



AN ALLETE COMPANY

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December 7, 2018

VIA ELECTRONIC FILING

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: Minnesota Power’s Industrial Demand Response Product
Docket No. E-015/M-18-735
Docket No. E-015/GR-16-664
Docket No. E-015/AI-17-568

Dear Mr. Wolf:

Enclosed please find the Petition for Approval of Minnesota Power’s Industrial Demand Response Product, which was developed in consultation with Minnesota Power’s largest customers and interested stakeholders. This Petition is being filed in a new miscellaneous docket, Docket No. E-015/M-18-735. Feel free to contact me with any questions related to this matter.

Respectfully,

A handwritten signature in black ink that reads "Jennifer J. Peterson".

Jennifer J. Peterson
Manager – Regulatory Affairs

JJP:sr
Attach.
c: Official Service List

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of the Petition for
Approval of Minnesota Power's
Industrial Demand Response Product

Docket No. E015/M-18-735

PETITION FOR APPROVAL

SUMMARY OF FILING

Minnesota Power (or "the Company") submits this Petition to the Minnesota Public Utilities Commission ("Commission") pursuant to Minn. Stat. § 216B.05 and in accordance with the Commission's order in Docket No. E015/GR-16-664 and the forthcoming order in Docket No. E015/AI-17-568. Minnesota Power is requesting the approval of a suite of new Demand Response ("DR") product options for its largest industrial customers that would be offered through a new rate and implemented in new or amended Electric Service Agreements ("ESA").

Specifically, the Company is seeking Commission approval of the following:

- Product A: a *Short-Term Emergency Capacity Product* that offers customers a credit of \$0.60 per kW of monthly interruptible billing demand, to be updated annually
- Product B: a *Long-Term Emergency Capacity Curtailable with Firm Load Control Periods Product* that offers a \$7 per kW-month capacity credit for up to 150 MW of capacity. This product also provides a \$30 per MWh Physical Interruption Energy Credit for customers who interrupt operations for economic purposes. Customers would have the option to buy-through a control period at the Company's incremental energy price, plus an adder.
- Product C: a *Market Surplus Service Capacity Product* that allows Minnesota Power to work with a participating customer to identify options for any excess capacity that does not fit into other DR products or current needs of the Company for Resource Adequacy.
- A new Rider for Large Power Demand Response Service, which sets forth the terms, conditions, and pricing for these proposed products and includes a DR Surcharge for current cost recovery of the incremental costs associated with the new DR products. Minnesota Power has provided two cost allocation methods for Commission consideration.

- Minnesota Power is requesting the \$30 per MWh Physical Interruption Energy Credit be recovered through the Rider for Fuel and Purchased Energy Adjustment.

**STATE OF MINNESOTA
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In the Matter of the Petition for
Approval of Minnesota Power's
Industrial Demand Response Product

Docket No. E015/M-18-735

PETITION FOR APPROVAL

I. INTRODUCTION

This Petition outlines Minnesota Power's new DR suite of product options for its largest industrial customers. As a utility with one of the highest concentrations of industrial load in the country, where nine large customers currently comprise 61% of its energy sales, Minnesota Power has a unique opportunity to efficiently and effectively deliver large quantities of DR. As an important part of Minnesota Power's overall portfolio, DR complements the existing power supply by providing the ability to temporarily reduce energy demand to mitigate system reliability issues or reduce the need for market purchases during periods when energy is unavailable. In addition, when energy demand is reduced there is less need to produce energy from other fuel resources, potentially resulting in a lower emission profile for Minnesota Power. Contracting for up to a ten-year period with large industrial customers for flexible, firm and curtailable capacity will provide system reliability, renewable integration, environmental and customer benefits.

