STINSON
LEONARD
STREET

Andrew Gibbons
612.335.1438 **DIRECT**
andrew.gibbons@stinson.com

April 5, 2019

Via Electronic Filing

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

Re: SunShare, LLC's Response to Xcel Energy's Motion to Strike

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)

Docket No. E002/M-19-29

Dear Mr. Wolf:

Enclosed for filing in the above-referenced docket, please find an amended version of the January 17, 2019 Response ("Response") by SunShare, LLC ("SunShare") to the Appeal by Northern States Power Company d/b/a/ Xcel Energy ("Xcel") of Independent Engineer Sam Wheeler's December 18, 2018 Report regarding the Linden Project.

On March 26, 2019, Xcel filed a Motion to Strike Statements from SunShare's Response ("Motion to Strike") asserting that certain issues, disputes, and claims included in the Response were barred by the January 3, 2017 Settlement Agreement between Xcel and SunShare. Xcel requested that the Commission strike certain text from the Response as a result.

Xcel and SunShare continued to work together following filing of the Motion to Strike and were able to reach a resolution on this issue. The enclosed amended Response proposes changes to the January 17, 2018 Response to address the issues raised in the Motion to Strike. Clean and redline copies of the public and Trade Secret versions of the amended Response are provided for ease of reference. SunShare takes its settlement obligations very seriously, and, while SunShare does not believe that the Response violated the terms of the Settlement Agreement, it provides the enclosed changes in a showing of good faith. Xcel has confirmed that these changes resolve all of the concerns raised in the Motion to Strike.

Via Electronic Filing

The Attachments to the Response are unchanged and not included with this filing, but should still be considered as part of SunShare's Response.

Please do not hesitate to contact me with any questions or concerns.

Sincerely,

Stinson Leonard Street LLP

Andrew Gibbons

Andrew Gibbons

Enclosures

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)	MPUC Docket No. E-002/M-19-29 **SUNSHARE, LLC'S RESPONSE TO XCEL ENERGY'S APPEAL OF THE INDEPENDENT ENGINEER REPORT OF DECEMBER 18, 2018**

SunShare, LLC respectfully submits this response to the Appeal by Northern States Power Company d/b/a Xcel Energy ("Xcel") of Independent Engineer ("IE") Sam Wheeler's December 18, 2018 Report regarding the Linden Project ("IE Report").[1]

I. EXECUTIVE SUMMARY.

The IE Report confirms that Xcel's engineering studies for the Linden Project following a January 2, 2017 settlement agreement between Xcel and SunShare ("January 2017 Settlement Agreement") were flawed, and that Xcel failed to provide SunShare with critical information to justify the cost estimates resulting from those flawed studies, including overly constrictive inputs. Discovery during the IE process also revealed that Xcel's engineers internally acknowledged these errors and inaccuracies over a year ago, yet did not share this information with SunShare. Instead, Xcel threatened to cancel the project if SunShare did not sign the interconnection agreement resulting from this flawed analysis.

Xcel's improper analyses and lack of transparency have caused extensive delay since the January 2017 Settlement Agreement, resulting in significant expense to SunShare, frustration for

[1] Mr. Wheeler issued a slightly revised version of the IE Report on December 24, 2018. The IE Report, in its revised form, is included as Attachment A to Xcel's Appeal. Where possible, this Response refers to the attachments included in Xcel's Appeal rather than reattach those documents here. This Response references additional documents that were not attached to Xcel's Appeal but should still be included in the Commission's record. Those documents are set forth in the Attachment Table included at the end of this Response.

its customers, and harm to Xcel's own residential customers who comprise 100 percent of the project's subscribers. SunShare estimates that these delays have caused $520,000 in damages to date, which costs continue to increase. This amount does not include lost profits and staff time devoted to the project, nor the nearly $2 million in deposits and down payments to Xcel and private capital SunShare was forced to spend on construction to meet local deadlines.

SunShare agrees with the IE Report and asks that the Commission require Xcel to immediately implement the relief ordered therein; in particular, to complete a restudy of the project with certain parameters and with SunShare's participation. SunShare also requests that the Commission use its authority to address certain issues outside the relief and scope ordered by the IE – mostly to ensure timely project completion under the local deadlines that the project faces due to Xcel's delays – and to provide expedited review and relief.

Xcel is well aware that prompt action is needed in light of SunShare's impending permitting and financing deadlines, yet it has chosen to continue delaying project implementation. In order to meet these deadlines, and recognizing the substantial delays caused by Xcel to date, SunShare respectfully requests that the Commission schedule this Appeal for a hearing at the earliest practicable date, promptly affirm the IE Report, and order Xcel to:

1. Immediately conduct the flicker study and restudy ordered by the IE, including SunShare's participation to identify errors such as Xcel's setpoint inputs, to be completed by no later than mid-February;

2. Complete any interconnection upgrades and schedule witness testing by no later than May 31, 2019, expedited at Xcel's cost;

3. Immediately execute the interconnection agreement and complete detailed design review for the 3 MWs' worth of capacity that Xcel has approved, so that SunShare can secure financing to continue ongoing construction of that reduced capacity to meet the date required by time-limited building permit;

4. In its restudy, analyze whether advanced smart inverter functionalities such as voltage control functions can reduce interconnection costs, and allow for their use if so; and

5. Comply with all other relief ordered by the IE, including in particular the determination that interconnection costs be capped at $1 million and that Xcel be prohibited from charging any profit, overhead, labor, bond costs, or any other markups to the equipment and labor used to complete the interconnection.

Xcel's conduct is indicative of the broader persisting interconnection delays and other procedural issues that unnecessarily increase costs and significantly impede the ability of SunShare and other community solar garden developers to timely and efficiently complete interconnections. The complications of using a residential customer base caused by the delays exhibited here also exemplify the difficulty with having residential participation, and the reason most developers choose to serve only a small number of large commercial and municipal customers. This is contrary to the S*RC program's purpose of promoting greater community investment in distributed solar generation, in particular among residential subscribers, churches, schools, and other community groups;[2] and reasonably allowing for the creation, financing, and accessibility of community solar gardens.[3]

The Commission should consider the issues exhibited here when reviewing other dockets regarding interconnection standards and adjustments to CSG rates. Often the sheer costs of raising an IE dispute and supporting it at the Commission are so high that small companies cannot afford to raise the issues and fully participate in every docket. We ask the Commission to recognize this as it considers how to implement a diverse new energy economy in the state that provides a level playing field for all participants and yields greater public benefits.

[2] *See* Order Approving Solar-Garden Plan with Modifications at 11, Docket No. E-002/M-13-867 (Sept. 17, 2014), eDocket ID 20149-103114-01.

[3] Minn. Stat. § 216B.1641(e)(1).

II. BACKGROUND.

a. SunShare Submits an Application for the Linden Project, and the Commission Finds Errors in Xcel's Processing and Review of SunShare's Projects.

SunShare offers the following background of the Linden Project to provide greater context to the issues raised in this Appeal. SunShare submitted an application for the Linden Project in May 2015. SunShare submitted a Formal Complaint and Petition for Relief in November 2015. ("November 2015 Complaint").[4] On December 1, 2015, the Commission[5] referred four project disputes included in the November 2015 Complaint for IE review. Those four projects are known as the Becker, Glazier, Bartlett, and Murphy Projects. In early 2016, the IE issued multiple reports setting forth recommended resolutions of these disputes.

SunShare and Xcel appealed these reports. On November 1, 2016, the Commission issued an order adopting the IE's recommendations.[6] First, the Commission ordered Xcel to "work with other interested parties to develop a transition plan for incorporating the IEEE 1453 standard into its modeling of voltage fluctuations and flicker for solar PV."[7] The Commission also determined that SunShare should not be permitted to utilize voltage-control functions on its smart inverters "until such time as the inverter functions have been tested and certified under UL standards, or

[4] Formal Complaint and Petition for Relief by SunShare, LLC Against Northern States Power Company – a Minnesota Corporation d/b/a Xcel Energy for Violations of Its Section 10 Interconnection Tariff and Related Solar*Rewards Community Program Rules, Docket No. E-002/M-15-786 (Nov. 3, 2015), eDocket ID 201511-115399-02.

[5] *See* Order Finding Jurisdiction and Referring Complaint to Independent Engineer, *In the Matter of a Formal Complaint and Petition by SunShare, LLC for Relief Under Minn. Stat. § 216B.1641 and Sections 9 and 10 of Xcel Energy's Tariff Book* Docket No. E-002/M-15-786 (Dec. 1, 2015), eDocket ID 201512-116051-01.

[6] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[7] *Id.* at 7.

until further order of the Commission."[8] The Commission also ordered Xcel to restudy the Becker and Glazier sites using a 2.0% (full-on full-off) rather than 1.5% flicker threshold.[9]

b. Xcel Performs an Erroneous Restudy of the Linden Project, Pursuant to a Flawed "Simplified" IEEE 1453 Methodology.

On December 22, 2016, SunShare signed the January 2017 Settlement Agreement that resolved all remaining issues raised in the November 2015 Complaint. Xcel countersigned the agreement on January 2, 2017.[10] The January 2017 Settlement Agreement **[PROTECTED DATA BEGINS**

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SunShare, through its industry partners, worked with Xcel in transitioning to the new IEEE 1453 standard through stakeholder meetings between January and March 2017. Xcel's firm position was that it would initially develop a "simplified" IEEE 1453 process, rather than a full and complete application of 1453, as had been intended by the IE in 2016. While disagreeing with Xcel, industry participants had no choice but to simply wait and see how the "simplified" process methodology impacted projects. Minutes from these stakeholder meetings reflect that "there continued to be dissent within the workgroup regarding the simplified approach to IEEE 1453 recommended practice"[12] and that developers were not willing to adopt the simplified approach

[8] *Id.*

[9] *Id.*

[10] The January 2017 Settlement Agreement is included as Attachment B to Attachment E of Xcel's Appeal.

[11] Xcel has dropped its argument on Appeal that the January 2017 Settlement Agreement precludes this dispute. Although Xcel claims that "we believe the issues raised by SunShare have already been resolved by" that agreement, it also states that this Appeal is "unrelated" to the determination that this dispute is not precluded. Xcel Appeal at 3, 6. In case Xcel reasserts this argument, SunShare notes that the argument lacks merit for the reasons stated in the IE Report. Section 1(b) of the IE Contract authorizes the IE to, "at his sole discretion, determine whether, or to what extent, the [January 2017 Settlement Agreement] resolves the issues set forth in the Intake Forms."

[12] *See* Attachment B to Compliance – Transition to Incorporating the Standards of IEEE 1453, Docket No. E-002/M-13-867 (Apr. 26, 2017), eDocket ID 20174-131247-01.

for projects exceeding 1 MW.[13] Although the simplified IEEE 1453 method helps many projects, for some projects it did not go far enough, and a full IEEE 1453 study would have been critical to those projects that required further study after the application of the "simplified" methodology.

On April 26, 2017, Xcel submitted a compliance filing which outlined this "simplified IEEE 1453 study process." ("April 2017 Compliance Filing").[14] This simplified IEEE 1453 study process was proposed even though the Commission and IE never permitted Xcel to adopt a "simplified" version of the IEEE 1453 method. The Commission has also never reviewed or approved Xcel's use of this simplified method, which does not allow for the same site-specific flexibility.

Xcel's April 2017 Compliance Filing also acknowledged that one utility, National Grid, was utilizing a time-series IEEE 1453 approach[15] that provided greater site-specificity, and that Xcel could obtain data at similar resolution through collaborating with developers.[16] Xcel also acknowledged that for "specific projects that we have been ordered to monitor or have decided to monitor for further information, higher resolution data is being collected in the field using specialized equipment."[17] In other words, the April 217 Compliance Filing acknowledged that Xcel is capable of performing more robust assessments on a case-by-case basis.

[13] *See id.* at 11 ("The Stakeholder group seemed to be comfortable moving forward with the simplified approach in the interim for 1 MW projects in the pipeline."). The April 2017 Compliance Filing is Included as Attachment B to Attachment K of Xcel's Appeal.

[14] *See* Compliance – Transition to Incorporating the Standards of IEEE 1453, Docket No. E-002/M-13-867 (Apr. 26, 2017), eDocket ID 20174-131247-01.

[15] April 2017 Compliance Filing at 4.

[16] *Id.* at 7.

[17] *Id.*

Xcel conducted its restudy of the Linden Project and presented its revised cost estimate to SunShare on July 14, 2017.[18] Xcel utilized the "simplified" IEEE 1453 methodology rather than the standard IEEE 1453 that the IE and Commission ordered it to implement. The revised cost estimate restricted the project to three 1 MW co-located gardens because any greater capacity would push interconnection costs above the $1 million material upgrade threshold, according to Xcel. Xcel estimated the interconnection costs to be **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** for the 3 MW restricted project. While that estimate is above $1 million, it also includes costs that do not count toward the material upgrade threshold, and thus 3 MW rather than 5 MW was allowed.[19] This cost estimate did not explain the material upgrades that would have caused a 5 MW project to exceed the threshold, nor did Xcel indicate that it conducted any study for the project at a capacity greater than 3 MW. Xcel would never answer these two questions over the following months, and it appears from Xcel's Appeal that it has never conducted a study of the Linden Project at any capacity greater than 3 MW. Without conducting a study of above 3 MW and correcting errors, it is impossible to know for certain if more than 3 MW could be installed for less than $1 million.

c. Xcel Fails to Adequately Respond to SunShare's Information Requests, While Internally Acknowledging that Its Studies Contained Numerous Errors.

Over the following months, SunShare made multiple requests to Xcel to clarify and provide justification for aspects of the revised study. SunShare asked Xcel to provide, among other things: (1) justification for the type of lines called for in the revised study, (2) the project inputs used for the restudy, (3) an explanation of the upgrades that would push a 5 MW project above the $1

[18] The July 14, 2017 revised cost estimate and interconnection package is included as Attachment K to Attachment E of Xcel's Appeal.

[19] Xcel has later revised this estimate down below $1 million, referenced in the IE Report.

million material upgrade threshold, (4) an explanation for why expensive underground lines were required, (5) an explanation for why Xcel utilized the simplified IEEE 1453 method when it appeared to limit capacity, and (6) an explanation for why SunShare could not use voltage control measures on its smart inverters even though doing so would likely mitigate potential flicker and steady-state overvoltage issues and avoid other costly upgrades, and because industry acceptance of this technology had progressed substantially since 2016.[20]

At the same time SunShare was requesting this information, Xcel knew that its revised study for the Linden Project performed after the January 2017 Settlement Agreement contained numerous errors. SunShare also made multiple requests for all studies for the Linden Project, some of which Xcel refused to provide and did not provide until ordered to do so by the IE. SunShare discovered through the IE process that Xcel's own staff had internally acknowledged that the studies **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS]. In December 2017, an Xcel engineer observed that the contractor performing the revised study for the Linden Project **[PROTECTED DATA BEGINS**

[20] Much of this correspondence is included as Attachment M to Attachment E of Xcel's Appeal. However, that attachment is missing some emails reflecting this back-and-forth between the parties. SunShare submits additional correspondence, including from Xcel's response to the IE's Information Request No. 10, as Attachment A here.

[21] IE Report at 44.

PROTECTED DATA ENDS].[22] An Xcel employee also internally acknowledged that Xcel's responses to SunShare's information requests were **[PROTECTED DATA BEGINS PROTECTED DATA ENDS].**

Yet in response to SunShare's information requests, Xcel provided answers that were evasive, delayed, and incorrect.[24] Incredibly, Xcel refused to provide SunShare with redacted versions of certain restudies of the Linden Project for close to half a year, even though this is necessary for SunShare to vet the accuracy of Xcel's final study that it presented to SunShare.

d. SunShare Initiates IE Review and Pays the Required Interconnection Fee.

Because SunShare's good faith attempts to resolve issues pertaining the Linden Project on a bilateral basis failed, and Xcel was threatening to cancel the project, SunShare submitted the dispute for IE review on March 16, 2018. In its intake form,[25] SunShare asked the IE to review:

1. Whether Xcel was justified in requiring SunShare to use 750 AL underground line at a cost of $107,405, due to Xcel's claim that there is currently an underground line at that location, and whether Xcel should be required to rerun its study with the correct 630A ampacity for the 750 AL line (the study incorrectly stated the ampacity was rated at 255A).

