

October 1, 2021

VIA E-MAIL AND ELECTRONIC FILING

Mr. Bill Storm
Minnesota Department of Commerce
85 7th Place East, Suite 280
St. Paul, MN 55101
bill.storm@state.mn.us

**Re: In the Matter of the Application of Xcel Energy for a Route Permit for the West 345 kV transmission line for the Sherco Solar Project in Sherburne County.
Docket No. E-002/TL-21-189**

**In the Matter of the Application of Xcel Energy for a Route Permit for the East 345 kV transmission line for the Sherco Solar Project in Sherburne County.
Docket No. E-002/TL-21-190**

**In the Matter of the Application of Xcel Energy for a Site Permit for the up to 460 MW Sherco Solar Project in Sherburne County.
Docket No. E-002/GS-21-191**

Dear Mr. Storm:

Northern States Power Company, doing business as Xcel Energy (“Xcel Energy”), submits these reply comments in response to the comments received during the environmental assessment scoping comment period for the up to 460 MW solar project to be located in Sherburne County, Minnesota (“Solar Project”) and two 345 kilovolt (“kV”) transmission lines to interconnect the Solar Project to the grid (collectively the “Project”). These reply comments primarily focus on:

- Comments submitted by the City of Becker (“City”) in its September 15, 2021 letters related to the City’s claims of mischaracterizations and omissions by Xcel Energy as to the City’s Business Park Expansion Plan, suggested Project alternatives, and the City’s request for a citizen advisory task force;
- Project land updates;

- Additional information on solar panels that is responsive to comments and questions raised in public comments; and
- General responses to other questions raised during the comment period.

Questions and comments already addressed by the Project's site and route permit applications or those which are not relevant to siting and routing decisions are not addressed in these reply comments.

1. The Project Will Not Impact the City's Approved Business Expansion Area

With respect to the City's argument that Xcel Energy and National Grid Renewables Development, LLC ("NGR") failed to account for impacts on the City's proposed business park in Xcel Energy's site and route permit applications, we respectfully disagree. As noted in both the April 2021 Application for a Site Permit and Two Route Permits for the Sherco Solar Project ("Application") and Xcel Energy's August 2, 2021 Letter to the City of Becker (filed with the Minnesota Public Utilities Commission ("Commission") on August 4, 2021), the City's planned development of a business park was a key consideration in the siting of the proposed solar facility.

To begin with, the solar facility is consistent with the City's overall stated interests in utility-scale solar developments. In a July 5, 2016 filing in Xcel Energy's last resource plan,¹ the City stated:

The City of Becker greatly supports the building of industrial solar power generation. The Becker community urges the Public Utility Commission to implement the Preferred Plan, which includes a large scale solar plant in Becker. It will help offset some of the job losses proposed by the decommissioning of Units 1 and 2. We also see the solar generation plant as an economic development tool. As we promote and develop our community, we are hearing that other business partners want renewable energy. Therefore, we believe the solar plant will be a critical part of the City of Becker's marketing strategy as the community transitions from a coal based economy to a more environmentally sustainable economy.

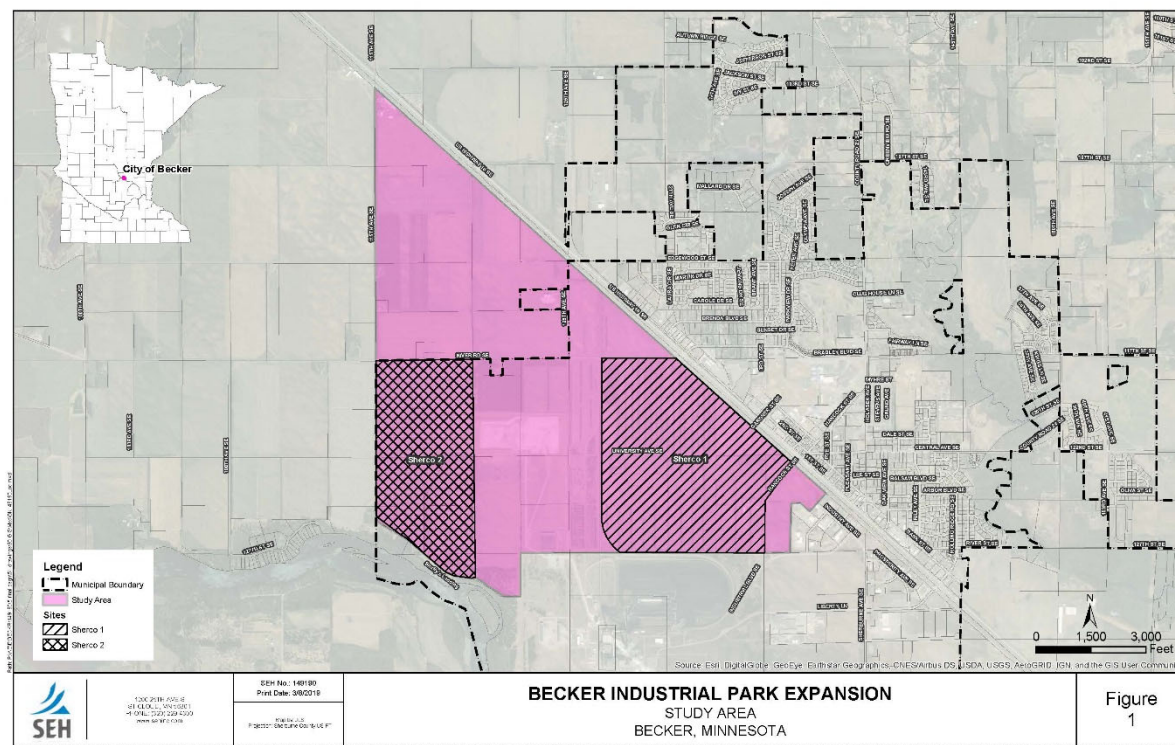
Notwithstanding this general support for projects like Sherco Solar, Xcel Energy carefully designed the Solar Project to not overlap with City's planned business park. As noted in Xcel Energy's Application, Xcel Energy has been working closely with the City in fostering economic