The Company has long established key customer relationships that have allowed it to partner with the state's largest industrial customers to minimize investment in large generator infrastructure, like peaking plants, to support system resource adequacy requirements. Through an iterative and collaborative process, the Company is proposing to continue this practice through a suite of new DR products that enhances value for all stakeholders, including providing access to a long term resource that has environmental and customer benefits, while allowing flexibility for safe and effective customer operations. The proposed DR product suite is the result of collaboration with the customers who will provide the resource, as well as the thoughtful input provided by interested stakeholders representing clean energy groups, consumer advocates, and more. Minnesota Power values the time and insight stakeholders provided throughout the

product development process and believes it resulted in a suite of industrial DR products that provides multiple benefits further identified throughout this petition.

II. PROCEDURAL MATTERS

A. General Filing Information

Pursuant to Minn. Stat. § 216B.16, subd. 1 and Minn. Rule 7829.1300, Minnesota Power provides the following required general filing information.

1. Summary of Filing (Minn. Rule 7829.1300, subp.1)

A one-paragraph summary accompanies this Petition.

2 Service on Other Parties (Minn. Rule 7829.1300, subp. 2)

Pursuant to Minn. Stat. § 216.17, subd. 3 and Minn. Rule 7829.1300, subp. 2, Minnesota Power eFiles the Petition on the Department of Commerce - Division of Energy Resources (“the Department”) and the Minnesota Office of the Attorney General - Antitrust and Utilities Division. A summary of the filing prepared in accordance with Minn. Rule 7829.1300, subp. 1 is being served on Minnesota Power’s general service list.

3. Name, Address and Telephone Number of Utility (Minn. Rule 7829.1300, subp. 3(A))

Minnesota Power
30 West Superior Street
Duluth, MN 55802
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4. Name, Address and Telephone Number of Utility Attorney (Minn. Rule 7829.1300, subp. 3(B))

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5. Date of Filing and Date Proposed Rate Takes Effect (Minn. Rule 7829.1300, subp. 3(C))

This Petition is being filed on December 7, 2018. The effective date is the date of the Commission’s Order or such other date as directed in the Commission’s Order.

6. Statute Controlling Schedule for Processing the Filing (Minn. Rule 7829.1300, subp. 4(D))

This Petition is made in accordance with Commission orders in Docket No. E015/GR-16-664, the forthcoming order in Docket No. E015/AI-17-568 and Minn. Stat. § 216B.05. No statutorily imposed time frame for a Commission decision applies to this filing. Minn. Rule 7825.3200 requires that utilities serve notice to the Commission at least 90 days prior to the

proposed effective date of modified rates. Furthermore, Minnesota Power’s Petition falls within the definition of a “Miscellaneous Tariff Filing” under Minn. Rules 7829.0100, subp. 11 and 7829.1400, subp. 1 and 4 permitting comments in response to a miscellaneous filing to be filed within 30 days, and reply comments to be filed no later than 10 days thereafter.

7. Utility Employee Responsible for Filing (Minn. Rule 7829.1300, subp. 4(E))

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8. Impact on Rates and Services (Minn. Rule 7829.1300, subp. 4(F))

This filing will have no effect on Minnesota Power’s base rates. However, Minnesota Power provides anticipated rate implications in Section V.

9. Service List (Minn. Rule 7829.0700)

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B. Trade Secret Designation (Minn. Rule 7825.0500)

Pursuant to Minn. Stat. §§ 13.01 et seq. and Minn. Rule 7829.0500, Minnesota Power has designated portions of the Petition as containing Trade Secret Information and these have been redacted as appropriate to reflect the Trade Secret nature of the documents. Trade Secret and Public copies of the Petition are being eFiled in accordance with the Commission’s Rules and Minn. Stat. § 216.17, subd. 3. A statement regarding justification for excising Trade Secret information accompanies this Petition

III. BACKGROUND AND RESOURCE PLANNING FOUNDATION

The topic of a modernized DR program for the Minnesota Power's large industrial customers has appeared in several different Commission proceedings over the last three years. A brief summary of how DR was addressed in these various dockets is below, which provides the procedural history and foundation for the newly proposed DR product in Section V.

