STATE OF MINNESOTA
BEFORE THE
PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Commissioner
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In the Matter of the Commission Investigation into Grid Modernization	Docket No. E999/CI-15-556

REPLY COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC. ON DISTRIBUTION SYSTEM PLANNING EFFORTS AND CONSIDERATIONS

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I. INTRODUCTION

On August 21, 2017, the Interstate Renewable Energy Council ("IREC") filed initial comments on Section C of the Minnesota Public Utilities Commission's ("Commission") April 21, 2017 Questionnaire set forth in the Commission's Notice of Comment Period on Distribution System Planning Efforts and Considerations. On July 25, 2017, the Commission issued a notice extending the deadline for reply comments to September 21, 2017. IREC has reviewed initial comments submitted by the Advanced Energy Economy Institute ("AEE"), Alevo USA Inc. ("Alevo"), the Citizens Utility Board ("CUB"), the Energy Storage Association ("ESA"), the Minnesota Department of Commerce ("DOC"), and by the Minnesota utilities Xcel Energy ("Xcel"), Dakota Electric Association ("Dakota Electric"), Minnesota Power, and Otter Tail Power Company ("Otter Tail"). IREC accordingly submits its reply comments to Section C of the Questionnaire.

As the Commission has recognized, integrated distribution planning is an essential component of grid modernization. IREC appreciates the opportunity to participate in this pioneering proceeding and applauds the engagement of diverse stakeholders and utilities. As discussed in our initial comments, an overarching goal of distribution planning should be to integrate distributed energy resources (DERs) in a way that maximizes their beneficial use through identification of high-value locations, including where DERs can serve as non-wires alternatives (NWAs), and to identify low-cost locations where DERs can interconnect easily, as well as upgrades that may be needed to accommodate expected DER growth. There is broad agreement with this vision among non-utility parties.[1] IREC also commends Xcel's "support

[1] *See, e.g.*, Fresh Energy Initial Comments at 12 ("Through proactive planning and intervention, utilities and the Commission can optimize the deployment of DER, saving customers money while making the grid more resilient."); AEE at 3 & n.2 (noting "support [for]

[for] a shift toward more integrated system planning, where utilities assess opportunities to reduce peak demand using DER and to supply customers' energy needs from a mix of centralized and distributed generation resources."[2]

To achieve this aim, IREC and other parties emphasize the critical importance of transparency in utilities' planning processes, and of ensuring opportunities for consistent and meaningful stakeholder engagement, both in developing guidance for distribution planning and in evaluating utilities' plans. Non-utility parties are generally aligned in encouraging some level of Commission oversight in utility distribution planning and uniformity in guidance applicable to all Minnesota utilities. IREC recognizes that there are differences in resources constraints, system capabilities, and levels of DER penetration between utilities, and that Xcel is positioned to be the first mover in advancing its distribution planning process. While IREC joins Fresh Energy in recommending that the Commission accordingly focus certain of its initial requirements on Xcel, as discussed further below, we also encourage the Commission to issue guidance that will be applicable to all Minnesota utilities, and to put in place some degree of monitoring to ensure universal movement toward a modernized grid.

Integrated distribution planning will require the development of several new tools, including hosting capacity analyses, DER forecasting, and locational valuation. These essential components of integrated distribution planning should be explored in this proceeding to ensure that they are being developed with the objective of promoting proactive planning for DERs and integration of DERs as NWAs, even if details of some components, such as hosting capacity methodologies, are elaborated in other dockets. In addition, there is agreement among many

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an integrated system planning approach"); Alevo Initial Comments at 7 ("Distribution plans should be one part of an integrated system plan submitted by Minnesota utilities.).

[2] Xcel Initial Comments at 8.

parties that incorporation of multiple scenarios encompassing varying DER growth rates can improve distribution planning, particularly as scenarios and probabilistic planning allow for utilities to account for uncertainty inherent in forecasting DER and load growth. Many parties also emphasized the importance of third-party access to sufficiently granular system data (with appropriate protections in place) to direct DERs to optimal grid locations and realize the benefits of DERs as NWAs, to plan for organic DER growth, and to improve the interconnection process. IREC again suggests that the Commission issue goals and guidance for these planning elements that will be applicable to all Minnesota utilities, even if the timelines for utilities' deployment of them differ. IREC offers below further specific responses to party comments on the Commission's identified topic areas.

II. REPLIES TO PARTY COMMENTS ON COMMISSION SECTION C QUESTIONS

1. Evaluation of Utility Plans

There is broad agreement among stakeholders that the Commission has an important role to play in fostering the alignment of utility distribution planning with Minnesota's broader grid modernization and policy goals. IREC, Alevo, ESA, AEE, and Fresh Energy all recommend that the Commission exercise some form of enhanced oversight over and engagement with utility distribution planning.[3] Commission oversight and engagement are necessary in part because, as

[3] *See* IREC Initial Comments at 8-11; Alevo Initial Comments at 8 (recommending that utilities submit "integrated system plans," which would be evaluated by the Commission "for [their] ability to satisfy the goals articulated by the stakeholder process, ensuring that the utility has considered and agreed to appropriate performance metrics"); AEE Initial Comments at 3 (recommending that "the Commission approve the distribution system plans and utilize the outputs from the plans to inform other Commission processes"); ESA Initial Comments at 1 (recommending that the Commission set forth criteria for and review utility distribution plans); Fresh Energy Initial Comments at 3 (noting that it will be "at a minimum . . helpful in the near-term for the Commission and stakeholders to be more involved in the plans, especially in the development of the load forecasts and the scenario analyses").

Commission staff have noted, the economic incentives attendant to the utility business model and cost recovery structure are not currently well-aligned with the goals of maximizing the adoption and beneficial use DERs.[4] IREC agrees with AEE that it will ultimately be important to change the economic paradigm to one in which utility incentives are better aligned with ratepayer interests and state policy objectives.[5] In the meantime, effective oversight from the Commission, improved transparency, and robust stakeholder participation can help ensure that utilities are, through their planning processes, moving toward a common vision for the distribution grid.