¹ Docket No. E002/RP-15-21

Mr. Bill Storm
October 1, 2021
Page 3

development in the community, including by designating approximately 1,300 acres of land within and surrounding the existing Sherco Generating Plant for future economic development.² Moreover, Xcel Energy consulted with the City and reviewed documents concerning the City's Business Park Expansion Plan, as shown in Figure 1 below, which was described in detail in the 2019 Business Park Expansion Feasibility Report Prepared by SEH on March 18, 2019 ("Feasibility Report"), and that was presented to and accepted by the Becker City Council during its May 7, 2019 Regular Meeting.³

FIGURE 1: BECKER BUSINESS PARK EXPANSION STUDY AREA



This study area included two areas designated in the Feasibility Report as “Sherco 1” and “Sherco 2,” which are shaded in Figure 1 above, and as noted in the Feasibility Report, are 470

² Application at 9-13

³ A copy of the Feasibility Report can be found at this link:
<https://www.ci.becker.mn.us/DocumentCenter/View/2041/FinalFeasibility-Report---031>

acres and 314 acres in size, respectively. The Feasibility Report included three “phases” for the development of all necessary water and sanitary sewer construction for the study area. As shown in the Figures appended to the Feasibility Report, the “Phase 1” infrastructure supported only a limited portion of the Sherco 1 and Sherco 2 sites, with the development in “Phase 2” and the “Ultimate Phase” completing the necessary infrastructure to serve the entirety of the study area.

The Feasibility Report indicated approximately \$22 million in probable costs for “Phase 1” of the infrastructure project, which is consistent with the Project Narrative submitted to the Minnesota legislature in support of a bonding request for utility infrastructure expansion:

The first phase of the trunk utility infrastructure project to serve approximately 450 acres of undeveloped property would include the construction of three major components: additional wells for added water capacity, trunk water main, and trunk sanitary sewer. The total infrastructure project is estimated at \$22 Million. The property within the City’s planned extended Business Park is not presently served by municipal water or sanitary sewer. The existing municipal sanitary sewer infrastructure serving the current Business Park has limited capacity available, which currently hinders growth opportunities.⁴

Consistent with this request, Minnesota’s 2020 Bonding Bill that was signed into law included \$20.5 million “[f]or a grant to the city of Becker to acquire land, predesign, design, construct, furnish, and equip public infrastructure, including water, sanitary sewer, storm sewer and drainage systems, roads, and lighting for a business park in the city of Becker. A portion of the water infrastructure for the business park will be installed in Becker Township.”⁵ No portions of the water infrastructure for the business park and no business park expansions were proposed in Clear Lake Township in either the Feasibility Report or Bonding Bill.

There is no dispute that the solar generating infrastructure for the Solar Project does not overlap with the land the City designated in its Business Park Expansion Plan (see Figure 2).⁶

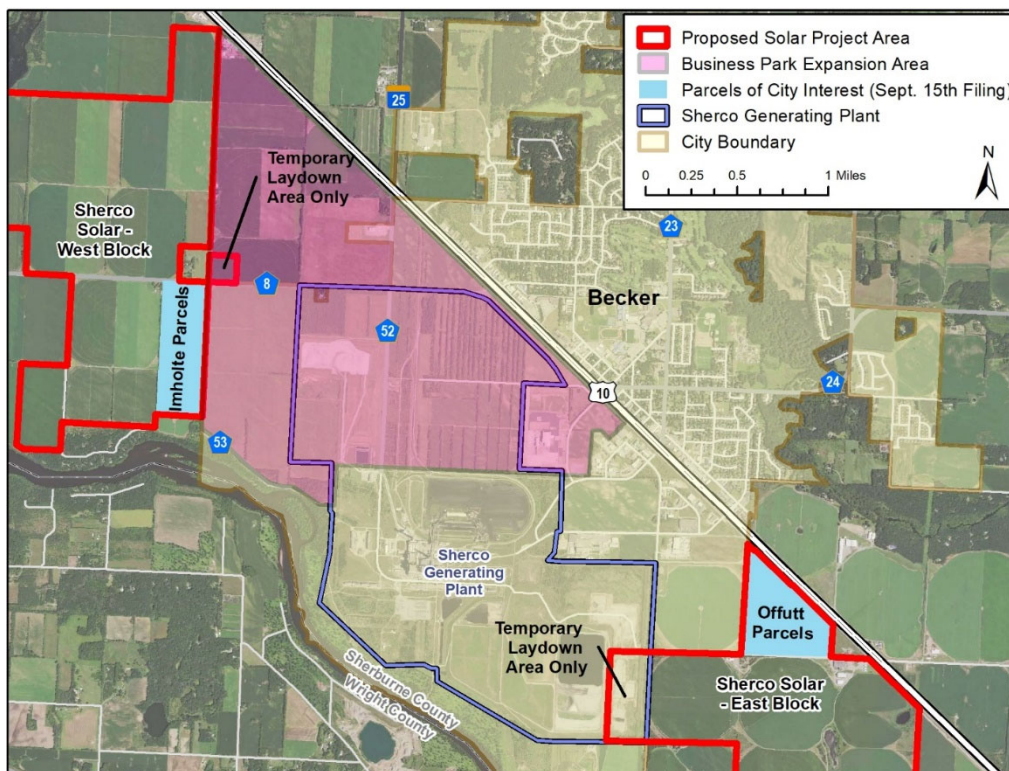
⁴ <https://mn.gov/mmb-stat/documents/budget/capital-budget/preliminary-capital-budgets/2020/local-government.pdf>

⁵ <https://www.revisor.mn.gov/laws/2020/5/Session+Law/Chapter/3/>

⁶ One temporary laydown area is proposed adjacent to the West Block on Xcel Energy owned property in Becker Township and within the City’s Business Park Expansion Area.

Instead, the City first claimed it had an interest in additional parcels beyond its approved Business Park Expansion Plan (including parcels noted in its September 15, 2021 filing in these dockets: Nos. 05-005-2400, 05-005-3000, 20-134-1100, 20-134-1400, 20-134-4100) after Xcel Energy and NGR proposed the Project. Not only are these parcels located outside the City's limits without an identified path for the City to annex such property, the owners of the parcels strongly support including the parcels in the Project.⁷

FIGURE 2: BECKER BUSINESS PARK EXPANSION STUDY AREA IN RELATION TO THE SOLAR PROJECT AREA AND CITY REQUESTED EXCLUSION AREAS



At bottom, the City's argument that its infrastructure will be underutilized because of the Project is inconsistent with its public statements regarding its Business Park Expansion Plan.

