STATE OF MINNESOTA BEFORE THE PUBLIC UTILITIES COMMISSION

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In the Matter of Updating the Generic Standards for the Interconnection and Operation of Distributed Generation Facilities Established under Minn. Stat. § 216B.1611

DOCKET NO. E-999/CI-16-521

REPLY COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL INC. AND FRESH ENERGY ON THE DISTRIBUTED ENERGY RESOURCE TECHNICAL INTERCONNECTION AND INTEROPERABILITY REQUIREMENTS

The Interstate Renewable Energy Council, Inc. (IREC) and Fresh Energy submit these reply comments on the proposed Minnesota Distributed Energy Resource (DER) Technical Interconnection and Interoperability Requirements (TIIR). Fresh Energy and IREC submitted initial comments on September 24, 2019 and have reviewed the comments submitted by the other parties. In these reply comments, we respond to the comments of other parties on the appropriate review process for the Technical Standards Manuals (TSMs) and also refine some of the next steps we would like to see the Commission take to ensure that there is a robust set of technical requirements in place in Minnesota to help advance the transition to clean energy for years to come.

I. IT IS IMPORTANT FOR THE COMMISSION TO EXERCISE REASONABLE OVERSIGHT OVER THE CONTENT AND FORM OF THE TECHNICAL STANDARDS MANUALS.

During the Distributed Generation Workgroup's Technical Subgroup (the "Workgroup" or DGWG) the utilities advocated for the creation of not one but two different technical

standards documents. The primary one would be the TIIR and it would be adopted statewide, while the secondary one(s), known as the TSMs, would be adopted individually by each utility and could contain varying technical requirements on a wide range of important issues that could significantly impact the performance and economics of Distributed Energy Resources (DERs) in the state. IREC and Fresh Energy would have preferred to resolve many, if not most, of the technical requirements in the TIIR so that there was clarity and consistency across the state, but the TSM approach was preferred by the utilities. In their initial comments Dakota Electric Association (Dakota Electric), Minnesota Rural Electric Association (MREA), and Otter Tail Power Company (Otter Tail) argue that the Commission should exercise little oversight over the TSMs before they are adopted or after they are updated. These utilities cite their desire to be able to regularly update the TSMs, modify the requirements on a rolling basis, and suggest that if the Commission requires some level of review that they would no longer be motivated to keep their technical standards up to date and instead, to quote Dakota Electric, they might choose to "just say no" to an applicant seeking to implement innovative uses of a technology.\frac{1}{2}

Fresh Energy and IREC appreciate the utilities' desire to keep the TSMs up to date and agree that this should be not only the goal but the norm. However, we do strongly believe that the Commission needs to exercise reasonable oversight over the TSMs and not rely on the individual complaint process to resolve concerns that might affect many projects. The process that we proposed in our opening comments strikes that balance.² It allows the utilities to update their TSMs on an as-needed basis and does not require the Commission to always individually review and approve each change through a separate process. Rather, it allows for a 30-day

¹ Dakota Electric Association Sept. 24, 2019 Comments at 5.

² IREC/Fresh Energy Initial Comments at 3-5.

period for parties to review and raise objections, if necessary. If no objections are raised, the TSM would go into effect without the need for further action, if objections are raised then there will be an opportunity for the Commission to resolve the concern prior to implementation of the changes to the TSM. This process is efficient and not unduly burdensome: it will incentivize utilities to work with the DER community on significant changes before they are proposed and ensure that the Commission has a chance to resolve disputes before they have the potential to impose costly or burdensome constraints on new projects.

Finally, while we agree that the utilities should endeavor to keep their TSMs up to date and as consistent as possible, we want to note that it is important that the utilities not each be constantly tweaking their TSMs. It is going to be difficult enough to keep track of the various requirements in the different TSMs, if they are changing on a near constant basis then there could be real confusion over the state of the requirements. While we do not think the utilities were suggesting changing them on an overly-frequent basis, we think a reasonable process that allows for a formal opportunity to object to changes, and object to vastly different requirements across the TSMs, will help ensure that it is clear what the requirements are and also allow big picture issues to be addressed before the Commission outside of an individual complaint process. The utilities and interconnection customers will also always have the ability to use the mutual agreement option to agree on requirements where the TIIR or TSM is silent on the topic. This provides for flexibility, while still maintaining appropriate oversight and consistency.

