prior to commenting on the solutions discussed by the DGWG, it is necessary to provide some background on what MN DIP currently states and how it is being interpreted. The first issue relates to the origin of the “on hold” process used by Xcel. When the MN DIP was implemented, Xcel Energy chose to interpret a provision in the rules requiring “serial” studies in an extreme manner that is not required, or even supported, by the plain language of the rules.

MN DIP section 1.83 provides that:

The Area EPS Operator shall maintain a single, administrative queue and may manage the queue by geographical region (i.e. feeder, substation, etc.) This administrative queue shall be used to address Interconnection Customer inquiries about the queue process. If the Area EPS Operator and the Interconnection Customer(s) agree, Interconnection Applications may be studied in clusters for the purpose of the system impact study; *otherwise, they will be studied serially.* (emphasis added)

The term “serially” is not defined in the rules, and it is our understanding that Xcel chose to interpret this provision to allow them to not commence the study of a later queued project until an interconnection agreement had been signed by a previously queued project.<sup>11</sup> However, nowhere in the rules does the MN DIP provide for a process that enables Xcel to so delay the study of a project whose application has been deemed complete. Rather, the rules indicate that a

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<sup>11</sup> MN Pub. Util. Comm., Dkt. E999/CI-16-521, DGWG Subgroup Final Reports, at pp. 40-41 (May 11, 2021) (“Subgroup Final Reports”).



scoping meeting should be held once the application is deemed complete and that the system impact study agreement should be provided “as soon as possible, but not later than five (5) Business Days after the scoping meeting . . .”<sup>12</sup> It is also problematic to interpret the term “serially” in the manner Xcel did because, in the context of the sentence, it is clearly only indicates that projects will be studied individually instead of in a cluster. It does not specify that only one study can be conducted at a time. Rather, the rest of the procedures define how that study process will proceed.

Xcel used this faulty interpretation of a single word in a section on queue management to adopt a process of putting projects “on hold” that does not exist anywhere in the MN DIP and is also in conflict with the practice it had previously used under the prior rules. Xcel did not bother to seek guidance from the Commission on this dramatic new policy prior to implementing it. Furthermore, this practice (at least as currently implemented) is simply impractical in a market where customers are eager to participate in community solar. Because the entire study process takes roughly 225 business days (or 11.25 months),<sup>13</sup> placing later queued projects on hold until the previously queued project has signed an interconnection agreement effectively means that only one project can be studied per year in any one geographical region. And this problem is compounded when Xcel is not even meeting that generous timeline. Indeed, Xcel’s most recent interconnection queue report demonstrates that a mere 16 projects out of more than 200

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<sup>12</sup> MN DIP § 4.3.2. Section 4.3.4 provides the applicant 20 business days to return the Agreement, and section 4.3.5 provides that the utility shall complete the study within 30 business days.

<sup>13</sup> This number is arrived at by adding all the timelines required to go from submittal of a complete application to receipt of a signed interconnection agreement, assuming upgrades are required and that no transmission system impact study is needed. This presumes each step takes the fully allotted amount of time.

applications requiring full study have received signed interconnection agreements since fall of 2019.<sup>14</sup> This results in an extremely, untenably slow interconnection process.<sup>15</sup>

The second piece of background relies on the same language above from MN DIP, which allows the utility to study applications in clusters if there is agreement between the applicants and the utility. When pressed by community solar garden developers to come up with a way to speed up interconnection studies in light of these interconnection holds, Xcel instead offered to conduct “batch” studies.<sup>16</sup> These batch studies, however, actually offered no real time savings as they were essentially just offering to continue to study each project in a serial manner under the same timelines as already exist under the rules.<sup>17</sup> Further, under Xcel’s “batch” proposal, the utility absolves itself of any role in allocating study costs, instead providing that Xcel would provide a single bill for study costs to the applicants in the batch, and then they must coordinate among themselves to pay.<sup>18</sup> Nowhere does the proposal provide for sharing of upgrade costs—one of the most critical issues for moving development forward in areas where upgrades are needed.

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<sup>14</sup> See MN Pub. Util. Comm., Dkt. E999/CI-16-521, Xcel Interconnection Queue Report Spreadsheet (Aug. 16, 2021).

<sup>15</sup> See MN Pub. Util. Comm., Dkt. E999/CI-16-521, Comments of Nokomis Energy (May 18, 2021) (documenting delays related to projects being “on hold”); *see also supra*, footnote 11 (citing Xcel queue report documenting number of projects “on hold” and estimated length of time to get interconnection agreement).

<sup>16</sup> See Xcel Energy Distributed Generation Engineering Batch/Cluster Study Guidelines, available at <https://www.xcelenergy.com/staticfiles/xcel-responsive/Working%20With%20Us/Renewable%20Developers/Distributed-Generation-Engineering-Batch-Cluster-Study-Guidelines.pdf>.

<sup>17</sup> *Id.* at p. 9 (sec. 3.2).

<sup>18</sup> *Id.* at p. 5 (para. 6).

## **B. Parallel Studies**

In light of the background provided above, the development community requested that the Queue Subgroup consider a “parallel” study process wherein Xcel would study multiple projects simultaneously.<sup>19</sup> In its simplest form, this would mean that projects would begin to be studied according to the timelines laid out in the MN DIP regardless of whether Xcel was already conducting a study of a queued ahead project. It is our understanding that this was the approach used by Xcel prior to adoption of the MN DIP (and as discussed above nothing in MN DIP required this to be changed). The risks of this approach is that if an earlier queued project was to decide not to proceed (for any reason), later queued project(s) may need to be restudied, which would increase costs and potentially duplicate efforts. The benefit is that if earlier queued projects do not drop out, it would be possible to interconnect numerous projects each year on a feeder or substation.

The working group evaluated multiple ways of conducting these studies, looking at different potential starting points for the later queued project. For example, while the most aggressive approach would start the later queued studies immediately, other options could include starting the study after the earlier queued project’s system impact study or facilities study has been completed.<sup>20</sup> This may provide a better indication of whether the earlier queued project was likely to proceed and minimize some of the risk. The group also discussed requiring deposits for potential re-study costs, limiting the number of projects that could be evaluated concurrently, and other measures to help mitigate risks of re-study.<sup>21</sup> In the end, however, Xcel

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<sup>19</sup> Subgroup Final Reports at pp. 43-44.

<sup>20</sup> *Id.* at p. 43.

<sup>21</sup> *Id.* at p. 44.

was not willing to agree to advance the study process in a manner that would have any meaningful effect on the study timelines for developers, only agreeing to start the later queued project's study after an Interconnection Agreement was provided to the earlier queued project. Xcel primarily cited concerns about its ability to staff these study processes.<sup>22</sup> If that is indeed the concern, it is not clear why Xcel's staffing resource are not expandable through in-house or contracted resources, particularly because interconnection customers pay the actual costs of the studies.

The Commission did not explicitly seek comments on the parallel study option, but IREC believes that it is important that the Commission know that there are multiple options for advancing the study timelines that could be considered even if Xcel Energy was not supportive of the approaches. IREC agrees that a full parallel study process could have risks of restudy if not managed properly, but believes that there are multiple ways to design a process to manage and minimize such risks while also helping to alleviate the study backlog. Also, IREC does not see having to conduct occasional restudies as an unacceptable outcome, particularly in light of the current alternative of only studying one project a year. The data available from previous years suggest project drop-out was not a significant issue.<sup>23</sup> Though we do not know why a small number of past projects dropped out, it is possible that steps like this, which make the

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<sup>22</sup> *Id.* (“Xcel is concerned about staff / consultant capacity and overlapping projects during the time-intensive stage of Facilities Study review and finalization with the customer, prior to the IA being sent. The Queue Subgroup has discussed this concern at length and some participants disagree about the severity of the challenge in budgeting, recruiting, and training qualified engineers and designers to support this work.”).

<sup>23</sup> *Id.* & footnote 6 (“Xcel has shared some data on historical rates of cancelled and withdrawn projects that indicate the risk is relatively small, but not insignificant.” and “Xcel Response to Fresh Energy IR 30 indicates that as of 12/31/20, four projects had withdrawn after a facilities study was completed and an additional five withdrew after the System Impact Study (SIS) phase, out of approximately 135 Interconnection Applications that have required an SIS since MNDIP took effect.”).

processes move more quickly, could actually help minimize project drop-out. Thus, we encourage the Commission to remain open to considering parallel studies as one option to manage the queue.

### **C. Group Studies**

In addition to the Queue Subgroup's discussion of parallel studies, another subgroup examined a different (potentially complimentary) avenue that has been deployed in other states grappling with similar queue challenges: group studies.<sup>24</sup> IREC was involved in the development of group study procedures in California, Massachusetts, and North Carolina and has examined cluster study frameworks at the ISOs. We participated in the subgroup to share our knowledge about the different components of these processes with the group. It is IREC's assessment, based on our experience in other states and the current conditions in Minnesota, that the most viable approach to solve many of Xcel's current queue problems would be to require group studies for certain queues and/or to develop a program for proactive grid upgrades that would be funded by DER customers and other beneficiaries (i.e., ratepayers where capacity upgrades would have been needed or depreciated assets are replaced). Besides the parallel study process described above, which is not likely to alleviate issues where significant upgrades are necessary, no other options have been identified other than simply accepting that interconnections will proceed very slowly and that once a major upgrade is triggered the feeders would essentially be closed indefinitely. IREC believes this solution will be unacceptable to the

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<sup>24</sup> The terms "group study" and "cluster study" are often used interchangeably. For the purpose of these comments, IREC will refer to group studies. In our experience, the term "cluster study" is most often used for studies on the transmission system, while the term "group study" is used more often for studies on the distribution system.

citizens of Minnesota. We thus urge the Commission to adopt a group study process while also beginning to explore a proactive upgrade process.