Minnesota Power currently offers a DR product for customers to allow their load to be utilized for local system emergency events on an annual basis and is accredited in MISO's resource adequacy program. The term for the current large industrial interruptible capacity product is one year and the amount of capacity made available by participating customers can vary from year to year. Over the past five MISO planning years, the capacity made available to Minnesota Power has ranged from approximately 100 MW to 260 MW, and the variability of the quantity along with the short commitment term has made it difficult for the Company to do long-term system planning associated specifically with this DR product. Due to the large volume of DR available on its system, Minnesota Power identified that a longer term product would firm up a portion of the available DR to ensure access for resource planning needs in the coming years. The Company expects the 150 MW of the newly proposed DR Product B will displace a portion of the 250 MW of DR received today in the one year commitment product.

The Company currently offers other DR incentive programs for residential and commercial customers, such as a long standing Dual Fuel product and Time of Day Pilot Program. These existing DR programs are a valuable component of Minnesota Power's least-cost supply strategy and help to ensure the reliability of the regional power supply. Mostly utilized during the winter months, the Dual Fuel product allows interruption of customer electric heating load. Additionally, in late 2014, the Company initiated a residential Time of Day rate with critical peak pricing pilot program. Under this rate, customers pay more for usage during on-peak hours and critical peak pricing events, and receive a discount for usage during off-peak hours. The goal of this pilot program is to gauge customer interest in new rate offerings that incentivize load shifting, and to further inform decisions about broader program implementation and infrastructure investment.

The DR product suite for large industrial customers proposed in this Petition will enhance the Company's existing DR programs. The incentive will be provided in Product B to have these large customers commit to physically shedding their large loads periodically over a ten year contract period, thereby securing a resource for the future that can defer the need for new physical capacity resources and can reduce energy needs during peak pricing periods.

A. 2015 Integrated Resource Plan (“IRP”)

The first of the three dockets where discussion of new DR product appeared was in the Company's 2015 IRP. Minnesota Power highlighted that its current suite of industrial and residential/commercial products are being utilized for peak shaving and system emergency events. The 2015 IRP recommendations by Minnesota Power included continuing to enhance and create additional customer product options, as it is doing with this newly proposed DR suite of products and current redesign of the residential Time of Day Pilot Program. The Company continues to offer its current interruptible product that permits the curtailment of large industrial load and small amounts of residential/commercial load to support the Company's management of system reliability.

As part of the 2015 IRP outcome to identify additional resource options, the Commission directed the Company to propose a DR competitive-bidding process within six months.¹ In compliance with that Order, Minnesota Power issued a Request for Proposal (“RFP”) for up to 300 MW of Large Customer Demand Response Resource on August 5, 2016. The Company's RFP requested cost-effective DR resources that utilized the capability of Minnesota Power's large industrial customers to curtail their load for electric system emergencies or market economics and provide capacity that is creditable under current MISO resource adequacy rules.² Proposals were due by September 26, 2016. Minnesota Power received only one response to this RFP, a customer offering of 96 MW of system capacity DR available for energy curtailment events during MISO system emergencies or Minnesota Power local system emergencies starting in 2019 for a ten year period. This bid was offered at a price well above the

¹ MPUC Order, Minnesota Power's 2015 Integrated Resource Plan, July 2016. E015/RP-15-690.

² The Large Customer Demand Response Resources RFP requested two types of DR products: (1) Minnesota Power System Capacity, DR available for energy curtailment events during MISO system emergencies or Minnesota Power local system emergencies and (2) Scheduled Economic Curtailment Energy, DR available for economic energy curtailment events determined by market energy process in the discretion of the Company.

cost for Minnesota Power to add new peaking generation to the system and ultimately was not selected to move forward in the broader resource acquisition process.