Ultimately, we believe our position and that of the utilities mentioned above are not very far apart. The key difference is that instead of just filing the TSM for informational purposes,

³ The TIIR specifically indicates that "(a)dditional requirements that are not contemplated by the TIIR may be mutually agreed upon between the Parties." Draft TIIR at 5.

there would be a 30-day period for objections to the Commission before the document could go into effect. We hope that in most cases this will not be required, but since the TSMs are new and break from the tradition of having a consistent set of statewide standards, we think this measure is appropriate at this time. We hope that over time we will find that many of the requirements of the TSMs actually are consistent and that they can be moved into the TIIR in the near-term to increase the overall clarity of the Minnesota technical requirements.

II. THE COMMISSION SHOULD REQUIRE A GUIDE TO BE PUBLISHED THAT DESIGNATES WHICH OF THE TIIR REQUIREMENTS GO INTO EFFECT IMMEDIATELY.

In our initial comments, IREC and Fresh Energy identified that the approach the Workgroup initially agreed to regarding immediate adoption of the TIIR, except for those sections "requiring equipment that conforms with IEEE 1547-2018 advanced functionalities" was likely to create considerable confusion and uncertainty about what the technical requirements actually are in the interim period before the newly certified equipment is available. Since the filing of the initial comments, we have reached out to the utilities and understand that their thinking was likely to rely on the existing 2005 technical requirements and/or IEEE 1547-2003, but they did not have specific references prepared. While we agree that continuing existing practice for this transition period would likely provide the best continuity for interconnecting customers, we think it needs to be clear exactly where an existing practice applies, and if so, what is the exact practice that applies.

IREC and Fresh Energy recommend the Commission reconvene the DGWG in shortorder to create a simple guidance document to accompany the TIIR that would identify which

⁴ IREC and Fresh Energy Initial Comments at 15-17.

sections, or which specific requirements, should take effect only three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. The guidance document should also specify whether any specific requirement from IEEE Std 1547-2003 or the State of Minnesota Distributed Generation Interconnection Requirements would prevail in the interim period instead of the excluded requirement.

Attachment 1 to these reply comments outlines our initial thinking on what sections of the new TIIR should not apply at all until the new equipment is available, and in some cases, what provisions of either the original Interconnection Requirements or IEEE 1547-2003 should be in place instead in the interim period. This list should be confirmed with the utilities, but we provide it here as an example of what is needed and as a starting point for the DGWG to work with.

If the DGWG reaches consensus on this document, it should be filed with the Commission in this docket, be published on the Commission's website, and go into effect along with the TIIR.⁵ If consensus cannot be reached before the TIIR is to go into effect, the utilities shall adopt their preferred version of the guidance along with their TSM. In that case, the process identified above for objecting to the TSMs should be utilized to resolve any outstanding concerns. While it would be preferred that the Commission formally approve the guidance document, we believe all parties are motivated to get technical requirements in place and thus propose this imperfect solution to avoid further delays.

⁵ We would recommend delegating authority to the Executive Secretary to accept the guidance document and publish the guidance document on the Commission website if the Executive Secretary has determined that the DGWG guidance document is a consensus document per the Commission Order.

In sum, while there may be some areas that need discussion in order to determine what existing practice needs to be referenced, we think creating a single document that clearly defines what sections are, or are not, in place in the interim period is both feasible to develop in relatively short-order and also critically important to ensure clarity going forward. IREC and Fresh Energy ask the Commission reconvene the DGWG with the objective of creating a consensus guidance document prior to the implementation date of the TIIR and TSMs.

III. THE COMMISSION SHOULD ADOPT THE FOLLOWING DECISION OPTIONS PROPOSED BY FRESH ENERGY AND IREC AND INCLUDED AS ATTACHMENT TWO

In our initial comments, Fresh Energy and IREC recommended that the Commission adopt six different categories of actions. Attachment 2 to these reply comments are the proposed Decision Options we recommend the Commission adopt. These Decision Options break down into the following categories.

First, we recommend the Commission adopt the TIIR as proposed with two minor clarification edits (Decision Options 1.a and 1.b). We recommend one more substantive edit (Decision Option 1.c) that will clarify exactly when the utilities may begin requiring the use of newly certified equipment. Specifically, rather than using the term "readily available" in TIIR Section 1.6, the TIIR should use the following more precise language: "three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020." Additionally, we support the clarifying changes proposed by Xcel Energy in their initial comments⁶ to both the TIIR and to their associated tariffs (Decision Option 1.d).