Another temporary laydown area is proposed adjacent to the East Block on Xcel Energy owned property in the City of Becker and not within the City's Business Park Expansion Area.

⁷ See Section 2 below.

Accordingly, the environmental assessment need not account for the City's newly-expressed plans for economic development in land it has no path to control and has not taken any actions (other than through comments in these dockets) to pursue.

2. City Proposed Exclusion of Parcels and Alternatives

Notwithstanding that the Project will not impact the City's approved business expansion area, the City requested that approximately 120.5 acres of land in the West Block, comprised of three parcels owned by Imholte Bros., L.L.C. ("Imholte"), and approximately 125.4 acres of land in the East Block, comprised of two parcels owned by RD Offutt Company ("Offutt"), be removed from the Project (See City Attachment 1 and Figure 2 above; the "Imholte and Offutt Parcels"). The combined acreage of the Imholte and Offutt Parcels is approximately 246 acres. The City also indicated there are several potential alternative sites that could replace any generating capacity lost from the Imholte and Offutt Parcels and asked that the environmental assessment consider the use of a portion of the potential alternate land to replace the Imholte and Offutt Parcels. The City did not specify which 250+/- acres of the potential alternative sites should be considered in the environmental assessment.

Instead, the City's potential alternative sites are located in two general clusters of land (See City Letter Attachments 2 and 3). The first cluster of land comprises approximately 900 acres of land located south of Clear Lake and approximately two miles northwest of the Project (the "Clear Lake Parcels"). The Clear Lake Parcels were identified in a January 15, 2021 letter to the City from NGR for an up to 600 MW solar project that would have comprised the Clear Lake Parcels and the West and East Blocks from the Project. Sherco Solar, LLC, a wholly owned subsidiary of NGR holds leases on the Clear Lake Parcels.⁸ The second cluster of land is located three miles northwest of the Project in a location that is northwest of the Clear Lake Parcels, Minnesota Highway 24 and the City of Clear Lake (the "Northwestern Parcels"). Neither Xcel Energy nor NGR (or any of their affiliates) hold leases on the Northwestern Parcels.

A. The Study of the City's Exclusion of Parcels and Alternatives is not Justified.

The Department of Commerce Energy Environmental Review Analysis unit ("EERA") should not lend credence to the City's arguments or proffered justification for the exclusion of the Imholte and Offutt Parcels from the Project.⁹ Neither the parcels owned by Imholte nor Offutt

⁸ The Clear Lake Parcels are reserved for a separate, potential solar project that could provide approximately 140 MW of additional solar resources for Minnesota consumers.

⁹ Ross Imholte and RD Offutt Company both submitted comments indicating they want to participate in the Project. Ross Imholte, on behalf of himself and Imholte Bros. L.L.C., provided

were included or otherwise contemplated in the City's Feasibility Report for the Business Park Expansion Area or in the City's associated bonding request for utility investments to serve the City's expansion area. Therefore, according to the City's own calculations, development of the Imholte and Offutt Parcels as part of the City's Business Park is not necessary to recover City expenditures to serve other parcels in the Business Park with City utilities. The placement of new utilities, east of 115th Avenue, as shown in the Feasibility Report, would still allow for utility service to sites in the City's planned Business Park within City limits. Moreover, the City has not secured an easement from Imholte for the placement of utilities on the parcels owned by Imholte west of 115th Avenue. As discussed above, Xcel Energy specifically chose the Solar Project area in its current location to consolidate the area needed for the Project as close to existing transmission infrastructure as possible to limit the need for more transmission infrastructure and the overall impact of the Project on the surrounding areas while allowing for City Business Park expansion in an area that was approved by the City in its Business Park Expansion Plan.

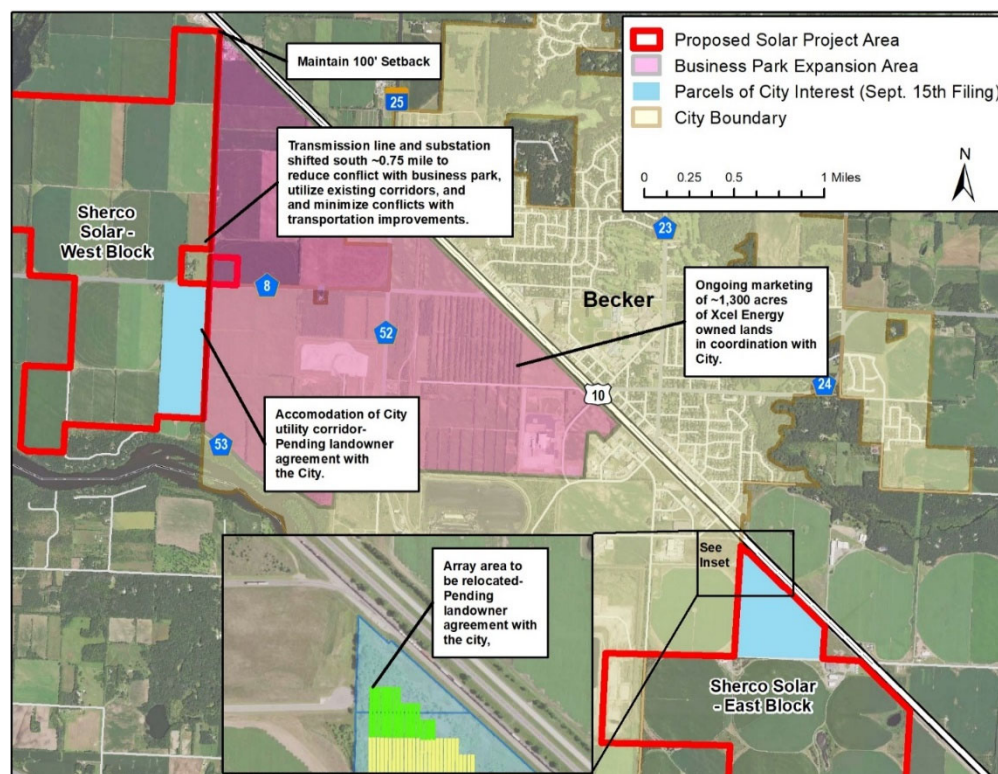
Regardless, Xcel Energy continues to work with the City in good faith and has worked to accommodate practicable modifications to the Project footprint (See Figure 3 for examples of Xcel Energy's Project modifications to respond to requests from the City). For example, as noted in the Application, Xcel Energy remains willing to accommodate an infrastructure corridor along 115th Avenue to accommodate the City's desired utility infrastructure corridor. However, as noted in Imholte's comment letter, this corridor would be contingent on the City reaching an agreement with Imholte. More recently, the City, separate from and prior to its September 15, 2021 comments, requested that Xcel Energy remove the northernmost 5-acre Offutt parcel (PID 05-005-2400) from the Solar Project area.¹⁰ Xcel Energy has informed the City it would be willing to remove this area from the Project because of a specific and imminent business development