Minnesota Power found this RFP process insightful, even though it did not result in the procurement of new long-term DR. The Company received feedback from industrial customers that they did not favor the RFP process as not all industrial customers have the same knowledge of MISO DR Product nomenclature and many are not accustomed to working within the communication barriers that need to exist between respondents and the requester during an RFP process. Minnesota Power's large industrial customers communicated their preference for the historical method of working collaboratively with Minnesota Power on co-developing these types of opportunities. When taking into consideration the feedback industrial customers provided and the unique opportunity Minnesota Power's customer mix provides in capturing large scale DR, the Company believes a collaborative effort between stakeholders results in a better overall product for all customers

The Company acted on the IRP order point by requesting an industrial DR RFP and learned through the process that there are both customer benefits and potential shortcomings a RFP has for procuring supply-side resources. The product suite proposed in this petition, which is superior in design to what was offered in the RFP, is a testament to the results that can occur when Minnesota Power collaborates with customers to develop innovative solutions. The dialogue with customers on new DR products began with the issuance of the RFP in August of 2016 and continued in parallel through the 2016 General Rate Case and 2017 NTEC hearings, and has been a key part of the process in this proposed suite of DR products.

B. Minnesota Power's 2016 General Rate Case

Shortly after the conclusion of its IRP proceeding Minnesota Power filed a rate case in November 2016, and through that proceeding there was additional discussion at the Commission and with individual industrial customers on advancing an updated DR product. In the Commission's March 12, 2018 Order in the case, it stated:

“The Company shall work with LPI and other stakeholders to develop a demand response rider and corresponding methodology for cost recovery, based on stakeholder input, for submission to the Commission. The record to support the submission to the Commission may be developed in either Docket E015/AI-17-568, OAH Docket 68-2500-34672 or a

new miscellaneous docket. In the event the Company, LPI, and other stakeholders elect to proceed with a new miscellaneous docket filing, such filing shall be submitted for Commission approval within six months after the date of the final written order in this proceeding.”³

This directive was upheld in the Commission’s May 29, 2018 Order Granting Reconsideration in Part.⁴

C. 2017 Nemadji Trail Energy Center (“NTEC”) Proceeding

Finally, in July 2017 Minnesota Power filed a petition for the approval of the *EnergyForward* Resource Package (generally referred to as the NTEC proceeding), in which it updated its resource analysis from the 2015 IRP. This refined analysis continued to consider additional long term DR and identified that for planning purposes there was approximately 150 MW of interruptible capability available. It is important to note that today Minnesota Power does not have 150 MW of DR capacity under contract for the long-term, as the current industrial DR program is administered through individual annual commitments from customers. The proposed Product B will firm up the 150 MW of capacity as industrial customers are able to commit to make it available for a ten-year period. This commitment is a material change from existing DR products and Minnesota Power believes this is reflected in the value attributed to the product through the demand credit and energy interruptible incentive.⁵

The Findings of Fact, Conclusions of Law, and Recommendation published on July 2, 2019 by the Administrative Law Judge (“ALJ”) in the NTEC proceeding recommended the Commission open a new miscellaneous docket to address a new DR rider and corresponding methodology for cost recovery for submission to the Commission. At the Commission hearing in this docket, on October 29, 2018, the ALJ recommendations on DR were accepted. Although this matter was referred to a miscellaneous docket in the above-mentioned proceeding, Minnesota Power would note that a 150 MW DR product, representative of what is being proposed here as Product B, was included in the base case of the Strategist analysis in the NTEC proceeding.

³ MPUC Order Dated March 12, 2018. Docket No. E015/GR-16-664.

⁴ MPUC Order Dated May 29, 2018. Docket No. E015/GR-16-664.

⁵ Minnesota Power’s Petition for Approval of the *EnergyForward* Resource Package, July 28, 2017. Docket No. E015/M/AI-17-568.