⁶ Xcel Energy Sept. 24, 2019 Comments.

Second, we recommend the Commission adopt a clear process, as discussed above, for the adoption and approval of the TSMs (Decision Options 2.a and 2.b). Third, we recommend the Commission reconvene the DGWG with the objective of creating a consensus guidance document to be used along with the TIIR to clarify what technical requirements are in place in the interim period until the newly certified equipment becomes available (Decision Options 3.a or 3.b).

Fourth, we recommend the Commission adopt a process for ensuring that provisions in the TSM are evaluated for their consistency and necessity and moved into the TIIR where possible (Decision Option 4.a). We recommend adopting a form for interested stakeholders to use when submitting topics to the Executive Secretary for consideration by the DGWG (Decision Option 4.b). We also recommend that the Executive Secretary establish a clear voltage reporting process to ensure that the Commission has visibility into the effects that voltage regulation may have on the state's DER customers (Decision Option 4.c).

The fifth category of Decision Options (5.a through 5.e) center around how to move forward with the issues that were not adequately addressed in the Phase II Workgroup's efforts. IREC and Fresh Energy urge the Commission to clearly identify the need for further work in these areas and to provide clear direction to the DGWG for resolution of these issues in the future.

Finally, Decision Option 6 would establish that the Commission may resolve these or other issues that may arise with the TIIR upon petition from a party.

IV. CONCLUSION

Fresh Energy and IREC are proud of the hard work of the many parties that have contributed to this multi-year effort to update and refresh the interconnection policies of the state of Minnesota. The parties have engaged together respectfully and collaboratively and we

appreciate the Commission's support of this process. While we expect that these new policies will create a solid foundation for DER interconnection in the coming years, we also recognize that DER technologies are evolving rapidly and that new challenges and opportunities will continue to emerge. We look forward to participating in future DGWG efforts to ensure Minnesota continues to maintain forward-thinking interconnection policies that benefit all Minnesotans.

DATED: October 11, 2019

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ATTACHMENT 1

Attachment 1

The Interstate Renewable Energy Council and Fresh Energy recommend the Distributed Generation Working Group develop a simple guidance document that can be used to clarify which sections of the TIIR (1) go into effect immediately, (2) do not go into effect until "three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020", and/or (3) are replaced with an existing technical requirement until the new equipment is available. Below are starting recommendations to guide this effort. The "interim period" referred to below is from whatever date the TIIR goes into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020.

All sections of the TIIR shall go into effect on [fill in date when TIIR is to be adopted] except for the following sections:

Section 4 (Performance Categories)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. No alternate provision is in place during the interim period.

Section 5 (Reactive Power Capability and Voltage/Power Control Performance)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. In the interim period, the power factor requirements of section 4.A.iii of the existing Minnesota Distributed Generation Interconnection Requirements document shall be used.

Section 6 (Response to Abnormal Conditions)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. In the interim period, the voltage and frequency trip settings from section 4.2.3 ("Voltage") and 4.2.4 ("Frequency") of IEEE 1547-2003 shall be used.

Section 9 (Interoperability)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. In the interim period, section 5.B (regarding metering and monitoring control requirements) of the existing Minnesota Distributed Generation Interconnection Requirements document shall be used. ¹

¹ The DGWG should discuss whether the introductory language in section 5 should also be used in the interim period.

Section 12 (Enter Service and Synchronization)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. In the interim period, section 4.2.6 ("Reconnection to Area EPS") of 1547-2003 shall be used.

Section 14 (Test and Verification Requirements)

This section does not go into effect until three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020. In the interim period, section 8 of the existing Minnesota Distributed Generation Interconnection Requirements document shall be used.

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ATTACHMENT 2

Attachment 2

Fresh Energy and IREC's Proposed Decision Options

- 1. Adopt the TIIR as submitted with the following modifications:
 - a. The definition for ESS Control Mode in the TIIR should be modified as follows: "The function that manages the real and reactive power flow from or to a <u>DERESS</u> in response to certain parameters, (such as time, price signals, frequency or external signals, etc.)."
 - b. The title of section 5.4 should be changed from "Voltage and Reactive Power Control" to "Voltage and Active Power Control."
 - c. The term "readily available" in TIIR Section 1.6, shall be replaced with "three months after the UL 1741 future effective date for incorporating changes related to IEEE Std 1547-2018 and IEEE Std 1547.1-2020."
 - d. Minor process edits proposed in Xcel's initial comments.