Process Recommendations: Areas of Agreement

Although there are different views on whether the Commission should formally approve plans, parties are generally aligned on several process components. First, there is universal agreement that, if the Commission does approve utility distribution plans, this approval should not constitute a formal prudency finding. Rather, that prudency finding should continue to be made as part of a utility's general rate case or other separate proceeding, though Commission approval could support an ultimate prudency finding or vice versa.

Second, many parties agree that an important first step is for the Commission to develop upfront guidance and objectives for the Minnesota utilities, including, as Xcel suggests, "guiding principles that would aid utilities in evolving their planning processes and supporting planning tools."[6] As IREC discussed in our initial comments, the California and New York Commissions both provided detailed upfront guidance on the goals for and contents of utility distribution

[4] *See* Staff Report on Grid Modernization ("Staff Report"), Minnesota Public Utilities Commission, March 2016, pp. 31-35; IREC Initial Comments at 7.

[5] *See* AEE Initial Comments at 18-19 (proposing that utilities should be allowed "to earn on . . . operating expenses [for interconnected DERs] that cost effectively replace a capital expenditure" and recommending that the Commission consider "how a performance-based regulatory framework could help utilities transition toward desired system outcomes").

[6] Xcel Initial Comments at 9.

system plans, and have issued additional guidance through subsequent rulings since initial plan submittal.[7] A similar role for the Minnesota Commission is appropriate here.

Third, IREC and AEE, among other parties, urge direct, consistent, and iterative stakeholder participation throughout the distribution planning process, including written comments on initial guidance and submitted distribution plans, and in-person engagement through working groups and workshops.[8] As Xcel notes, stakeholders are increasingly invested in planning, grid modernization, and DER integration, and IREC appreciates Xcel and Minnesota Power's solicitude toward stakeholder input.[9] IREC suggests that, through a carefully designed process, stakeholders can play a robust role in elaborating guidance for and in reviewing utility distribution plans.[10] As IREC discussed in our initial comments, Massachusetts, New York, and California have set forth helpful roadmaps for stakeholder participation in distribution planning, and their experiences have confirmed the value of the diverse non-utility perspectives that stakeholders bring to the table.[11]

Balancing Enhanced Transparency With Other Considerations

While IREC believes that increased transparency in utility distribution planning is important, we appreciate that transparency goals must be balanced with maintaining a cost-effective, functional process. IREC also acknowledges the reality of uneven utility resources and

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[7] *See* IREC Initial Comments at 9-10.

[8] *See, e.g.*, IREC Initial Comments at 12-14; AEE Initial Comments at 5 ("Direct stakeholder engagement in the development of the plans, as well as stakeholder review of the draft and final plans is the optimal means of facilitating an improved, [m]ore transparent distribution planning process.")

[9] Xcel Initial Comments at 12-13; Minnesota Power Initial Comments at 2.

[10] *Cf.* Xcel Initial Comments at 12 (noting that stakeholder "[i]nvolvement in the annual planning process is . . . currently limited by the lack of planning tools that contemplate stakeholder involvement").

[11] *See* IREC Initial Comments at 13.

planning requirements. Utilities are not similarly situated with respect to, for instance, population density, distribution system capabilities, and levels of DER penetration, and they therefore face different degrees of exigency in advancing their distribution planning paradigms. IREC recognizes that Xcel may be the utility best situated to undertake planning enhancements in the near-term, and, as Fresh Energy notes, it may be prudent for the Commission to focus some of its initial efforts on Xcel.[12] However, IREC also encourages the Commission to set forth distribution planning objectives and guiding principles for all Minnesota utilities. Whether or not the utilities are universally required to submit plans initially, or engage in the development of related tools, such as hosting capacity analyses, they should all be considering DERs as they engage in regular system planning, as appropriate to their circumstances. Technology enhancements, falling costs, policy incentives, and consumer interest are creating conditions for dramatic growth in DER penetration nationwide.[13] As IREC noted in our initial comments, Minnesota utilities have the valuable advantage of planning for the grid of the future before mounting DER interconnection requests cause the pressures experienced by higher penetration states.[14] All ratepayers will benefit from utilities' getting out ahead of these changes in their planning processes.

Importance of Common Criteria and Coordination Between Processes

Likewise, it is important that the Commission develop common criteria to evaluate utilities' distribution plans, even as it allows for variation in utilities' planning processes in

[12] *See* Fresh Energy Initial Comments at 4.

[13] *See, e.g.*, Fresh Energy Initial Comments at 12; Tim Lindl and Kevin Fox, *Integrated Distribution Planning Concept Paper: Proactive Approach for Accommodation High Penetrations of Distribution Generation Resources*, Interstate Renewable Energy Council, Inc. (May 2013), pp. 3-4, *available at* http://www.irecusa.org/publications/integrated-distribution-planning-concept-paper/.

[14] IREC Initial Comments at 6.

accordance with their size, capabilities, system characteristics, and needs. Smaller utilities, for instance, may need more extended timelines and gradual targets, but all of Minnesota's utilities should be moving in a common direction in their distribution planning efforts—toward a future of increased and optimized DER penetration. IREC agrees with Dakota Electric that economics and reliability should remain key evaluation criteria.[15] Like ESA and AEE, we also recommend that metrics be expanded beyond achievement of traditional planning goals to ensure that DERs are being rigorously evaluated as NWAs[16] and that equity goals are being achieved.[17] Furthermore, IREC joins AEE in emphasizing the importance of accounting for the full range of societal benefits of DER solutions in planning.[18] IREC suggests that development of common criteria and metrics for distribution plan evaluation will be a fruitful area for the Commission to continue to explore through stakeholder input.

In addition, IREC and a number of other parties agree that distribution planning should be closely integrated with other planning activities, like integrated resource planning, interconnection, and transmission planning.[19] As Xcel notes, exchanges across interfaces will—and should—increase "[a]s DER penetration becomes substantial and distribution planning

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[15] *See* Dakota Electric Initial Comments at 3.

[16] *See* AEE Initial Comments at 6 (recommending that the Commission "develop a comprehensive benefit cost analysis (BCA) framework," which "can compare traditional utility solutions to DER solutions"); ESA Initial Comments at 2 ("Utility plans must be assessed in their cost-benefit evaluation of DERs.").