Providing an initial cap at 150 MW reflects how industrial DR resources were modeled in previous resource plans and recent resource acquisitions petitions. Minnesota Power will evaluate in future resource plans if more than 150 MW of DR is economical to add to its resource portfolio on behalf of all of its customers. This future IRP analysis will include evaluating the Company's energy and capacity needs and determining if adding more long term DR as a resource alternative is part of the preferred resource portfolio. Minnesota Power acknowledges that this DR product does have limitations to meet the overall energy needs of the system due to industrial customers needing to restrict the number of hours they can curtail demand while continuing to effectively operate their production facilities. However, similar to all resource types, the DR resource attributes will be compared and combined with other resource types as part of an integrated planning process.

The Department of Commerce ("Department") provided testimony on a DR procurement process in the NTEC Proceeding. Starting on page 8 of Dr. Rakow's Rebuttal Testimony, the Department outlined what should be demonstrated when acquiring a new DR product. In general, this recommendation follows a similar process used for supply side-resources, including:

1. Identifying a need in the IRP
2. Issuance of an RFP for all similar technologies (including supply side)
3. Include the Minnesota Public Utilities Commission's environmental cost values
4. Demonstrate that a renewable energy facility is not more economical

Minnesota Power understands that the procurement process recommended by Dr. Rakow has its merits and contains similar procedures as those Minnesota Power agreed to follow for supply side resource acquisitions in the NTEC proceeding. However, in this case the Commission's rate review order to create this product, and the outcome of the NTEC proceeding, impacted the Company's ability to implement such a process. Through the rate case proceeding order, the Commission approved six month timeline for the development of a DR rider and submission for approval, which would not have been a sufficient amount of time to go through the Company's IRP process (Minnesota Power's next IRP is scheduled for late 2020), or issue an additional RFP and negotiate contracts for a new resource.

Prior to and since the Rate Case Order, Minnesota Power has been working with industrial customers to develop a new DR product and associated cost recovery methods that meet the needs of participating customers while also ensuring the product provides benefits to all the Company's customers. Collaboration with customers outside a formal RFP process provides a forum where the needs of both the utility and participating DR customers can be discussed freely with an opportunity to work together to develop a program that works for all parties involved. This collaborative environment would not be present in a traditional supply-side resource procurement process.

IV. PRODUCT DEVELOPMENT STAKEHOLDER PROCESS

Minnesota Power engaged in an intentional, customer and stakeholder-focused approach to design a new DR product for its largest customers. This took the form of iterative meetings with both the Large Power Intervenor Group and individual customers, as well as intentional outreach to stakeholders and broader interested parties through two stakeholder workshops. The feedback the Company received was directly incorporated into the program design proposed in this petition and the process used to gather that feedback is described below.

A. Collaboration and Negotiations with Large Power Customers

Minnesota Power began conceptual discussions with its large customers several years ago to potentially modernize a longer-term DR product suite, building on a foundation of decades-long customer relationships and with thoughts of considering DR as a potential resource choice. In some cases leveraging over twenty-five years of large customer involvement in Minnesota Power's prior DR products and programs, the Company and its customers worked collaboratively to share best practices utilized in different areas of the country. Large power customers also provided insights from their facilities in other states that participate in different utility programs, and they provided testimony in both the 2016 General Rate Case and the NTEC proceeding supporting products modeled after those used by other utilities.

The efforts to modernize Minnesota Power's DR product intensified in the time leading up to the 2016 rate case and translated to specific product meetings through 2017 and 2018. The mutual goals that the Company and its customers collectively worked on, which were better honed and focused through the rate review order in March of 2018, were to develop an updated DR product suite that provided benefits to the system while also recognizing the need these large industrial customers to have flexibility to accommodate their operational and business needs. The large customers came to these discussions with firsthand knowledge and insight on the risks that they take to production, customer order satisfaction, operational safety and business sustainability by participating in a DR program. They also openly shared how they assess the value of participating in a DR program with the risks associated in doing so as items for consideration in final product design. Minnesota Power worked with the large customers in a collaborative process through a series of meetings, emails, and conference calls to modify the

product suite referenced by large customers in the aforementioned dockets to better align with the specific resource needs of Minnesota Power and its customers.