We also recommend that the Commission adopt the following procedural next steps:

- 2. Adopt the following approval procedures:
 - a. Each utility's TSM shall be filed in this docket within 60-days of the Commission's order.
 - b. After the TSMs are filed, objections may be filed with the Commission within a 30-day period. Any such objection should clearly identify what provisions are being objected to, why, and identify a preferred alternative approach if possible. If no such objections are received, the TSMs shall go into effect automatically (i.e. 30 days after being filed). If objections are received, the Commission shall make a formal determination on the objections before the challenged TSM can go into effect. A TSM going into effect after the 30-day period with no objection does not waive or nullify future objections to the provision contained in that TSM.
- 3. Reconvene the Distributed Generation Workgroup to draft a guidance document to accompany the TIIR which clarifies what provisions are in place in the interim period until newly certified equipment is available. The DGWG should complete its work and finalize the document by the publication date of the TIIR. The addendum shall be:
 - a. Filed in this docket and published by the Executive Secretary along with the TIIR on its website if consensus is reached. *Or*
 - b. Included with the utility TSMs when they are submitted by each utility if DGWG consensus is not reached.
- 4. Adopt the following TIIR conformance procedures:
 - a. Commission staff (or another neutral party as determined by the Executive Secretary) shall conduct a review of the TSMs to identify (1) what technical requirements are consistent across the utilities that could be moved into the TIIR and (2) what technical requirements are currently inconsistent but warrant evaluation as to whether the differences are truly justified based on actual technical distinctions with utility systems. This review and accompanying report documenting the review, shall be conducted one year after the TSMs are first

- filed. The Executive Secretary shall convene the Distributed Generation Workgroup following the filing of the report to discuss and establish next steps.
- b. The Revision Request Form is adopted and should be made available on the interconnection page of the Commission's website. The Executive Secretary shall use these Request Forms to help determine when the DG Workgroup should be convened and what issues to cover.
- c. The Executive Secretary shall establish a voltage reporting process. At a minimum, the utilities shall file a report on voltage-based energy production impacts reported by DER operators using the elements defined in Appendix B to IREC and Fresh Energy's Comments. The reports shall be filed yearly for up to five years, the Executive Secretary may decide to increase the frequency of the reports, to extend the number of years which they shall be filed for, or change the formatting as is appropriate to accomplish the goal of ensuring the Commission has adequate information to understand how the new voltage regulation requirements are impacting DER customers.
- 5. The Commission recommends the following items for discussion and eventual resolution through the Distributed Generation Workgroup:
 - a. energy storage control modes and harmonizing the language and structure of the energy storage requirements in the operating agreements,
 - b. Determine explicit treatment of Distributed Energy Resources using Power Control Systems for maximum capacity and export control in the Minnesota Distributed Energy Resources Interconnection Process (MN DIP) and the Technical Interconnection and Interoperability Requirements document.
 - c. evaluation of volt-var in the Technical Interconnection and Interoperability Requirements.
 - d. harmonize the language and structure of the voltage regulation considerations in the operating agreements to the extent possible.
 - e. harmonize the language and structure of the communications operating agreements so as to not unduly burden DER operators.
- 6. The Commission may consider revisions to the TIIR to address these or any other issues upon petition from a party.

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¹ https://mn.gov/puc/energy/distributed-energy/interconnection/

CERTIFICATE OF SERVICE

Docket No. E-999/CI-16-521 and E-999/CI-01-1023

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

On October 11, 2019, I served a true and correct copy of

REPLY COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL INC. AND FRESH ENERGY ON THE DISTRIBUTED ENERGY RESOURCE TECHNICAL INTERCONNECTION AND INTEROPERABILITY REQUIREMENTS

on the parties in this action as follows:

SEE ATTACHED SERVICE LIST

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

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

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

Executed in San Francisco, California on October 11, 2019.