comments on September 3, 2021 indicating he has no interest in setting any of his land, or land owned by his company, aside for other potential future land uses; RD Offutt Company provided comments on the Project on August 4, 2021 indicating it has not discussed other economic development opportunities for its land with the City other than the Project [the discussions on the 5-acre parcel discussed below occurred after August 4, 2021]. Clear Lake Township also submitted comments on September 23, 2021 indicating it supports the development of the Project in its current location and does not support reserving those parcels for expansion of the City's Business Park.

¹⁰ Xcel Energy has preliminarily determined it can shift the panels from this Project onto surrounding parcels and not lose any nameplate capacity for the Project. Xcel Energy understands the City and Offutt are still in discussions regarding this parcel, including whether Offutt is willing to release this land from its lease with Xcel Energy.

opportunity the City is pursuing. Xcel Energy's removal of this parcel from the Project is contingent upon the City and Offutt reaching an agreement on the sale of the parcel (see Figure 3). The removal of this parcel can be accommodated with minimal impact to Project energy production, which is not the case of the other parcels owned by Offutt and Imholte. Lastly, the City requested a 100-foot setback from U.S. Highway 10 at parcel 20-122-1400. We confirm that Xcel Energy's planned infrastructure on this parcel will be set back 100 feet from Highway 10, and Xcel Energy will maintain that setback moving forward to accommodate the City's needs along Highway 10.

FIGURE 3: XCEL ENERGY DESIGN CONSIDERATIONS AND MODIFICATIONS IN COORDINATION WITH THE CITY

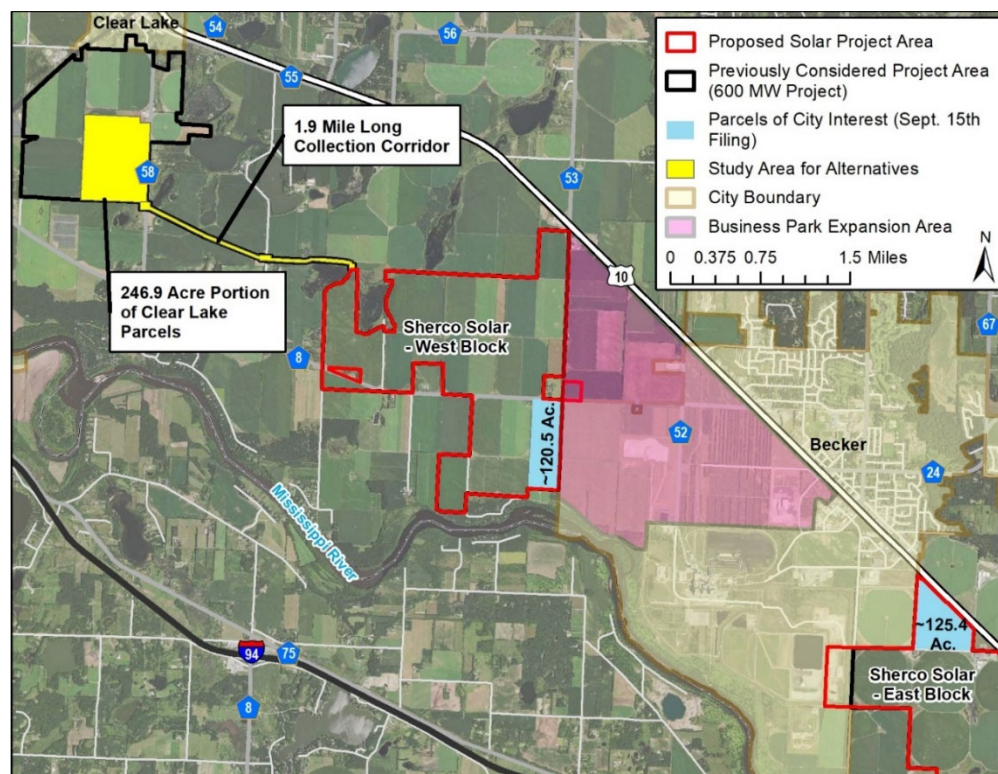


Xcel Energy does not believe that any portion of the Clear Lake Parcels or the Northwestern Parcels should be considered in the environmental assessments as an alternative location for the portion of the Project located on the Imholte and Offutt Parcels. However, if any portion of the alternate land proposed by the City is studied in the environmental assessment, it would be logical to study an approximately 246.9 acre portion of the Clear Lake Parcels together with an approximately 1.9-mile-long collection corridor to connect the area to the Project, as an alternative for a portion of the Project because they are being leased by or under easement with

Sherco Solar, LLC and they are the closest parcels to the Project (see Figure 4 with parcels highlighted as an Alternative Study Area). Xcel Energy offers this as a suggestion to aide in the development of a definable alternate area to study in the environmental assessment, without condoning its inclusion in this Project and reserving the right to object to its inclusion in the Project.

Moving any solar energy generation equipment to any of the proposed alternative parcels would result in a minimum of 1.9 miles of additional collection corridor outside of the current Solar Project area and an additional 1-2 miles of collection cabling inside of the Solar Project area to connect the Clear Lake Parcels and associated electrical circuits to the Solar Project area. The Northwestern Parcels would result in much greater distances of collection cabling as compared to the Clear Lake Parcels. Regardless, either collection corridor would also result in increased line losses, increase costs to Xcel Energy and subsequently its ratepayers, unnecessary soil disturbance, and at least one public waterbody crossing. These impacts are avoided via the current site layout.