The basic idea behind group studies is that multiple electrically interrelated projects can be studied together under one study and that any upgrade costs identified in the study can then be shared by the projects in the group. While there are multiple different ways to design a group study process, each approach has pros and cons, and risks and trade-offs, for all parties involved; there is not a single perfect, painless, and frictionless solution. For this reason, the subgroup was unable to reach consensus on an effective solution. Stakeholders were not prepared to accept the tradeoffs required to move things forward, nor were any non-utility stakeholders satisfied with the status quo. Accordingly, it falls to the Commission to make the hard decisions on how best to implement Minnesota's interconnection process for the greater good and a clean energy future.

**1. The proposal to pilot a group study is insufficient because it delays meaningful action for too long, and Xcel's proposed pilot itself is poorly designed.**

At the outset of the subgroup, IREC presented an outline of the key decisions that need to be made about the framework for a group study process based on the experiences of other states and ISOs.<sup>25</sup> In our presentation and later written summary,<sup>26</sup> IREC emphasized how each

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<sup>25</sup> See MN Pub. Util. Comm., Dkt. E999/CI-16-521, Cluster Study Subgroup Report, pp. 4-5 (July 16, 2021) ("Cluster Study Subgroup Report"). IREC's proposal was largely based on group study processes developed in California, Massachusetts, and North Carolina. See MA Dept. of Pub. Util., Dkt. 17-164, Order on Revisions to Section 3.4.1 of the Standards of Interconnection of Distributed Generation Tariff ("MA Group Study Order"), at 5 (Apr. 8, 2020); NC Utils. Comm., Dkt. E-100, Sub 101, Order Approving Queue Reform (Oct. 15, 2020), *which adopted in whole the proposal by Duke Energy in NC* Utils. Comm., Dkt. E-100, Sub 101, Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Reply Comments, Attachment 1 ("North Carolina Interconnection Procedures – Group Study Proposal") (Aug. 31, 2020); Pacific Gas & Electric, Electric Rule No. 21, Generating Facility Interconnections ("CA Rule 21") § F.3, available at [https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC\\_RULES\\_21.pdf](https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_RULES_21.pdf). (PG&E's tariff is cited here, but all California utility tariffs include the same or similar language.)

<sup>26</sup> Cluster Study Subgroup Report at pp. 2-4.

element involves some risks and tradeoffs, but also sought to explain why other states had found it necessary to include each of the elements in order to create a functional process. Initial meetings gave some optimism that there was a framework on how to approach group studies that would be workable for most stakeholders. MN SEIA members were generally supportive of a mandatory group study, but some had concerns.<sup>27</sup> However, a few meetings in, a developer hesitant about how group studies might impact their projects proposed that there should be a “pilot program” to see how a group study would work, in practice, before moving ahead with group studies more widely. Xcel and MN SEIA agreed that they would prefer to pilot the approach first.<sup>28</sup> IREC and Fresh Energy expressed concerns about the pilot, both because a pilot is guaranteed to delay the development of a meaningful solution, and because the needs and goals of the pilot were not well defined. It was, and still is, unclear what would be learned from the pilot and how and when it would ultimately inform full implementation.

Xcel proposed such a pilot, set forth in its draft Cluster Study Guidelines and has insisted that this is the only way it is willing to proceed.<sup>29</sup> Unfortunately, Xcel’s pilot proposal would not solve the issues that necessitated group studies in the first place, and it would delay achievement of a broader solution for a least a couple of years.

Xcel’s proposed pilot program does not provide an adequate solution because participation is not mandatory under the current rules (a key aspect of a successful group study process, as explained below), and thus would not test the hard cases where help is needed most because developers could not be compelled to participate. Further, the proposal leaves discretion

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<sup>27</sup> *Id.* at p. 5.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*, Att. A.

with Xcel alone to determine when group studies are warranted, how they will be formed, and whether they will be conducted at all based on undefined criteria. This is problematic in light of Xcel's and others' differing views on when group studies are warranted (e.g., deep queues versus high upgrade costs), which is discussed more below in Section II.D. In particular, it appears that Xcel is currently uninterested in instituting group studies on capacity-constrained feeders, which would deprive Minnesota of the opportunity of expanding grid capacity to accommodate DER. In addition, Xcel is not committing to commencing or completing the pilot within any concrete timeframe and is not offering to conduct a diversity of studies. The undefined criteria also do not provide a useful basis to learn from any results from the pilot or help move towards full adoption.

Finally, it is simply not clear what insight the pilot could give versus simply instituting a group study process—a process that is not uncharted territory and has already been available in other states like California<sup>30</sup> and Massachusetts.<sup>31</sup> There are risks either way, and proceeding with a pilot is not the lowest-risk approach because relying on the pilot would make certain that we are least a few years away from a meaningful solution for most projects—and the risk of not solving the problem is more concerning than the risk that group studies may have some problems. Instead of taking this incomplete-step approach pursuant to a pilot, the Commission should work to develop a mandatory group study program, just as other utilities and ISOs have been able to do without a pilot. The process will undoubtedly have its challenges and may need

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<sup>30</sup> Note that in California, while the group study process has been available for years, the utilities have not, as yet, needed to rely on it and instead continue to process applications individually and in general compliance with applicable timelines.

<sup>31</sup> *See supra*, footnote 25.



tweaking over time, but there is no other meaningful proposal on the table that would solve these issues in a timely manner.

**2. The Commission should take action to identify solutions to queue backlog and prohibitive upgrade costs.**

The key issue IREC has observed with stakeholders attempting to develop a group study process is that parties have been unable to find a compromise solution because participants have to accept some risks and tradeoffs for their projects. This was particularly true here, perhaps also exacerbated by the fact that there were so few directly impacted participants in the subgroup. For example, a developer who has a project at the front of a queue may be unwilling to agree to a mandatory group study process, which could result in slightly longer timelines for their project to be studied and perhaps sharing of upgrade costs that they otherwise might have avoided in a purely cost-causer-pays approach. Similarly, later queued projects face other risks since they may hope the first project will just cover the cost of an upgrade and they will not have to contribute, and the utility may be reluctant to tackle the learning curve associated with conducting a new study process.

IREC has always been a supporter of stakeholder working groups as the first line for developing solutions to issues with the interconnection process, and those working groups frequently identify effective solutions. But where, like here, there are a complex mix of interests involved, the parties sometimes cannot arrive at a solution on their own. That is where the Commission should step in, review the evidence, and decide what approach should be adopted to achieve Minnesota's goals for clean energy and deployment of DER.

IREC thus urges the Commission to take on the responsibility of making the hard decisions here about implementing a group study process, recognizing that not every party will be perfectly happy, but that a new approach is needed to achieve effective interconnection in

Minnesota. Or, if the Commission does not believe group studies are the appropriate answer to these problems, the Commission should look for other solutions. Regardless, the key point here is that the Commission must take decisive action to alleviate the problems being faced in the interconnection process in Minnesota. Especially in light of the Commission’s clear disapproval of the current state of interconnection expressed at the May 20, 2021 meeting on the DGWG subgroups’ reports, IREC emphasizes here that the Commission should take bold action now to institute meaningful change. Such action is necessary to achieve the MN DIP’s purpose, as set forth in Minn. Stat. § 216B.1611, to “promote the use of distributed resources”; as it stands, the current state of affairs, if anything, discourages DER development.

### **3. The elements of a group study process.**

IREC provided the subgroup a written assessment of the key considerations that go into forming a group study. This assessment is provided in the subgroup report and we provide a more abbreviated summary below. We encourage the Commission to use that assessment in evaluating the different components that will need to be established for a functioning process.<sup>32</sup> The subgroup report calls out specific areas where there is a particular need for the Commission to help break an impasse (such as with respect to whether the process should be mandatory, what timelines are appropriate, and what feeders it should apply to) and those are identified below in italics. However, in reality, because the subgroup never documented agreement on the other components nor did it write out the structure for those components, we believe that Commission involvement is likely necessary on most components to ensure that a reasonable and functional process is established in a timely manner. IREC is wary of the further process and time delays that could result from another open-ended working group process.

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<sup>32</sup> See Cluster Study Subgroup Report at pp. 2-4.

While there are different ways to establish each of the components identified, and IREC is not taking a position on how each element should be decided, we do believe there is one critical piece that must be implemented: the group study process must be mandatory. As soon as optionality for the utility or the customers is added into the process, there is a high likelihood that any one party can effectively stymie the entire process. A mandatory process forces all parties to accept the tradeoffs associated with achieving an overall more efficient interconnection process.

1. Group Formation. The group study rules should define when and how a group is formed.

a. Timing. The rules should establish when a group is formed (e.g., when two or more electrically interrelated projects enter the queue at the same time), and then provide a window for other projects to join the group. Groups will not be needed in every location, and a well-defined window can determine whether a group or traditional serial study is appropriate.

b. Geographic Scope. The rules should establish criteria for grouping projects based on electrical interrelatedness (e.g., sharing the same electrical infrastructure).

c. Participation. Participation in the group should be mandatory for all projects meeting group study criteria (e.g., small projects should be exempt); otherwise, the purpose of the group study is undermined because participation by all is necessary to realize the time and cost savings of a group study.

*MnSEIA and Xcel want to see the outcome of Xcel's "pilot" before a group study process would become mandatory.<sup>33</sup> IREC and Fresh Energy, however, recommend an approach where group studies are required when certain criteria are met.<sup>34</sup>*

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<sup>33</sup> *Id.* at pp. 8-9, 11-12.