2. Whether the 1.5% and 75% on/off voltage parameters that Xcel appeared to apply in its most recent study were more restrictive than is necessary, which in turn may have led Xcel to use more robust and costly equipment than may otherwise be necessary under industry best practices and/or may have unnecessarily restricted the MW capacity for the Project.

3. Whether Xcel has delayed in sharing information about the project, including studies, answers to questions about study inputs, restudying projects with correct conductor parameters, etc.

[22] Emphasis added. This correspondence is included on page 19 of Attachment M to Xcel's Appeal.

[23] *Id.* at 20.

[24] *See* generally Attachment A to this Response and Attachment M to Attachment E of Xcel's Appeal.

[25] SunShare's March 16, 2018 Intake Form is included as Attachment A to Attachment E of Xcel's Appeal.

4. Whether Xcel utilized more robust and costly equipment than is required by industry standards for its cost estimates, with particular focus on the use of 336 AL line versus other alternatives, and erroneously passing that cost to SunShare.

5. Given the number of engineering issues discovered with post-settlement studies for the Linden Project, and lack of clarity from Xcel regarding those studies, whether the IE should conduct a complete review of Xcel's studies for accuracy and validity.

Xcel engaged in delay tactics after SunShare submitted the dispute. For example, it argued that the dispute was precluded by the January 2017 Settlement Agreement and it delayed in executing the IE Contract[26] for three months, only signing it on June 13, 2018. Xcel could have executed the IE Contract much earlier, because SunShare and the IE agreed that it was appropriate to work from versions of the contracts that the parties previously used for SunShare-Xcel disputes in the community solar garden program, judged by the same IE. At the time, Xcel knew these delays would risk SunShare missing its permitting and financing deadlines. SunShare had made this reality known to Xcel to try and accelerate the process, but Xcel chose to use the information to its advantage and try to push SunShare to settle.

Around the same time Xcel signed the IE Contract, SunShare also paid its required 1/3 interconnection cost – totaling **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** – and executed the interconnection agreement that Xcel provided with its July 14, 2017 revised cost estimate, in an effort to allow for Xcel's design review of the limited 3 MW that had been approved to proceed. In yet another attempt to unnecessarily delay, Xcel refused to countersign the agreement and complete final design review, arguing it would be inconsistent with its business practices because there was an ongoing IE review.

[26] The Dispute Resolution Services Agreement executed between Xcel and SunShare for this dispute is included as Attachment C to Xcel's Appeal.

However, Xcel has executed interconnection agreements and conducted detailed design reviews for previous SunShare projects, at SunShare's expense, notwithstanding pending IE disputes. This has allowed SunShare and Xcel to gain more insight to the impact of the projects on Xcel's system, and to ***accelerate*** review. Conducting detailed review for those projects did not disrupt their development or IE review, and in fact it allowed for quicker turnaround to complete final designs on those past projects, since by the time the IE review and Commission appeal was complete, the detailed engineering review had also been substantially completed. Nevertheless, despite its refusal to countersign the interconnection agreement or do its detailed design, Xcel continued to hold SunShare's **[PROTECTED DATA BEGINS**

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Because Xcel was refusing to countersign the interconnection agreement for the restricted 3 MW project that Xcel had approved, SunShare requested that the IE also review whether Xcel was required to execute the agreement.[27] SunShare also requested that the IE consider (1) whether the use of voltage control measures on its smart inverters would mitigate flicker and voltage control issues that Xcel claimed would be caused by the Kane/Linden Project, and whether SunShare could utilize those functionalities and have them incorporated in a restudy of the project; and (2) whether the allowable flicker threshold for the project should be increased from 2% to 4%.[28]

Although Xcel agreed that the IE could review the additional flicker threshold issue that SunShare submitted, it argued that IE review was not warranted on the remaining issues and stated

[27] *See* Attachment F to Xcel's Appeal (July 24, 2018 email from the IE noting this request by SunShare).

[28] SunShare's second Intake Form, dated August 14, 2018, is included as Attachment G to Xcel's Appeal.

that they would not participate in the IE process if they were included. Commerce informed the IE that he could not consider these issues, but they could be reviewed by the Commission.[29]

e. SunShare is Forced to Commence Construction on the Linden Project.

Because SunShare was only able to receive an unexecuted interconnection agreement for 3 MW as a result of Xcel's inaccurate design studies, SunShare applied for a conditional use permit for a project of that size because the zoning jurisdiction was about to change its ordinances to limit all projects to 1 MW moving forward.[30] The zoning jurisdiction stated they would be willing to consider and grandfather SunShare's project due to the extenuating circumstances with Xcel, but only so long as SunShare applied for the permits immediately. The zoning permit is only valid for one year before a building permit must be applied for, and given the sunset on the greater than 1 MW policy for projects, extensions were impossible. SunShare then acquired a building permit[31] within twelve months to preserve the conditional use permit and begin construction before winter, to keep the building permit active. SunShare commenced construction in the fall of 2018, investing close to $1 million to procure and install equipment before winter. A picture showing this construction is included as Attachment D. The building permit expires on June 1, 2019.

SunShare began construction at considerable risk, in light of Xcel's refusal to provide a signed interconnection agreement, in order to preserve its investment and the potential for its nearly thousand residential homeowners slated for this garden to participate in the community solar program. Indeed, SunShare was unable to secure construction financing without an executed interconnection agreement, so it was forced to use expensive and limited private capital to commence construction, a significant expense for a small business. **[PROTECTED DATA**

[29] *See* Attachments F and H to Xcel's Appeal.

[30] A copy of the County's action letter granting SunShare's conditional use permit is included as Attachment B.

[31] A copy of the County's records regarding SunShare's building permit is included as Attachment C.

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PROTECTED DATA ENDS] for the Linden project. Given the lack of clarity to date from Xcel on what the project's size will be, SunShare is constructing the restricted 3 MW project at this time, and will seek local zoning approvals (which may require a variance due to the change in local policy given the delay caused by Xcel) for the remaining 2 MW once Xcel restudies the project using correct methodologies.

f. The IE Issues His Report, Criticizing the Myriad Errors and Inaccuracies in Xcel's Multiple Engineering Studies, and Xcel's Lack of Transparency.

The IE issued his Report on December 18, 2018.[32] He found in favor of SunShare on nearly all issues. Xcel falsely claims that the IE failed to conduct any technical review or analysis of the specific engineering issues that SunShare submitted for his review. To the contrary, the IE made a number of findings challenging Xcel's multiple engineering studies, and Xcel's failures to explain its errors and discrepancies in those studies. He observed the following:

- The IE notes that there is a lack of transparency related to Xcel not providing SunShare with copies of the various models Xcel has performed, as well as not providing the inputs used in those models to SunShare. **[PROTECTED DATA BEGINS**

  PROTECTED DATA ENDS] as is normal and appropriate engineering practice. The IE also noted these issues prior to receiving the Xcel response to IE IR 011. **[PROTECTED DATA BEGINS** **PROTECTED DATA ENDS]** of Xcel is to be commended for calling out these issues, but Xcel did not go on to correct them or redo these problems as identified.[33]

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[32] The IE issued a slightly revised version of the report on December 24, 2018.

[33] IE Report at 23.

[34] *Id.* at 23 n.6.

- There is also an error found in the ampacity of the Linden model Revision 3 regarding the ampacity of a 750 AL cable in Revision 3 of that Study. . . . Xcel claims that this error does not affect the results, but the IE feels this is indicative of the many errors and ongoing inaccuracies in Xcel's studies throughout the project. As a consumer of Xcel's information and Studies, SunShare, like any consumer, has a right to accurate information, particularly when it pays for it. This lack of transparency reduces developer confidence in Xcel performed Studies.[35]

- The IE notes that none of the Studies performed by Xcel for SunShare were entirely accurate and that the Studies had to be changed due to inaccuracies in data, changing external conditions and Xcel's errors. The IE has reviewed each of the Studies and noted inaccuracies and errors.[36]

- Xcel admits that it has used the wrong input values in each of the Studies . . . , resulting in restudies that have consistently caused additional MW to be reapplied to SunShare's original 5 MW of Flicker in multiple revisions of the computer model, since the initial model was run in August of 2015. This trend has continued through the IE process.[37]

Although Xcel claims that the IE did not "address or evaluate industry best practices or standards,"[38] this is not true. For example, the IE found that the full IEEE 1453 method is "utterly different" than the version that Xcel used for its restudy, and that Xcel erred by using the simplified version.[39] He also found that the simplified approach was unwarranted because it had never been reviewed, accepted, adopted, or validated in any way by the Commission.[40] Further, the IE determined that SunShare had proposed the use of alternative overhead cables that were cheaper than cable typically used by Xcel, but were still sufficient for the interconnection.[41]

The IE also found that Xcel had not sufficiently explained why the underground cable included in its indicative cost estimates needed to be buried:

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[35] *Id.* at 23–24.

[36] *Id.* at 36.

[37] *Id.* at 38.

[38] Xcel Appeal at 8.

[39] IE Report at 42.

[40] *Id.* at 27.

[41] *Id.* at 32–34.

- Xcel has only provided SunShare with vague speculation as to why the 792 foot, 1/0 underground line section was buried in the first place, but no substantive historical reason. Xcel has noted that it could be an easement or special agreement with a landowner, but was not specific as to the full extent of the 1/0 buried cable situation.[42]

In short, Xcel's claim that "the IE simply did not conduct any technical engineering review of the specific issues disputed by SunShare"[43] is not true.

The IE issued various forms of relief in order to compensate SunShare for Xcel's errors and inaccuracies, the company's lack of transparency regarding its engineering studies and cost estimates, and the resulting delays in implementing the project. Among other things, the IE ordered Xcel to perform and complete a site-specific flicker study within one month of the December 18, 2018 decision – i.e., by January 18, 2019 – with SunShare engineers present, and to complete a new engineering study of the Linden Project three weeks following the flicker report, for a due date of February 8, 2019. The following parameters are to apply to the restudy:

1. SunShare's engineers shall be permitted to be present during and actively participate in the modeling process;

2. If the revised study uses 750 AL underground cable, the appropriate 630A rating must be used instead of the 255A rating previously used;

3. Because the current, correct IEEE 1453 standard excludes the use of 1.5% flicker thresholds with 75% drop criteria, the revised study shall use voltage regulators modeled with a 2% full on/full off value, or higher if there is no demonstrable result outside of the IEEE 1453 maximum Pst flicker values.;

4. Xcel must work with SunShare to determine all appropriate inputs for the restudy;

5. Xcel must run variations of the restudy to account for the results of the ordered pre-construction flicker study, using different flicker thresholds ranging from 2% to 4% and at each MW increment (3-5 MW) and with no flicker limitation at all, as the latest IEEE 1547 dropped such a requirement in favor of the IEEE 1453 process.

[42] *Id.* at 24.

[43] Xcel Appeal at 2.

6. Xcel must perform a variation of each study using 336 OH cables instead of the 750 AL underground segment.[44]

SunShare has asked Xcel to begin these studies and take other actions consistent with the IE Report, but Xcel has refused.

The IE found that it was outside his scope of authority to order SunShare's requested relief that the $1 million material upgrade threshold be waived for the Linden Project to allow for the construction of the entire 5 MW project and to compensate for the years of Xcel's delays. However, recognizing that SunShare was entitled to some relief for those delays, the IE determined that Xcel's revised costs, which due to corrections made by Xcel during the IE dispute were reduced to below $1 million, could not exceed that cost.[45] Notwithstanding this revised estimate, Xcel has since stated verbally that interconnection costs could run as high as $1.6 million, but Xcel has not provided support for these costs. The IE and SunShare pressed for this information during a conference call. In light of this lack of transparency, SunShare made a verbal request that Xcel be prohibited from charging anything in excess of its wholesale costs for materials and to exclude its labor costs. Consistent with that request, the IE also found that Xcel could not add its typical profit, overhead, or bond costs, or any other markups to the project's cable, poles, and associated line and hardware, as well as labor required to perform the interconnection as relief to SunShare for the considerable harm it has faced.[46] This included the 336 AL cable that SunShare established was more costly than alternatives that still complied with industry standards.[47]

The IE did not provide a date certain for Xcel to complete the interconnection upgrades that will result from the restudy. This was not requested by SunShare in March 2018 because the

[44] IE Report at 44–47.

[45] *Id.* at 31.

[46] *Id.*

[47] *Id.* at 34.

timing did not yet require it. However, due to the significant delays Xcel created within the IE process, and in order to meet impending deadlines under its construction and zoning permits and to obtain proper financing, SunShare needs to have an interconnection agreement executed by Xcel in early February 2019 and detailed design review and upgrades completed no later than May 2019. SunShare paid for the detailed design review in June 2018 and informed Xcel of the need for quick action. There is no practical reason for continued delay.

g. Xcel's Delays Have Significantly Harmed SunShare.

It is approximately three and a half years since SunShare submitted its application for the Linden Project. As recognized by the IE, SunShare is entitled to relief simply for the damages caused by the delays that have resulted from the numerous errors and inaccuracies permeating Xcel's engineering studies and Xcel's refusal to provide information to support those studies. SunShare estimates its damages to be around $518,397.84, to date. This includes:

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These amounts do not include other damages that SunShare has certainly suffered, including for example lost profits or the hundreds of hours of staff time that SunShare has devoted to working on this project and seeking resolution with Xcel following the January 2017 Settlement Agreement. These damages will increase as Xcel further delays implementation. Xcel has not taken any steps to implement the IE's decision, even though the IE provided a January 18 deadline

for completing the flicker study.[48] SunShare requests that the Commission order Xcel to immediately implement the relief ordered in the IE Report.

III. ARGUMENT.

Notwithstanding Xcel's arguments to the contrary, the IE engaged in a technical review of the issues in this dispute, concluding that Xcel's engineering studies were replete with errors and inaccuracies, were not consistent with current industry standards, and required the use of equipment that was more restrictive than necessary. The IE also found that Xcel failed to inform SunShare of the errors and inaccuracies included in the studies, even though Xcel's own engineers were well aware of them from an early stage. This lack of transparency, along with other conduct by Xcel, has caused significant delays to project implementation, delays that were also acknowledged by Xcel's own staff. The relief that the IE ordered to address these issues is appropriate and entirely within his authority. Further, although Xcel disagrees with the IE's technical review of each of the issues raised by SunShare, that review was sound. Accordingly, the Commission should not give weight to any of the contentions raised in Xcel's Appeal.

Xcel has frustrated SunShare's attempts to develop the Linden Project, to the detriment of not only SunShare, but Xcel's own residential customers. Xcel's actions have also caused significant brand and reputational risk to SunShare, as SunShare continues its attempts to keep customers engaged and project partners such as landowners satisfied, despite Xcel's delays.

[48] Xcel also has not sought a stay of the IE Report, and nothing in its tariff or the IE Contract allows Xcel to refuse to comply with the IE Report during this appeal. SunShare expects that Xcel will rely on Section 4(e) of the IE Contract, which provides that the IE Report is "final and binding on the Parties, unless modified by timely appeal to the Commission." This language, however, does not state that the IE Report is without effect pending an appeal. Instead, it contemplates that the IE Report is final and binding ***up until*** the point it is modified by the Commission. There is therefore no basis for Xcel's refusal to immediately implement the relief ordered by the IE.

a. The Relief Ordered by the IE is Appropriate in Light of the Errors and Inaccuracies in Xcel's Studies, and Xcel's Continuing Lack of Transparency.

Xcel questions whether the restudy that the IE ordered is necessary, arguing that the steady state voltage issues that it identified in its appeal will still limit the Linden Project to 3 MW regardless of whether another study is performed. This argument misses the central finding of the IE Report; namely, that a complete restudy (with SunShare's participation) is necessary because none of the studies that Xcel has performed were accurate, and Xcel has not provided adequate justification for its cost estimates resulting from the studies.