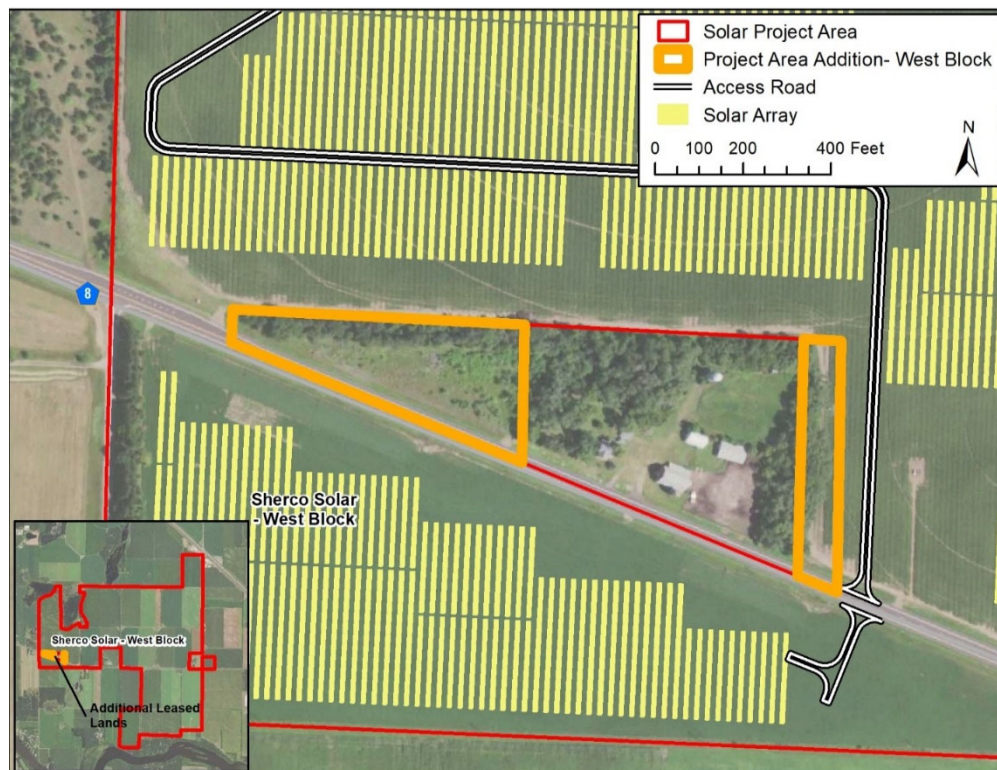
FIGURE 4: CLEAR LAKE PARCELS AND ASSOCIATED COLLECTION CORRIDOR



3. Xcel Energy Requests Additional Area be Studied in the Environmental Assessment.

To aid in the development of a comprehensive record for this Project and to assist Xcel Energy in responsibly siting this Project, Xcel Energy would like the environmental assessment to consider the potential environmental impacts of including additional land in the Project. After the Application was filed, one of the non-participating landowners in the southwestern corner of the West Block elected to sign a lease for two portions of its land totaling approximately 4.1 acres on the east and west sides of the landowner's home (Figure 5). Xcel Energy requests that this leased land be considered in the environmental assessment to determine the potential environmental impacts of using this land as part of the Project. Xcel Energy has not designed Project infrastructure for this land but believes the eastern portion of the land could be utilized for an access road and the western portion could be utilized for solar panels, temporary laydown areas or construction parking.

FIGURE 5: ADDITIONAL LEASED LAND



4. The Commission Should Not Appoint a Citizen Advisory Task Force

The City requested the Commission appoint a citizen advisory task force to aid the Commission in ‘evaluating the proposed and potential alternative sites for the Sherco Solar Project, as well as the [P]roject’s negative economic impacts not evaluated in Xcel’s Permit Application and the potential mitigation thereof.’ Xcel Energy disagrees with the City’s analysis and requests that the Commission deny the City’s request for an advisory task force.

The Commission has the authority to appoint a citizen advisory task force and is required to determine the need for a task force as early in the process as possible.¹¹ In its May 4, 2021 Notice of Comment Period, the Commission specifically requested comment on whether an advisory task force should be appointed. In its May 18, 2021 comment letter, the City did not request that an advisory task force be appointed. EERA considered the need for an advisory task force and, in its May 18, 2021 comment letter, determined there was no need to appoint an advisory task force at that time. EERA’s recommendation was made after considering the City’s comments in related docket E002/M-20-891 where the City’s primary concern was the proposed Project location together with the City’s request that the Commission allow the City a full opportunity to address its concerns with the Project’s proximity to the City’s existing and planned municipal infrastructure and its impact on future development in the City. On July 8, 2021, Xcel Energy’s Application came before the Commission. During the meeting, the Commission provided the City an opportunity to comment on whether a summary proceeding was adequate for the City to participate and voice its concerns about the Project. At the hearing, the City agreed to the summary proceeding process.¹² Accordingly, the City had multiple opportunities to request the appointment of an advisory task force and instead agreed that the summary process, without an advisory task force, was adequate to address the City’s concerns.

Furthermore, the appointment of an advisory task force will not garner new information beyond that which has been presented by the City in its oral and written comments. Minnesota Rule 7850.2400 subp. 3 specifies that the Commission shall determine the responsibilities of a citizen advisory task force, which responsibilities ‘shall include the *identification of additional sites or routes or particular impacts to be evaluated in the environmental [assessment]*.’¹³ The Commission may also request that the task force *express a preference for a specific site if it has one* and the task force expires upon the designation by the Commission of alternative sites to be

¹¹ Minn. R. 7850.2400 subp. 1.

¹² See Order Accepting Application as Complete and Authorizing Use of the Alternative Review Process at 6.

¹³ Emphasis added.

included in the environmental assessment.¹⁴ The City has participated in a Commission meeting, provided oral comments at the environmental scoping meeting and submitted written comments in the record for this matter on two occasions. Through this participation, the City has already identified an additional site [or portion thereof], expressed a preference for that additional site and noted particular impacts it would like evaluated in the environmental assessment. The City has not provided any other information in its request for a citizen advisory task to indicate that such a task force would add more information than what has already been provided by the City. And, notably, no other local jurisdiction has requested a task force.¹⁵ Therefore, an advisory task force is not necessary to aide EERA in developing a scoping document that can be reviewed and approved by the Commission.