[17] *See* IREC Initial Comments at 15.

[18] *See* AEE Initial Comments at 6.

[19] *See, e.g.*, IREC Initial Comments at 11-12; ESA Initial Comments at 2 ("Distribution planning must be fully integrated and leveraged in Integrated Resource Planning, Rate Cases, Interconnection and Transmission Planning"); AEE Initial Comments at 3 (same); CUB Initial Comments at 5 ("Because grid modernization investments have a potential impact on load growth, distribution planning should be integrated with resource planning."); *see also* Fresh Energy Initial Comments at 3 ("[T]he integration of distribution, transmission, and resource plans will be an extremely important topic as DER adoption increases.").

practices and tools mature."[20] This integration will be significantly facilitated by ensuring that, as Otter Tail puts it, "core assumptions [are] consistent through various planning activities."[21] IREC also agrees with CUB that metrics should "provide a common framework for evaluating progress in grid modernization" across utility proceedings.[22]

IREC believes that the Commission has an important role to play in fostering these interfaces. Commission oversight and guidance will be particularly important in the near-term in developing essential planning tools, such as hosting capacity, scenario planning, improved DER forecasting, and locational valuation. IREC agrees with Fresh Energy that the development and refinement of tools such as forecasting and scenario planning should be a focal point of this proceeding.[23] At the same time, IREC encourages the Commission to ensure that these tools are being developed and refined with an eye toward their integration into interconnection, distribution planning, and any other relevant processes, so that their full potential can be realized. Stakeholder participation will be key to identifying these goals and objectives, and optimizing the benefits of these essential tools.

Utility Distribution Plan Timeframe and Format

Although IREC acknowledges that the timeframe for utility distribution planning processes may differ between utilities, and from year to year at the same utility, IREC disagrees that distribution system needs emerge and change too rapidly to admit Commission and stakeholder engagement or development of longer-term distribution plans.[24] While utilities

[20] Xcel Initial Comments at 9.

[21] Otter Tail Initial Comments at 3.

[22] CUB Initial Comments at 5.

[23] *See* Fresh Energy Initial Comments at 3.

[24] *Cf.*, e.g., Dakota Electric Initial Comments at 1; Otter Tail Initial Comments at 2-3; DOC Initial Comments at 2.

undoubtedly require the flexibility to respond to immediate and evolving system needs, that does not obviate the role for longer-range forecasting and planning, or guidance related to the integration of DERs and, in particular, the assessment of NWAs. Rather, utilities will be better situated to meet needs as they emerge if they are reliably anticipating changes to load, distributed generation, and other grid characteristics, and planning for those changes in advance in a manner that incorporates DER and other policy objectives. Transparency is particularly important with respect to utility planning for DERs and leveraging of DERs as NWAs in light of the misaligned incentives attendant to the utility business and cost recovery paradigms discussed above and in IREC's initial comments.

Experiences in California and New York highlight the feasibility—and the benefits—of utility submittal of forward-looking distribution system plans.[25] But if the Commission chooses to follow the suggestion of Xcel and CUB to review "an annual report summarizing the results of [utilities'] present annual planning process[es],"[26] then the Commission should provide explicit guidance on what such a report should include, and what level of data or granularity is necessary to ensure that it is meaningful, constructive, and sufficient. In addition, the Commission should still build in robust and iterative stakeholder participation processes. Such processes should include opportunities to comment on both the Commission's guidance and the utilities' annual reports, and a requirement that utilities consider stakeholder comments, and explain whether and how they responded to stakeholder feedback in future reports.[27] As AEE notes, "[t]he goal of involving non-utility stakeholders is not just to have them review and comment on the plans, but

[25] *See, e.g.*, IREC Initial Comments at 8-10.

[26] Xcel Initial Comments at 9; *see also* CUB Initial Comments at 5.

[27] *See, e.g.*, Alevo Initial Comments at 7 ("The integrated system planning process should include multiple opportunities for stakeholder feedback.").

to be more actively involved in identifying potential DER solutions to system needs that can then be incorporated into the plans and subsequently into rate cases and approved investment plans."[28] This is true whether stakeholders review prospective distribution system plans, such as the biennial ones required in California and New York, or retrospective annual reports.

2. Feasibility of Planning Enhancements

As noted above and in our initial comments, IREC appreciates that Minnesota utilities differ in various ways, including with respect to size, geographic area, customer economics, distribution system capabilities, and levels of DER penetration.[29] As stated by Dakota Electric, "[a]ll utilites have unique characteristics and service areas," and planning requirements must account for this variation and give utilities the flexibility necessary to respond to the unique needs of their customers and systems.[30] At the same time, the majority of the parties agree that there should be at least high-level uniformity in planning processes for all utilities.[31] As Xcel puts it, there are benefits to developing "common framework elements" that "each utility would apply to their planning efforts."[32] These benefits include, as ESA notes, enabling effective evaluation of utility planning efforts by the Commission and robust stakeholder participation.[33] And, as discussed above, common framework elements will aid in the integration of distribution

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[28] AEE Initial Comments at 5.

[29] IREC Initial Comments at 17.

[30] Dakota Electric Initial Comments at 4.

[31] *See, e.g.*, IREC Initial Comments at 17; ESA Initial Comments at 3; AEE Initial Comments at 7; CUB Initial Comments at 7; *see also* Dakota Electric Initial Comments at 4 (recognizing that "there could be some general uniform planning requirements" so long as there is "flexibility for each utility to allow them to meet the needs of their customers"); Xcel Initial Comments at 15.

[32] Xcel Initial Comments at 15; *see also* CUB Initial Comments at 7 ("What is most important is the Commission application of the same set of criteria to all plans with the understanding that each utility service territory is different.").

[33] ESA Initial Comments at 3.

plans with other planning activities, like interconnection, transmission, and integrated resource planning. Some level of uniformity is also necessary to ensure that the utilities are moving toward common goals aligned with state policy objectives and consumer interests.