As observed by the IE, **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS].[49]

Indeed, "none of the Studies performed by Xcel for SunShare were entirely accurate[,]"[50] and the "Studies had to be changed due to inaccuracies in data, changing external conditions and Xcel errors."[51] Xcel has also admitted "that it has used the wrong input values in each of the Studies."[52] The IE also found "a lack of transparency"[53] by Xcel, with Xcel failing to provide SunShare with copies of the models and studies that Xcel performed, along with other information that SunShare requested such as the specific reason why underground cable needed to be used for part of the interconnection.[54]

[49] IE Report at 23.

[50] *Id.* at 36.

[51] *Id.*

[52] *Id.* at 38.

[53] *Id.* at 23.

[54] *Id.* at 24.

The technical merits of Xcel's arguments related to steady state voltage and flicker are dubious, as discussed further *infra*. But even accepting the argument that flicker is immaterial, a restudy is still warranted. Flicker is just one variable that the IE stated should be monitored during the restudy. More importantly, however, the IE also found that SunShare's engineers must be given an opportunity to participate in and vet the study, to ensure it is performed properly and transparently. It could be the case that, during this process, SunShare's and Xcel's engineers agree that the flicker adjustments ordered by the IE would be immaterial. That does not mean, however, that SunShare should be precluded from participating in the restudy to vet its accuracy, because other errors may be identified such as those resulting in the steady state issues, explained below.

Xcel's flicker and steady state voltage-related arguments also divert attention from a more fundamental flaw in its studies – the company's failure altogether to determine what the interconnection costs would be if the Linden Project's capacity exceeded 3 MW. Xcel claims that interconnection costs would exceed the $1 million threshold if the Project's had any capacity greater than 3 MW. But Xcel has never studied what those interconnection costs may actually be at that greater capacity, or at least it has never shared this information with SunShare. As a result, the IE found it appropriate to require Xcel to conduct restudies at capacities above 3 MW.

Xcel is required by Section 9 of its tariff to disclose the basis for its cost determinations where necessary interconnection upgrades exceed $1 million.[55] Specifically, Xcel must provide "any underlying data and documentation related to" those interconnection costs.[56] This transparency allows developers and Xcel to resolve disputes over the accuracy of Xcel's cost

[55] *See* Order Approving Tariffs and Modified and Requiring Filing at 5, Docket No. E-002/M-13-867 (Dec. 15, 2015), eDocket ID 201512-116474-01; Xcel Tariff Section 9, 1st Revised Sheet No. 68.5(5h).

[56] Xcel Tariff Section 9, 1st Revised Sheet No. 68.5(5h).

estimates, and it facilities IE review.[57] Xcel has acknowledged the need to be transparent and has stated that it will provide developers with cost information "in as much detail as possible."[58] Doing so "improve[s] transparency, assure[s] developers that they are being treated fairly, and promote[s] efficiency by minimizing the number of disputes that have to be resolved by the independent engineer."[59] This dispute underscores the need for this transparency. Had Xcel been forthcoming with the information that SunShare requested of it, now over a year ago, Xcel and SunShare may have been able to resolve this dispute without IE review (and now Commission intervention).

b. The Relief Set Forth in the IE Report is Within the IE's Authority to Order.

The IE is given broad authority to consider the issues submitted for his review, and to issue relief in a given dispute. Xcel's Appeal attempts to unduly narrow this authority, stating that the IE's review is limited only to technical issues raised in a particular dispute. Although a core function of the IE is to provide a technical review of specific engineering issues, the IE's purpose and authority is much broader. Xcel's tariff provides that the IE shall "resolve disputes on the study process, including material disputes related to the Company's determination of application completeness, timeliness of application and study processing, and the cost and necessity of required study costs and distribution system upgrades."[60] The Commission has made clear, however, that this is a "nonexclusive list of topics."[61] Indeed, the Commission has recognized that the IE is able to comment on and recommend the very "program-wide changes or policy reforms"[62]

[57] Order Approving Tariffs and Modified and Requiring Filing at 5, Docket No. E-002/M-13-867 (Dec. 15, 2015), eDocket ID 201512-116474-01.

[58] *Id.* at 6.

[59] *Id.*

[60] Xcel Tariff Section 9, Sheet 68.11(9a). Section 1(c) of the parties' IE Contract contains identical language.

[61] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 3, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[62] Xcel Appeal at 8.

that Xcel argues the IE is precluded from addressing. IE disputes have played a crucial role in advancing general changes to the S*RC program. For example, the requirement that Xcel implement the IEEE 1453 methodology when conducting engineering studies for all projects resulted from an IE dispute.[63] Individual disputes that are submitted by developers often raise issues that are pertinent to the broader S*RC program and interconnection standards for Minnesota. Furthermore, outputs of previous IE disputes and subsequent Commission rulings, particularly relating to IEEE 1453 adoption, have been used outside of Minnesota to improve interconnection standards in other states. The IE process provides a natural forum to address program-wide issues, and the Commission has endorsed using the process – and the IE's authority – for this purpose.

The IE's reference to his "charter" in the IE Report simply reflects this understanding. Although Xcel claims that the IE is referring to some document that is not in the record, this is not the case. The IE has defined his charter identically in previous disputes, in particular those involving the Becker, Glazier, Murphy, and Bartlett[64] sites developed by SunShare. Xcel never previously argued that the IE misstated his authority when discussing this charter, nor has the Commission found the IE's understanding to be incorrect. Importantly, when resolving disputes, the IE is directed to "rely on industry codes, standards and references, as well as Commission

[63] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 7, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[64] Appendix A to Xcel Energy's Appeal from the Independent Engineer Report, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 7, 2016), eDocket ID 20164-119858-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 13, 2016, Report on the SunShare Glazier Site, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 20, 2016), eDocket ID 20164-120388-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 15, 2016, Report on the SunShare Murphy Site, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 22, 2016), eDocket ID 20164-120531-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 26, 2016, Report on the SunShare Bartlett Site (May 3, 2016), eDocket ID 20165-121005-02).

orders, rules and tariffs, ***and other relevant sources that he may determine to be appropriate***."[65] It is therefore within the IE's authority to "address appropriate and related best business and technical practices and trends in the PV interconnection industry that would be noteworthy and of benefit to Parties as well as the wider CSG/SRC program."[66]

c. The IE's Engineering Review of the Issues Raised by SunShare Was Accurate.

Xcel also takes issue with the IE's technical engineering review of the various issues that SunShare raised in this dispute. As set forth below, Xcel's arguments are wrong on the merits and are yet another attempt to distract from the thrust of the IE's Report – that a complete restudy is warranted in light of Xcel's repeated errors and lack of transparency.

i. Xcel's Use of Its "Simplified" IEEE 1453 Methodology is Unwarranted.

Xcel challenges the IE's determination that its use of the "simplified" IEEE 1453 methodology was not appropriate. According to Xcel, the IE did not actually evaluate or assess this approach, and therefore his findings are flawed. This is not true. He found that Xcel's simplified approach was "utterly different" than the full IEEE 1453 methodology that the Commission ordered Xcel to implement in 2016[67] and that Xcel's tariff and current industry standards require use of the full method. He also found that the April 2017 Compliance Filing, which set forth the "simplified" IEEE 1453 approach, cannot be substantiated.[68]

[65] IE Contract § 1(f) (emphasis added). Section 9 of Xcel's tariff likewise directs the IE to "consider industry standards for interconnection, including the current version of the National Electric Safety Code, National Electric Code as adopted in Minnesota, FERC rules, NERC rules, Minnesota rules and Minnesota Interconnection Standards and," on a "case-by-case basis, the Company's standards for building, safety, power quality, reliability and long-term stable operations for building facilities even where such standards are more restrictive than the minimum requirements set forth in the codes, standards, and rules." Xcel Tariff Section 9, Sheet 68.11 (9a).

[66] IE Report at 2.

[67] *Id.* at 42.

[68] *Id.* at 43.

Xcel also falsely claims that SunShare agreed that the "simplified" IEEE 1453 methodology could be used to study the Linden Project. Although Xcel cites to a February 21, 2017 email from SunShare, that email does not reference a "simplified" approach.[69] Instead, it shows that SunShare expected Xcel to apply the IEEE 1453 method in full. That is consistent with the IE's order that preceded this email, which directed Xcel to "use and apply the latest, most current editions of ANSI/IEEE Standards" when conducting its engineering studies.[70] Xcel was also aware in February 2017 that there "continued to be dissent" among solar developers "regarding the simplified approach to IEEE 1453"[71] and that developers were not willing to adopt the simplified approach for projects that exceeded 1 MW in capacity. [72]

Lastly, Xcel suggests that the IE's decision on this issue is flawed because of the broader implications it might have on the S*RC program, noting that it implies "that a large number of solar garden projects in operation today have been studied under an invalid voltage fluctuation approach."[73] But the IE did not order Xcel to correct any errors in its studies for other projects, and Xcel acknowledges that its "simplified" IEEE 1453 methodology is only to be implemented temporarily. In its April 2017 Compliance Filing, Xcel stated that the end goal was transitioning to an IEEE 1453 methodology which, similar to the approach already used by National Grid, would utilize time series data when modeling voltage fluctuation and flicker.[74] It further acknowledged

[69] This February 21, 2017 email is included as Attachment E to Attachment K of Xcel's Appeal.

[70] Resolution of the SunShare Flicker Dispute at the Golf/Hassan/St. Michael/Becker Interconnection Site, MPUC Docket Nos. 13-867 (Mar. 31, 2016) (included as Appendix A to Xcel Energy's Appeal from the Independent Engineer Report, MPUC Docket No. E-002/M-13-867 (Apr. 7, 2016), eDocket ID 20164-119858-02).

[71] Xcel Summary – Transition to IEEE 1453 Standards for PV Distributed Generation Stakeholder Meeting (Mar. 15, 2017) (included as Attachment B to the April 2017 Compliance Filing).

[72] *See id.* Att. B at 11 ("The Stakeholder group seemed to be comfortable moving forward with the simplified approach in the interim for 1 MW projects in the pipeline.").

[73] Xcel Appeal at 10.

[74] April 2017 Compliance Filing at 5 (explaining the purpose of convening the stakeholder group on this issue).

that "[a]dditional research and analysis will be needed before we are to implement a more detailed analysis for voltage fluctuation using the IEEE 1453 methodology."[75]

Xcel should welcome the opportunity to engage in a more thorough analysis here, because this will provide the company with additional information to determine how best to transition to a more robust IEEE 1453 methodology, including one that uses time series data. Again, the IE did not state that Xcel needed to implement this more thorough analysis program-wide. Nonetheless, doing so only for the Linden Project is consistent with the Commission's approval of project-specific relief in other disputes, including those regarding SunShare's Becker and Glazier projects.

ii. Xcel Did Not Properly Perform Its Engineering Studies for the Project.

The IE Report concluded that none of the engineering studies Xcel performed for the Linden Project following the January 2017 Settlement Agreement was entirely accurate, and that Xcel's own engineers acknowledged these errors yet failed to explain them to SunShare. Again, an Xcel engineer noted the following in December 2017 regarding the most recent study that Xcel provided to SunShare, which Xcel now claims is "correct in all material aspects"[76]: **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS].[77] Xcel attempts to dismiss the above email as pertaining to the content of the study report, and not the accuracy of the study itself. However, the email shows

[75] *Id.* at 6.

[76] Xcel Appeal at 11.

[77] Emphasis added. This correspondence is included on page 19 of Attachment M to Xcel's Appeal.

that Xcel's own engineers could not confirm the report's accuracy, warranting the restudy ordered by the IE. And although Xcel now claims that steady state voltage provides the limiting factor for the Linden Project, this argument must be met with skepticism in light of these admitted errors.

Skepticism is also warranted with regards to Xcel's steady state voltage argument because, as one example, the latest study appears to have **[PROTECTED DATA BEGINS**

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This example shows that SunShare engineers should be permitted to partake in the revised study, as recognized by the IE. And again, skepticism of Xcel's studies is also appropriate because

[78] Included as Attachment G to Attachment E of Xcel's Appeal.

[79] Included as Attachment L to Attachment E of Xcel's Appeal.

Xcel has apparently never performed a study to determine what the interconnection costs would be at a capacity greater than 3 MW, which makes it impossible to know if more than 3 MW could be installed below the $1 million material upgrade threshold.

Xcel also argues that the S*RC program would "grind to a halt" if the site-specific flicker study that the IE ordered was required program-wide, and that the restudy ordered by the IE is unnecessarily burdensome.[80] Again, the IE did not order Xcel to implement site-specific flicker studies throughout the S*RC program, and performing a more thorough study of the Linden Project should provide useful information to Xcel to assist in transitioning to a more robust IEEE 1453 methodology.

iii. Xcel Still Refuses to Explain Why Underground Cable Is Required.

The IE also determined that Xcel has "only provided SunShare with vague speculation" as to why the underground section of line used in its interconnection study in fact needed to be used and that Xcel "was not specific" as to the easement or special agreement that it hinted provided the basis for this requirement.[81] Xcel still has not adequately explained why the interconnection will require using this 792 foot span of cable. The company states that underground cable is "typically customer-driven[,]"[82] but it has not explained why underground cable is specifically needed in this case. Although Xcel also explains that they do not share this information until detailed design review, they neglect to tell the Commission that SunShare has already paid Xcel to commence this detailed design review, and Xcel has refused to do so. There is no practical reason for Xcel's refusal to provide greater specificity as to why this section of underground line is required.

[80] Xcel Appeal at 19.

[81] IE Report at 24.

[82] Xcel Appeal at 22.

iv. The IE Properly Determined that Xcel's Use of 336 AL Conductor Was Unnecessary, and Issued Appropriate Relief.

Next, the IE found that SunShare demonstrated that less costly conductor line could be used as an alternative to the 336 AL cable that Xcel proposed to use for the interconnection. To compensate SunShare for the incremental difference in cost between these materials, and as further compensation for Xcel's recognized delays, the IE found that Xcel should be permitted to use its proposed cable for the entire project, but if it does, then Xcel cannot charge SunShare its profit and bond cost off the price of materials, as well as for labor costs.[83]

The relief ordered by the IE is consistent with Xcel's tariff, which provides that if a component "is more restrictive than industry standards but does not discourage cogeneration or small power production, the Company may implement that alternative, if the Company pays the incremental cost in excess of the amount necessary to implement the industry standard."[84] Here, the IE determined that Xcel's proposed cable was more restrictive – i.e., more expensive – than the conductor line that SunShare proposed. He then ordered relief to compensate SunShare in part for the incremental difference in cost. This is an appropriate method of compensating SunShare both for this incremental difference and the damages Xcel caused SunShare through delaying this project. In contrast, Xcel is certainly in violation of its tariff by charging SunShare for the use of 336 AL line when cheaper alternatives exist that are also consistent with industry standards.

Lastly, Xcel's reliance on the Klingelhutz and Rice Brunansky IE report is misplaced.[85] That dispute pertained to whether the unit cost for the line that Xcel utilized was reasonable, which SunShare does not dispute. Instead, SunShare established that cheaper alternatives to 336 AL can

[83] IE Report at 34.

[84] Xcel Tariff Section 9, Sheet 68.11(9a).

[85] Xcel Appeal at 24.

be used for the Linden Project, and therefore Xcel cannot charge SunShare the incremental cost between that equipment and the 336 AL line.

v. The IE Issued Appropriate Relief to Compensate for Xcel's Delays.

Lastly, Xcel argues that the relief the IE issued to compensate SunShare for Xcel's delays is not appropriate. Xcel first overlooks the fact that it is to blame for the substantial majority of this delay, evidenced in part by the multiple studies it had to perform in order to correct errors acknowledged by its own engineers following the January 2017 Settlement Agreement. Xcel's internal email correspondence during the IE process also admits that the company's responses to SunShare's information requests were **[PROTECTED DATA BEGINS PROTECTED DATA ENDS].**[87]

Xcel also now claims that the 24-month clock for mechanical completion cannot be reset, because this is not expressly provided for in Xcel's tariff. However, in the internal email referenced by the IE, Xcel acknowledges that the company's **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** And the IE recognized that the clock "has been used flexibly by Xcel, as is appropriate in any construction project."[89] The IE therefore correctly ordered that Xcel restart the 24-month mechanical completion clock upon resolution of this dispute.

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[86] *See* page 20 of Attachment M to Xcel's Appeal.