In conclusion, Xcel Energy still agrees with EERA's original conclusion that an advisory task force is not warranted.

5. Environmental Considerations Regarding Solar Panels

Xcel Energy reviewed public comments for common themes or concerns raised. Primary concerns included questions about hazardous materials contained in the solar panels and the potential for the panels to contaminate the environment. Concerns were also raised about the recyclability of the solar panels after they are removed from the Project. It is prudent to address these concerns at this time to aid in the analysis of the topic in the environmental assessment.

A. The Panels are Designed to Not Release Hazardous Materials

Solar panels that will be used for the Project are nearly entirely encapsulated in glass and aluminum, which are not hazardous materials. The solar panels do, however, contain small amounts of metals that are, by themselves, characterized as hazardous materials by the United States Environmental Protection Agency ("EPA"). When panels are disposed of at recycling facilities or landfills, the characteristics of those elements and the likelihood that they will leach from the solar panels into the environment must be determined and reported in accordance with state and federal laws. Many manufacturers of solar panels are taking proactive actions to determine the potential for the metals contained in solar panels to leach from the panels during operation of the panel or if it is broken into pieces. The EPA-approved method for determining whether a hazardous substance is likely to leach into the ground and ground water is the Toxicity

¹⁴ *Id.*

¹⁵ Without condoning the need for a citizen task force, Clear Lake Township indicated in its September 23, 2021 comment letter that it would participate on the citizen task force if one were created.

Characteristic Leaching Procedure (“TCLP”). Each of the manufacturers being considered by Xcel Energy to provide solar panels for the Project completes TCLP testing as part of the product development process and has determined that all existing products passed TCLP testing. In other words, the panels that will be used for the Project will not release hazardous materials (including arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver) into the environment.¹⁶ In light of the panels being fully encapsulated and unable to leach hazardous materials into the environment, the risk to the environment from the contents of the solar panels will be minimal. If a solar panel is broken at the Project, the broken pieces and the remainder of the panel will be recycled or disposed of and replaced, thereby further reducing the risk for hazardous materials contained in the solar panels to leach into the environment.

B. Solar Panels are Recyclable

Solar panels and other equipment utilized by the Project will, at some time, need to be managed as waste products. The heaviest components of solar panels, glass and aluminum are common and easily recyclable. Other solar panel components that can be successfully recovered are copper, silver and semiconductor materials. More than 90 percent of semiconductor material and glass can be reused in new modules and products.

Certain manufacturers, PVCycle (an international program that some silicon manufacturers participate in), waste management companies, or other entities such as the Solar Energy Industries Association (“SEIA”) have been actively seeking and developing solar panel and associated equipment recycling partners across the U.S. SEIA has produced a fact sheet on photovoltaic (“PV”) solar panel recycling that provides useful summaries of current recycling capabilities in the U.S. and efforts to expand such capabilities in the future (*see Exhibit A*). For example, as of January 2020, SEIA’s recycling partners have processed more than four million pounds of PV solar panels and related equipment since SEIA’s recycling program was initiated in 2016.

Future research and development of recycling equipment should further optimize the recoverability of additional solar panel materials and the purity of any reclaimed materials. Xcel Energy anticipates that, by the end of the useful life of the solar panels used for the Project, PV solar panel recycling will be sufficiently established in Minnesota or surrounding states to recycle the solar panels and associated equipment used for the Project.

¹⁶ TCLP testing determines whether the panels would release hazardous materials in amounts that exceed EPA concentration thresholds. The panels being considered for the Project have passed TCLP testing and therefore would not violate EPA standards.

6. The substation for the West Block and West HVTL was located to address Multiple Concerns

Mr. Russ Armstrong noted a minor discrepancy in the site design drawings for the substation for the West Block and the West HVTL and questioned whether the substation was moved to allow the alternative permitting process. During early development of the Project, the collector substation was located to the north of its current location as shown in the 'key' on sheet C200 of the Project Site Plan. Xcel Energy had originally intended on routing the West HVTL along an existing transmission corridor and an existing railroad right-of-way to minimize environmental impacts. However, when this route was presented to the City, it indicated that the City and County have been studying potential interchange reconfigurations for Highway 10, County State Aid Highway 8 and Minnesota State Highway 25. The prior route would have also created a more significant impact on land the City wishes to include in its Business Park and would have crossed land owned by a landowner that did not wish to grant an easement across its property. Accordingly, Xcel Energy re-routed the West HVTL to its current location to allow the City and County room to design the new interchange without having to account for the West HVTL.

7. Conclusion.

Xcel Energy respectfully requests that the Commission decline to appoint an advisory task force and find that there is no need to study alternatives in the environmental assessment, but if any alternatives do need to be studied, an approximately 246.9-acre portion of the Clear Lake Parcels together with an approximately 1.9-mile-long collection corridor could be studied in the environmental assessment. Xcel Energy looks forward to further coordinating to address issues raised by local jurisdictions, including the City, and the additional development of these issues in the records before the Commission.

These reply comments have been e-filed today through www.edockets.state.mn.us. A copy of this filing is also being served upon the persons on the Official Service Lists of record. Please let me know if you have any questions regarding this filing.

Mr. Bill Storm
October 1, 2021
Page 15

Sincerely,

FREDRIKSON & BYRON, P.A.
ATTORNEYS FOR NATIONAL GRID RENEWABLES DEVELOPMENT

/s/ Jeremy P. Duehr

Jeremy P. Duehr
Direct Dial: 612.492.7413
Email: jduehr@fredlaw.com

/s/ Haley L. Waller Pitts

Haley L. Waller Pitts
Direct Dial: 612.492.7443
Email: hwallerpitts@fredlaw.com

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End-of-Life Management for Solar Photovoltaics: Recycling