The collaborative process with the large customers resulted in alignment in several distinct product parameters for DR Product B, including the level of demand credit to align with representative resource costs, the quantity of curtailable hours to provide the avoided energy benefit, the ability of the customer to buy through Firm Load Control Periods, and the requirement to commit to a ten-year term. In addition to individual collaboration with large customers and other interested parties, the Company convened two stakeholder workshops to gather additional input on DR programs. Because of Minnesota Power's unique customer mix and the specific considerations of each customer class, the first workshop focused exclusively on DR for large industrial customers, and the second focused on programs for residential and commercial customers.

B. Minnesota Power's Industrial Demand Response Stakeholder Workshop #1

The first workshop was held on September 25, 2018 in Duluth, Minnesota and included a stakeholder perspective panel with representatives from a clean energy organization, a large industrial customer and a consumer advocate. Following the workshop, one of Minnesota Power's large industrial customers that has participated in the Company's current DR program, Verso Corporation, provided a tour of its Duluth Paper Mill so stakeholders could experience the operational realities of customer-offered DR.

The workshop enabled Minnesota Power to share information about its system considerations and to hear from a broad range of interested parties about what is important to consider when developing a large industrial customer DR product. The presentations and discussion notes from the day were filed in the relevant dockets and are included as Appendix A. Some key themes the Company heard from the stakeholders present include: a need for participating customers to have flexibility in the program, clear and easy to follow program guidelines, options for customer cost savings, the ability to treat DR like a system resource, and recognition of the system and environmental benefits that DR can provide.

C. Commercial and Residential Customer Demand Response Stakeholder Workshop #2

Following the stakeholder workshop concentrated on large industrial DR, Minnesota Power convened a workshop to focus on residential and commercial DR programs on November

20, 2018 in Duluth. The second DR workshop was hosted by Saint Louis County, a participant in the Company's current Dual Fuel product, and included a presentation that covered best practices regarding DR programs nationwide and a stakeholder perspectives panel discussion. The panel included customers that have both participated in DR and are interested in new DR offerings, including Saint Louis County, the University of Minnesota-Duluth, and the Western Lake Superior Sanitary District. Meeting materials from the second stakeholder workshop are include as Appendix B. Some of the high level themes from the second DR workshop include the need for education and outreach to customers on DR potential and opportunities, the desire for flexibility in participating options, and programs that provide both environmental and financial benefits to customers. Minnesota Power is currently engaging stakeholders in a redesign of its Time of Day Pilot Program and will continue to work with these customer classes to gather feedback and analyze program options to be considered in the future.

V. PROPOSED INDUSTRIAL DEMAND RESPONSE PRODUCT OPTIONS

Minnesota Power proposes a new suite of DR products for large industrial customers that affords flexibility for customer operations, provides optionality for customers with clear guidelines for participating, generates a commitment to make DR available longer term, treats DR like a system resource and recognizes value streams, including environmental and customer benefits. As stated previously, stakeholder feedback indicated a customer desire for optionality and that having a number of participation choices from within a broad DR program was an important product design feature. The proposed DR suite of products outlined below would each have an effective date at the start of the MISO Planning Year following Commission approval.

A. Large Power Demand Response Product A – Short-Term Emergency Capacity

The first option within the suite, Product A, is an emergency-only capacity product that is selected annually. Product A is very similar to the interruptible product Minnesota Power currently offers to its large industrial customers. The credit for Product A during the initial year is currently anticipated to be approximately \$0.60 per kW of interruptible billing demand per month, and it is contemplated that the amount of the credit may be updated annually based on the current market price trends for short term capacity. The following conditions would currently apply for emergency capacity events:

- Maximum number of annual emergency events: 5 events
- Maximum duration of emergency events: 4 hours
- Minimum notice of emergency events: 2 hours

The conditions for emergency curtailments must meet the requirements of MISO accreditation in accordance with Module E-1 of the Business Practices Manual for Resource Adequacy, and it is intended to utilize emergency capacity only if required by MISO or if system integrity is threatened. Minnesota Power is monitoring and participating in MISO's Resource Availability and Need stakeholder process and any changes to DR requirements for accreditation would amend the conditions noted above. The treatment of future modification to the MISO DR requirement for accreditation also applies to Products B and C below.