<sup>34</sup> *Id.*

2. Conduct of Studies. The group study rules should define how the study is performed.

a. Phases. The rules should explain how many studies will be conducted, and what the point of different studies are if there is more than one. Many group study processes involve two phases: the first to determine initial scope of impacts and costs, and then a more detailed second phase that proceeds after there is a chance for projects to drop out (see section on “Withdrawal,” below).

b. Timelines. The group study rules should include clearly identified timelines for each step of the process.

*The timelines for the study process in Xcel’s “pilot” appear much longer than those currently used in other states. IREC, Fresh Energy, and MnSEIA want the Commission to set clear, efficient timelines based on what has worked in other jurisdictions.<sup>35</sup> If Xcel lacks the staffing or expertise, it should be required to acquire it.*

c. Impact Assessments. The purpose of the group study is to identify collective impacts of the projects in the group and then allocate costs, so most impacts will be assessed together. However, the rules should explain circumstances in which individual impacts assessments may be necessary (e.g., for project-specific interconnection facilities), and when that assessment will happen (typically no additional time is needed and this is done concurrently with the broader assessment).

3. Changes in the Group. The rules should account for what happens when projects drop out of the group after the process has started. While the group study rules should be drafted in a way that minimizes project attrition (e.g., efficient timelines, process clarity, site-control requirements, and cost sharing opportunities), there should be a clear set of rules regarding when

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<sup>35</sup> See *id.* at p. 12.

a project can drop out or be modified, and the consequences (e.g., deposit forfeiture) to mitigate the impact of withdrawal on other members of the group.

4. Cost Allocation. The rules should clearly define how costs are shared among members of the group.

a. Study Costs. The rules should explain how costs are allocated, for example, based on project size, shared equally, or based on some other factors. They may need to be both group study costs and individual study costs.

b. Upgrade Costs. The rules should define a transparent and fair method for allocating upgrade costs. This is often based on project size.

5. Transition. The Commission should also provide guidance on how to transition to a group study process once the rules are implemented. For example, there should be a process for identifying which existing queued projects could be added to a group. The transition rules should be developed to minimize delays. In Minnesota, where the queue is already significantly backlogged in many places, *the transition rules are especially important*. It is likely that the initial groups conducted will be larger or otherwise different from those that may occur once the already queued projects are studied.

6. Applicability. The Commission must determine which utilities are required to use group studies. The focus of the group study discussion has been on interconnection applications in Xcel's territory. Typically IREC recommends that procedures be consistent across a state and believes that may also be beneficial here, although we do not take a strong position on whether to require a group study in the other utility territories immediately. However, we would like to emphasize that implementing a group study process state wide does not mean that all utilities would be required to immediately conduct those studies. Rather, depending on how the

Commission establishes the triggers for a study, it is likely that group studies would only begin to be necessary when multiple projects begin to apply in the same locations within a defined period of time. Until that time the traditional serial process can continue uninhibited.

\* \* \*

Finally, it is critical that the Commission update the MN DIP to include any group study rules it develops. Group studies implicate important rights and obligations, including rights to existing capacity and the obligation to pay for upgrade costs. Without clearly applicable rules, the risk to DER developers is increased and unnecessary uncertainty added—an issue highlighted by Xcel’s proposed pilot, which leaves many of the above questions unanswered and carries substantial risks of serious and consequential disputes.

**D. Require Xcel Energy to provide the Commission an assessment of the upgrades needed for heavily impacted substations.**

As discussed above, one of the primary points of disagreement within the cluster study subgroup was not about whether group studies should be conducted at all, but rather whether they are appropriate to use for the most heavily impacted feeders with capacity constraints in Xcel’s territory.<sup>36</sup> For IREC, and many of the other non-utility stakeholders in the group, the principle promise of a group study was that it would help to solve the bottleneck on those feeders where it is clear an expensive upgrade is required. Where there are only one or two projects in the queue, or where significant upgrades are not necessary, the complexities of a group study may be less compelling and a parallel study option may work just as well. Where significant upgrades are required, however, it appears that the only solution is to find some way of sharing

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<sup>36</sup> *Id.* at pp. 7-8.

the costs across multiple projects or beneficiaries if the state wants to continue to allow community solar (or other larger scale DERs) to be installed at those substations.

Xcel initially took the position that it did not want to conduct group studies on the heavily impacted feeders and then revised its position to a “maybe,” but does not provide a compelling explanation as to why that is the case.<sup>37</sup> The reasons provided by Xcel in the subgroup report (timeline, transmission impact, and ratepayer impact) do not actually seem to suggest a group study process would not work, and it is also notable that Xcel has not bothered to provide any other solution, besides suggesting that projects should look for capacity elsewhere. That is a convenient position that is designed to expressly ignore the community solar program rules which require systems to be sited near subscribing customers.

There needs to be a public assessment of what constraints exist and what potential upgrades are needed for these feeders. Xcel has alluded to some conversations underway with the MISO, but has yet to point the stakeholders to evidence of those discussions or a timeline for when it may produce results. It may very well be that in some locations the upgrades necessary would truly be prohibitively expensive even under a group study scenario, but the only way to identify whether solutions, if any, are possible is to have a proper assessment of the constraints.

A number of feeders have been constrained for multiple years now, and the number of feeders in this situation continues to grow. It is time to require that Xcel present to the Commission a full assessment of each constrained feeder, what constraints exist and what the upgrade options would be. IREC and other members of the subgroup, ask the Commission to require that Xcel conduct this assessment and provide it to the Commission and stakeholders

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<sup>37</sup> *Id.* at pp. 7-8, 9-10.

within two months of the Commission’s Order.<sup>38</sup> The details of what should be required in the report are set forth in the Cluster Study Subgroup Report at page 9. This assessment should help the Commission evaluate what solutions are necessary and begin the process of identifying an appropriate solution for those feeders, whether it be a group study process or some other option.

**E. Proactive upgrades may provide a more comprehensive long-term solution that also addresses the growth of multiple types of DER.**

While parallel studies and group studies are likely the most realistic options for near-term alleviation of the queue backlog in Minnesota, IREC believes it is time that the Commission consider a more proactive approach to the upgrades necessary to accommodate DERs of all types. Although this concept was not presented in the DGWG working groups, the discussions and impasses in those groups highlight that relying on a project-by-project interconnection process for upgrading the distribution system may not be sustainable in the long run. Multiple states with high DER penetration and goals or mandates for transportation and building electrification are starting to recognize that a more holistic approach to DER integration is necessary. These states are thus beginning to consider alternatives, including new approaches to distribution system planning,<sup>39</sup> such as Massachusetts’ development of a process to proactively upgrade DER feeders to accommodate the full range of DERs that will be necessary for

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<sup>38</sup> *Id.* at pp. 9-10.

<sup>39</sup> ME Pub. Utils. Comm., Dkt. No. 2021—0039, Commission Initiated Investigation of the Design and Operation of Maine’s Distribution System. “Accordingly, the Commission initiates and will conduct an in-depth, structured, and comprehensive examination of the future design and operation of the electric distribution system in Maine to accommodate both the integration and operation of increasing amounts of DER and the potential for substantial load growth resulting from electrification efforts to meet climate change initiatives and objectives.” (p. 1 of Notice of Summary Investigation, February 18, 2021); MD Pub. Serv. Comm., PC44 and Case No. 9665, In The Matter of Transforming Maryland’s Electric Distribution Systems to Ensure that Electric Service is Customer-Centered, Affordable, Reliable and Environmentally Sustainable in Maryland.



meaningful climate action.<sup>40</sup> Utilizing a more proactive process that is not simply reacting to individual interconnection applications, is likely to result in more cost effective means of deploying DERs to help serve customer needs and respond to the urgency of the climate crisis. IREC urges the Commission to consider commencing a similar process in Minnesota in addition to adopting a parallel and group study process.

### **III. Solutions for a More Efficient Study Processes for Small Projects**

In addition to addressing the parallel study process already described above, the Queue Subgroup also considered a number of other solutions to help alleviate the delays and upgrade costs experienced by smaller DER applications (which typically do not require a full study) in Xcel's territory. Below, IREC provides our thoughts on those proposals and recommends that the Commission consider moving forward with a flat-fee approach for small projects.

#### **A. The Commission should adopt a formula fee for small projects.**

In Minnesota, an increasing number of Xcel customers who want to install small residential or commercial solar systems to serve on-site load are facing unaffordable upgrade costs.<sup>41</sup> This can result in customers in certain regions being unable to install on-site solar and is creating growing frustration amongst citizens in Minnesota. During the Queue Subgroup, IREC, in collaboration with Fresh Energy, presented an idea for moving small projects forward that was based on an approach that has successfully been used for a number of years in California and that

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<sup>40</sup> See, e.g., MA Dept. Pub. Utils., Dkt. No. 20-75, Investigation by the Department of Public Utilities On Its Own Motion Into Electric Distribution Companies' (1) Distributed Energy Resource Planning and (2) Assignment and Recovery of Costs for Interconnection of Distributed Generation, Vote and Order Opening Investigation (Oct. 22, 2021) ("MA DPU Dkt. No. 20-75"); CA Pub. Util. Com., Dkt. No. R.21-06-017, Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future (Jul. 2, 2021)..

<sup>41</sup> See *supra*, footnote 2.

is also under consideration in Massachusetts at this time.<sup>42</sup> The basic concept is that while small projects (i.e. those under 40 kW) typically do not trigger upgrades of any consequence, when they do, it can be cost prohibitive for individual customers but quite affordable when the costs are shared. Thus, a flat fee can be established on an annual basis, based on the previous year's upgrade costs, to cover the costs for some or all upgrades triggered by qualifying projects. This cost-sharing mechanism can result in a fairer process for everyone and get the necessary upgrades completed rather than resulting in "closed" circuits, while also significantly expediting the review process for individual projects. This idea has been refined and expanded by Fresh Energy and small DER developers into a proposal that they will present in their comments.