SEIA PV Recycling Partner Network

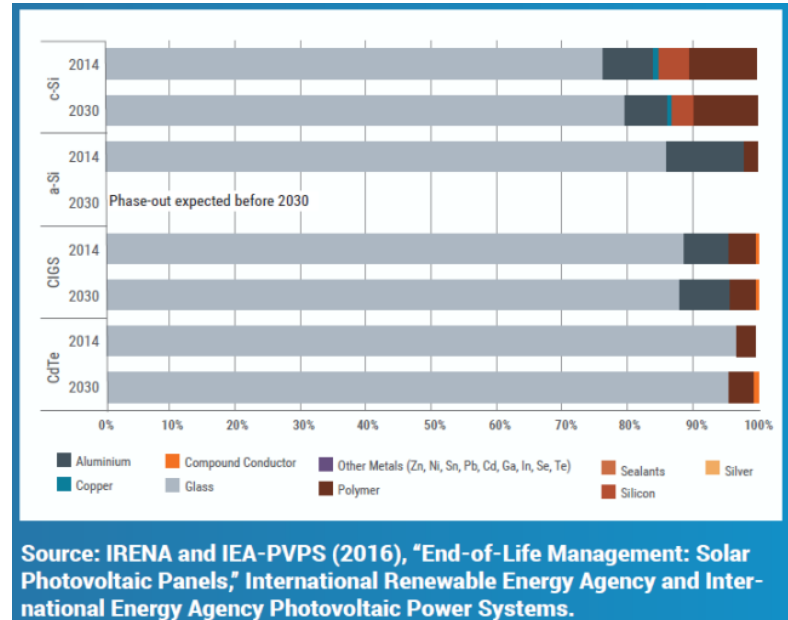
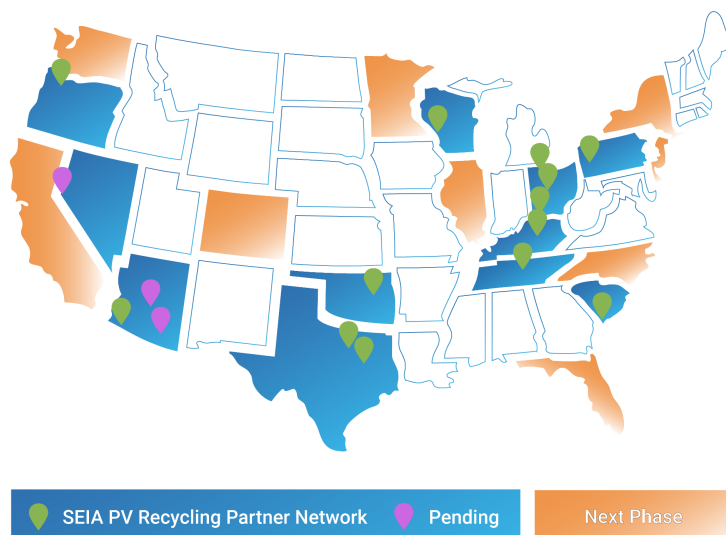
SEIA's PV Recycling Working Group has been actively seeking and developing recycling partners across the U.S since 2016. Over 95% of PV modules deployed in the U.S have been installed since 2012, and such modules will stay in service for more than 25+ years. Nonetheless some waste is generated when panels are damaged during production, shipment or installation, determined to be defective, by weather events, and for warranty-related claims.

SEIA's National Recycling Program is preparing now for larger volumes of waste to come in future years. Already SEIA's recycling partners have processed >4M pounds of PV modules and related equipment since the program launched.

While they offer specific benefits to SEIA members, the recyclers provide their services to interested installers, project and system owners, developers, distributors and other parties.

SEIA's current partners have prior expertise in recycling glass, polymerics, aluminum, scrap metal, and electronics; all of which provide a good foundation for recycling PV modules, inverters, racking systems and other components of a PV system. Our current network partners offer and provide services to SEIA members and industry throughout the U.S. SEIA is continually working to find new partners in more geographies to make recycling more accessible in areas where solar is installed.

The graphic below shows where SEIA's current partners are located and where we are in process of adding new partners. As we expand our network to more areas, we help partner companies to develop their processes and equipment for our technology. Overall, we aim to add 2-4 new partners yearly and for both new and existing partners to expand their collection and processing locations.

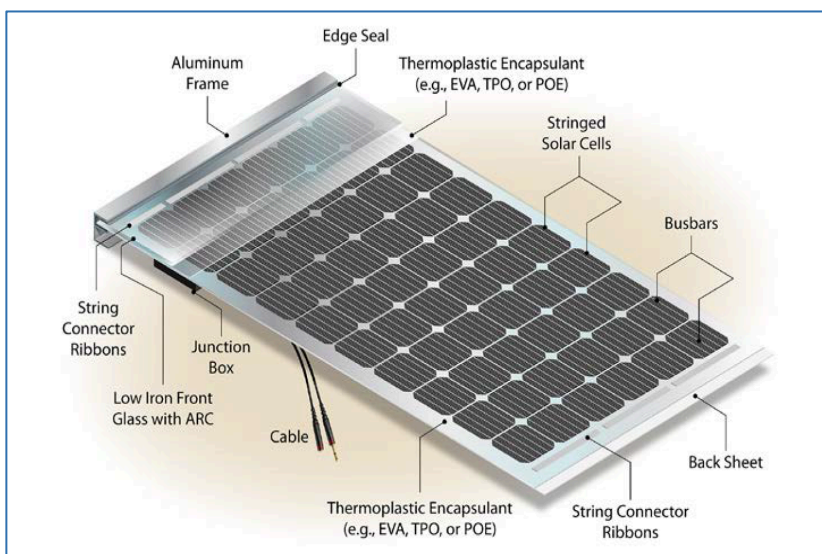


End-of-Life Management for Solar Photovoltaics: Recycling

Photovoltaic equipment and options for first end-of-life stages

Like many other durable products and construction materials, solar equipment can last for decades, particularly with proper maintenance. In some cases, PV modules can be reused or refurbished to have a ‘second life’ generating electricity. The other components of solar systems can also be handled responsibly. Inverters can be recycled as e-Waste and racking equipment can be re-utilized with newer technology or recycled like other metals.

SEIA advises manufacturers, system and project owners to consider reuse, refurbishment and / or recycling of first end-of-life PV modules, inverters, racking equipment and associated components when possible.



Source: NREL, *Crystalline Silicon Photovoltaic Module Manufacturing Costs and Sustainable Pricing*, 2019

Recycling

While most PV panels produced today will have a useful life for decades, there is inevitable waste created during production, when panels are damaged during shipment or installation, determined to be defective, become obsolete or reach their end-of-life. High-value recycling can help minimize lifecycle impacts and recover valuable and energy-intensive materials, thereby increasing sustainability within the PV industry.