B. Large Power Demand Response Product B – Long-Term Emergency Capacity Curtaillable with Firm Load Control Periods

The second DR choice, Product B, is a new long-term emergency capacity product with energy curtailment (“Firm Load Control”) periods that can be called by Minnesota Power for economic purposes. Product B requires participating customers to have an ESA in place with Minnesota Power for an initial period of ten years that would coincide with the commitment for Product B. This ten-year ESA stipulation ensures Minnesota Power can plan for the DR in Product B in a way similar to that of a long-term supply-side resource.

Based upon the defined capacity need outlined previously in this petition, the offering of Product B will be for 150 MW. If customers request more than 150 MW of Product B, Minnesota Power will allocate MW of the product based on expected peak energy usage, determined by firm nominations and duration in months that Minnesota Power and the participating customer have committed under fully executed ESAs. An allocation date will be determined following product approval.

The following conditions would currently apply for emergency capacity events:

- Maximum number of annual emergency events: 5
- Maximum duration of emergency events: 4 hours
- Minimum notice of emergency events: 2 hours

As with Product A, curtailment conditions for Product B must also meet the requirements of MISO accreditation in accordance with Module E-1 of the Business Practices Manual for Resource Adequacy.

Product B will also include Firm Load Control periods for energy that can be called on by Minnesota Power for economic purposes. Effectively, this is customer energy that can either be reduced by participation (curtailed) or the customer can buy through the event at a higher cost than non-participating customers. The following conditions will apply for Firm Load Control periods:

- Maximum number of annual (calendar year) Firm Load Control hours: 600 hours
- Maximum of 2 Firm Load Control periods per day
- Maximum of 12 hours of Firm Load Control periods per day

- Maximum Firm Load Control duration per occurrence: 12 hours
- Minimum Firm Load Control duration per occurrence: 4 hours
- No more than four Firm Load Control periods in any seven days of the week (Sunday-Saturday)
- Notice will be given either the day-ahead or real-time with four hours advance notice through an e-mail notice.

During a Firm Load Control period customers will have the option to buy through or reduce their load. Through many customer and stakeholder meetings, these large industrial operations stated their need for a buy through provision to ensure flexibility in their operations and their ability to compete in a global marketplace. If the customer elects to buy through the energy charge will be based upon the Company's hourly incremental energy costs during the time of the sale including MISO market operator costs incurred by the Company plus a \$5.00/MWh adder. The incremental energy cost is determined each hour of the month during which energy is taken and shall include fuel costs and variable operation and maintenance expenses for generating or purchasing the energy. Incremental energy will also be the cost of energy immediately after assigning lower cost energy to all firm retail and firm wholesale customer requirements including all inter-system sales.

If customers reduce load during the curtailment they will be paid a Physical Interruptible Energy Credit of \$30.00/MWh. The expected available energy for physical curtailment, or the buy through, is the difference between the customer's firm service level and the higher of the average of four hours before notification or four hours before the interruption period begins. The difference represents the anticipated energy that is available economic curtailment. The energy credit is then applied to the difference described above. Appendix C provides a detailed example of how the curtailable energy volume is calculated and the energy credit is applied.

Customers will also have ability to reduce MWs of Product B and convert them to firm service through a written notice to Company no later than October 1 of the year prior to the next MISO planning year. Within 90 days of receipt of such written notice Company shall advise the Customer of any capacity or energy charge premiums associated with converting demand response to firm service, such charges would be calculated to keep non-demand response customers and Company unaffected by Customer's decision to convert to firm service.