Given this general agreement, developing common framework elements applicable to all utilities—especially common guidance, goals, metrics and criteria for evaluation—may be a useful starting point for the Commission, even as it provides additional guidance and requirements for Xcel as the largest utility with the highest penetration of DERs. As Xcel notes, the Commission could look for examples and models in distribution system planning proceedings in California and New York, "where each utility filed their plans to implement the respective commission's guidance and directives."[34]

IREC agrees with Xcel and AEE that ICF International's three-stage "walk-jog-run" approach may be appropriate to the evolution of distribution system planning in Minnesota.[35] This approach permits increasingly complex analyses to be phased in over time, as DER penetrations increase, and utilities acquire experience and sophistication in their planning approaches. It also permits utilities to move through the three-phase evolution at different paces in accordance with their system capabilities and needs. At the same time, IREC cautions that not all parties agree on how to characterize the respective stages, where utilities are situated with respect to the three stages, and how quickly the utilities should advance through them. IREC is concerned that this multi-stage approach could improperly defer improvements to planning processes and tools that are feasible and appropriate to pursue in the nearer term, at least for

[34] Xcel Initial Comments at 15.

[35] Xcel Initial Comments at 15-16; AEE Initial Comments at 8.

Xcel, such as a refined hosting capacity analysis,[36] more advanced DER forecasting methods, and more robust system data sharing. Even though they are differently situated, all utilities should be taking active steps, calibrated to their capabilities and needs, to move toward enhanced planning processes. If a walk-jog-run or similar approach is adopted, IREC suggests that the Commission carefully explore and define, with stakeholder input, the characterization of each stage and timelines for advancing through them, with the overriding goal of ensuring proactive planning for increased DER penetrations across all service areas.[37]

3. Forecasting

IREC appreciates that DER forecasting involves uncertainty. As Dakota Electric notes, rates of DER adoption, locations of DER integration into the grid, legislative and policy changes that may impact DER development and adoption, and timing of technological advances cannot be known with certainty.[38] A robust forecasting methodology should endeavor to account for those uncertainties, while making well-informed prognostications based on historic and current market trends. Utilities are accustomed to developing similar forecasts for customer load, which arguably presents their own uncertainties and challenges. Like traditional load forecasting, DER forecasting requires utilities to use the best information available about what has happened to develop a picture of the future. IREC acknowledges, though, that forecasting for DER growth will look different from traditional load forecasting and will involve unique challenges to develop robust methodologies to inform planning processes. The historical data that forms the input for traditional load forecasting are not available for all DERs, and underlying forecasting

[36] For a detailed discussion of potential improvements to Xcel's hosting capacity analysis, see IREC's initial and reply comments on Xcel's first hosting capacity report, filed in Docket No. E002/M-15-962 and attached to our initial comments in this proceeding.

[37] *See* AEE Initial Comments at 8.

[38] Dakota Electric Initial Comments at 4.

methods and best practices are still emerging, particularly for newer DERs beyond distributed solar, such as energy storage and electric vehicles.

The existence of such challenges does not, however, detract from the need to develop reliable DER forecasting methods. DER forecasts are central to ensuring that the grid can accommodate DER growth and to enabling utilities to leverage the benefits of DERs to meet grid needs. When combined with hosting capacity analyses and locational valuation assessments, DER forecasts can help to predict when and where the grid may face capacity constraints, where future DER growth should be directed to optimize its benefits, and what grid changes and investment may be needed to accommodate expected growth.[39] IREC suggests that the Commission look to current regulatory efforts in California as a possible model for integrating forecasting into distribution planning. The California Public Utility Commission is currently considering a staff proposal in which California utilities would combine annual forecasts with hosting capacity analyses to identify a suite of DER-driven grid needs, which would be met by procuring DER services from third-parties as NWAs and making grid modernization investments.[40] In addition, by helping to steer DER growth to grid locations that can accommodate such growth without infrastructure upgrades, DER forecasting can help streamline the interconnection process. DER forecasts can also help regulators and utilities identify incentives or adjustments to rate or tariffs that may be needed to help achieve Minnesota's policy goals.

Probabilistic forecasting is an important tool for dealing with the uncertainty in DER growth, and there appears to be near consensus among the parties that it could improve demand

[39] See Fresh Energy Initial Comments at 5 ("[F]orecasts determine whether (and when) distribution system upgrades are made.").

[40] California Utility Commission's Energy Division Staff Proposal on a Distribution Investment Deferral Framework, R 14-08-013 (June 2017).

forecasting and DER modeling. As AEE notes, "[a]s DER adoption increases, predicting the types, amount and adoption rates of DERs will change. This will make singular and deterministic forecasting practices less viable and less valuable as a means of predicting distribution system needs over the long-term."[41] IREC agrees with Xcel that "[w]ithout a solid foundation of probabilistic analysis it will be difficult to reliably forecast the impact of DER on the distribution system."[42] IREC notes that Dakota Electric may be considering probabilistic analysis too narrowly when it suggests only that it is important for gauging "the failure rates or risks of DER being unable to provide the support as intended."[43] As described in IREC's initial comments, probabilistic planning can help utilities think through the range of possible DER growth scenarios and make planning decisions that account for the potential of DERs as NWAs, as well as the capital investments that may be required to integrate DERs.[44]

IREC appreciates that the smaller Minnesota utilities have relatively low current penetrations of DERs on their distribution systems.[45] IREC also recognizes that DER forecasting is relatively new to Minnesota's utilities and thus that they may feel unsure of how to integrate DER forecasts into long-range planning.[46] Nonetheless, DER forecasting is a critical tool to predict DER growth in the future to enable effective planning for changes in the pipeline. Even if this growth occurs unevenly across the state, all utilities should begin to consider DER forecasting, and, as appropriate to their circumstances, develop DER forecasts and integrate them into their planning processes. IREC joins Fresh Energy in encouraging the Commission to

[41] AEE Initial Comments at 9.

[42] Xcel Initial Comments at 18.

[43] Dakota Electric Initial Comments at 5.

[44] IREC Initial Comments at 21.

[45] *See, e.g.*, Otter Tail Initial Comments at 5.