[87] Incredibly, Xcel also charges the IE with unnecessarily delaying his consideration and resolution of the dispute. Although Xcel claims that the process was held up because the IE made unnecessary information requests, the IE Report notes that the emails requested of Xcel were pertinent to the dispute, and Xcel readily provided similar information when requested in previous disputes. *Id.* at 10. SunShare and Xcel also specifically requested that IE withhold any consideration of this dispute from August 16 to September 4, as the parties were negotiating a settlement. *Id.* at 9. The IE was thereafter incapacitated due to a medical issue, which placed the dispute on hold for another month. *Id.* Importantly, Xcel also unnecessarily delayed the process by initially refusing to execute the IE Contract for many months, and also contending that no IE review was warranted because the dispute was precluded by the January 2017 Settlement Agreement. Thus, any process-related concerns that Xcel now claims are simply unfounded.

[88] This email is included on page 5 of Attachment M to Xcel's Appeal.

[89] IE Report at 30.

The IE also appropriately determined that the costs charged to SunShare for the interconnection should be capped at the $1 million material threshold. This is appropriate compensation for Xcel's delays, which as discussed have caused SunShare an estimated $518,397.84 in damages, not including lost profits and the hundreds of staff hours that SunShare has devoted to this project. Notwithstanding its revised estimates, which as explained have reduced the estimated interconnection costs below $1 million, Xcel has also noted verbally to SunShare and the IE that it anticipates the actual interconnection costs for the Project may reach as much as $1.6 million. Xcel has not provided support for this marked increase from its revised estimate, and SunShare needs to be protected against this. Some semblance of certainty is required for developers to accurately anticipate project costs, and we ask the Commission to independently affirm this relief ordered by the IE.

d. The Commission Should Order SunShare's Other Requested Relief on Those Issues that the IE Was Precluded from Considering.

The IE was precluded from considering two issues because the Department of Commerce believed they were only within the Commission's scope – whether SunShare should be permitted to incorporate advanced inverter functionalities into the project, including the consideration of those functionalities in the revised engineering studies to mitigate voltage variation and steady state overvoltage; and whether Xcel was required to immediately countersign the interconnection agreement for the approved restricted 3 MW project and begin detailed design review, to allow SunShare to obtain financing for construction. SunShare requests that the Commission independently grant this relief.[90]

[90] Commission review is allowed under Section 1(d) of the IE Contract, which provides "[i]n the event that either Party appeals the IE's Final written report the Commission may make its own independent determination on whether any issue was, or was not, appropriate for the IE to review under this Services Agreement."

i. The Commission Should Order Xcel to Immediately Countersign the Interconnection Agreement and Begin Detailed Design Review.

SunShare needs an executed interconnection agreement in order to preserve its building permit, to close on construction financing, and to allow Xcel to provide final confirmation on interconnection route and costs.[91] This relief provides appropriate compensation to SunShare for the delay and associated expense caused by Xcel. It is also consistent with Xcel's tariff. Under Step 7 of Xcel's Section 10 interconnection process, Xcel must commence final design review of a project within 15 business days of receiving a signed interconnection agreement, among other materials, from the project applicant.[92] Further, under Section 9, the company must countersign an interconnection agreement if the developer has complied with certain prerequisites, which SunShare in this case has done.[93] Notwithstanding Xcel's refusal to sign the interconnection agreement, it has retained SunShare's close to **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** payment for half a year.

Xcel's actions are a departure from prior practice. Xcel has allowed for detailed design review of past SunShare projects that had pending IE disputes, such as the Glazier Project. Indeed, further review and study by Xcel would lead to quicker project implementation, consistent with the purpose of the community solar garden statute. Xcel knows that any further delay makes it more likely SunShare will run afoul of deadlines imposed under local permits, yet it chooses to cause SunShare delay, likely to attempt to force SunShare to settle. Accordingly, SunShare requests that the Commission order Xcel to immediately countersign the interconnection agreements for the 3 MW worth of capacity that Xcel acknowledges can be constructed, and to

[91] *See, e.g.*, Minn. Stat. § 216B.1641(e)(1) (requiring the community solar garden program to reasonably allow for the creation and financing of solar gardens).

[92] Xcel Tariff Section 10, Original Sheet No. 97.

[93] Xcel Tariff Section 9, Original Sheet No. 68.8(6d).

immediately engage in detailed design review. Although slight modifications may be necessary following completion of the restudy that the IE ordered, allowance for those modifications is warranted in light of the damage that Xcel's delays have caused SunShare thus far.

ii. Xcel Should Allow SunShare to Utilize Smart Inverter Functionalities to Further Reduce Interconnection Costs.

Further, allowing SunShare to utilize voltage control measures, specifically the "voltage-reactive power mode" specified in IEEE 1547-2018, in its smart inverters could further reduce interconnection costs. As explained, the potential for steady-state overvoltage and increased voltage fluctuations and flicker on the grid is a primary reason for the high interconnection costs and limitations on the project's capacity. Yet Xcel is not incorporating the capabilities of Advanced Functionality Inverters (AFIs) as a way to mitigate these issues. AFIs have the capability to mitigate steady-state overvoltage and flicker, and this can support the grid and allow for increased PV penetration.

SunShare acknowledges that several years ago, the IE and Commission previously determined that Xcel would not be required to utilize advanced smart inverter functionalities to mitigate flicker and voltage issues, until such technologies were tested and certified under UL standards, or until further order of the Commission.[94] However, significant progress has been made since the Commission's November 1, 2016 Order. Just prior to the order, UL announced its Advanced Inverter Testing Program, to be implemented under a new UL 1741 Supplement A (SA), which has now been released.[95] The new IEEE 1547-2018 standard (that was issued in April of

[94] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 15, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[95] *See UL Launches Advanced Inverter Testing and Certification Program*, UL (Sept. 8, 2016), *available at* https://news.ul.com/news/ul-launches-advanced-inverter-testing-and-certification-program/.

last year)[96] and UL 1741 SA, address these capabilities, and smart inverter functionality is currently being utilized (and in fact required) in other states, including Hawaii since March 2018 and California since September 2017. Most, if not all inverters, are now smart inverters, and come equipped with voltage control functionalities.

Thus, although "full implementation of IEEE 1547-2018 will take a few more years, it is not too soon for states to begin adopting the new standard."[97] Wider implementation of advanced smart inverter functionalities remains an ongoing topic for 2020 introduction in the broader Commission-led review regarding distributed generation interconnection practices. Allowing a limited rollout of these functionalities, for the Linden Project and a select few other projects, would provide additional data to inform this review.

The Commission's November 1, 2016 Order recognized that circumstances may arise that would warrant the implementation of voltage control functions on smart inverters, even though final UL testing and certification had not been accomplished at that time.[98] Given the advancements in the industry and recently released standards, we believe it is time for Xcel to update their methodologies and rules, allowing for a more stable and advanced grid. Xcel has stated that it "support[s] and encourage[s] the earliest possible completion" of the research necessary to certify these smart inverter functionalities,[99] and it recognizes that "advances in

[96] *See* Brian Lydic, *Smart Inverter Updates: New IEEE 1547 Standards and State Implementation Efforts*, Interstate Renewable Energy Council (July 23, 2018), *available at* https://irecusa.org/2018/07/smart-inverter-update-new-ieee-1547-standards-and-state-implementation-efforts/

[97] *Id.*

[98] *See* Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 7, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[99] Xcel Energy's Response to SunShare's Appeal from the Independent Engineer's Report on the SunShare Becker Site at 8 (Apr. 21, 2016), eDocket ID 20164-120479-02.

technology" are behind its recent commitment to provide 100% carbon-free electricity by 2050.[100] We therefore ask the Commission to rule that Xcel must analyze in its restudy whether the use of these functionalities would result in reduced interconnection costs, and to allow for their use if so.

IV. EXPEDITED REVIEW AND RELIEF IS NECESSARY.

SunShare reiterates that expedited review and relief from the Commission is warranted for this appeal, in order to meet deadlines under its construction and zoning permits, and to obtain proper financing for construction. Expedited review and relief is also warranted in light of Xcel's delays in processing the application for this project, which was submitted almost four years ago.

As a result, SunShare respectfully requests that the Commission schedule this Appeal for a hearing at the earliest practicable date, promptly affirm the IE Report, and order Xcel to:

1. Immediately conduct the flicker study and restudy ordered by the IE, including SunShare's participation to identify errors such as Xcel's setpoint inputs, to be completed by no later than mid-February;

2. Complete any interconnection upgrades and schedule witness testing by no later than May 31, 2019, expedited at Xcel's cost;

3. Immediately execute the interconnection agreement and complete detailed design review for the 3 MWs' worth of capacity that Xcel has approved, so that SunShare can secure financing to continue ongoing construction of that reduced capacity to meet the date required by its expiring building permit;

4. In its restudy, analyze whether advanced smart inverter functionalities such as voltage control functions can reduce interconnection costs, and allow for their use if so; and

5. Comply with all other relief ordered by the IE, including in particular the determination that interconnection costs be capped at $1 million and that Xcel be prohibited from charging any profit, labor, overhead, bond costs, or any other markups to the equipment and labor used to complete the interconnection.

[100] *See* Julia Pyper, *Xcel Energy Commits to 100% Carbon-Free Electricity by 2050*, Greentech Media (Dec. 4, 2018), *available at* https://www.greentechmedia.com/articles/read/xcel-commits-to-100-carbon-free-electricity-by-20501#gs.rhJ4Ukc.

Respectfully Submitted,

Dated: January 17, 2019

STINSON LEONARD STREET LLP

/s/ Andrew J. Gibbons

Andrew Gibbons (#0389692)
Thomas Burman (#0396406)
50 South Sixth Street, Suite 2600
Minneapolis, Minnesota 55402
Telephone: (612) 335-1500
Facsimile: (612) 335-1657
andrew.gibbons@stinson.com
thomas.burman@stinson.com

Attorneys for Complainant SunShare, LLC

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)	MPUC Docket No. E-002/M-19-29 **SUNSHARE, LLC'S RESPONSE TO XCEL ENERGY'S APPEAL OF THE INDEPENDENT ENGINEER REPORT OF DECEMBER 18, 2018**

TABLE OF SUNSHARE ATTACHMENTS

ATTACHMENT A	October 2017 to March 2018 email correspondence between Xcel and SunShare
ATTACHMENT B	March 7, 2018 Action Letter from Scotty County Approving Conditional Use Permit
ATTACHMENT C	Linden Project Building Permit Record
ATTACHMENT D	Photograph showing Linden Project Construction

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)	MPUC Docket No. E-002/M-19-29 **SUNSHARE, LLC'S RESPONSE TO XCEL ENERGY'S APPEAL OF THE INDEPENDENT ENGINEER REPORT OF DECEMBER 18, 2018**

SunShare, LLC respectfully submits this response to the Appeal by Northern States Power Company d/b/a Xcel Energy ("Xcel") of Independent Engineer ("IE") Sam Wheeler's December 18, 2018 Report regarding the Linden Project ("IE Report").[1]

I. EXECUTIVE SUMMARY.

The IE Report confirms that ~~Xcel repeatedly failed to conduct proper~~Xcel's engineering studies for the Linden Project~~, and that it~~ following a January 2, 2017 settlement agreement between Xcel and SunShare ("January 2017 Settlement Agreement") were flawed, and that Xcel failed to provide SunShare with critical information to justify the cost estimates resulting from those flawed studies, including overly constrictive inputs. Discovery during the IE process also revealed that Xcel's engineers internally acknowledged these errors and inaccuracies over a year ago, yet did not share this information with SunShare. Instead, Xcel threatened to cancel the project if SunShare did not sign the interconnection agreement resulting from this flawed analysis.

[1] Mr. Wheeler issued a slightly revised version of the IE Report on December 24, 2018. The IE Report, in its revised form, is included as Attachment A to Xcel's Appeal. Where possible, this Response refers to the attachments included in Xcel's Appeal rather than reattach those documents here. This Response references additional documents that were not attached to Xcel's Appeal but should still be included in the Commission's record. Those documents are set forth in the Attachment Table included at the end of this Response.

Xcel's improper analyses and lack of transparency have caused ~~years of delay~~extensive delay since the January 2017 Settlement Agreement, resulting in significant expense to SunShare, frustration for its customers, and harm to Xcel's own residential customers who comprise 100 percent of the project's subscribers. SunShare estimates that these delays have caused $520,000 in damages to date, which costs continue to increase. This amount does not include lost profits and staff time devoted to the project, nor the nearly $2 million in deposits and down payments to Xcel and private capital SunShare was forced to spend on construction to meet local deadlines.

SunShare agrees with the IE Report and asks that the Commission require Xcel to immediately implement the relief ordered therein; in particular, to complete a restudy of the project with certain parameters and with SunShare's participation. SunShare also requests that the Commission use its authority to address certain issues outside the relief and scope ordered by the IE – mostly to ensure timely project completion under the local deadlines that the project faces due to Xcel's delays – and to provide expedited review and relief.

Xcel is well aware that prompt action is needed in light of SunShare's impending permitting and financing deadlines, yet it has chosen to continue delaying project implementation. In order to meet these deadlines, and recognizing the substantial delays caused by Xcel to date, SunShare respectfully requests that the Commission schedule this Appeal for a hearing at the earliest practicable date, promptly affirm the IE Report, and order Xcel to:

1. Immediately conduct the flicker study and restudy ordered by the IE, including SunShare's participation to identify errors such as Xcel's setpoint inputs, to be completed by no later than mid-February;

2. Complete any interconnection upgrades and schedule witness testing by no later than May 31, 2019, expedited at Xcel's cost;

3. Immediately execute the interconnection agreement and complete detailed design review for the 3 MWs' worth of capacity that Xcel has approved, so that

SunShare can secure financing to continue ongoing construction of that reduced capacity to meet the date required by time-limited building permit;

4. In its restudy, analyze whether advanced smart inverter functionalities such as voltage control functions can reduce interconnection costs, and allow for their use if so; and

5. Comply with all other relief ordered by the IE, including in particular the determination that interconnection costs be capped at $1 million and that Xcel be prohibited from charging any profit, overhead, labor, bond costs, or any other markups to the equipment and labor used to complete the interconnection.

Xcel's conduct ~~over the three years since the project was applied for~~ is indicative of the broader persisting interconnection delays and other procedural issues that unnecessarily increase costs and significantly impede the ability of SunShare and other community solar garden developers to timely and efficiently complete interconnections. The complications of using a residential customer base caused by the delays exhibited here also exemplify the difficulty with having residential participation, and the reason most developers choose to serve only a small number of large commercial and municipal customers. This is contrary to the S*RC program's purpose of promoting greater community investment in distributed solar generation, in particular among residential subscribers, churches, schools, and other community groups;[2] and reasonably allowing for the creation, financing, and accessibility of community solar gardens.[3]

The Commission should consider the issues exhibited here when reviewing other dockets regarding interconnection standards and adjustments to CSG rates. Often the sheer costs of raising an IE dispute and supporting it at the Commission are so high that small companies cannot afford to raise the issues and fully participate in every docket. We ask the Commission to

[2] *See* Order Approving Solar-Garden Plan with Modifications at 11, Docket No. E-002/M-13-867 (Sept. 17, 2014), eDocket ID 20149-103114-01.

[3] Minn. Stat. § 216B.1641(e)(1).

recognize this as it considers how to implement a diverse new energy economy in the state that provides a level playing field for all participants and yields greater public benefits.

II. BACKGROUND.

a. SunShare Submits an Application for the Linden Project, and the Commission Finds Errors in Xcel's Processing and Review of SunShare's Projects.

~~The Xcel conduct which forms the basis of the instant dispute is also consistent with prior disputes, and an understanding of those disputes will inform the issues underlying the Linden Project.~~ SunShare offers the following background of the Linden Project to provide greater context to the issues raised in this Appeal. SunShare submitted an application for the Linden Project in May 2015~~, which Xcel failed to timely process~~. SunShare ~~described these delays, along with delays pertaining to numerous other SunShare applications~~ submitted ~~in 2015, in~~ a Formal Complaint and Petition for Relief in November 2015. ("November 2015 Complaint").[4] On December 1, 2015, the Commission[5] referred four project disputes included in the November 2015 Complaint for IE review. Those four projects are known as the Becker, Glazier, Bartlett, and Murphy Projects. In early 2016, the IE issued multiple reports setting forth recommended resolutions of these disputes.