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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Sharon	Ferguson	sharon.ferguson@state.mn .us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Christine	Fox	cfox@itasca-mantrap.com	Itasca-Mantrap Coop. Electric Assn.	PO Box 192 Park Rapids, MN 56470	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mike	Franklin	mfranklin@mncef.com	MN Conservative Energy Forum	235 E 6th St Fifth Floor St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Nathan	Franzen	nathan@geronimoenergy.c om	Geronimo Energy	7650 Edinborough Way Suite 725 Edina, MN 55435	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Freestate	dfreestate@epri.com	EPRI	942 Corridor Park Blvd Knoxville, TN 37932	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Scott	Froemming	sfroemming@kpcoop.com	Kandiyohi Power Cooperative	8605 47th St NE Spicer, MN 56288-4617	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Katelyn	Frye	kfrye@mnpower.com	Minnesota Power	30 W Superiot St Duluth, MN 558022093	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Hal	Galvin	halgalvin@comcast.net	Provectus Energy Development llc	1936 Kenwood Parkway Minneapolis, MN 55405	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Elaine	Garry	egarry@peoplesrec.com	Peoples Energy Cooperative	1775 Lake Shady Ave S Oronoco, MN 55960-2351	Paper Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_16-521_Officia Service List PUC
Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy	408 St. Peter Street Ste 220 Saint Paul, Minnesota 55102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Vitzan	Goldberger	n.goldberger@energystora ge.org	Energy Storage Association	1800 M Street NW Suite 400S Washington, DC 20036	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sarah	Groebner	sgroebner@redwoodelectri c.com	Redwood Electric Cooperative	60 Pine St Clements, MN 56224	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Timothy	Gulden	timothy.gulden@yahoo.co m	Winona Renewable Energy, LLC	1449 Ridgewood Dr Winona, MN 55987	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tom	Guttormson	Tom.Guttormson@connexu senergy.com	Connexus Energy	14601 Ramsey Blvd Ramsey, MN 55303	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Гопу	Hainault	anthony.hainault@co.henn epin.mn.us	Hennepin County DES	701 4th Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
lames	Haler	jhaler@southcentralelectric .com	South Central Electric Association	71176 Tiell Dr P. O. Box 150 St. James, MN 56081	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Oonald	Hanson	dfhanson@ieee.org	Solar Photovoltaic Systems	P. O. Box 44579 Eden Prairie, MN 55344	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	Harlander	john.c.harlander@xcelener gy.com	Xcel Energy	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jared	Hendricks	hendricksj@owatonnautiliti es.com	Owatonna Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Annete	Henkel	mui@mnutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St.Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ryan	Hentges	ryanh@mvec.net	Minnesota Valley Electric Cooperative	125 Minnesota Valley Electric Dr Jordan, MN 55352	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Ronald	Horman	rhorman@redwoodelectric.	Redwood Electric Cooperative	60 Pine Street Clements, MN 56224	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Dean	Hunter	Dean.Hunter@state.mn.us	Minnesota Department of Labor & Industry	443 Lafayette Rd N St. Paul, MN 55155-4341	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Barb	Jacobs	jaco0270@umn.edu	University of Minnesota	Institute on the Environmen	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ralph	Jacobson	ralphj@ips-solar.com		2126 Roblyn Avenue Saint Paul, Minnesota 55104	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Chris	Jarosch	chris@carrcreekelectricser vice.com	Carr Creek Electric Service, LLC	209 Sommers Street North Hudson, WI 54016	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Brian	Jeremiason	bjeremiason@llec.coop	Lyon-Lincoln Electric Cooperative, Inc.	205 W. Hwy. 14 Tyler, MN 56178	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Mark	Larson	mlarson@meeker.coop	Meeker Coop Light & Power Assn	1725 Highway 12 E Ste 100 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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				MN 55101			