IREC refers the Commission to Fresh Energy's comments for the details of the proposal, but we would like to provide some context from California and Massachusetts to explain how this idea was developed and to provide additional data points for reference.

In California, net energy metered (NEM) projects below 1 MW are exempt from paying interconnection upgrade costs.<sup>43</sup> Since 2002, the CPUC has tracked annual distribution upgrade costs incurred for these projects in each utility territory so that it can evaluate the policy on an ongoing basis.<sup>44</sup> The reports track the administrative and engineering costs associated with reviewing the NEM applications as well as the costs of distribution upgrades and interconnection facilities. The most recent annual reports on interconnection costs submitted by the California utilities on NEM projects below 1 MW show that the costs for distribution upgrades and

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<sup>42</sup> MN Pub. Util. Comm., Dkt. 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, Staff Briefing Papers at p. 13 (May 20, 2021).

<sup>43</sup> CA Pub. Util. Comm., Dkt. R99-10-025, Decision 02-03-057, Opinion Interpreting Public Utilities Code Section 2827 at p. 14 (March 21, 2002).

<sup>44</sup> *Id.* at p. 11.

interconnection facilities, when spread across the total number of customer accounts (aka ratepayers), come to less than \$.01 in San Diego Gas & Electric's territory, \$.85 in Southern California Edison's territory, and \$2.70 in Pacific Gas & Electric's territory.<sup>45</sup> The cost for upgrades have tended to increase annually as DER penetration increases, though in some years they have also gone down.

The reported data in California also include the total upgrade costs per year along with the total number of NEM customers interconnected. From this, it is easy to see what the costs would be if they were spread across interconnection applicants instead of the rate base. In 2019-2020, the costs on a per-NEM interconnection application basis for distribution upgrades were \$1.05 in San Diego Gas & Electric's territory, \$82.04 in Southern California Edison's territory,

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<sup>45</sup> San Diego Gas & Electric Co, Advice Letter 3601-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 1, 2020), *available at* <http://regarchive.sdge.com/tm2/pdf/3601-E.pdf>; Southern California Edison, Advice Letter 4296-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 21, 2020), *available at* [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/pending/electric/ELECTRIC\\_4296-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/pending/electric/ELECTRIC_4296-E.pdf); Pacific Gas & Electric, Advice Letter 5964-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 29, 2020), *available at* [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5964-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5964-E.pdf).

and \$186.03 in Pacific Gas & Electric’s territory.<sup>46</sup> The following table shows the costs on a per-application basis since 2013:<sup>47</sup>

	<b>Pacific Gas &amp; Electric</b>	<b>Southern California Edison</b>	<b>San Diego Gas &amp; Electric</b>
<b>2013-2015</b>	\$45.61	\$5.01	\$0.78
<b>2015-2016</b>	\$125.97	\$15.47	\$1.34
<b>2016-2017</b>	\$68.76	\$90.79	\$4.79
<b>2017-2018</b>	\$211.50	\$98.68	\$42.43
<b>2018-2019</b>	\$217.10	\$230.33	\$1.39
<b>2019-2020</b>	\$186.03	\$82.04	\$1.05

Massachusetts is currently considering adopting a similar framework for the sharing of small project interconnection upgrade costs that is widely supported by all parties, including the utilities.<sup>48</sup> As part of the record in that proceeding, the Massachusetts utilities provided similar data for their systems.<sup>49</sup> The following table shows upgrade costs per application received by

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<sup>46</sup> Pacific Gas & Electric, Advice Letter 5640-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 19, 2019), *available at* [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5640-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5640-E.pdf); Southern California Edison, Advice Letter 4296-E, Information-Only Advice Letter, Southern California Edison Co.’s Report on Net Energy Metering Interconnection Costs (Sept. 21, 2020), *available at* [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_4296-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_4296-E.pdf); San Diego Gas & Electric Co, Advice Letter 3601-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 1, 2020), *available at* <http://regarchive.sdge.com/tm2/pdf/3601-E.pdf>.

<sup>47</sup> The advice letters from utilities containing the data on which these calculations are based is attached hereto as Attachment B.

<sup>48</sup> *See generally* MA DPU Dkt. No. 20-75.

<sup>49</sup> MA DPU Dkt. No. 20-75, Unitil Responses to Information Requests, Att. B (Dec. 23, 2020); MA DPU Dkt. No. 20-75, National Grid Comments on Straw Proposal, Att. 1 (Dec. 23, 2020). Note that the third Massachusetts utility, Eversource, did not provide this information because the utility, when it incurred upgrade costs for simplified process facilities did not charge the facilities for those costs, absorbing them into the ratebase instead. *See* MA DPU Dkt. No. 20-75, Initial Comments of NSTAR Electric Company d/b/a Eversource Energy, Att. Eversource IR-4 (Dec. 23, 2020).

two utilities in Massachusetts for projects under the state’s Simplified Process (for projects 15 kW or less single-phase, or 25 kW or less three-phase):

	<b>National Grid</b>	<b>Unitil</b>
<b>2014</b>	data unavailable	\$9.41
<b>2015</b>	data unavailable	\$10.37
<b>2016</b>	data unavailable	\$54.10
<b>2017</b>	\$4.89	\$44.96
<b>2018</b>	\$196.93	\$315.83
<b>2019</b>	\$119.38	\$13.83
<b>2020</b>	\$83.16	\$4.96

What the data from both of these states show is that even in very high penetration markets, spreading interconnection costs across all interconnection customers can result in relatively reasonable fees that could go a long way towards resolving the inequities of the upgrade lottery, while also actually providing the funding to get the upgrades done and keep projects moving.

Aggregating the upgrade costs for small projects can streamline the administrative costs of interconnection because the utility does not spend the same amount of time developing individual cost estimates during the review process, collecting deposits, and then reconciling actuals to estimates for the upgrades. As a result, customers who want to install a small DER system will encounter few, if any, barriers due to the need for grid upgrades. Indeed, this approach has led to some of the fastest interconnection timelines in the country in California, where utilities process the vast majority of small project applications (those less than 30 kW) in less than ten days, according to a recent report prepared to evaluate of California’s interconnection procedures.<sup>50</sup>

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<sup>50</sup> CA Pub. Utils. Comm., Rule 21 Interconnection Program Evaluation, p. 54 (Mar. 2021), available at [https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/rule21/rule-21-interconnection-program-eval\\_2021.pdf](https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/rule21/rule-21-interconnection-program-eval_2021.pdf).

This approach must be subject to Commission oversight, however. Utilities must be required to demonstrate the upgrades they charge to the rate base in the name of accommodating small DERs are necessary and that the prices charged are reasonable. Otherwise, utilities could be tempted to gold-plate their distribution systems with unnecessary upgrades that then are improperly charged to rate-payers. The Commission should regularly review the DER upgrade charges for reasonableness. Indeed, the data that are currently available from Xcel, compared to the data from California and Massachusetts, may suggest that the Commission should be paying more attention to Xcel's interconnection costs.<sup>51</sup> The amounts provided above for California include upgrades for projects up to 1 MW in size, while the proposal here in Minnesota is limited to much smaller projects (those below 40 kW). For this reason, one would expect that the per project costs would be smaller since larger projects are much more likely to trigger significant upgrades. Similarly, both California and Massachusetts likely have substantially higher and widespread penetration of DER than Minnesota and, again, one would thus expect the upgrade costs to be lower in Minnesota where system penetration is likely lower. While system topographies and conditions vary, the Commission should consider asking utilities for greater justification of upgrade costs if the data in Minnesota is not in sync with these expectations. It could be that the amounts charged are too high or that upgrades are being required unnecessarily. Or it could be that the costs are accurate and reasonable.

The small project fee is an issue of fairness. Under the existing rules, a project that triggers an upgrade pays the costs of that upgrade. Consider this in the context of small, residential projects: many homes may interconnect a solar PV system to a certain feeder without

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<sup>51</sup> Subgroup Final Reports, at p. 49; *see also* the comments from Fresh Energy which will outline the data further.

paying any upgrade costs, and then one unlucky homeowner, following in her neighbors' footsteps, is told she must pay thousands of dollars to upgrade a transformer to support her project. But the need for the new transformer was not caused by her alone; every project interconnecting before her contributed to the need for the upgrade. As a practical matter, the current situation in Minnesota is that people in some geographic areas can develop small, site-serving solar, while others cannot. We believe that a flat interconnection fee approach could go a long way towards addressing these inequities while also keeping the interconnection process moving efficiently.

Finally, it must be noted that while a set small-project fee will alleviate some problems for small projects, it will not solve all the problems of a constrained grid. Eventually, a necessary upgrade may be triggered by small projects that is prohibitively expensive for small projects to bear even when the cost is shared. It does not address the interaction with the upgrades required by community solar projects. Further, sharing costs does not address the issue of timeline delays related to construction, which could be exacerbated if upgrades are not tied to a single project and its MN DIP timelines. For these reasons, if Minnesota truly wants to see a high-penetration clean energy future, the Commission will need to address the issue of proactive grid upgrades as well.

**B. The planning limits and capacity reservation proposals would further exacerbate queue issues and raise the costs of interconnection.**

In addition to the small project fee, the queue subgroup also discussed two interrelated proposals from Xcel Energy: a proposed change to the “planning limits” and a capacity reservation for small projects. IREC opposes both of these proposals because they are not designed to actually facilitate faster and more efficient interconnection. Rather, they lower the

amount of capacity on the system for DERs in a manner that is discriminatory, not in alignment with the MN DIP, and not necessary from a safety and reliability standpoint.