[46] *See, e.g.*, Dakota Electric Initial Comments at 4.

continue exploration and discussion of forecasting in this proceeding.[47] While IREC agrees that Xcel is best positioned to be the first mover on integrating DER forecasting into its distribution planning,[48] all Minnesota utilities should be moving in this direction.

4. Scenarios

There is broad agreement among the parties that DER growth scenarios should be incorporated into planning, and that multiple scenarios should be adopted.[49] Given this high-level agreement, IREC suggests that scenario planning is a ripe area for future exploration in tandem with forecasting. In particular, IREC encourages the Commission to solicit stakeholder input and provide guidance on the selection of planning scenarios—what scenarios to consider, how many, and how and when they should be deployed by the various utilities.

Non-utility parties are aligned in recommending that the Commission ensure some level of consistency in planning scenarios across the utilities.[50] CUB, Fresh Energy, and DOC, for instance, recommend that all utilities adopt three scenarios—such as a base case, lower, and higher DER adoption scenarios—similar to the three DER growth scenarios set forth in the California Distribution Resources Plan (DRP) guidance.[51] IREC acknowledges Dakota Electric's

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[47] *See* Fresh Energy Initial Comments at 6, 10-11.

[48] *See* Fresh Energy Initial Comments at 3-4, 10.

[49] *See* Xcel Initial Comments at 19 ("We believe the planning process would benefit from using multiple scenarios, when the planning tools evolve to allow for systematic examination of multiple scenarios and multiple inputs."); DOC Initial Comments at 3 ("Similar to the process that occurs in integrated resource planning, the Department foresees that utilities could benefit from high/medium/low growth estimates for DER, as well as efforts to identify the location on the distribution system for expected growth."); *see also* IREC Initial Comments at 22; Fresh Energy Initial Comments at 7; AEE Initial Comments at 10-11; CUB Initial Comments at 8.

[50] *See, e.g.*, IREC Initial Comments at 22-23; AEE Initial Comments at 11.

[51] Fresh Energy Initial Comments at 7; CUB Initial Comments at 8; DOC Initial Comments at 3.

emphasis on local differences between and within utilities' service areas.[52] IREC suggests, however, that high-level guidance on scenarios would benefit all utilities and their customers, and that local data could be incorporated into the scenarios to reflect local conditions. As AEE writes, scenarios could be "adjusted based on utility-specific circumstances" while still grounded in common "basic principles, assumptions and data."[53]

Several parties echo IREC's emphasis on the critical role of stakeholder input in developing planning scenarios.[54] As Xcel recognizes, stakeholders can provide "valuable input into DER and EV adoption rates and locations."[55] DOC likewise notes that "[s]takeholder input could be useful in identifying potential locations for expected growth in distributed generation facilities."[56] IREC reiterates that it is critical that utilities be transparent in scenario assumptions to permit stakeholders to provide meaningful input. IREC also agrees with AEE's recommendation that scenarios be "aligned with the state's public policy goals."[57]

5. Standards

IREC joins the general consensus among the parties that national standards and codes should be adopted for distribution system planning and operations as appropriate.[58] This view is well-captured by Fresh Energy's comment that "[a]dopting uniform, universally understood standards ensures both safety and interoperability. This spurs innovation and technological

[52] *See* Dakota Electric Initial Comments at 5.

[53] AEE Initial Comments at 11.

[54] *See, e.g.*, IREC Initial Comments at 22; AEE Initial Comments at 10 ("Stakeholder input is essential in building planning scenarios."); Xcel Initial Comments at 19; DOC Initial Comments at 3.

[55] Xcel Initial Comments at 19.

[56] DOC Initial Comments at 3.

[57] AEE Initial Comments at 10.

[58] *See, e.g.*, DOC Initial Comments at 3; MN Power Initial Comments at 4-5; Xcel Initial Comments at 21-23; Fresh Energy Initial Comments at 7.

advancements, while also allowing competition to drive down costs."[59] IREC notes that it will be important to incorporate, when finalized, the forthcoming IEEE 1547 standards for advanced inverters, which will enable utilities and DER providers to maximize the beneficial use of advanced inverters.

6. Access to Grid and Planning Data by Customers and Third Parties

IREC reiterates the fundamental importance of ensuring effective data sharing between utilities and customers, DER providers, and other stakeholders.[60] Fresh Energy, AEE, ESA, CUB, and DOC are in accord.[61] As ESA writes, broad "[a]ccess to data by third parties is critical in order to develop a robust DER market in Minnesota that drives down costs and provides a wide variety of end uses that achieve the greatest gains on the distribution level."[62] Informed third parties, as CUB notes, "may achieve greater efficiency and cost-effective DER implementation that the utility alone," reducing costs for consumers and the "need for ratepayer spending on utility infrastructure" [63] And they can be instrumental in helping to move Minnesota toward its renewable energy and other policy goals.

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[59] Fresh Energy Initial Comments at 7.

[60] IREC Initial Comments at 24-26; *see also* New York Public Utility Commission, Order on Distributed System Implementation Plan Filings ("DSIP Order"), p. 8, Case 14-M-0101, 16-M-0411 (March 9, 2017) ("[D]ata sharing between the Utilities and third parties is essential and must become part of the Utilities' normal business practices. Without the necessary data, DER investment opportunities cannot be effectively identified such that the maximum benefits of DERs can be realized.").

[61] *See, e.g*, Fresh Energy Initial Comments at 8 ("Data Accessibility is an integral part [of] distribution planning."); AEE Initial Comments at 13 ("A core element of modern distribution system planning processes should be providing improved information to customers, regulators, and third parties to create a common discussion and enable non-utility stakeholder's to propose solutions to grid needs."); ESA Initial Comments at 3; CUB Initial Comments at 9; DOC Initial Comments at 3.

[62] ESA Initial Comments at 3.

[63] CUB Initial Comments at 9.