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Natalie	McIntire	natalie.mcintire@gmail.com	Wind on the Wires	570 Asbury St Ste 201 Saint Paul, MN 55104-1850	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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John	McWilliams	John.McWilliams@Dairylan dPower.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, Minnesota 55120	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tim	Mergen	tmergen@meeker.coop	Meeker Cooperative Light And Power	1725 US Hwy 12 E. Suite 100 PO Box 68 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Alan	Miller	N/A		2210 20th St NE Stewartville, MN 55976	Paper Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Darrick	Moe	darrick@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Dalene	Monsebroten	dalene.monsebroten@nmp agency.com	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Andrew	Moratzka	andrew.moratzka@stoel.co m	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Murtaugh	mmurtaugh@fmcs.coop	Freeborn-Mower Cooperative Services	2501 Main Street East Albert Lea, MN 56007	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Ben	Nelson	benn@cmpasgroup.org	СММРА	459 South Grove Street Blue Earth, MN 56013	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Tony	Nelson	tnelson@itasca- mantrap.com	Itasca-Mantrap Coop. Electric Assn.	PO Box 192 Park Rapids, MN 56470	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
David	Niles	david.niles@avantenergy.c om	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Noble	noble@fresh-energy.org	Fresh Energy	Hamm Bldg., Suite 220 408 St. Peter Street St. Paul, MN 55102	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Rolf	Nordstrom	mordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220 Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Jeff	O'Neill	jeff.oneill@ci.monticello.mn .us	City of Monticello	505 Walnut Street Suite 1 Monticelllo, Minnesota 55362	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Wendi	Olson	wolson@otpco.com	Otter Tail Power Company	215 South Cascade Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Bethany	Owen	bowen@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dan	Patry	dpatry@sunedison.com	SunEdison	600 Clipper Drive Belmont, CA 94002	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jeffrey C	Paulson	jeff.jcplaw@comcast.net	Paulson Law Office, Ltd.	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Dean	Pawlowski	dpawlowski@otpco.com	Otter Tail Power Company	PO Box 496 215 S. Cascade St. Fergus Falls, MN 565370496	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Susan	Peirce	Susan.Peirce@state.mn.us	Department of Commerce	85 Seventh Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Joyce	Peppin	joyce@mrea.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Mary Beth	Peranteau	mperanteau@wheelerlaw.c om	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Mark	Rathbun	mrathbun@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Michael	Reinertson	michael.reinertson@avante nergy.com	Avant Energy	220 S. Sixth St. Ste 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John C.	Reinhardt		Laura A. Reinhardt	3552 26Th Avenue South Minneapolis, MN 55406	Paper Service	No	OFF_SL_16-521_Official Service List PUC
Generic Notice	Residential Utilities Division	residential.utilities@ag.stat e.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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eff	Schoenecker	jschoenecker@dakotaelect ric.com	Dakota Electric Association	4300 220th Street W Farmington, MN 55024	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Felicia	Skaggs	fskaggs@meeker.coop	Meeker Cooperative Light & Power	1725 US Highway 12 E Suite 100 Litchfield, MN 55355	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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Trevor	Smith	trevor.smith@avantenergy.	Avant Energy, Inc.	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Rafi	Sohail	rafi.sohail@centerpointener gy.com	CenterPoint Energy	800 LaSalle Avenue P.O. Box 59038 Minneapolis, MN 554590038	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