~~The IE concluded in those reports Xcel used outdated methods in its studies used to estimate interconnection costs.[6] Following the Commission's directive that "industry standards~~

[4] Formal Complaint and Petition for Relief by SunShare, LLC Against Northern States Power Company – a Minnesota Corporation d/b/a Xcel Energy for Violations of Its Section 10 Interconnection Tariff and Related Solar*Rewards Community Program Rules, Docket No. E-002/M-15-786 (Nov. 3, 2015), eDocket ID 201511-115399-02.

[5] *See* Order Finding Jurisdiction and Referring Complaint to Independent Engineer, *In the Matter of a Formal Complaint and Petition by SunShare, LLC for Relief Under Minn. Stat. § 216B.1641 and Sections 9 and 10 of Xcel Energy's Tariff Book* Docket No. E-002/M-15-786 (Dec. 1, 2015), eDocket ID 201512-116051-01.

~~[6] *See, e.g.*, Resolution of the SunShare Flicker Dispute at the Golf/Hassan/St. Michael/Becker Interconnection~~

should be the touchstone for solar-garden interconnection requirements[,]"[7] the IE observed that "it is expected that Xcel use and apply the latest, most current editions of ANSI/IEEE Standards" when conducting its engineering studies.[8] The IE concluded that the IEEE 1547-2003 standard and related GE Flicker Chart that was applied at the time, which Xcel had until that point relied on in its engineering studies, was superseded by IEEE 1453 and other standards.[9] He recommended that the Commission provide a one-year deadline for Xcel to comply with the latest IEEE standards.[10] The IE also concluded that Xcel improperly applied a 1.5% flicker threshold, rather than a 2.0% threshold, in its engineering studies.[11]

SunShare had also asked the IE to allow it to use voltage control functions on its advanced-functionality inverters (known as smart inverters) to mitigate potential flicker and steady-state overvoltage, which in turn could reduce interconnection costs. However, the IE recommended – now almost three years ago – that Xcel continue to be allowed to prohibit the use of the smart inverters' voltage-control functions until such time as the relevant IEEE standards and UL 1741 are jointly updated and revised, and the functions are tested and certified by UL.[12] At that time, Xcel permitted SunShare to install smart inverters but disallowed the use

Site, MPUC Docket Nos. 13-867 (Mar. 31, 2016) (included as Appendix A to Xcel Energy's Appeal from the Independent Engineer Report, MPUC Docket No. E-002/M-13-867 (Apr. 7, 2016), eDocket ID 20164-119858-02).

[7] *Id.* at 38 (quoting Order Approving Tariffs as Modified and Requiring Filing at 7, MPUC Docket No. 13-867 (Dec. 15, 2015), eDocket ID 201512-116474-01).

[8] *Id.* at 39.

[9] *Id.* at 36-39.

[10] *Id.* at 39.

[11] *Id.* at 46-48.

[12] *Id.* at 53.

~~of their voltage-control functions, despite their benefits in mitigating flicker and steady-state overvoltage, which lower interconnection costs.~~

SunShare and Xcel appealed these reports. On November 1, 2016, the Commission issued an order adopting the IE's recommendations.[~~13~~6] First, the Commission ordered Xcel to "work with other interested parties to develop a transition plan for incorporating the IEEE 1453 standard into its modeling of voltage fluctuations and flicker for solar PV."[~~14~~7] The Commission also determined that SunShare should not be permitted to utilize voltage-control functions on its smart inverters "until such time as the inverter functions have been tested and certified under UL standards, or until further order of the Commission."[~~15~~8] The Commission also ordered Xcel to restudy the Becker and Glazier sites using a 2.0% (full-on full-off) rather than 1.5% flicker threshold.[~~16~~9]

b. Xcel Performs an Erroneous Restudy of the Linden Project, Pursuant to a Flawed "Simplified" IEEE 1453 Methodology.

On December 22, 2016, SunShare signed ~~a settlement agreement~~the January 2017 Settlement Agreement that resolved all remaining issues raised in the November 2015 Complaint. Xcel countersigned the agreement on January 2, 2017~~ ("January 2017 Settlement Agreement").~~[~~17~~] .[10] The January 2017 Settlement Agreement **[PROTECTED DATA BEGINS**

[~~13~~6] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[~~14~~7] *Id.* at 7.

[~~15~~8] *Id.*

[~~16~~9] *Id.*

[~~17~~] ~~The January 2017 Settlement Agreement is included as Attachment B to Attachment E of Xcel's Appeal.~~

[10] The January 2017 Settlement Agreement is included as Attachment B to Attachment E of Xcel's Appeal.

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SunShare, through its industry partners, worked with Xcel in transitioning to the new IEEE 1453 standard through stakeholder meetings between January and March 2017. Xcel's firm position was that it would initially develop a "simplified" IEEE 1453 process, rather than a full and complete application of 1453, as had been intended by the IE in 2016. While disagreeing with Xcel, industry participants had no choice but to simply wait and see how the "simplified" process methodology impacted projects. Minutes from these stakeholder meetings reflect that "there continued to be dissent within the workgroup regarding the simplified approach to IEEE 1453 recommended practice"[19]12 and that developers were not willing to adopt the simplified approach for projects exceeding 1 MW.[20]13 Although the simplified IEEE 1453 method helps many projects, for some projects it did not go far enough, and a full IEEE 1453 study would have been critical to those projects that required further study after the application of the "simplified" methodology.

[18]11 Xcel has dropped its argument on Appeal that the January 2017 Settlement Agreement precludes this dispute. Although Xcel claims that "we believe the issues raised by SunShare have already been resolved by" that agreement, it also states that this Appeal is "unrelated" to the determination that this dispute is not precluded. Xcel Appeal at 3, 6. In case Xcel reasserts this argument, SunShare notes that the argument lacks merit for the reasons stated in the IE Report. Section 1(b) of the IE Contract authorizes the IE to, "at his sole discretion, determine whether, or to what extent, the [January 2017 Settlement Agreement] resolves the issues set forth in the Intake Forms."

[19]12 *See* Attachment B to Compliance – Transition to Incorporating the Standards of IEEE 1453, Docket No. E-002/M-13-867 (Apr. 26, 2017), eDocket ID 20174-131247-01.

[20]13 *See id.* at 11 ("The Stakeholder group seemed to be comfortable moving forward with the simplified approach in the interim for 1 MW projects in the pipeline."). The April 2017 Compliance Filing is Included as Attachment B to Attachment K of Xcel's Appeal.

On April 26, 2017, Xcel submitted a compliance filing which outlined this "simplified IEEE 1453 study process." ("April 2017 Compliance Filing").[~~21~~14] This simplified IEEE 1453 study process was proposed even though the Commission and IE never permitted Xcel to adopt a "simplified" version of the IEEE 1453 method. The Commission has also never reviewed or approved Xcel's use of this simplified method, which does not allow for the same site-specific flexibility.

Xcel's April 2017 Compliance Filing also acknowledged that one utility, National Grid, was utilizing a time-series IEEE 1453 approach[~~22~~15] that provided greater site-specificity, and that Xcel could obtain data at similar resolution through collaborating with developers.[~~23~~16] Xcel also acknowledged that for "specific projects that we have been ordered to monitor or have decided to monitor for further information, higher resolution data is being collected in the field using specialized equipment."[~~24~~17] In other words, the April 217 Compliance Filing acknowledged that Xcel is capable of performing more robust assessments on a case-by-case basis.

Xcel conducted its restudy of the Linden Project and presented its revised cost estimate to SunShare on July 14, 2017.[~~25~~18] Xcel utilized the "simplified" IEEE 1453 methodology rather than the standard IEEE 1453 that the IE and Commission ordered it to implement. The revised cost estimate restricted the project to three 1 MW co-located gardens because any greater

[~~21~~14] *See* Compliance – Transition to Incorporating the Standards of IEEE 1453, Docket No. E-002/M-13-867 (Apr. 26, 2017), eDocket ID 20174-131247-01.

[~~22~~15] April 2017 Compliance Filing at 4.

[~~23~~16] *Id.* at 7.

[~~24~~17] *Id.*

[~~25~~18] The July 14, 2017 revised cost estimate and interconnection package is included as Attachment K to Attachment E of Xcel's Appeal.

capacity would push interconnection costs above the $1 million material upgrade threshold, according to Xcel. Xcel estimated the interconnection costs to be **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** for the 3 MW restricted project. While that estimate is above $1 million, it also includes costs that do not count toward the material upgrade threshold, and thus 3 MW rather than 5 MW was allowed.[~~26~~19] This cost estimate did not explain the material upgrades that would have caused a 5 MW project to exceed the threshold, nor did Xcel indicate that it conducted any study for the project at a capacity greater than 3 MW. Xcel would never answer these two questions over the following months, and it appears from Xcel's Appeal that it has never conducted a study of the Linden Project at any capacity greater than 3 MW. Without conducting a study of above 3 MW and correcting errors, it is impossible to know for certain if more than 3 MW could be installed for less than $1 million.

c. Xcel Fails to Adequately Respond to SunShare's Information Requests, While Internally Acknowledging that Its Studies Contained Numerous Errors.

Over the following months, SunShare made multiple requests to Xcel to clarify and provide justification for aspects of the revised study. SunShare asked Xcel to provide, among other things: (1) justification for the type of lines called for in the revised study, (2) the project inputs used for the restudy, (3) an explanation of the upgrades that would push a 5 MW project above the $1 million material upgrade threshold, (4) an explanation for why expensive underground lines were required, (5) an explanation for why Xcel utilized the simplified IEEE 1453 method when it appeared to limit capacity, and (6) an explanation for why SunShare could not use voltage control measures on its smart inverters even though doing so would likely

[~~26~~19] Xcel has later revised this estimate down below $1 million, referenced in the IE Report.

mitigate potential flicker and steady-state overvoltage issues and avoid other costly upgrades, and because industry acceptance of this technology had progressed substantially since 2016.[~~27~~20]

At the same time SunShare was requesting this information, Xcel knew that its ~~multiple~~ revised ~~studies~~study for the Linden Project~~, which were conducted from February 2016 to June 2017~~ performed after the January 2017 Settlement Agreement contained numerous errors. SunShare also made multiple requests for all studies for the Linden Project, some of which Xcel refused to provide and did not provide until ordered to do so by the IE. SunShare discovered through the IE process that Xcel's own staff had internally acknowledged that the studies **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS]. In December 2017, an Xcel engineer observed that the contractor performing the revised study for the Linden Project **[PROTECTED DATA BEGINS**

[~~27~~20] Much of this correspondence is included as Attachment M to Attachment E of Xcel's Appeal. However, that attachment is missing some emails reflecting this back-and-forth between the parties. SunShare submits additional correspondence, including from Xcel's response to the IE's Information Request No. 10, as Attachment A here.

[~~28~~21] IE Report at 44.

PROTECTED DATA ENDS].[29][22] An Xcel employee also internally acknowledged that Xcel's responses to SunShare's information requests were **[PROTECTED DATA BEGINS PROTECTED DATA ENDS].**

Yet in response to SunShare's information requests, Xcel provided answers that were evasive, delayed, and incorrect.[31][24] Incredibly, Xcel refused to provide SunShare with redacted versions of certain restudies of the Linden Project for close to half a year, even though this is necessary for SunShare to vet the accuracy of Xcel's final study that it presented to SunShare.

d. SunShare Initiates IE Review and Pays the Required Interconnection Fee.

Because SunShare's good faith attempts to resolve issues pertaining the Linden Project on a bilateral basis failed, and Xcel was threatening to cancel the project, SunShare submitted the dispute for IE review on March 16, 2018. In its intake form,[32][25] SunShare asked the IE to review:

1. Whether Xcel was justified in requiring SunShare to use 750 AL underground line at a cost of $107,405, due to Xcel's claim that there is currently an underground line at that location, and whether Xcel should be required to rerun its study with the correct 630A ampacity for the 750 AL line (the study incorrectly stated the ampacity was rated at 255A).

2. Whether the 1.5% and 75% on/off voltage parameters that Xcel appeared to apply in its most recent study were more restrictive than is necessary, which in turn may have led Xcel to use more robust and costly equipment than may otherwise be necessary under industry best practices and/or may have unnecessarily restricted the MW capacity for the Project.

[29][22] Emphasis added. This correspondence is included on page 19 of Attachment M to Xcel's Appeal.

[30][23] *Id.* at 20.

[31][24] *See* generally Attachment A to this Response and Attachment M to Attachment E of Xcel's Appeal.

[32][25] SunShare's March 16, 2018 Intake Form is included as Attachment A to Attachment E of Xcel's Appeal.

3. Whether Xcel has delayed in sharing information about the project, including studies, answers to questions about study inputs, restudying projects with correct conductor parameters, etc.

4. Whether Xcel utilized more robust and costly equipment than is required by industry standards for its cost estimates, with particular focus on the use of 336 AL line versus other alternatives, and erroneously passing that cost to SunShare.

5. Given the number of engineering ~~studies that Xcel had performed, which spanned from February 2016 to June 2017, and the number of errors~~issues discovered with post-settlement studies for the Linden Project, and lack of clarity from Xcel regarding those ~~studies, and Xcel's failure thus far to provide all~~ studies, whether the IE should conduct a complete review of Xcel's studies for accuracy and validity.

Xcel engaged in delay tactics after SunShare submitted the dispute. For example, it argued that the dispute was precluded by the January 2017 Settlement Agreement and it delayed in executing the IE Contract[~~33~~26] for three months, only signing it on June 13, 2018. Xcel could have executed the IE Contract much earlier, because SunShare and the IE agreed that it was appropriate to work from versions of the contracts that the parties previously used for SunShare-Xcel disputes in the community solar garden program, judged by the same IE. At the time, Xcel knew these delays would risk SunShare missing its permitting and financing deadlines. SunShare had made this reality known to Xcel to try and accelerate the process, but Xcel chose to use the information to its advantage and try to push SunShare to settle.

Around the same time Xcel signed the IE Contract, SunShare also paid its required 1/3 interconnection cost – totaling **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** – and executed the interconnection agreement that Xcel provided with its July

[~~33~~26] The Dispute Resolution Services Agreement executed between Xcel and SunShare for this dispute is included as Attachment C to Xcel's Appeal.

14, 2017 revised cost estimate, in an effort to allow for Xcel's design review of the limited 3 MW that had been approved to proceed. In yet another attempt to unnecessarily delay, Xcel refused to countersign the agreement and complete final design review, arguing it would be inconsistent with its business practices because there was an ongoing IE review.

However, Xcel has executed interconnection agreements and conducted detailed design reviews for previous SunShare projects, at SunShare's expense, notwithstanding pending IE disputes. This has allowed SunShare and Xcel to gain more insight to the impact of the projects on Xcel's system, and to ***accelerate*** review. Conducting detailed review for those projects did not disrupt their development or IE review, and in fact it allowed for quicker turnaround to complete final designs on those past projects, since by the time the IE review and Commission appeal was complete, the detailed engineering review had also been substantially completed. Nevertheless, despite its refusal to countersign the interconnection agreement or do its detailed design, Xcel continued to hold SunShare's **[PROTECTED DATA BEGINS**

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Because Xcel was refusing to countersign the interconnection agreement for the restricted 3 MW project that Xcel had approved, SunShare requested that the IE also review whether Xcel was required to execute the agreement.[~~34~~27] SunShare also requested that the IE consider (1) whether the use of voltage control measures on its smart inverters would mitigate flicker and voltage control issues that Xcel claimed would be caused by the Kane/Linden Project, and whether SunShare could utilize those functionalities and have them incorporated in a restudy

[~~34~~27] *See* Attachment F to Xcel's Appeal (July 24, 2018 email from the IE noting this request by SunShare).

of the project; and (2) whether the allowable flicker threshold for the project should be increased from 2% to 4%.[35][28]

Although Xcel agreed that the IE could review the additional flicker threshold issue that SunShare submitted, it argued that IE review was not warranted on the remaining issues and stated that they would not participate in the IE process if they were included. Commerce informed the IE that he could not consider these issues, but they could be reviewed by the Commission.[36][29]

e. SunShare is Forced to Commence Construction on the Linden Project.