To realize these benefits, data must be shared in such a way that it can be effectively used by its intended recipients. In particular, it is critical to ensure that data is shared in an appropriate format and with sufficient detail and frequency of updating. Specifically, hosting capacity maps, accompanied by downloadable data files, can help utilities and third parties identify areas where DERs can easily interconnect to the system and provide optimal grid services so long as these criteria are met. With the addition of relevant forecasting and locational value data, such maps and data can enable third parties to develop effective NWAs for utilities to procure in lieu of traditional capital-intensive infrastructure investments. IREC recognizes that it may take time to achieve these data-sharing goals and that it may be appropriate to roll out data-sharing requirements over time. Nonetheless, IREC strongly believes that it is both feasible and advisable for Xcel—and, calibrated to their resources and circumstances, other Minnesota utilities—to begin developing tools for effective third-party data access now, rather than entirely deferring the issue to a "run" stage.[64]

IREC recognizes utility concerns with privacy and security, particularly with respect to customer data and critical energy infrastructure information,[65] and believes that protections can be put in place to address these concerns. Issues regarding customer and system data are distinct but can, in both cases, be managed while ensuring effective third-party data access. As discussed in IREC's initial comments, tools for mitigating privacy and security concerns include non-disclosure agreements and setting up registrations for maps and data files with password

[64] *Cf.* Xcel Initial Comments at 25.

[65] *See* Otter Tail Initial Comments at 7, Dakota Electric Initial Comments at 6, Minnesota Power Initial Comments at 5-6; Xcel Initial Comments at 23.

protected logins.[66] As Xcel notes, registration, security, and password requirements are currently being used by California utilities to protect access to hosting capacity information.[67]

As emphasized in our initial comments, examples of system data sharing from other states are instructive. In New York, utilities have published indicator maps as part of their initial Distributed System Implementation Plan (DSIP) filings illustrating locations with the potential for relatively high interconnection costs.[68] The New York Public Utilities Commission has ordered them to complete hosting capacity analyses for all circuits at and above 12 kV by October 1, 2017, and release the data through interactive maps and downloadable data files.[69] In California, the three major utilities performed hosting capacity analyses of their distribution grids in urban and rural demonstration areas, and released the resulting hosting capacity data in December 2016 through both color-coded maps with data pop-outs and downloadable data files.[70] A recent Proposed Decision, which IREC expects the California Commission to adopt, would require the utilities to complete a system-wide rollout of updated online hosting capacity maps within 9 months of the decision, once it is finalized.[71] Utilities, regulators, and stakeholders have acquired extensive experience with balancing data transparency, privacy, and security in the

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[66] IREC at 26, 31.

[67] Xcel Initial Comments at 26.

[68] New York Joint Utilities' Supplemental Distributed System Implementation Plan, p. 50, Case 16-M-0411 (Nov. 1, 2016).

[69] DSIP Order at pp. 14-15.

[70] *See* SDG&E Distribution Resources Plan Demonstration Project A—Enhanced Integration Capacity Final Report ("SDG&E Final Report") (Dec. 22, 2016); PG&E Distribution Resources Plan Demonstration Project A —Enhanced Integration Capacity Final Report (Dec. 27, 2016); SCE, Distribution Resources Plan Demonstration Project A—Enhanced Integration Capacity Analysis Final Report (Dec. 23, 2016).

[71] California Public Utilities Commission, Proposed Decision on Track 1 Demonstration Projects A (Integration Capacity Analysis) and B (Locational Net Benefits Analysis), pp. 3-4, 31 R 14-08-013 (Aug. 25, 2017).

course of these proceedings. IREC joins ESA in encouraging the Commission to "leverage[] lessons learned and best practices" from their respective approaches.[72]

7. Hosting Capacity

IREC agrees with Dakota Electric and Otter Tail that, to harness the benefits of hosting capacity analysis, it is critical to establish goals for the analysis at the outset.[73] Without that guidance, the usefulness of hosting capacity results for third-party developers and for utilities can be unnecessarily limited, and may also result in a more costly undertaking for all involved parties and ratepayers. IREC shares Dakota Electric's vision of hosting capacity streamlining—and even eventually automating—the interconnection process,[74] and adds that hosting capacity is an essential tool for integrated distribution planning, as well. When combined with DER forecasting and locational valuation data, hosting capacity analysis identifies areas of the grid where DERs can be interconnected at the least cost, where DERs can provide the greatest benefits to the grid, and where upgrades may be needed to host additional DERs.[75]

While IREC agrees with Fresh Energy that, at this time, methodological details may be best addressed through Xcel's separate hosting capacity docket (Docket 15-962),[76] IREC

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[72] ESA Initial Comments at 3.

[73] *See* Dakota Electric Initial Comments at 7 (commenting that hosting capacity proceedings in other states often lack "a clear requirement for why the hosting capacity study is being completed"); Otter Tail Initial Comments at 7 ("A discussion about what hosting capacity information is needed, what it represents and doesn't represent, would be warranted to set clear expectations amongst stakeholders.").

[74] *See* Dakota Electric Initial Comments at 8.

[75] *See* Proposed Decision at 26 ("[Hosting capacity analysis] results may be used to identify grid locations facing hosting capacity constraints in light of DER growth scenarios that would be candidates for grid upgrades to accommodate projected DER growth" and they "may in the future guide sourcing and procurement of DER solutions in specific locations with available hosting capacity and locational value.").

[76] *See* Fresh Energy Initial Comments at 9.

suggests that this proceeding (Docket 15-556) provides a productive forum to develop the goals and use cases for hosting capacity, and to determine how hosting capacity will feature in the distribution planning process, including in its relationship to DER forecasting. IREC believes that these discussions of ultimate goals and use cases could involve all of Minnesota's utilities, even though Xcel is furthest along in its development of a hosting capacity analysis and its concrete application. These discussions and any Commission decisions can inform the ongoing work on Xcel's hosting capacity analysis in Docket 15-962. As Fresh Energy recognizes, the Commission "will want to determine how best to merge Xcel's work in Docket 15-962 with Xcel's broader integrated distribution planning work."[77]

The Commission should ensure that the hosting capacity methodology or methodologies that are developed are suited to achieve identified hosting capacity goals, including those related to interconnection as well as distribution planning. IREC, AEE, Fresh Energy, and ESA are all generally aligned in their vision for the types of hosting capacity data that should be provided and the format for its dissemination: maps and downloadable data files providing systems data such as line voltage, current and queued generation, and load profiles.[78] As noted, IREC recognizes that Xcel is ahead of the other utilities in its consideration of hosting capacity and development of a methodology, and IREC acknowledges the concerns of other Minnesota utilities that the analysis is too resource-intensive to deploy in their service territories given low current DER penetration.[79] However, IREC believes that the Commission has an important

[77] *Id.*

[78] *See* IREC Initial Comments at 29-30; AEE Initial Comments at 16; Fresh Energy Initial Comments at 9 n.16; *see also* ESA Initial Comments at 4 (recommending adoption of IREC's recommendations for hosting capacity).