### **1. Planning Limits**

Xcel is proposing to change its planning limits such that it no longer take into account how load offsets the impact of generation on a circuit. It has proposed to no longer take minimum daytime load into account when assessing whether a proposed project will have an impact on a circuit. Xcel's reasoning is that by not considering daytime load, it will ensure that customers have the ability to offset their own load when installing on-site generation. IREC certainly supports the rights of customers to offset their own load, but this is not the right way to approach it for a number of reasons. The reality is that many of Xcel's customers are not able to install onsite generation to offset their load, either because they are renters, their home is not suited for onsite solar, or a variety of other technical or financial reasons. Thus, there will likely always be some load on a circuit that is not being served by onsite generation, and this policy would likely thus result in unused capacity or unnecessary upgrades.

This approach also raises consumer fairness concerns and appears to be a disguised attempt to minimize the amount of community solar that can be installed. Multiple times during the subgroup discussions, Xcel expressed the view that community solar customers are somehow not real customers or not entitled to the same opportunities to offset their electricity bills with solar as those who can install solar on their residential or commercial rooftop. While it is true that not all community solar customers live on the same circuit where the facility they subscribe to is installed, they are still legitimate customers of Xcel and should have access to the opportunity to invest in clean, renewable energy as was intended by the legislature and Commission.



The proposal to change the planning limits to exclude consideration of minimum load is also in conflict with the concepts that are laid out in the MN DIP and virtually all other state interconnection procedures. The MN DIP requires that Xcel consider the manner in which load offsets generation in the Fast Track and Supplemental Review screens.<sup>52</sup> Not taking minimum load into account will unduly restrict the amount of generation that can be safely accommodated on a circuit. Indeed, calculations suggest that the “change would reduce the potential available capacity for DER (based on thermal capacity) by approximately 13% compared to what would be available under the existing policy.”<sup>53</sup> While other electrical considerations, including voltage and protection, may in some cases limit the capacity, there needs to be a strong technical justification for such a significant potential reduction in capacity.

Xcel is correct that there may be cases where a customer seeking to install non-exporting capacity could trigger the need for distribution upgrades if there is already a significant amount of generation on the circuit. However, its proposed solution is overbroad and fails to recognize the load growth that is likely to occur from transportation and building electrification. Instead, the Commission must assess how likely it is that this circumstance will arise with any frequency, and then evaluate what, if any, policy changes can be taken to address it without simply reducing overall system capacity unnecessarily.

## **2. Capacity Reservation for Customer-Sited Projects**

In addition to proposing to change the capacity limits, Xcel proposed to reserve 25% of the planning capacity on a feeder for customer sited projects. While IREC is committed to finding a pathway to enabling fast and efficient interconnection for customer-sited projects, this

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<sup>52</sup> See MN DIP §§ 3.2.1.2 & 3.4.4.1 (expressly requiring the consideration of minimum load in screening the impacts of proposed projects).

<sup>53</sup> Subgroup Final Reports at p. 45.

proposal is another attempt to simply lower the amount of capacity for solar overall on the system.

First, as explained above with the planning limits proposal, this policy would effectively favor certain customers' ability to invest in clean energy over others. But, more centrally, this policy would carve out much more capacity than is likely to be needed for customer-sited systems on any feeder in the foreseeable future. As discussed in the Queue Subgroup Report, "on the ten feeders with the highest concentration of DER  $\leq 40\text{kW}$ , this DER capacity makes up 1.2-3.6% of feeder equipment capacity."<sup>54</sup> Even with aggressive deployment of DER, it is unlikely that any feeder is going to see 25% of the capacity served by onsite generation anytime soon. As a result, this proposal, along with the planning limits proposal discussed above, would effectively shrink the pie rather than helping more customers directly invest in clean energy.

IREC is not opposed to capacity reservations altogether, but Xcel's proposal is simply too broad, and it also has an underlying presumption that feeders should not be upgraded to accommodate greater amounts of DER into the future. The small project fee is a preferred policy solution because it does not result in capacity being left unused and provides a means for upgrades to be completed when necessary. The Commission should see through Xcel's cynical attempt to limit the opportunity for all customers in Minnesota to invest in clean energy, reject both these proposals, and direct Xcel to find ways to expand opportunities for their customers instead of limiting them unnecessarily.

#### **IV. Implementation**

In implementing the above proposals supported by IREC, the Commission should update the MN DIP/DIA. Additionally, with regard to the small-project fee, the Commission should

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<sup>54</sup> *Id.* at p. 46.

evaluate reducing timelines for small projects to reflect the streamlining this approach supports. IREC supports applying these changes to all utilities, though it is clear that the immediate and essential need is to apply them to Xcel, which suffers the worst timeline performance and most significant barriers to interconnection of any of Minnesota’s utilities. In adopting these proposals, the Commission would be supporting Minn. Stat. § 216B.1611’s directive to provide for cost-effective interconnection of DER.

## **V. Dispute Resolution**

On June 1, 2021, Xcel filed a report documenting its compliance with the Commission’s February 23, 2021 Order Accepting Filing and Denying Request to Exclude Complaints in Docket Nos. E,G002/CI-02-2034 and E,G002/M-12-383 (“QSP Order”).<sup>55</sup> The QSP Order required Xcel to work with stakeholders to develop “outside the QSP customer complaint metrics, a different mechanism or tariff to resolve solar installation issues before they become QSP complaints.”<sup>56</sup> Inexplicably, despite IREC’s extensive participation in the QSP docket on the issue of complaints and dispute resolution, and IREC’s experience in interconnection dispute resolution procedures and accountability mechanisms, Xcel neglected to invite IREC to participate in the stakeholder group to develop the dispute resolution proposal. Thus, we were not privy to all conversations that led to the development of this proposal, and can comment only on the proposal itself.

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<sup>55</sup> MN Pub. Util. Comm., Dkt. E,G002/M-12-383 & Dkt. E,G002/M-02-2034, Xcel Energy’s Compliance – Quality of Service Plan Tariff (June 1, 2021) (“Xcel QSP Compliance Report”).

<sup>56</sup> MN Pub. Util. Comm., Dkt. E,G002/M-12-383 & Dkt. E,G002/M-02-2034, Order Accepting Filing and Denying Request to Exclude Complaints, p. 7 (Feb. 18, 2021) (“QSP Order”).

IREC does not oppose providing a streamlined dispute resolution procedure for non-technical issues,<sup>57</sup> but the proposal is quite modest and not likely to significantly assist customers or provide greater accountability, which was the intent of the Commission. If the Commission considers Xcel's proposal, it should ensure that it is not used as a roadblock to prevent interconnection customers from lodging complaints with the CAO. Currently, the CAO outlines a three-step process for customer complaints: first, a customer should try to informally resolve this issue with the utility; second, if the issue is unable to be resolved, the customer may file a complaint with the CAO; and third, the CAO will review the complaint, confirm its jurisdiction, and work to mediate the issue.

Xcel's proposal seems to be generally consistent with this approach, with the proposed streamlined dispute resolution procedure serving to meet the CAO's requirement that the customer first attempt direct resolution with Xcel. However, it appears that the only improvement this process is adding is a somewhat more efficient timeline for those initial discussions. At a minimum, the Commission should clarify that if the issue is not fully resolved by the resolution meeting (e.g., within 10 business days of the submission of the Notice of Dispute to Xcel<sup>58</sup>), the customer may elect to file a complaint with the CAO without waiting for further process with Xcel.

This assurance that a customer can file a complaint with the CAO without waiting beyond the 10 business day period ensures that the core purpose of the QSP is satisfied, which is to measure customer satisfaction. Retaining the ability for interconnection customers to complain about customer service issues is essential to ensuring accountability. In the QSP

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<sup>57</sup> See Xcel QSP Compliance Report at pp. 9-10.

<sup>58</sup> See *id.* at p. 10.

Order, the Commission recognized the importance of dispute resolution *and* accountability.<sup>59</sup> If Xcel's proposed streamlined dispute resolution process is allowed to become too onerous, it will discourage interconnection customers from attempting to resolve issues, while also preventing them from filing complaints with the CAO. This would result in loss of a key metric under the QSP: how many customers are actually aggrieved enough to file a complaint in the first place. Thus, the Commission must ensure that Xcel's proposal will not deter participation or reduce visibility into the frequency of problems, and that the process will treat interconnection customers similarly to any other utility customer.

In order to ensure accountability, the Commission should also clarify that if a customer has already attempted to resolve a certain kind of complaint with Xcel (for example, a timeline issue for a small DER project) and the issue remains unresolved and happens repeatedly, the customer can go directly to the CAO instead of re-attempting futile dispute resolution with Xcel. This, too, prevents unnecessary burden on developers and prevents Xcel from avoiding evaluation of its customer service under the QSP.

## **VI. Conclusion**

In closing, IREC would like to acknowledge that the issues before the Commission are thorny and point to the need for a broader policy assessment. The nature of the community solar program is resulting in patterns of development that create very difficult interconnection challenges. These challenges are impacting both community solar customers and customers seeking to install on-site solar. While the solutions to these challenges will require trade-offs for all stakeholders, it is important to recognize that the citizens of Minnesota are eager to continue to serve their load with distributed clean energy and to find ways to enable them to do so in a

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<sup>59</sup> See QSP Order at p. 7.

cost effective and timely manner. Both large and small developers recognize that there are costs associated with interconnection and none are opposed to helping to pay for necessary upgrades, but they need a partner in this process that is looking to help facilitate these upgrades instead of trying to curb the growth of DERs.

DATED: August 25, 2021

By:           /s/ Sky Stanfield            
Sky C. Stanfield  
Laura D. Beaton  
SHUTE, MIHALY & WEINBERGER LLP  
396 Hayes Street  
San Francisco, CA 94102  
Telephone: (415) 552-7272  
Facsimile: (415) 552-5816  
stanfield@smwlaw.com  
beaton@smwlaw.com

Attorneys for INTERSTATE RENEWABLE  
ENERGY COUNCIL, INC.