Because SunShare was only able to receive an unexecuted interconnection agreement for 3 MW as a result of Xcel's inaccurate design studies, SunShare applied for a conditional use permit for a project of that size because the zoning jurisdiction was about to change its ordinances to limit all projects to 1 MW moving forward.[37][30] The zoning jurisdiction stated they would be willing to consider and grandfather SunShare's project due to the extenuating circumstances with Xcel, but only so long as SunShare applied for the permits immediately. The zoning permit is only valid for one year before a building permit must be applied for, and given the sunset on the greater than 1 MW policy for projects, extensions were impossible. SunShare then acquired a building permit[38][31] within twelve months to preserve the conditional use permit and begin construction before winter, to keep the building permit active. SunShare commenced construction in the fall of 2018, investing close to $1 million to procure and install equipment

[35][28] SunShare's second Intake Form, dated August 14, 2018, is included as Attachment G to Xcel's Appeal.

[36][29] *See* Attachments F and H to Xcel's Appeal.

[37][30] A copy of the County's action letter granting SunShare's conditional use permit is included as Attachment B.

[38][31] A copy of the County's records regarding SunShare's building permit is included as Attachment C.

before winter. A picture showing this construction is included as Attachment D. The building permit expires on June 1, 2019.

SunShare began construction at considerable risk, in light of Xcel's refusal to provide a signed interconnection agreement, in order to preserve its investment and the potential for its nearly thousand residential homeowners slated for this garden to participate in the community solar program. Indeed, SunShare was unable to secure construction financing without an executed interconnection agreement, so it was forced to use expensive and limited private capital to commence construction, a significant expense for a small business. **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS] for the Linden project. Given the lack of clarity to date from Xcel on what the project's size will be, SunShare is constructing the restricted 3 MW project at this time, and will seek local zoning approvals (which may require a variance due to the change in local policy given the delay caused by Xcel) for the remaining 2 MW once Xcel restudies the project using correct methodologies.

f. The IE Issues His Report, Criticizing the Myriad Errors and Inaccuracies in Xcel's Multiple Engineering Studies, and Xcel's Lack of Transparency.

The IE issued his Report on December 18, 2018.[3932] He found in favor of SunShare on nearly all issues. Xcel falsely claims that the IE failed to conduct any technical review or analysis of the specific engineering issues that SunShare submitted for his review. To the contrary, the IE made a number of findings challenging Xcel's multiple engineering studies, and Xcel's failures to explain its errors and discrepancies in those studies. He observed the following:

[3932] The IE issued a slightly revised version of the report on December 24, 2018.

- The IE notes that there is a lack of transparency related to Xcel not providing SunShare with copies of the various models Xcel has performed, as well as not providing the inputs used in those models to SunShare. **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS] as is normal and appropriate engineering practice. The IE also noted these issues prior to receiving the Xcel response to IE IR 011. **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** of Xcel is to be commended for calling out these issues, but Xcel did not go on to correct them or redo these problems as identified.[40][33]

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- There is also an error found in the ampacity of the Linden model Revision 3 regarding the ampacity of a 750 AL cable in Revision 3 of that Study. . . . Xcel claims that this error does not affect the results, but the IE feels this is indicative of the many errors and ongoing inaccuracies in Xcel's studies throughout the project. As a consumer of Xcel's information and Studies, SunShare, like any consumer, has a right to accurate information, particularly when it pays for it. This lack of transparency reduces developer confidence in Xcel performed Studies.[42][35]

- The IE notes that none of the Studies performed by Xcel for SunShare were entirely accurate and that the Studies had to be changed due to inaccuracies in data, changing external conditions and Xcel's errors. The IE has reviewed each of the Studies and noted inaccuracies and errors.[43][36]

- Xcel admits that it has used the wrong input values in each of the Studies . . . , resulting in restudies that have consistently caused additional MW to be reapplied to SunShare's original 5 MW of Flicker in multiple revisions of the computer model, since the initial model was run in August of 2015. This trend has continued through the IE process.[44][37]

[40][33] IE Report at 23.

[41][34] *Id.* at 23 n.6.

[42][35] *Id.* at 23–24.

[43][36] *Id.* at 36.

[44][37] *Id.* at 38.

Although Xcel claims that the IE did not "address or evaluate industry best practices or standards,"[45]38 this is not true. For example, the IE found that the full IEEE 1453 method is "utterly different" than the version that Xcel used for its restudy, and that Xcel erred by using the simplified version.[46]39 He also found that the simplified approach was unwarranted because it had never been reviewed, accepted, adopted, or validated in any way by the Commission.[47]40 Further, the IE determined that SunShare had proposed the use of alternative overhead cables that were cheaper than cable typically used by Xcel, but were still sufficient for the interconnection.[48]41

The IE also found that Xcel had not sufficiently explained why the underground cable included in its indicative cost estimates needed to be buried:

- Xcel has only provided SunShare with vague speculation as to why the 792 foot, 1/0 underground line section was buried in the first place, but no substantive historical reason. Xcel has noted that it could be an easement or special agreement with a landowner, but was not specific as to the full extent of the 1/0 buried cable situation.[49]42

In short, Xcel's claim that "the IE simply did not conduct any technical engineering review of the specific issues disputed by SunShare"[50]43 is not true.

The IE issued various forms of relief in order to compensate SunShare for Xcel's ~~repeated~~ errors and inaccuracies, the company's lack of transparency regarding its engineering studies and cost estimates, and the resulting delays in implementing the project. Among other things, the IE ordered Xcel to perform and complete a site-specific flicker study within one month of the

[45]38 Xcel Appeal at 8.

[46]39 IE Report at 42.

[47]40 *Id.* at 27.

[48]41 *Id.* at 32–34.

[49]42 *Id.* at 24.

[50]43 Xcel Appeal at 2.

December 18, 2018 decision – i.e., by January 18, 2019 – with SunShare engineers present, and to complete a new engineering study of the Linden Project three weeks following the flicker report, for a due date of February 8, 2019. The following parameters are to apply to the restudy:

1. SunShare's engineers shall be permitted to be present during and actively participate in the modeling process;

2. If the revised study uses 750 AL underground cable, the appropriate 630A rating must be used instead of the 255A rating previously used;

3. Because the current, correct IEEE 1453 standard excludes the use of 1.5% flicker thresholds with 75% drop criteria, the revised study shall use voltage regulators modeled with a 2% full on/full off value, or higher if there is no demonstrable result outside of the IEEE 1453 maximum Pst flicker values.;

4. Xcel must work with SunShare to determine all appropriate inputs for the restudy;

5. Xcel must run variations of the restudy to account for the results of the ordered pre-construction flicker study, using different flicker thresholds ranging from 2% to 4% and at each MW increment (3-5 MW) and with no flicker limitation at all, as the latest IEEE 1547 dropped such a requirement in favor of the IEEE 1453 process.

6. Xcel must perform a variation of each study using 336 OH cables instead of the 750 AL underground segment.[~~51~~44]

SunShare has asked Xcel to begin these studies and take other actions consistent with the IE Report, but Xcel has refused.

The IE found that it was outside his scope of authority to order SunShare's requested relief that the $1 million material upgrade threshold be waived for the Linden Project to allow for the construction of the entire 5 MW project and to compensate for the years of Xcel's delays. However, recognizing that SunShare was entitled to some relief for those delays, the IE determined that Xcel's revised costs, which due to corrections made by Xcel during the IE

[~~51~~44] IE Report at 44–47.

dispute were reduced to below $1 million, could not exceed that cost.[52][45] Notwithstanding this revised estimate, Xcel has since stated verbally that interconnection costs could run as high as $1.6 million, but Xcel has not provided support for these costs. The IE and SunShare pressed for this information during a conference call. In light of this lack of transparency, SunShare made a verbal request that Xcel be prohibited from charging anything in excess of its wholesale costs for materials and to exclude its labor costs. Consistent with that request, the IE also found that Xcel could not add its typical profit, overhead, or bond costs, or any other markups to the project's cable, poles, and associated line and hardware, as well as labor required to perform the interconnection as relief to SunShare for the considerable harm it has faced.[53][46] This included the 336 AL cable that SunShare established was more costly than alternatives that still complied with industry standards.[54][47]

The IE did not provide a date certain for Xcel to complete the interconnection upgrades that will result from the restudy. This was not requested by SunShare in March 2018 because the timing did not yet require it. However, due to the significant delays Xcel created within the IE process, and in order to meet impending deadlines under its construction and zoning permits and to obtain proper financing, SunShare needs to have an interconnection agreement executed by Xcel in early February 2019 and detailed design review and upgrades completed no later than May 2019. SunShare paid for the detailed design review in June 2018 and informed Xcel of the need for quick action. There is no practical reason for continued delay.

[52][45] *Id.* at 31.

[53][46] *Id.*

[54][47] *Id.* at 34.

g. Xcel's Delays Have Significantly Harmed SunShare.

It is approximately three and a half years since SunShare submitted its application for the Linden Project. As recognized by the IE, SunShare is entitled to relief simply for the damages caused by the delays that have resulted from the numerous errors and inaccuracies permeating Xcel's engineering studies and Xcel's refusal to provide information to support those studies. SunShare estimates its damages to be around $518,397.84, to date. This includes:

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These amounts do not include other damages that SunShare has certainly suffered, including for example lost profits or the hundreds of hours of staff time that SunShare has devoted to working on this project and seeking resolution with Xcel following the January 2017 Settlement Agreement. These damages will increase as Xcel further delays implementation. Xcel has not taken any steps to implement the IE's decision, even though the IE provided a

January 18 deadline for completing the flicker study.[5548] SunShare requests that the Commission order Xcel to immediately implement the relief ordered in the IE Report.

III. ARGUMENT.

Notwithstanding Xcel's arguments to the contrary, the IE engaged in a technical review of the issues in this dispute, concluding that Xcel's engineering studies were replete with errors and inaccuracies, were not consistent with current industry standards, and required the use of equipment that was more restrictive than necessary. The IE also found that Xcel failed to inform SunShare of the errors and inaccuracies included in the studies, even though Xcel's own engineers were well aware of them from an early stage. This lack of transparency, along with other conduct by Xcel, has caused significant delays to project implementation, delays that were also acknowledged by Xcel's own staff. The relief that the IE ordered to address these issues is appropriate and entirely within his authority. Further, although Xcel disagrees with the IE's technical review of each of the issues raised by SunShare, that review was sound. Accordingly, the Commission should not give weight to any of the contentions raised in Xcel's Appeal.

Xcel has frustrated SunShare's attempts to develop the Linden Project, to the detriment of not only SunShare, but Xcel's own residential customers. Xcel's actions have also caused significant brand and reputational risk to SunShare, as SunShare continues its attempts to keep customers engaged and project partners such as landowners satisfied, despite Xcel's delays.

[5548] Xcel also has not sought a stay of the IE Report, and nothing in its tariff or the IE Contract allows Xcel to refuse to comply with the IE Report during this appeal. SunShare expects that Xcel will rely on Section 4(e) of the IE Contract, which provides that the IE Report is "final and binding on the Parties, unless modified by timely appeal to the Commission." This language, however, does not state that the IE Report is without effect pending an appeal. Instead, it contemplates that the IE Report is final and binding ***up until*** the point it is modified by the Commission. There is therefore no basis for Xcel's refusal to immediately implement the relief ordered by the IE.

a. The Relief Ordered by the IE is Appropriate in Light of the Errors and Inaccuracies in Xcel's Studies, and Xcel's Continuing Lack of Transparency.

Xcel questions whether the restudy that the IE ordered is necessary, arguing that the steady state voltage issues that it identified in its appeal will still limit the Linden Project to 3 MW regardless of whether another study is performed. This argument misses the central finding of the IE Report; namely, that a complete restudy (with SunShare's participation) is necessary because none of the studies that Xcel has performed were accurate, and Xcel has not provided adequate justification for its cost estimates resulting from the studies.

As observed by the IE, **[PROTECTED DATA BEGINS**

PROTECTED DATA ENDS].[56][49] Indeed, "none of the Studies performed by Xcel for SunShare were entirely accurate[,]"[57][50] and the "Studies had to be changed due to inaccuracies in data, changing external conditions and Xcel errors."[58][51] Xcel has also admitted "that it has used the wrong input values in each of the Studies."[59][52] The IE also found "a lack of transparency"[60][53] by Xcel, with Xcel failing to provide SunShare with copies of the models and studies that Xcel performed, along with other information that SunShare requested such as the specific reason why underground cable needed to be used for part of the interconnection.[61][54]

[56][49] IE Report at 23.

[57][50] *Id.* at 36.

[58][51] *Id.*

[59][52] *Id.* at 38.

[60][53] *Id.* at 23.

[61][54] *Id.* at 24.

The technical merits of Xcel's arguments related to steady state voltage and flicker are dubious, as discussed further *infra*. But even accepting the argument that flicker is immaterial, a restudy is still warranted. Flicker is just one variable that the IE stated should be monitored during the restudy. More importantly, however, the IE also found that SunShare's engineers must be given an opportunity to participate in and vet the study, to ensure it is performed properly and transparently. It could be the case that, during this process, SunShare's and Xcel's engineers agree that the flicker adjustments ordered by the IE would be immaterial. That does not mean, however, that SunShare should be precluded from participating in the restudy to vet its accuracy, because other errors may be identified such as those resulting in the steady state issues, explained below.

Xcel's flicker and steady state voltage-related arguments also divert attention from a more fundamental flaw in its studies – the company's failure altogether to determine what the interconnection costs would be if the Linden Project's capacity exceeded 3 MW. Xcel claims that interconnection costs would exceed the $1 million threshold if the Project's had any capacity greater than 3 MW. But Xcel has never studied what those interconnection costs may actually be at that greater capacity, or at least it has never shared this information with SunShare. As a result, the IE found it appropriate to require Xcel to conduct restudies at capacities above 3 MW.

Xcel is required by Section 9 of its tariff to disclose the basis for its cost determinations where necessary interconnection upgrades exceed $1 million.[62~~55~~] Specifically, Xcel must provide

[62~~55~~] *See* Order Approving Tariffs and Modified and Requiring Filing at 5, Docket No. E-002/M-13-867 (Dec. 15, 2015), eDocket ID 201512-116474-01; Xcel Tariff Section 9, 1st Revised Sheet No. 68.5(5h).

"any underlying data and documentation related to" those interconnection costs.[6356] This transparency allows developers and Xcel to resolve disputes over the accuracy of Xcel's cost estimates, and it facilities IE review.[6457] Xcel has acknowledged the need to be transparent and has stated that it will provide developers with cost information "in as much detail as possible."[6558] Doing so "improve[s] transparency, assure[s] developers that they are being treated fairly, and promote[s] efficiency by minimizing the number of disputes that have to be resolved by the independent engineer."[6659] This dispute underscores the need for this transparency. Had Xcel been forthcoming with the information that SunShare requested of it, now over a year ago, Xcel and SunShare may have been able to resolve this dispute without IE review (and now Commission intervention).

b. The Relief Set Forth in the IE Report is Within the IE's Authority to Order.

The IE is given broad authority to consider the issues submitted for his review, and to issue relief in a given dispute. Xcel's Appeal attempts to unduly narrow this authority, stating that the IE's review is limited only to technical issues raised in a particular dispute. Although a core function of the IE is to provide a technical review of specific engineering issues, the IE's purpose and authority is much broader. Xcel's tariff provides that the IE shall "resolve disputes on the study process, including material disputes related to the Company's determination of application completeness, timeliness of application and study processing, and the cost and

[6356] Xcel Tariff Section 9, 1st Revised Sheet No. 68.5(5h).

[6457] Order Approving Tariffs and Modified and Requiring Filing at 5, Docket No. E-002/M-13-867 (Dec. 15, 2015), eDocket ID 201512-116474-01.

[6558] *Id.* at 6.