[79] Otter Tail Initial Comments at 7, Minnesota Power Initial Comments at 7.

opportunity to provide guidance to all Minnesota utilities, even though some are at very early stages in their consideration of hosting capacity analysis.

8. Strawman Proposals

IREC agrees with AEE that "[t]he stakeholder engagement process should be transparent" and effective participation of diverse stakeholder groups maximized.[80] In IREC's experience, workshops and working groups have proven to be effective for stakeholder engagement and achieving consensus solutions, provided they are structured and facilitated effectively and have clearly articulated objectives and goals. As discussed above, IREC recommends that these venues be accompanied by opportunities for written comments, both in setting goals for planning and in the review of specific plans upon submission to the Commission.

IREC also agrees that the topics highlighted by Fresh Energy—demand and DER forecasting—are critical.[81] IREC supports Fresh Energy's proposed process for addressing them, including requiring an initial compliance filing on demand and DER adoption forecasts, initiating a comment period to solicit stakeholder input, and designating a lead commission to facilitate record development and provide recommendations to the Commission.[82] And IREC supports Fresh Energy's recommendation that the Commission focus initial efforts on Xcel and later expand them to encompass the other Minnesota utilities.[83]

At the same time, IREC suggests that the Commission will sacrifice an important opportunity if it considers these issues and their application to Xcel in isolation. IREC

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[80] AEE Initial Comments at 17.

[81] Fresh Energy Initial Comments at 10.

[82] *Id.*

[83] *Id.*

encourages the Commission to consider forecasting and the associated issues of scenarios and probabilistic planning in the context of overall distribution planning goals and alongside other essential topics like data access and hosting capacity analysis. IREC also encourages the Commission to issue broader guidance and apply criteria to all utilities, to facilitate increased transparency and stakeholder engagement in their planning processes, even if only Xcel is initially required to act on the guidance in any specific manner. As discussed above, IREC agrees that the details of Xcel's hosting capacity methodology are appropriately elaborated in Docket 15-962, though it encourages the Commission to consider in this proceeding how hosting capacity relates to forecasting and fits into the Commission's distribution planning vision for all utilities, and to issue guidance accordingly.

9. Additional Topics

IREC agrees with AEE that "[t]o take full advantage of the benefits that new technologies can provide to the system, the utility business model may need to be realigned to put new technologies and traditional technologies on an equal playing field."[84] IREC also agrees that performance-based regulations and allowing utilities a return on certain operational expenses for DERs represent two promising frameworks for realigning utility incentives with grid modernization goals.[85] As noted in our initial comments, IREC emphasizes that it is important for the Commission to recognize utility business incentives, even if it postpones addressing cost recovery and the utility business model to later stages of the grid modernization process.[86] In the meantime, IREC believes that moving toward integrated distribution planning, with effective

[84] AEE Initial Comments at 18.

[85] *See id.* at 18-19.

[86] IREC Initial Comments at 7; Staff Report at 31-35.

guidance and oversight by the Commission and stakeholders, can serve as a critical mechanism to enable higher DER penetration and achievement of renewable energy goals.

As Fresh Energy notes, DER "technologies will continue to advance and adoption will increase whether the Commission or utilities plan for them or not."[87] Through transparent and proactive planning, the Commission can help to ensure that the full range of benefits that DERs offer (to the grid, and economically, environmentally, and socially) are captured and that DERs are deployed in locations where these benefits can be optimally leveraged. This may require utilities to reframe the way they conceptualize DERs, from engineering challenges to cost-effective potential solutions to grid needs. IREC also encourages the Commission to ensure that equity goals are considered in this proceeding so that access to DER technologies and their benefits will be broadly distributed among Minnesota customers. While we do not address more explicit recommendations on equity considerations in these comments, IREC welcomes the opportunity for future discussions and comment opportunities on this important topic.

III. CONCLUSION

IREC appreciates the opportunity to submit these reply comments and to continuing our participation in this proceeding.

DATED: September 21, 2017 SHUTE, MIHALY & WEINBERGER LLP

By: /s/ Erica S. McConnell
ERICA S. McCONNELL
STEPHANIE L. SAFDI

Attorneys for Interstate Renewable Energy Council, Inc.

[87] Fresh Energy Initial Comments at 12.

CERTIFICATE OF SERVICE

Docket No. E999/CI-15-556

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 September 21, 2017, I served a true and correct copy of

REPLY COMMENTS OF THE INTERSTATE RENEWABLE ENERGY COUNCIL, INC. ON DISTRIBUTION SYSTEM PLANNING EFFORTS AND CONSIDERATIONS

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 September 21, 2017.