# **ATTACHMENT A**

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 22  
Docket No.: E999/CI-16-521  
Response To: Fresh Energy  
Requestor: Isabel Ricker  
Date Received: October 29, 2020

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Question:

- a. When initial or supplemental review screens indicate an application requires upgrades, how does Xcel determine whether a cost estimate or a facilities study is appropriate (under MNDIP sections 3.2.2.2 and 3.4.5.2)?
- b. What types of upgrades are subject to cost estimates, and which are subject to facilities studies?
- c. What is the maximum, minimum, and mean amount of time it takes to provide a cost estimate under MNDIP sections 3.2.2.2 and 3.4.5.2?
- d. What is the maximum, minimum, and mean amount of time it takes to conduct a facilities study under MNDIP sections 3.2.2.2 and 3.4.5.2?

Response:

- a. Where projects fail the initial or supplemental screens, but we can determine without a system impact study that the project can nevertheless be interconnected consistent with safety, reliability, and power quality standards if construction of facilities is performed, the project will enter a facilities study.
  - b. We believe that the question is referring to “good faith estimates.” The facilities study will specify and estimate the cost of the upgrade. Interconnection Applications that require construction of any facilities go through the facilities studies in order to provide better informed cost estimates. Applications that require no construction will not receive a facilities study.
  - c. Facility studies are used to provide better informed cost estimates where construction is needed therefore there is no data to respond to this request.
  - d. Facilities studies are completed as part of MNDIP 4.4. The maximum, minimum, and mean amounts for the completed facilities studies as follows: maximum 126 days, minimum 1 day, and mean 56 days. The majority of these projects are 1 MW projects.
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Preparer: Jessica Peterson  
Title: Sr. Regulatory Analyst  
Department: DSM & Renewable, Policy and Strategy  
Telephone: 612.330.6850  
Date: November 9, 2020

- Not Public Document – Not For Public Disclosure
- Public Document – Not Public Data Has Been Excised
- Public Document

Xcel Energy Information Request No. 21  
 Docket No.: E999/CI-16-521  
 Response To: Fresh Energy  
 Requestor: Isabel Ricker  
 Date Received: October 29, 2020

Question:

Please complete the table below for simplified and fast track applications received since MNDIP went into effect on June 17, 2019, through the most recent date available. The table requests data on simplified and fast track applications where it was determined during initial or supplemental review that upgrades were necessary, and the number of these applications that received a cost estimate versus a facilities study under MNDIP Section 3.2.2.2 or 3.4.5.2.

	<b>Simplified</b>	<b>Fast Track</b>
Deemed Complete Applications		
Upgrades deemed required in Initial Review (3.2.2.2)		
Cost Estimate Provided		
Facilities Study Required		
Upgrades deemed required in Supplemental Review (3.4.5.2)		
Cost Estimate Provided		
Facilities Study Required		

Response:

As of October 30, 2020, we provide the data requested below:

	<b>Simplified</b>	<b>Fast Track</b>
<b>Deemed Complete Applications</b>	<b>1773</b>	<b>390</b>
<b>Upgrades deemed required in Initial Review (3.2.2.2)</b>	<b>9</b>	<b>21</b>
Cost Estimate Provided	0	0
Facilities Study Required <i>(including projects in process)</i>	9	21
<b>Upgrades deemed required in Supplemental Review (3.4.5.2)</b>	<b>29</b>	<b>35</b>
Cost Estimate Provided	0	0
Facilities Study Required <i>(including projects in process)</i>	29	35

We understand that the cost estimate provided being asked for is the good faith cost estimate for the construction of any facilities as described in MN DIP 3.2.2.2 and 3.4.5.2. The facilities study will specify and estimate the cost of the upgrade. We also clarify that that upgrades in initial screen include projects that went directly to the facilities study after the initial screen. In addition, the facilities study required does include the projects that are in process (not yet received a cost estimate) or may have been withdrawn.

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Preparer: Alex Nordlund  
Title: Marketing Assistant  
Department: Renewable and Choice Programs  
Telephone: 612.330.6782  
Date: November 9, 2020

# **ATTACHMENT B**

## Attachment B

### California Utility Advice Letters re NEM Costs

Pacific Gas & Electric, Advice Letter 4660-E, Information-Only Filing Regarding Net Energy Metering Costs (Dec. 31, 2015), *available at* [https://www.pge.com/rates/tariffs/tm2/pdf/ELEC\\_4660-E.pdf](https://www.pge.com/rates/tariffs/tm2/pdf/ELEC_4660-E.pdf).

Southern California Edison, Advice Letter 3239-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (June 30, 2015), *available at* [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_3239-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_3239-E.pdf).

San Diego Gas & Electric Co, Advice Letter 2761-E, Information Only -- Net Energy Metering Interconnection Costs Pursuant to Resolution E-4610 and Decision 14-05-033 (June 30, 2015), *available at* <http://regarchive.sdge.com/tm2/pdf/2761-E.pdf>.

Pacific Gas & Electric, Advice Letter 4918-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 19, 2016), *available at* [https://www.pge.com/tariffs/tm2/pdf/ELEC\\_4918-E.pdf](https://www.pge.com/tariffs/tm2/pdf/ELEC_4918-E.pdf).

Southern California Edison, Advice Letter 3473-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 19, 2016), *available at* [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_3473-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_3473-E.pdf).

San Diego Gas & Electric Co, Advice Letter 2984-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Oct. 18, 2016), *available at* <http://regarchive.sdge.com/tm2/pdf/2984-E.pdf>.

Pacific Gas & Electric, Advice Letter 5143-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 19, 2017), *available at* [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5143-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5143-E.pdf).

Southern California Edison, Advice Letter 3658-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 19, 2017), *available at* [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_3658-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_3658-E.pdf).

San Diego Gas & Electric Co, Advice Letter 3131-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Oct. 12, 2017), *available at* <http://regarchive.sdge.com/tm2/pdf/3131-E.pdf>.

Pacific Gas & Electric, Advice Letter 5398-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Oct. 4, 2018), *available at* [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5398-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5398-E.pdf).

Southern California Edison, Advice Letter 3866-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 19, 2018), available at [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_3866-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_3866-E.pdf).

San Diego Gas & Electric Co, Advice Letter 3273-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 19, 2018), available at <http://regarchive.sdge.com/tm2/pdf/3273-E.pdf>.

Pacific Gas & Electric, Advice Letter 5640-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 19, 2019), available at [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5640-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5640-E.pdf).

Southern California Edison, Advice Letter 4074-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 19, 2019), available at [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_4074-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_4074-E.pdf).

San Diego Gas & Electric Co, Advice Letter 3601-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Aug. 30, 2019), available at <http://regarchive.sdge.com/tm2/pdf/3426-E.pdf>.

Pacific Gas & Electric, Advice Letter 5964-E, Information-Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 29, 2020), available at [https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC\\_5964-E.pdf](https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5964-E.pdf).

Southern California Edison, Advice Letter 4296-E, Information-Only Advice Letter, Southern California Edison Co.'s Report on Net Energy Metering Interconnection Costs (Sept. 21, 2020), available at [https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC\\_4296-E.pdf](https://library.sce.com/content/dam/sce-doclib/public/regulatory/filings/approved/electric/ELECTRIC_4296-E.pdf).

San Diego Gas & Electric Co, Advice Letter 3601-E, Information Only Filing Regarding Net Energy Metering (NEM) Costs (Sept. 1, 2020), available at <http://regarchive.sdge.com/tm2/pdf/3601-E.pdf>.

**CERTIFICATE OF SERVICE**

**Docket Nos. E-999/CI-16-521 and E-999/CI-01-1023**

I, the undersigned, state that I am a citizen of the United States and am employed in the City and County of San Francisco; that I am over the age of eighteen (18) years and not a party to the within cause; and that my business address is 396 Hayes Street, San Francisco, CA 94102.

On August 25, 2021, I served a true and correct copy of

**COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL INC. ON  
PROPOSED CHANGES TO THE MINNESOTA DISTRIBUTED ENERGY RESOURCE  
INTERCONNECTION PROCESS OR AGREEMENTS IDENTIFIED BY  
DISTRIBUTED GENERATION WORKGROUP SUBGROUPS**

on the parties in this action as follows:

**SEE ATTACHED SERVICE LIST**

**BY ELECTRONIC FILING:** I caused a copy of the document(s) to be sent to the e-mail addresses of the persons designated as accepting electronic service on the Official Service List by using the eService feature of the eFiling application of the Minnesota Public Utilities Commission.

**BY MAIL:** I enclosed the document(s) in a sealed envelope addressed to the persons designated as requiring paper service on the Official Service List. I am readily familiar with Shute, Mihaly & Weinberger LLP's practice for collecting and processing correspondence for mailing. On the same day that the correspondence is placed for collection and mailing, it is deposited in the ordinary course of business with the United States Postal Service, in a sealed envelope with postage fully prepaid.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed in Union City, California on August 25, 2021.