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Sherry	Swanson	sswanson@noblesce.com	Nobles Cooperative Electric	22636 US Highway 59 PO Box 788 Worthington, MN 56187	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Thomas P.	Sweeney III	tom.sweeney@easycleane nergy.com	Clean Energy Collective	P O Box 1828 Boulder, CO 80306-1828	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
_ynnette	Sweet	Regulatory.records@xcele nergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Bryant	Tauer	btauer@whe.org	Wright-Hennepin	6800 Electric Dr Rockford, MN 55373	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jeff	Triplett	triplettj@powersystem.org	MREA	10710 Town Square Dr NW St 201 Minneapolis, MN 55449	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Adam	Tromblay	atromblay@noblesce.com	Nobles Cooperative Electric	22636 US Hwy. 59 P.O. Box 788 Worthington, MN 56187-0788	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
ise	Trudeau	lise.trudeau@state.mn.us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Craig	Turner	cturner@dakotaelectric.co m	Dakota Electric Association	4300 - 220th Street West Farmington, MN 550249583	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Alan	Urban	alan.m.urban@xcelenergy.	Xcel Energy	N/A	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sam	Villella	sdvillella@gmail.com		10534 Alamo Street NE Blaine, MN 55449	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Sarah	Walinga	swalinga@solarcity.com	Energy Freedom Coalition	3055 Clearview Way San Mateo, MN 94402	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Robert	Walsh	bwalsh@mnvalleyrec.com	Minnesota Valley Coop Light and Power	PO Box 248 501 S 1st St Montevideo, MN 56265	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Roger	Warehime	warehimer@owatonnautiliti es.com	Owatonna Public Utilities	208 South WalnutPO Box 800 Owatonna, MN 55060	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Jenna	Warmuth	jwarmuth@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802-2093	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Elizabeth	Wefel	eawefel@flaherty- hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
John	Williamson	John.Williamson@state.mn .us	Minnesota Department of Labor and Industry	443 Lafayette Rd N St. Paul, MN 55155-4341	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Danielle	Winner	danielle.winner@state.mn. us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Robyn	Woeste	robynwoeste@alliantenerg y.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
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_16-521_Official Service List PUC
Terry	Wolf	terry.wolf@mrenergy.com	Missouri River Energy Services	3724 W Avera Dr PO Box Sioux Falls, SD 571098920	Electronic Service	No	OFF_SL_16-521_Official Service List PUC
Thomas J.	Zaremba	TZaremba@wheelerlaw.co m	WHEELER, VAN SICKLE & ANDERSON	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_16-521_Official Service List PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	OFF_SL_1-1023_1
Janet	Anderson	jainstp@q.com	-	1799 Sargent St. Paul, MN 55105	Electronic Service	No	OFF_SL_1-1023_1
John	Bailey	bailey@ilsr.org	Institute For Local Self- Reliance	1313 5th St SE Ste 303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_1-1023_1
Peter	Beithon	pbeithon@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_1-1023_1
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_1-1023_1
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.st ate.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	OFF_SL_1-1023_1
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174 Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_1-1023_1
Lisa	Daniels	lisadaniels@windustry.org	Windustry	201 Ridgewood Ave Minneapolis, MN 55403	Electronic Service	No	OFF_SL_1-1023_1
Steve	Downer	sdowner@mmua.org	MMUA	3025 Harbor Ln N Ste 400 Plymouth, MN 554475142	Electronic Service	No	OFF_SL_1-1023_1
Renee	Doyle		Doyle Electric Inc.	PO Box 295 Amboy, MN 56010	Paper Service	No	OFF_SL_1-1023_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
R. Neal	Elliot		American Council for an	Energy-Efficient Economy 529 14th Street, NW, Suite 600 Washington, DC 20045	Paper Service	No	OFF_SL_1-1023_1
Sharon	Ferguson	sharon.ferguson@state.mn .us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_1-1023_1
Tony	Hainault	anthony.hainault@co.henn epin.mn.us	Hennepin County DES	701 4th Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_1-1023_1
John S.	Jaffray	jjaffray@jjrpower.com	JJR Power	350 Highway 7 Suite 236 Excelsior, MN 55331	Electronic Service	No	OFF_SL_1-1023_1
Steve	Korstad	swkorstad@comcast.net	Korridor Capital LLC	20 Red Fox Road St. Paul, MN 551276331	Electronic Service	No	OFF_SL_1-1023_1
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_1-1023_1
Douglas	Larson	dlarson@dakotaelectric.co m	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_1-1023_1
Michael	Loeffler	mike.loeffler@nngco.com	Northern Natural Gas Co.	CORP HQ, 714 1111 So. 103rd Street Omaha, NE 681241000	Electronic Service	No	OFF_SL_1-1023_1
Richard	Macke	macker@powersystem.org	Power System Engineering, Inc.	10710 Town Square Dr NE Ste 201 Minneapolis, MN 55449	Electronic Service	No	OFF_SL_1-1023_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_1-1023_1
Michael	Noble	noble@fresh-energy.org	Fresh Energy	Hamm Bldg., Suite 220 408 St. Peter Street St. Paul, MN 55102	Electronic Service	No	OFF_SL_1-1023_1
Bethany	Owen	bowen@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_1-1023_1
David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_1-1023_1
Generic Notice	Residential Utilities Division	residential.utilities@ag.stat e.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	No	OFF_SL_1-1023_1
Richard	Savelkoul	rsavelkoul@martinsquires.c om	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_1-1023_1
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_1-1023_1
Rafi	Sohail	rafi.sohail@centerpointener gy.com	CenterPoint Energy	800 LaSalle Avenue P.O. Box 59038 Minneapolis, MN 554590038	Electronic Service	No	OFF_SL_1-1023_1
Lynnette	Sweet	Regulatory.records@xcele nergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_1-1023_1

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Craig	Turner	cturner@dakotaelectric.co m	Dakota Electric Association	4300 - 220th Street West Farmington, MN 550249583	Electronic Service	No	OFF_SL_1-1023_1
Robyn	Woeste	robynwoeste@alliantenerg y.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_1-1023_1
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_1-1023_1