/s/ Amy Zehring
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928040.5

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James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Dean	Leischow	dean@sunrisenrg.com	Sunrise Energy Ventures	315 Manitoba Ave Wayzata, MN 55391	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Benjamin	Lowe	ben.lowe@alevo.com	Alevo USA Inc.	2321 Concord Parkway South Concord, North Carolina 28027	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Samuel	Mason	smason@beltramielectric.com	Beltrami Electric Cooperative, Inc.	4111 Technology Dr. NW PO Box 488 Bemidji, MN 56619-0488	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Erica	McConnell	mcconnell@smwlaw.com	Shute, Mihaly & Weinberger LLP	396 Hayes St San Francisco, California 94102-4421	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Dave	McNary	David.McNary@hennepin.us	Hennepin County DES	701 Fourth Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
John	McWilliams	jmm@dairynet.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, Minnesota 55120	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Herbert	Minke	hminke@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Dalene	Monsebroten	dalene@mncable.net	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Martin	Morud	mmorud@trunorthsolar.com	Tru North Solar	5115 45th Ave S Minneapolis, MN 55417	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Michael	Murray	mmurray@missiondata.org	Mission:Data Coalition	1020 16th St Ste 20 Sacramento, CA 95814	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Ben	Nelson	benn@cmpasgroup.org	CMMPA	459 South Grove Street Blue Earth, MN 56013	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Ron	Nelson	ron.nelson@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street Saint Paul, Minnesota 55101	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220 Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
David	O'Brien	david.obrien@navigant.com	Navigant Consulting	77 South Bedford St Ste 400 Burlington, MA 01803	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
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_15-556_OFF_SL_15-556_Official Service List
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Dan	Patry	dpatry@sunedison.com	SunEdison	600 Clipper Drive Belmont, CA 94002	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
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_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Hannah	Polikov	hpolikov@aee.net	Advanced Energy Economy Institute	1000 Vermont Ave, Third Floor Washington, DC 20005	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
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_15-556_OFF_SL_15-556_Official Service List
Gayle	Prest	gayle.prest@minneapolismn.gov	City of Mpls Sustainability	350 South 5th St, #315 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Gregory	Randa	granda@lakecountrypower.com	Lake Country Power	2810 Elida Drive Grand Rapids, MN 55744	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Mark	Rathbun	mrathbun@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Michael	Reinertson	michael.reinertson@avantenergy.com	Avant Energy	220 S. Sixth St. Ste 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
John C.	Reinhardt		Laura A. Reinhardt	3552 26Th Avenue South Minneapolis, MN 55406	Paper Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Craig	Rustad	crustad@minnkota.com	Minnkota Power	1822 Mill Road PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Thomas	Scharff	thomas.scharff@versoco.com	Verso Corp	600 High Street Wisconsin Rapids, WI 54495	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Dean	Sedgwick	N/A	Itasca Power Company	PO Box 457 Bigfork, MN 56628-0457	Paper Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Maria	Seidler	maria.seidler@dom.com	Dominion Energy Technology	120 Tredegar Street Richmond, Virginia 23219	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
William	Seuffert	Will.Seuffert@state.mn.us		75 Rev Martin Luther King Jr Blvd 130 State Capitol St. Paul, MN 55155	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
David	Shaffer	shaff081@gmail.com	Minnesota Solar Energy Industries Project	1005 Fairmount Ave Saint Paul, MN 55105	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Patricia	Sharkey	psharkey@environmentallawcounsel.com	Midwest Cogeneration Association.	180 N. LaSalle Street Suite 3700 Chicago, Illinois 60601	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Bria	Shea	bria.e.shea@xcelenergy.com	Xcel Energy	414 Nicollet Mall Minneapolis, MN 55401	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Doug	Shoemaker	dougs@mnRenewables.org	MRES	2928 5th Ave S Minneapolis, MN 55408	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Mrg	Simon	mrgsimon@mrenergy.com	Missouri River Energy Services	3724 W. Avera Drive P.O. Box 88920 Sioux Falls, SD 571098920	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Anne	Smart	anne.smart@chargepoint.com	ChargePoint, Inc.	254 E Hacienda Ave Campbell, CA 95008	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Joshua	Smith	joshua.smith@sierraclub.org		85 Second St FL 2 San Francisco, California 94105	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Trevor	Smith	trevor.smith@avantenergy.com	Avant Energy, Inc.	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ken	Smith	ken.smith@ever-greenenergy.com	Ever Green Energy	1350 Landmark Towers 345 St. Peter St St. Paul, MN 55102	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Beth H.	Soholt	bsoholt@windonthewires.org	Wind on the Wires	570 Asbury Street Suite 201 St. Paul, MN 55104	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Benjamin	Stafford	bstafford@aee.net	Advanced Energy Economy	1000 Vermont NW Floor 3 Washington, DC 20005	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Sky	Stanfield	stanfield@smwlaw.com	Shute, Mihaly & Weinberger	396 Hayes Street San Francisco, CA 94102	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Tom	Stanton	tstanton@nrri.org	NRRI	1080 Carmack Road Columbus, OH 43210	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Byron E.	Starns	byron.starns@stinson.com	Stinson Leonard Street LLP	150 South 5th Street Suite 2300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
James M.	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	470 U.S. Bank Plaza 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Thomas P.	Sweeney III	tom.sweeney@easycleanenergy.com	Clean Energy Collective	P O Box 1828 Boulder, CO 80306-1828	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Steve	Thompson	stevet@cmpasgroup.org	Central Minnesota Municipal Power Agency	459 S Grove St Blue Earth, MN 56013-2629	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Stuart	Tommerdahl	stommerdahl@otpco.com	Otter Tail Power Company	215 S Cascade St PO Box 496 Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Lise	Trudeau	lise.trudeau@state.mn.us	Department of Commerce	85 7th Place East Suite 500 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Karen	Turnboom	karen.turnboom@versoco.com	Verso Corporation	100 Central Avenue Duluth, MN 55807	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Lisa	Veith	lisa.veith@ci.stpaul.mn.us	City of St. Paul	400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Roger	Warehime	warehimer@owatonnautilities.com	Owatonna Public Utilities	208 South WalnutPO Box 800 Owatonna, MN 55060	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Jenna	Warmuth	jwarmuth@mnpower.com	Minnesota Power	30 W Superior St Duluth, MN 55802-2093	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Karlee	Weinmann	kweinmann@ilsr.org	Institute for Local Self-Reliance	1313 5th St SE #303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Jason	Willett	jason.willett@metc.state.mn.us	Metropolitan Council	390 Robert St N Saint Paul, MN 55101-1805	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Cam	Winton	cwinton@mnchamber.com	Minnesota Chamber of Commerce	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
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_15-556_OFF_SL_15-556_Official Service List
Thomas J.	Zaremba	TZaremba@wheelerlaw.com	WHEELER, VAN SICKLE & ANDERSON	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List
Christopher	Zibart	czibart@atcllc.com	American Transmission Company LLC	W234 N2000 Ridgeview Pkwy Court Waukesha, WI 53188-1022	Electronic Service	No	OFF_SL_15-556_OFF_SL_15-556_Official Service List