/s/ David Weibel

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David Weibel

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ross	Abbey	ross.abbey@us-solar.com	United States Solar Corp.	100 North 6th St Ste 222C Minneapolis, MN 55403	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Allen	michael.allen@allenergysolar.com	All Energy Solar	721 W 26th st Suite 211 Minneapolis, Minnesota 55405	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Brian	Allen	brian.allen@allenergysolar.com	All Energy Solar, Inc	1642 Carroll Ave Saint Paul, MN 55104	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Amster Olzweski	david@mysunshare.com	SunShare, LLC	1151 Bannock St Denver, CO 80204-8020	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Janet	Anderson	jainstp@q.com	-	1799 Sargent St. Paul, MN 55105	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mark	Anderson	manderson@southcentralelectric.com	South Central Electric Association	PO Box 150 71176 Tiell Drive St. James, MN 56081	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	Bailey	bailey@ilsr.org	Institute For Local Self-Reliance	1313 5th St SE Ste 303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Laura	Beaton	beaton@smwlaw.com	Shute, Mihaly & Weinberger LLP	396 Hayes Street San Francisco, CA 94102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Peter	Beithon	pbeithon@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
Sara	Bergan	sebergan@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	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
Derek	Bertsch	derek.bertsch@mrenergy.com	Missouri River Energy Services	3724 West Avera Drive PO Box 88920 Sioux Falls, SD 57109-8920	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
William	Black	bblack@mmua.org	MMUA	Suite 200 3131 Fernbrook Lane  Plymouth, MN 55447	Electronic Service North	No	OFF_SL_16-521_Official Service List PUC
Kenneth	Bradley	kbradley1965@gmail.com		2837 Emerson Ave S Apt CW112  Minneapolis, MN 55408	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jon	Brekke	jbrekke@greenergy.com	Great River Energy	12300 Elm Creek Boulevard  Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kathleen M.	Brennan	kmb@mcgrannshea.com	McGrann Shea Carnival, Straughn & Lamb, Chartered	800 Nicollet Mall Ste 2600  Minneapolis, MN 554027035	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Christopher	Browning	christopher.browning@nexteraenergy.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000  Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael J.	Bull	mbull@mncee.org	Center for Energy and Environment	212 Third Ave N Ste 560  Minneapolis, MN 55401	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jessica	Burdette	jessica.burdette@state.mn.us	Department of Commerce	85 7th Place East Suite 500 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jerry	Byer	jbyer@itasca-mantrap.com	Itasca-Mantrap Coop. Electric Assn.	PO Box 192  Park Rapids, MN 56470	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
Daniel T	Carlisle	todd-wad@toddwadana.coop	Todd-Wadana Electric Cooperative	550 Ash Ave NE PO Box 431 Wadana, MN 56482	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Douglas M.	Carnival	dmc@mcgrannshea.com	McGrann Shea Carnival Straughn & Lamb	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pat	Carruth	pat@mnvalleyrec.com	Minnesota Valley Coop. Light & Power Assn.	501 S 1st St. PO Box 248 Montevideo, MN 56265	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Coddington	Michael.Coddington@nrel.gov		15013 Denver West Blvd MS: ESIF 200 Golden, CO 80401-3393	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kenneth A.	Colburn	kcolburn@symbioticstrategies.com	Symbiotic Strategies, LLC	26 Winton Road  Meredith, NH 32535413	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400  St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_16-521_Official Service List PUC
Brooke	Cooper	bcooper@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022191	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Curtis	Cordt	ccordt@mvec.net	Minnesota Valley Electric Cooperative	125 Minnesota Valley Electric Drive  Jordan, MN 55352	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kevin	Cray	kevin@communitysolaraccess.org	CCSA	1644 Platte St  Denver, CO 80202	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174  Lake Elmo, MN 55042	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
Stacy	Dahl	sdahl@minnkota.com	Minnkota Power Cooperative, Inc.	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Lisa	Daniels	lisadaniels@windustry.org	Windustry	201 Ridgewood Ave  Minneapolis, MN 55403	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
James	Darabi	james.darabi@solarfarm.com	Solar Farm, LLC	2355 Fairview Ave #101  St. Paul, MN 55113	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Patricia	DeBleekere	tricia.debleeckere@state.mn.us	Public Utilities Commission	121 7th PI E St 350  St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Danielle	DeMarre	danielle.demarre@allenergysolar.com	All Energy Solar	1264 Energy Lane  St Paul, MN 55108	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
James	Denniston	james.r.denniston@xcenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, 401-8  Minneapolis, MN 55401	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Surina	Diddi	sdiddi@convergentep.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St  Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Cheryl	Dietrich	cheryl.dietrich@nexteraenergy.com	NextEra Energy Resources, LLC	700 Universe Blvd E1W/JB  Juno Beach, FL 33408	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
Robin	Doege	Rdoege@stearnselectric.org	Stearns Electric Association	PO Box 40 Melrose, MN 56352-0040	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kristin	Dolan	kdolan@meeker.coop	Meeker Cooperative Light & Power Assn	1725 US Hwy 12 E. Ste 100 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Renee	Doyle		Doyle Electric Inc.	PO Box 295 Amboy, MN 56010	Paper Service	No	OFF_SL_16-521_Official Service List PUC
John R.	Dunlop, P.E.	JDunlop@RESMinn.com	Renewable Energy Services	Suite 300 448 Morgan Ave. S. Minneapolis, MN 554052030	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kristen	Eide Tollefson	healingsystems69@gmail.com	R-CURE	28477 N Lake Ave Frontenac, MN 55026-1044	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Betsy	Engelking	betsy@geronimoenergy.com	Geronimo Energy, LLC	8400 Normandale Lake Blvd Suite 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Oncu	Er	oncu.er@avantenergy.com	Avant Energy, Agent for MMPA	220 S. Sixth St. Ste. 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406	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
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280  Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Christine	Fox	cfox@itasca-mantrap.com	Itasca-Mantrap Coop. Electric Assn.	PO Box 192  Park Rapids, MN 56470	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kornbaum	Frank	fkornbaum@mnpower.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mike	Franklin	mfranklin@mncef.com	MN Conservative Energy Forum	235 E 6th St Fifth Floor St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Nathan	Franzen	nathan@geronimoenergy.com	Geronimo Energy, LLC	8400 Normandale Lake Blvd  Suite 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Katelyn	Frye	kfrye@mnpower.com	Minnesota Power	30 W Superiot St  Duluth, MN 558022093	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Hal	Galvin	halgalvin@comcast.net	Provectus Energy Development llc	1936 Kenwood Parkway  Minneapolis, MN 55405	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St  Saint Paul, MN 55102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy	408 St. Peter Street Ste 220 Saint Paul, Minnesota 55102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Nitzan	Goldberger	n.goldberger@energystorage.org	Energy Storage Association	1800 M Street NW Suite 400S Washington, DC 20036	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
Sarah	Groebner	sgroebner@redwoodelectri c.com	Redwood Electric Cooperative	60 Pine St  Clements, MN 56224	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Timothy	Gulden	timothy.gulden@yahoo.co m	Winona Renewable Energy, LLC	1449 Ridgewood Dr  Winona, MN 55987	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Cody	Gustafson	cgustafson@mnpower.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tom	Guttormson	Tom.Guttormson@connexu senergy.com	Connexus Energy	14601 Ramsey Blvd  Ramsey, MN 55303	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tony	Hainault	anthony.hainault@co.henn epin.mn.us	Hennepin County DES	701 4th Ave S Ste 700  Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
James	Haler	jhaler@southcentralelectric .com	South Central Electric Association	71176 Tiell Dr P. O. Box 150 St. James, MN 56081	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Donald	Hanson	dfhanson@ieee.org	Solar Photovoltaic Systems	P. O. Box 44579  Eden Prairie, MN 55344	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	Harlander	john.c.harlander@xcelener gy.com	Xcel Energy	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Adam	Heinen	aheinen@dakotaelectric.co m	Dakota Electric Association	4300 220th St W  Farmington, MN 55024	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jared	Hendricks	jared.hendricks@owatonna utilities.com	Owatonna Municipal Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Annete	Henkel	mui@mnuilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St.Paul, MN 55101	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
Ryan	Hentges	ryanh@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
Ronald	Horman	rhorman@redwoodelectric.com	Redwood Electric Cooperative	60 Pine Street  Clements, MN 56224	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jan	Hubbard	jan.hubbard@comcast.net		7730 Mississippi Lane  Brooklyn Park, MN 55444	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dean	Hunter	Dean.Hunter@state.mn.us	Minnesota Department of Labor & Industry	443 Lafayette Rd N  St. Paul, MN 55155-4341	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ralph	Jacobson	ralphj@ips-solar.com		2126 Roblyn Avenue  Saint Paul, Minnesota 55104	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue  Bismarck, ND 58501	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John S.	Jaffray	jjaffray@jrpowers.com	JJR Power	350 Highway 7 Suite 236  Excelsior, MN 55331	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Robert	Jagusch	rjagusch@mmua.org	MMUA	3025 Harbor Lane N  Minneapolis, MN 55447	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Chris	Jarosch	chris@carrcreekelectricservice.com	Carr Creek Electric Service, LLC	209 Sommers Street North  Hudson, WI 54016	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
Brian	Jeremiason	bjeremiason@llec.coop	Lyon-Lincoln Electric Cooperative, Inc.	205 W. Hwy. 14 Tyler, MN 56178	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Nate	Jones	njones@hcpd.com	Heartland Consumers Power	PO Box 248 Madison, SD 57042	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kevin	Joyce	kjoyce@tesla.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mahmoud	Kabalan, PhD	mahmoud.kabalan@stthomas.edu		Mail OSS 100 2115 Summit Ave Saint Paul, MN 55105	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ralph	Kaehler	Ralph.Kaehler@gmail.com		13700 Co. Rd. 9 Eyota, MN 55934	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Kampmeyer	mkampmeyer@a-e-group.com	AEG Group, LLC	260 Salem Church Road Sunfish Lake, Minnesota 55118	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jack	Kegel	jkegel@mmua.org	MMUA	3025 Harbor Lane N Suite 400 Plymouth, MN 55447-5142	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tam	Kemabonta	kema4033@stthomas.edu		2115 Summit Avenue Saint Paul, MN 55105	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tom	Key	tkey@epri.com	EPRI	942 Corridor Park Blvd Knoxville, TN 37932	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
Ted	Kjos	tkjos@mienergy.coop	MiEnergy Cooperative	31110 Cooperative Way PO Box 626 Rushford, MN 55971	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Brad	Klein	bklein@elpc.org	Environmental Law & Policy Center	35 E. Wacker Drive, Suite 1600 Suite 1600 Chicago, IL 60601	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jack	Kluempke	Jack.Kluempke@state.mn. us	Department of Commerce	85 7th Place East Suite 600 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Chris	Kopel	chrisk@CMPASgroup.org	Central Minnesota Municipal Power Agency	459 S Grove St  Blue Earth, MN 56013-2629	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Steve	Kosbab	skosbab@meeker.coop	Meeker Cooperative Light and Power	1725 US Hwy 12 E  Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Krause	michaelkrause61@yahoo.c om	Kandiyo Consulting, LLC	433 S 7th Street Suite 2025 Minneapolis, Minnesota 55415	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Corrina	Kumpe	ckumpe@mysunshare.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jeffrey L.	Landsman	jlandsman@wheelerlaw.co m	Wheeler, Van Sickle & Anderson, S.C.	44 E. Mifflin Street, 10th Floor  Madison, WI 53703	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mark	Larson	mlarson@meeker.coop	Meeker Coop Light & Power Assn	1725 Highway 12 E Ste 100  Litchfield, MN 55355	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
Burnell	Lauer	blauer.sundial@gmail.com	Sundial Solar	3209 W. 76th St #305 Edina, MN 55435	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dean	Leischow	dean@sunrisenrg.com	Sunrise Energy Ventures	315 Manitoba Ave Wayzata, MN 55391	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Nick	Lenssen	lenssen.nick@gmail.com		1195 Albion Way Boulder, CO 80305	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Annie	Levenson Falk	annielf@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota Street, Suite W1360 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Amy	Liberkowski	amy.a.liberkowski@xcelen ergy.com	Xcel Energy	414 Nicollet Mall 7th Floor Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Carl	Linville	clinville@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@g mail.com	Green Energy Products	PO Box 108 Springfield, MN 56087	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Loeffler	mike.loeffler@nngco.com	Northern Natural Gas Co.	CORP HQ, 714 1111 So. 103rd Street Omaha, NE 681241000	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