PV panels typically consist of glass, aluminum, copper, silver and semiconductor materials that can be successfully recovered and reused. By weight, more than 80 percent of a typical PV panel is glass and aluminum – both common and easy-to-recycle materials. Recycling of solar equipment is increasingly possible as more recyclers accept modules.

Cooperation throughout the value chain

Research and development of PV-specific recycling equipment can optimize the recoverability and purity of reclaimed materials. The start-up and support of new organizations will help the industry extend the useful life of existing products while maintaining the quality and safety of the equipment. Working together with stakeholders from all these areas will help inform and develop policy appropriately so that end-of-life management solutions complement the deployment of solar.

SEIA and its members participate in research studies and projects, white papers, collaborative programs and present information, findings and research at stakeholder meetings, conferences and events to keep industry and others updated on our progress in developing end-of-life solutions.

R&D Organizations, Producers, Academia	Repair/Re-use/ Refurbishment Services	Recycling and Waste Management
<ul style="list-style-type: none">• Public institutions• Private organizations• OEM Manufacturers• Component Manufacturers	<ul style="list-style-type: none">• Manufacturers• Service providers• Contractors• Installers and EPCs• Operations & Maintenance companies• Waste management companies• Pre-treatment companies	<ul style="list-style-type: none">• Public waste agencies• Regulators• Waste management companies• Pre-treatment companies• Manufacturers

Certificate of Service

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Breann L. Jurek certifies that on the 1st day of October 2021, she e-filed on behalf of Northern States Power Company, doing business as Xcel Energy true and correct copies of the following documents:

1. Reply Comments; and
2. Certificate of Service.

A copy has also been served on the individuals listed on the attached service lists.

Executed on: October 1, 2021

Signed: /s/ Breann L. Jurek

Fredrikson & Byron, P.A.
200 South Sixth Street
Suite 4000
Minneapolis, MN 55401

[illegible]

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Marie	Pflipsen	mpflipsen@ci.becker.mn.us	City of Becker	12060 Sherburne Avenue PO BOX 250 Becker, Minnesota 55308	Electronic Service	No	OFF_SL_21-189_Official Service List
Greg	Pruszinske	gpruszinske@ci.becker.mn.us	City of Becker	PO Box 250 12060 Sherburne Ave Becker, MN 55308	Electronic Service	No	OFF_SL_21-189_Official Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_21-189_Official Service List
William	Risse	wrisse@nationalgridrenewables.com	National Grid Renewables Development, LLC	8400 Normandale Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-189_Official Service List
Melissa	Schmit	melissa@nationalgridrenewables.com	National Grid Renewables	8400 Normandale Lake Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-189_Official Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-189_Official Service List
William	Storm	bill.storm@state.mn.us	Department of Commerce	Room 500 85 7th Place East St. Paul, MN 551012198	Electronic Service	No	OFF_SL_21-189_Official Service List
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	Yes	OFF_SL_21-189_Official Service List
Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.	200 S 6th St Ste 4000 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-189_Official Service List

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Aaron	Brixius	Aaron.P.Brixius@xcelenergy.com	Xcel Energy	414 Nicollet Mall Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-190_Official Service List
Jordan	Burmeister	jordan@nationalgridrenewables.com	National Grid Renewables Development, LLC	8400 Normandale Boulevard Suite 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-190_Official Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-190_Official Service List
Jeremy	Duehr	jduehr@fredlaw.com	Fredrikson & Byron, P.A.	200 South Sixth Street Suite 4000 Minneapolis, Minnesota 55402-1125	Electronic Service	No	OFF_SL_21-190_Official Service List
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_21-190_Official Service List
Lucas	Franco	lfranco@liunagrocs.com	LIUNA	81 Little Canada Rd E Little Canada, MN 55117	Electronic Service	No	OFF_SL_21-190_Official Service List
Matthew B	Harris	matt.b.harris@xcelenergy.com	XCEL ENERGY	401 Nicollet Mall FL 8 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-190_Official Service List
Ellen	Heine	ellen.l.heine@xcelenergy.com	Xcel Energy	414 Nicollet Mall, MP-8 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-190_Official Service List
Breann	Jurek	bjurek@fredlaw.com	Fredrikson & Byron PA	200 South Sixth St Ste 400 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-190_Official Service List
Ryan	Long	ryan.j.long@xcelenergy.com	Xcel Energy	414 Nicollet Mall 401 8th Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-190_Official Service List

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Greg	Pruszinske	gpruszinske@ci.becker.mn.us	City of Becker	PO Box 250 12060 Sherburne Ave Becker, MN 55308	Electronic Service	No	OFF_SL_21-190_Official Service List
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William	Risse	wrisse@nationalgridrenewables.com	National Grid Renewables Development, LLC	8400 Normandale Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-190_Official Service List
Melissa	Schmit	melissa@nationalgridrenewables.com	National Grid Renewables	8400 Normandale Lake Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-190_Official Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-190_Official Service List
William	Storm	bill.storm@state.mn.us	Department of Commerce	Room 500 85 7th Place East St. Paul, MN 551012198	Electronic Service	No	OFF_SL_21-190_Official Service List
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	Yes	OFF_SL_21-190_Official Service List
Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.	200 S 6th St Ste 4000 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-190_Official Service List

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Ryan	Long	ryan.j.long@xcelenergy.com	Xcel Energy	414 Nicollet Mall 401 8th Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-191_Official
Marie	Pflipsen	mpflipsen@ci.becker.mn.us	City of Becker	12060 Sherburne Avenue PO BOX 250 Becker, Minnesota 55308	Electronic Service	No	OFF_SL_21-191_Official
Greg	Pruszinske	gpruszinske@ci.becker.mn.us	City of Becker	PO Box 250 12060 Sherburne Ave Becker, MN 55308	Electronic Service	No	OFF_SL_21-191_Official
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_21-191_Official
William	Risse	wrisse@nationalgridrenewables.com	National Grid Renewables Development, LLC	8400 Normandale Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-191_Official
Melissa	Schmit	melissa@nationalgridrenewables.com	National Grid Renewables	8400 Normandale Lake Blvd Ste 1200 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-191_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-191_Official
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