[6659] *Id.*

necessity of required study costs and distribution system upgrades."[67][60] The Commission has made clear, however, that this is a "nonexclusive list of topics."[68][61] Indeed, the Commission has recognized that the IE is able to comment on and recommend the very "program-wide changes or policy reforms"[69][62] that Xcel argues the IE is precluded from addressing. IE disputes have played a crucial role in advancing general changes to the S*RC program. For example, the ~~issues that SunShare raised in its November 2015 Complaint, and the IE's subsequent review of SunShare's disputes regarding the Becker and Glazier projects, resulted in an IE recommendation (adopted by the Commission)~~requirement that Xcel implement the IEEE 1453 methodology when conducting engineering studies for all projects~~.~~ ~~[70]~~ resulted from an IE dispute.[63] Individual disputes that are submitted by developers often raise issues that are pertinent to the broader S*RC program and interconnection standards for Minnesota. Furthermore, outputs of previous IE disputes and subsequent Commission rulings, particularly relating to IEEE 1453 adoption, have been used outside of Minnesota to improve interconnection standards in other states. The IE process provides a natural forum to address program-wide issues, and the Commission has endorsed using the process – and the IE's authority – for this purpose.

The IE's reference to his "charter" in the IE Report simply reflects this understanding. Although Xcel claims that the IE is referring to some document that is not in the record, this is

[67][60] Xcel Tariff Section 9, Sheet 68.11(9a). Section 1(c) of the parties' IE Contract contains identical language.

[68][61] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 3, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[69][62] Xcel Appeal at 8.

~~[70] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 7, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.~~

[63] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 7, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

not the case. The IE has defined his charter identically in previous disputes, in particular those involving the Becker, Glazier, Murphy, and Bartlett[71][64] sites developed by SunShare. Xcel never previously argued that the IE misstated his authority when discussing this charter, nor has the Commission found the IE's understanding to be incorrect. Importantly, when resolving disputes, the IE is directed to "rely on industry codes, standards and references, as well as Commission orders, rules and tariffs, ***and other relevant sources that he may determine to be appropriate***."[72][65] It is therefore within the IE's authority to "address appropriate and related best business and technical practices and trends in the PV interconnection industry that would be noteworthy and of benefit to Parties as well as the wider CSG/SRC program."[73][66]

c. The IE's Engineering Review of the Issues Raised by SunShare Was Accurate.

Xcel also takes issue with the IE's technical engineering review of the various issues that SunShare raised in this dispute. As set forth below, Xcel's arguments are wrong on the merits and are yet another attempt to distract from the thrust of the IE's Report – that a complete restudy is warranted in light of Xcel's repeated errors and lack of transparency.

[71][64] Appendix A to Xcel Energy's Appeal from the Independent Engineer Report, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 7, 2016), eDocket ID 20164-119858-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 13, 2016, Report on the SunShare Glazier Site, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 20, 2016), eDocket ID 20164-120388-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 15, 2016, Report on the SunShare Murphy Site, MPUC Docket Nos. E-002/M-13-867, E-002/M-15-786 (Apr. 22, 2016), eDocket ID 20164-120531-02); Appendix A to Xcel Energy's Appeal from the Independent Engineer's April 26, 2016, Report on the SunShare Bartlett Site (May 3, 2016), eDocket ID 20165-121005-02).

[72][65] IE Contract § 1(f) (emphasis added). Section 9 of Xcel's tariff likewise directs the IE to "consider industry standards for interconnection, including the current version of the National Electric Safety Code, National Electric Code as adopted in Minnesota, FERC rules, NERC rules, Minnesota rules and Minnesota Interconnection Standards and," on a "case-by-case basis, the Company's standards for building, safety, power quality, reliability and long-term stable operations for building facilities even where such standards are more restrictive than the minimum requirements set forth in the codes, standards, and rules." Xcel Tariff Section 9, Sheet 68.11 (9a).

[73][66] IE Report at 2.

i. Xcel's Use of Its "Simplified" IEEE 1453 Methodology is Unwarranted.

Xcel challenges the IE's determination that its use of the "simplified" IEEE 1453 methodology was not appropriate. According to Xcel, the IE did not actually evaluate or assess this approach, and therefore his findings are flawed. This is not true. He found that Xcel's simplified approach was "utterly different" than the full IEEE 1453 methodology that the Commission ordered Xcel to implement in 2016[74][67] and that Xcel's tariff and current industry standards require use of the full method. He also found that the April 2017 Compliance Filing, which set forth the "simplified" IEEE 1453 approach, cannot be substantiated.[75][68]

Xcel also falsely claims that SunShare agreed that the "simplified" IEEE 1453 methodology could be used to study the Linden Project. Although Xcel cites to a February 21, 2017 email from SunShare, that email does not reference a "simplified" approach.[76][69] Instead, it shows that SunShare expected Xcel to apply the IEEE 1453 method in full. That is consistent with the IE's order that preceded this email, which directed Xcel to "use and apply the latest, most current editions of ANSI/IEEE Standards" when conducting its engineering studies.[77][70] Xcel was also aware in February 2017 that there "continued to be dissent" among solar

[74][67] *Id.* at 42.

[75][68] *Id.* at 43.

[76][69] This February 21, 2017 email is included as Attachment E to Attachment K of Xcel's Appeal.

[77][70] Resolution of the SunShare Flicker Dispute at the Golf/Hassan/St. Michael/Becker Interconnection Site, MPUC Docket Nos. 13-867 (Mar. 31, 2016) (included as Appendix A to Xcel Energy's Appeal from the Independent Engineer Report, MPUC Docket No. E-002/M-13-867 (Apr. 7, 2016), eDocket ID 20164-119858-02).

developers "regarding the simplified approach to IEEE 1453"[78][71] and that developers were not willing to adopt the simplified approach for projects that exceeded 1 MW in capacity.[79][72]

Lastly, Xcel suggests that the IE's decision on this issue is flawed because of the broader implications it might have on the S*RC program, noting that it implies "that a large number of solar garden projects in operation today have been studied under an invalid voltage fluctuation approach."[80][73] But the IE did not order Xcel to correct any errors in its studies for other projects, and Xcel acknowledges that its "simplified" IEEE 1453 methodology is only to be implemented temporarily. In its April 2017 Compliance Filing, Xcel stated that the end goal was transitioning to an IEEE 1453 methodology which, similar to the approach already used by National Grid, would utilize time series data when modeling voltage fluctuation and flicker.[81][74] It further acknowledged that "[a]dditional research and analysis will be needed before we are to implement a more detailed analysis for voltage fluctuation using the IEEE 1453 methodology."[82][75]

Xcel should welcome the opportunity to engage in a more thorough analysis here, because this will provide the company with additional information to determine how best to transition to a more robust IEEE 1453 methodology, including one that uses time series data. Again, the IE did not state that Xcel needed to implement this more thorough analysis program-wide. Nonetheless, doing so only for the Linden Project is consistent with the Commission's

[78][71] Xcel Summary – Transition to IEEE 1453 Standards for PV Distributed Generation Stakeholder Meeting (Mar. 15, 2017) (included as Attachment B to the April 2017 Compliance Filing).

[79][72] *See id.* Att. B at 11 ("The Stakeholder group seemed to be comfortable moving forward with the simplified approach in the interim for 1 MW projects in the pipeline.").

[80][73] Xcel Appeal at 10.

[81][74] April 2017 Compliance Filing at 5 (explaining the purpose of convening the stakeholder group on this issue).

[82][75] *Id.* at 6.

approval of project-specific relief in other disputes, including those regarding SunShare's Becker and Glazier projects.

ii. Xcel Did Not Properly Perform Its Engineering Studies for the Project.

The IE Report concluded that none of the engineering studies Xcel performed for the Linden Project following the January 2017 Settlement Agreement was entirely accurate, and that Xcel's own engineers acknowledged these errors yet failed to explain them to SunShare. Again, an Xcel engineer noted the following in December 2017 regarding the most recent study that Xcel provided to SunShare, which Xcel now claims is "correct in all material aspects"[83~~76~~]:

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PROTECTED DATA ENDS].[84~~77~~] Xcel attempts to dismiss the above email as pertaining to the content of the study report, and not the accuracy of the study itself. However, the email shows that Xcel's own engineers could not confirm the report's accuracy, warranting the restudy ordered by the IE. And although Xcel now claims that steady state voltage provides the limiting factor for the Linden Project, this argument must be met with skepticism in light of these admitted errors.

[83~~76~~] Xcel Appeal at 11.

[84~~77~~] Emphasis added. This correspondence is included on page 19 of Attachment M to Xcel's Appeal.

Skepticism is also warranted with regards to Xcel's steady state voltage argument because, as one example, the latest study appears to have **[PROTECTED DATA BEGINS**

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This example shows that SunShare engineers should be permitted to partake in the revised study, as recognized by the IE. And again, skepticism of Xcel's studies is also appropriate because Xcel has apparently never performed a study to determine what the

[85][78] Included as Attachment G to Attachment E of Xcel's Appeal.

[86][79] Included as Attachment L to Attachment E of Xcel's Appeal.

interconnection costs would be at a capacity greater than 3 MW, which makes it impossible to know if more than 3 MW could be installed below the $1 million material upgrade threshold.

Xcel also argues that the S*RC program would "grind to a halt" if the site-specific flicker study that the IE ordered was required program-wide, and that the restudy ordered by the IE is unnecessarily burdensome.[~~87~~80] Again, the IE did not order Xcel to implement site-specific flicker studies throughout the S*RC program, and performing a more thorough study of the Linden Project should provide useful information to Xcel to assist in transitioning to a more robust IEEE 1453 methodology.

iii. Xcel Still Refuses to Explain Why Underground Cable Is Required.

The IE also determined that Xcel has "only provided SunShare with vague speculation" as to why the underground section of line used in its interconnection study in fact needed to be used and that Xcel "was not specific" as to the easement or special agreement that it hinted provided the basis for this requirement.[~~88~~81] Xcel still has not adequately explained why the interconnection will require using this 792 foot span of cable. The company states that underground cable is "typically customer-driven[,]"[~~89~~82] but it has not explained why underground cable is specifically needed in this case. Although Xcel also explains that they do not share this information until detailed design review, they neglect to tell the Commission that SunShare has already paid Xcel to commence this detailed design review, and Xcel has refused to do so. There

[~~87~~80] Xcel Appeal at 19.

[~~88~~81] IE Report at 24.

[~~89~~82] Xcel Appeal at 22.

is no practical reason for Xcel's refusal to provide greater specificity as to why this section of underground line is required.

iv. The IE Properly Determined that Xcel's Use of 336 AL Conductor Was Unnecessary, and Issued Appropriate Relief.

Next, the IE found that SunShare demonstrated that less costly conductor line could be used as an alternative to the 336 AL cable that Xcel proposed to use for the interconnection. To compensate SunShare for the incremental difference in cost between these materials, and as further compensation for Xcel's recognized delays, the IE found that Xcel should be permitted to use its proposed cable for the entire project, but if it does, then Xcel cannot charge SunShare its profit and bond cost off the price of materials, as well as for labor costs.[90][83]

The relief ordered by the IE is consistent with Xcel's tariff, which provides that if a component "is more restrictive than industry standards but does not discourage cogeneration or small power production, the Company may implement that alternative, if the Company pays the incremental cost in excess of the amount necessary to implement the industry standard."[91][84] Here, the IE determined that Xcel's proposed cable was more restrictive – i.e., more expensive – than the conductor line that SunShare proposed. He then ordered relief to compensate SunShare in part for the incremental difference in cost. This is an appropriate method of compensating SunShare both for this incremental difference and the damages Xcel caused SunShare through delaying this project. In contrast, Xcel is certainly in violation of its tariff by charging SunShare for the use of 336 AL line when cheaper alternatives exist that are also consistent with industry standards.

[90][83] IE Report at 34.

[91][84] Xcel Tariff Section 9, Sheet 68.11(9a).

Lastly, Xcel's reliance on the Klingelhutz and Rice Brunansky IE report is misplaced.[92][85] That dispute pertained to whether the unit cost for the line that Xcel utilized was reasonable, which SunShare does not dispute. Instead, SunShare established that cheaper alternatives to 336 AL can be used for the Linden Project, and therefore Xcel cannot charge SunShare the incremental cost between that equipment and the 336 AL line.

v. The IE Issued Appropriate Relief to Compensate for Xcel's Delays.

Lastly, Xcel argues that the relief the IE issued to compensate SunShare for Xcel's delays is not appropriate. Xcel first overlooks the fact that it is to blame for the substantial majority of this delay, evidenced in part by the multiple studies it had to perform in order to correct errors acknowledged by its own engineers following the January 2017 Settlement Agreement. Xcel's internal email correspondence during the IE process also admits that the company's responses to SunShare's information requests were **[PROTECTED DATA BEGINS PROTECTED DATA ENDS].**[94][87]

Xcel also now claims that the 24-month clock for mechanical completion cannot be reset, because this is not expressly provided for in Xcel's tariff. However, in the internal email referenced by the IE, Xcel acknowledges that the company's **[PROTECTED DATA BEGINS**

[92][85] Xcel Appeal at 24.

[93][86] *See* page 20 of Attachment M to Xcel's Appeal.

[94][87] Incredibly, Xcel also charges the IE with unnecessarily delaying his consideration and resolution of the dispute. Although Xcel claims that the process was held up because the IE made unnecessary information requests, the IE Report notes that the emails requested of Xcel were pertinent to the dispute, and Xcel readily provided similar information when requested in previous disputes. *Id.* at 10. SunShare and Xcel also specifically requested that IE withhold any consideration of this dispute from August 16 to September 4, as the parties were negotiating a settlement. *Id.* at 9. The IE was thereafter incapacitated due to a medical issue, which placed the dispute on hold for another month. *Id.* Importantly, Xcel also unnecessarily delayed the process by initially refusing to execute the IE Contract for many months, and also contending that no IE review was warranted because the dispute was precluded by the January 2017 Settlement Agreement. Thus, any process-related concerns that Xcel now claims are simply unfounded.

PROTECTED DATA ENDS] And the IE recognized that the clock "has been used flexibly by Xcel, as is appropriate in any construction project."[9588] The IE therefore correctly ordered that Xcel restart the 24-month mechanical completion clock upon resolution of this dispute.

The IE also appropriately determined that the costs charged to SunShare for the interconnection should be capped at the $1 million material threshold. This is appropriate compensation for Xcel's delays, which as discussed have caused SunShare an estimated $518,397.84 in damages, not including lost profits and the hundreds of staff hours that SunShare has devoted to this project. Notwithstanding its revised estimates, which as explained have reduced the estimated interconnection costs below $1 million, Xcel has also noted verbally to SunShare and the IE that it anticipates the actual interconnection costs for the Project may reach as much as $1.6 million. Xcel has not provided support for this marked increase from its revised estimate, and SunShare needs to be protected against this. Some semblance of certainty is required for developers to accurately anticipate project costs, and we ask the Commission to independently affirm this relief ordered by the IE.

d. The Commission Should Order SunShare's Other Requested Relief on Those Issues that the IE Was Precluded from Considering.

The IE was precluded from considering two issues because the Department of Commerce believed they were only within the Commission's scope – whether SunShare should be permitted to incorporate advanced inverter functionalities into the project, including the consideration of those functionalities in the revised engineering studies to mitigate voltage variation and steady

[9588] This email is included on page 5 of Attachment M to Xcel's Appeal.

[9689] IE Report at 30.

state overvoltage; and whether Xcel was required to immediately countersign the interconnection agreement for the approved restricted 3 MW project and begin detailed design review, to allow SunShare to obtain financing for construction. SunShare requests that the Commission independently grant this relief.[~~97~~90]

i. The Commission Should Order Xcel to Immediately Countersign the Interconnection Agreement and Begin Detailed Design Review.

SunShare needs an executed interconnection agreement in order to preserve its building permit, to close on construction financing, and to allow Xcel to provide final confirmation on interconnection route and costs.[~~98~~91] This relief provides appropriate compensation to SunShare for the ~~years of~~ delay and associated expense caused by Xcel. It is also consistent with Xcel's tariff. Under Step 7 of Xcel's Section 10 interconnection process, Xcel must commence final design review of a project within 15 business days of receiving a signed interconnection agreement, among other materials, from the project applicant.[~~99~~92] Further, under Section 9, the company must countersign an interconnection agreement if the developer has complied with certain prerequisites, which SunShare in this case has done.[~~100~~93] Notwithstanding Xcel's refusal to sign the interconnection agreement, it has retained SunShare's close to **[PROTECTED DATA BEGINS PROTECTED DATA ENDS]** payment for half a year.