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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
Susan	Mackenzie	susan.mackenzie@state.mn.us	Public Utilities Commission	121 7th Place E Ste 350  St. Paul, MN 551012147	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E  St. Paul, MN 55106	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sara G	McGrane	smcgrane@felhaber.com	Felhaber Larson	220 S 6th St Ste 2200  Minneapolis, MN 55420	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Dave	McNary	David.McNary@hennepin.us	Hennepin County DES	701 Fourth Ave S Ste 700  Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	McWilliams	John.McWilliams@DairylandPower.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817  La Crosse, WI 54601-7227	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Matthew	Melewski	matthew@theboutiquefirm.com	Nokomis Energy	2639 Nicollet Ave., Suite 200  Minneapolis, Minnesota 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, Minnesota 55120	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
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
Darrick	Moe	darrick@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N  Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022093	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency	123 2nd St W  Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Murtaugh	mmurtaugh@fmcs.coop	Freeborn-Mower Cooperative Services	2501 Main Street East  Albert Lea, MN 56007	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ben	Nelson	benn@cmpasgroup.org	CMPMPA	459 South Grove Street  Blue Earth, MN 56013	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Noble	noble@fresh-energy.org	Fresh Energy	408 Saint Peter St Ste 350  Saint Paul, MN 55102	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
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220  Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351  Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Timothy	O'Leary	toleary@llec.coop	Lyon-Lincoln Electric Cooperative, Inc	P.O. Box 639  Tyler, MN 561780639	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jeff	O'Neill	jeff.oneill@ci.monticello.mn.us	City of Monticello	505 Walnut Street Suite 1 Monticello, Minnesota 55362	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Wendi	Olson	wolson@otpc.com	Otter Tail Power Company	215 South Cascade  Fergus Falls, MN 56537	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
Dereck	Oosterman	doosterman@convergente.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Bethany	Owen	bowen@mnpower.com	Minnesota Power	30 West Superior Street  Duluth, MN 55802	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Dan	Patry	dpatry@sunedison.com	SunEdison	600 Clipper Drive  Belmont, CA 94002	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
Jeffrey C	Paulson	jeff.jcplaw@comcast.net	Paulson Law Office, Ltd.	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dean	Pawlowski	dpawlowski@otpc.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
Susan	Peirce	Susan.Peirce@state.mn.us	Department of Commerce	85 Seventh Place East  St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jeff M	Peters	jeff.peters@mrenergy.com	Missouri River Energy Services	3724 W Avera Dr PO Box 88920 Sioux Falls, MN 57109-8920	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Wess	Pfaff	wes.pfaff@mrenergy.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Donna	Pickard	dpickardgsss@gmail.com	Genie Solar Support Services	1215 Lilac Lane  Excelsior, MN 55331	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David G.	Prazak	dprazak@otpc.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
Elizabeth	Psihos	elizabeth.psihos@idealener gies.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Patrick	Quinn	pquinn@GREnergy.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Gregory	Randa	granda@lakecountrypower. com	Lake Country Power	26039 Bear Ridge Drive  Cohasset, MN 55721	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mark	Rathbun	mrathbun@greenergy.com	Great River Energy	12300 Elm Creek Blvd  Maple Grove, MN 55369	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
Michelle	Rebholz	michelle.rebholz@state.mn.us	Public Utilities Commission	Suite 350121 Seventh Place East  St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Peter	Reese	preese@sundialsolarenergy.com	Sundial Energy, LLC	3363 Republic Ave  Saint Louis Park, MN 55426	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Reinertson	michael.reinertson@avantenergy.com	Avant Energy	220 S. Sixth St. Ste 1300  Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206  St. Paul, MN 551011667	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Kristi	Robinson	krobinson@star-energy.com	STAR Energy Services, LLC	1401 South Broadway  Pelican Rapids, MN 56572	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Daniel	Rogers	dan@nokomispartners.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Darla	Ruschen	d.ruschen@bcrea.coop	Brown County Rural Electric Assn.	PO Box 529 24386 State Highway 4 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
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Kenric	Scheevel	Kenric.scheevel@dairylandpower.com	Dairyland Power Cooperative	3200 East Ave S PO Box 817 La Crosse, Wisconsin 54602	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Matthew	Schuerger	matthew.schuerger@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
Ronald J.	Schwartau	rschwartau@noblesce.com	Nobles Cooperative Electric	22636 U.S. Hwy. 59 Worthington, MN 56187	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Rob	Scott Hovland	rob.scott-hovland@mrenergy.com	Missouri River Energy Services	3724 W Avera Dr PO Box 88920 Sioux Falls, SD 571098920	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
Dean	Sedgwick	Sedgwick@Itascapower.com	Itasca Power Company	PO Box 455 Spring Lake, MN 56680	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_16-521_Official Service List PUC
Doug	Shoemaker	dougs@charter.net	Minnesota Renewable Energy	2928 5th Ave S Minneapolis, MN 55408	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Felicia	Skaggs	fskaggs@meecker.coop	Meeker Cooperative Light & Power	1725 US Highway 12 E Suite 100 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Trevor	Smith	trevor.smith@avantenergy.com	Avant Energy, Inc.	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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 H.	Soholt	bsoholt@windonthewires.org	Wind on the Wires	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, Minnesota 56085	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Braden	Solum	braden.solum@idealenergies.com	iDEAL Energies	5810 Nicollet Ave Minneapolis, Minnesota 55419	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

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Robyn	Sonstegard	robyn.s@northstarelectric.coop	North Star Electric Cooperative, Inc.	PO BOX 719 Baudette, MN 56623	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sky	Stanfield	stanfield@smwlaw.com	Shute, Mihaly & Weinberger	396 Hayes Street San Francisco, CA 94102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sherry	Swanson	sswanson@noblesce.com	Nobles Cooperative Electric	22636 US Highway 59 PO Box 788 Worthington, MN 56187	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Thomas P.	Sweeney III	tom.sweeney@easycleaneergy.com	Clean Energy Collective	P O Box 1828 Boulder, CO 80306-1828	Paper Service	No	OFF_SL_16-521_Official Service List PUC
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Bryant	Tauer	btauer@whe.org	Wright-Hennepin	6800 Electric Dr Rockford, MN 55373	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Peter	Teigland	pteigland@mnseia.org	Minnesota Solar Energy Industries Association	2288 University Ave W Saint Paul, MN 55114	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Emma Marshall	Torres	emarshall-torres@convergentep.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	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
Jeff	Triplett	triplettj@powersystem.org	MREA	10710 Town Square Dr NW St 201  Minneapolis, MN 55449	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Adam	Tromblay	atromblay@noblesce.com	Nobles Cooperative Electric	22636 US Hwy. 59 P.O. Box 788 Worthington, MN 56187-0788	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Lise	Trudeau	lise.trudeau@state.mn.us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Craig	Turner	cturner@dakotaelectric.com	Dakota Electric Association	4300 - 220th Street West  Farmington, MN 550249583	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jenny	Unknown	jenny@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N  Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Alan	Urban	alan.m.urban@xcelenergy.com	Xcel Energy	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sam	Villella	sdvillella@gmail.com		10534 Alamo Street NE  Blaine, MN 55449	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Wendy	Vorasane	wendy.vorasane@idealenergy.com		N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Elizabeth	Wefel	eawefel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470  Saint Paul, MN 55103	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
John	Williamson	John.Williamson@state.mn.us	Minnesota Department of Labor and Industry	443 Lafayette Rd N  St. Paul, MN 55155-4341	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Danielle	Winner	danielle.winner@state.mn.us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE  Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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
Thomas J.	Zaremba	TZaremba@wheelerlaw.com	WHEELER, VAN SICKLE & ANDERSON	44 E. Mifflin Street, 10th Floor  Madison, WI 53703	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