[~~97~~90] Commission review is allowed under Section 1(d) of the IE Contract, which provides "[i]n the event that either Party appeals the IE's Final written report the Commission may make its own independent determination on whether any issue was, or was not, appropriate for the IE to review under this Services Agreement."

[~~98~~91] *See, e.g.*, Minn. Stat. § 216B.1641(e)(1) (requiring the community solar garden program to reasonably allow for the creation and financing of solar gardens).

[~~99~~92] Xcel Tariff Section 10, Original Sheet No. 97.

[~~100~~93] Xcel Tariff Section 9, Original Sheet No. 68.8(6d).

Xcel's actions are a departure from prior practice. Xcel has allowed for detailed design review of past SunShare projects that had pending IE disputes, such as the Glazier Project. Indeed, further review and study by Xcel would lead to quicker project implementation, consistent with the purpose of the community solar garden statute. Xcel knows that any further delay makes it more likely SunShare will run afoul of deadlines imposed under local permits, yet it chooses to cause SunShare delay, likely to attempt to force SunShare to settle. Accordingly, SunShare requests that the Commission order Xcel to immediately countersign the interconnection agreements for the 3 MW worth of capacity that Xcel acknowledges can be constructed, and to immediately engage in detailed design review. Although slight modifications may be necessary following completion of the restudy that the IE ordered, allowance for those modifications is warranted in light of the damage that Xcel's delays have caused SunShare thus far.

ii. Xcel Should Allow SunShare to Utilize Smart Inverter Functionalities to Further Reduce Interconnection Costs.

Further, allowing SunShare to utilize voltage control measures, specifically the "voltage-reactive power mode" specified in IEEE 1547-2018, in its smart inverters could further reduce interconnection costs. As explained, the potential for steady-state overvoltage and increased voltage fluctuations and flicker on the grid is a primary reason for the high interconnection costs and limitations on the project's capacity. Yet Xcel is not incorporating the capabilities of Advanced Functionality Inverters (AFIs) as a way to mitigate these issues. AFIs have the capability to mitigate steady-state overvoltage and flicker, and this can support the grid and allow for increased PV penetration.

SunShare acknowledges that several years ago, the IE and Commission previously determined that Xcel would not be required to utilize advanced smart inverter functionalities to mitigate flicker and voltage issues, until such technologies were tested and certified under UL standards, or until further order of the Commission.[~~101~~94] However, significant progress has been made since the Commission's November 1, 2016 Order. Just prior to the order, UL announced its Advanced Inverter Testing Program, to be implemented under a new UL 1741 Supplement A (SA), which has now been released.[~~102~~95] The new IEEE 1547-2018 standard (that was issued in April of last year)[~~103~~96] and UL 1741 SA, address these capabilities, and smart inverter functionality is currently being utilized (and in fact required) in other states, including Hawaii since March 2018 and California since September 2017. Most, if not all inverters, are now smart inverters, and come equipped with voltage control functionalities.

Thus, although "full implementation of IEEE 1547-2018 will take a few more years, it is not too soon for states to begin adopting the new standard."[~~104~~97] Wider implementation of advanced smart inverter functionalities remains an ongoing topic for 2020 introduction in the broader Commission-led review regarding distributed generation interconnection practices. Allowing a limited rollout of these functionalities, for the Linden Project and a select few other projects, would provide additional data to inform this review.

[~~101~~94] Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 15, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[~~102~~95] *See UL Launches Advanced Inverter Testing and Certification Program*, UL (Sept. 8, 2016), *available at* https://news.ul.com/news/ul-launches-advanced-inverter-testing-and-certification-program/.

[~~103~~96] *See* Brian Lydic, *Smart Inverter Updates: New IEEE 1547 Standards and State Implementation Efforts*, Interstate Renewable Energy Council (July 23, 2018), *available at* https://irecusa.org/2018/07/smart-inverter-update-new-ieee-1547-standards-and-state-implementation-efforts/

[~~104~~97] *Id.*

The Commission's November 1, 2016 Order recognized that circumstances may arise that would warrant the implementation of voltage control functions on smart inverters, even though final UL testing and certification had not been accomplished at that time.[~~105~~98] Given the advancements in the industry and recently released standards, we believe it is time for Xcel to update their methodologies and rules, allowing for a more stable and advanced grid. Xcel has stated that it "support[s] and encourage[s] the earliest possible completion" of the research necessary to certify these smart inverter functionalities,[~~106~~99] and it recognizes that "advances in technology" are behind its recent commitment to provide 100% carbon-free electricity by 2050.[~~107~~100] We therefore ask the Commission to rule that Xcel must analyze in its restudy whether the use of these functionalities would result in reduced interconnection costs, and to allow for their use if so.

IV. EXPEDITED REVIEW AND RELIEF IS NECESSARY.

SunShare reiterates that expedited review and relief from the Commission is warranted for this appeal, in order to meet deadlines under its construction and zoning permits, and to obtain proper financing for construction. Expedited review and relief is also warranted in light of Xcel's delays in processing the application for this project, which was submitted almost four years ago.

[~~105~~98] *See* Order Resolving Independent-Engineer Appeals and Establishing Procedures for Future Disputes at 7, Docket No. E-002/M-13-867 (Nov. 1, 2016), eDocket ID 201611-126177-02.

[~~106~~99] Xcel Energy's Response to SunShare's Appeal from the Independent Engineer's Report on the SunShare Becker Site at 8 (Apr. 21, 2016), eDocket ID 20164-120479-02.

[~~107~~100] *See* Julia Pyper, *Xcel Energy Commits to 100% Carbon-Free Electricity by 2050*, Greentech Media (Dec. 4, 2018), *available at* https://www.greentechmedia.com/articles/read/xcel-commits-to-100-carbon-free-electricity-by-20501#gs.rhJ4Ukc.

As a result, SunShare respectfully requests that the Commission schedule this Appeal for a hearing at the earliest practicable date, promptly affirm the IE Report, and order Xcel to:

1. Immediately conduct the flicker study and restudy ordered by the IE, including SunShare's participation to identify errors such as Xcel's setpoint inputs, to be completed by no later than mid-February;

2. Complete any interconnection upgrades and schedule witness testing by no later than May 31, 2019, expedited at Xcel's cost;

3. Immediately execute the interconnection agreement and complete detailed design review for the 3 MWs' worth of capacity that Xcel has approved, so that SunShare can secure financing to continue ongoing construction of that reduced capacity to meet the date required by its expiring building permit;

4. In its restudy, analyze whether advanced smart inverter functionalities such as voltage control functions can reduce interconnection costs, and allow for their use if so; and

5. Comply with all other relief ordered by the IE, including in particular the determination that interconnection costs be capped at $1 million and that Xcel be prohibited from charging any profit, labor, overhead, bond costs, or any other markups to the equipment and labor used to complete the interconnection.

Respectfully Submitted,

Dated: January 17, 2019

STINSON LEONARD STREET LLP

/s/ Andrew J. Gibbons

Andrew Gibbons (#0389692)
Thomas Burman (#0396406)
50 South Sixth Street, Suite 2600
Minneapolis, Minnesota 55402
Telephone: (612) 335-1500
Facsimile: (612) 335-1657
andrew.gibbons@stinson.com
thomas.burman@stinson.com

Attorneys for Complainant SunShare, LLC

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)	MPUC Docket No. E-002/M-19-29 **SUNSHARE, LLC'S RESPONSE TO XCEL ENERGY'S APPEAL OF THE INDEPENDENT ENGINEER REPORT OF DECEMBER 18, 2018**

TABLE OF SUNSHARE ATTACHMENTS

ATTACHMENT A	October 2017 to March 2018 email correspondence between Xcel and SunShare
ATTACHMENT B	March 7, 2018 Action Letter from Scotty County Approving Conditional Use Permit
ATTACHMENT C	Linden Project Building Permit Record
ATTACHMENT D	Photograph showing Linden Project Construction

Summary report: **Litera® Change-Pro for Word 10.1.0.900 Document comparison done on 4/2/2019 12:30:49 PM**	
Style name: Default Style	
Intelligent Table Comparison: Active	
Original filename: SunShare - Response to Xcel Appeal.DOCX	
Modified filename: SunShare - Response to Xcel Appeal - Proposed Revisions (4-2-2019).DOCX	
Changes:	
Add	205
~~Delete~~	232
~~Move From~~	0
Move To	0
Table Insert	0
~~Table Delete~~	0
Table moves to	0
~~Table moves from~~	0
Embedded Graphics (Visio, ChemDraw, Images etc.)	0
Embedded Excel	0
Format changes	0
Total Changes:	437

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Appeal of an Independent Engineer Review Pertaining to the SunShare Linden Project as Authorized in Docket No. E002/M-13-867 (Community Solar Gardens Program)	)))))))	MPUC Docket No. E-002/M-19-29 **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that true and correct copies of **SunSahre, LLC's Response to Xcel Energy's Motion to Strike** have been served on this day by electronic service upon those persons listed on the attached Service List for the above-captioned docket, MPUC Docket E-002/M-19-29.

Dated this 5th day of April, 2019.

/s/ Joshua M. Feit
Joshua M. Feit

SERVICE LIST

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_19-29_M-19-29
Michael	Allen	michael.allen@allenergysolar.com	All Energy Solar	721 W 26th st Suite 211 Minneapolis, Minnesota 55405	Electronic Service	No	OFF_SL_19-29_M-19-29
David	Amster Olzweski	david@mysunshare.com	SunShare, LLC	1151 Bannock St Denver, CO 80204-8020	Electronic Service	No	OFF_SL_19-29_M-19-29
Sara	Baldwin Auck	sarab@irecusa.org	Interstate Renewable Energy Council, Inc.	PO Box 1156 Latham, NY 12110	Electronic Service	No	OFF_SL_19-29_M-19-29
Laura	Beaton	beaton@smwlaw.com	Shute, Mihaly & Weinberger LLP	396 Hayes Street San Francisco, CA 94102	Electronic Service	No	OFF_SL_19-29_M-19-29
Kenneth	Bradley	kbradley1965@gmail.com		2837 Emerson Ave S Apt CW112 Minneapolis, MN 55408	Electronic Service	No	OFF_SL_19-29_M-19-29
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_19-29_M-19-29
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_19-29_M-19-29
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_19-29_M-19-29
Arthur	Crowell	Crowell.arthur@yahoo.com	A Work of Art Solar	14333 Orchard Rd. Minnetonka, MN 55345	Electronic Service	No	OFF_SL_19-29_M-19-29

SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Timothy	DenHerder Thomas	timothy@cooperativeenergyfutures.com	Cooperative Energy Futures	3500 Bloomington Ave. S Minneapolis, MN 55407	Electronic Service	No	OFF_SL_19-29_M-19-29
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, Fifth Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_19-29_M-19-29
Ian	Dobson	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_19-29_M-19-29
Jason	Edens	jason@rreal.org	Rural Renewable Energy Alliance	3963 8th Street SW Backus, MN 55435	Electronic Service	No	OFF_SL_19-29_M-19-29
Betsy	Engelking	betsy@geronimoenergy.com	Geronimo Energy	7650 Edinborough Way Suite 725 Edina, MN 55435	Electronic Service	No	OFF_SL_19-29_M-19-29
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	1313 5th St SE #303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_19-29_M-19-29
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_19-29_M-19-29
Matthew D.	Forsgren	mforsgren@greeneespel.com	GREENE ESPEL PLLP	222 S. Ninth Street, Suite 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-29_M-19-29
Nathan	Franzen	nathan@geronimoenergy.com	Geronimo Energy	7650 Edinborough Way Suite 725 Edina, MN 55435	Electronic Service	No	OFF_SL_19-29_M-19-29

SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Hal	Galvin	halgalvin@comcast.net	Provectus Energy Development llc	1936 Kenwood Parkway Minneapolis, MN 55405	Electronic Service	No	OFF_SL_19-29_M-19-29
Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy	408 St. Peter Street Ste 220 Saint Paul, Minnesota 55102	Electronic Service	No	OFF_SL_19-29_M-19-29
Sean	Gosiewski	sean@afors.org	Alliance for Sustainability	2801 21st Ave S Ste 100 Minneapolis, MN 55407	Electronic Service	No	OFF_SL_19-29_M-19-29
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_19-29_M-19-29
Timothy	Gulden	info@winonarenewableenergy.com	Winona Renewable Energy, LLC	1449 Ridgewood Dr Winona, MN 55987	Electronic Service	No	OFF_SL_19-29_M-19-29
Duane	Hebert	duane.hebert@novelenergy.biz	Novel Energy Solutions	1628 2nd Ave SE Rochester, MN 55904	Electronic Service	No	OFF_SL_19-29_M-19-29
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-29_M-19-29
Jan	Hubbard	jan.hubbard@comcast.net		7730 Mississippi Lane Brooklyn Park, MN 55444	Electronic Service	No	OFF_SL_19-29_M-19-29
John S.	Jaffray	jjaffray@jjrpower.com	JJR Power	350 Highway 7 Suite 236 Excelsior, MN 55331	Electronic Service	No	OFF_SL_19-29_M-19-29
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street St. Paul, MN 551012134	Electronic Service	No	OFF_SL_19-29_M-19-29

SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julie	Jorgensen	juliejorgensen@greenmarksolar.com	Greenmark Solar	4630 Quebec Ave N New Hope, MN 55428-4973	Electronic Service	No	OFF_SL_19-29_M-19-29
Michael	Kampmeyer	mkampmeyer@a-e-group.com	AEG Group, LLC	260 Salem Church Road Sunfish Lake, Minnesota 55118	Electronic Service	No	OFF_SL_19-29_M-19-29
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_19-29_M-19-29
Aaron	Knoll	aknoll@greeneespel.com	Greene Espel PLLP	222 South Ninth Street Suite 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-29_M-19-29
Jon	Kramer	sundialjon@gmail.com	Sundial Solar	3209 W 76th St Edina, MN 55435	Electronic Service	No	OFF_SL_19-29_M-19-29
Michael	Krause	michaelkrause61@yahoo.com	Kandiyo Consulting, LLC	433 S 7th Street Suite 2025 Minneapolis, Minnesota 55415	Electronic Service	No	OFF_SL_19-29_M-19-29
Dean	Leischow	dean@sunrisenrg.com	Sunrise Energy Ventures	315 Manitoba Ave Wayzata, MN 55391	Electronic Service	No	OFF_SL_19-29_M-19-29
Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, Minnesota 55120	Electronic Service	No	OFF_SL_19-29_M-19-29
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-29_M-19-29

SERVICE LIST

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_19-29_M-19-29
Jeff	O'Neill	jeff.oneill@ci.monticello.mn.us	City of Monticello	505 Walnut Street Suite 1 Monticelllo, Minnesota 55362	Electronic Service	No	OFF_SL_19-29_M-19-29
Eric	Pasi	ericp@ips-solar.com	IPS Solar	2670 Patton Rd Roseville, MN 55113	Electronic Service	No	OFF_SL_19-29_M-19-29
Dan	Patry	dpatry@sunedison.com	SunEdison	600 Clipper Drive Belmont, CA 94002	Electronic Service	No	OFF_SL_19-29_M-19-29
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_19-29_M-19-29
Joyce	Peppin	joyce@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_19-29_M-19-29
David	Shaffer	shaff081@gmail.com	Minnesota Solar Energy Industries Project	1005 Fairmount Ave Saint Paul, MN 55105	Electronic Service	No	OFF_SL_19-29_M-19-29
Doug	Shoemaker	dougs@mnRenewables.org	Minnesota Renewable Energy	2928 5th Ave S Minneapolis, MN 55408	Electronic Service	No	OFF_SL_19-29_M-19-29
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_19-29_M-19-29
Thomas P.	Sweeney III	tom.sweeney@easycleanenergy.com	Clean Energy Collective	P O Box 1828 Boulder, CO 80306-1828	Electronic Service	No	OFF_SL_19-29_M-19-29

SERVICE LIST

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_19-29_M-19-29
Anna	Tobin	atobin@greeneespel.com	Greene Espel PLLP	222 South Ninth Street Suite 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-29_M-19-29
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_19-29_M-19-29
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_19-29_M-19-29