C. Large Power Demand Response Product C – Market Surplus Service

The final option in Minnesota Power’s newly proposed DR product suite, Product C, is an emergency-only capacity product that can be used for any excess capacity that doesn’t fit into other DR products or needs of Minnesota Power for Resource Adequacy.

Product C could be used by customers who might be looking for a capacity product greater than the one-year term in Product A, but are unwilling or unable to enter into a ten-year ESA. Product C is available to customers having an ESA in effect that matches the terms of the Market Surplus Service, provided the customer has not served an ESA cancellation notice. If a customer chooses to use Product C, Minnesota Power will facilitate options for the emergency-only capacity with the customer. The Company and the participating customer will work together to determine the quantity of emergency-only capacity to be offered as part of Product C. A per kW-month demand discount, based upon the accepted offer, would be passed through to the customer providing the capacity on their monthly electric bill. In a situation where the non-participating customers are impacted in anyway by Product C, Minnesota Power will seek additional Commission approval to pass any cost or benefits through to customers.

As with all other options, conditions, Product C must meet the requirements of MISO accreditation in accordance with Module E-1 of the Business Practices Manual for Resource Adequacy. The customer would also be responsible for any payments for transmission or network upgrades if needed to deliver capacity.

D. Demand Response MISO Requirements

In the event of a material change in MISO’s (or any successor organization) requirements for capacity accreditation, the Company will work with DR participants to determine the most appropriate amendments to ensure the capacity continues to be accredited. Any substantial changes would be subject to regulatory approval.

VI. CUSTOMER INTEREST SECTION

Since DR can provide system benefits similar to another generating resource, and also represents a potential cost to customers, it is important to identify and quantify the benefits this resource can provide. For this customer interest section Minnesota Power focused the analysis on Product B. Product A is currently available to industrial customers, is a single year commitment, and there will be no additional benefit that will be added with this proposal. In regards to Product C, Minnesota Power is proposing that options be explored with the participating customer for any excess capacity, so product capacity costs or potential off-takers of such capacity will not be known at this time.

A. Avoided Energy Benefits

DR Product B includes an energy component that allows Minnesota Power to request up to 90,000 MWh be curtailed annually from the DR Customers. In return for energy curtailment, the participating industrial customer receives a \$30 credit for each MW per hour of energy curtailed (i.e. \$30/MWh). As described above, the DR Customer has the option to buy through at a market like rate, which can result in less than 90,000 MWh being curtailed. The actual amount of curtailed energy will also vary depending on the number of customers participating in the product.

There are two key benefits that both Minnesota Power customers and society receive when demand is curtailed and generating or purchasing additional energy is avoided:

1. The \$30/MWh physical interruptible credit is lower cost than dispatching peaking generation, and
2. Reduction in system emissions from displaced generation (avoided externalities).

When industrial customers physically curtail energy it avoids the need to generate energy or purchase energy from the market to meet the demand that would occur if this DR product did not exist. This results in both an avoided energy and emission benefit for customers. Typically, Minnesota Power will implement the energy curtailment provision in Product B during periods of high demand or when intermittent renewable generation is unavailable. During these periods, natural gas fired peaking generation is typically utilized for meeting customer needs and would represent the most expensive energy produced during these periods. Minnesota Power believes

it's reasonable to compare the attributes of Product B to a natural gas fired peaking generation. For the purpose of this analysis, Minnesota Power is comparing the energy cost and emission profile of a 228 MW combustion turbine to Product B.⁶ The avoided capacity benefit analysis that follows this section also uses the 228 MW combustion turbine as a comparative alternative.

Minnesota Power estimates the value of avoided energy when industrial customers reduce demand under Product B is up to \$10 million over the initial 10 year commitment period (or approximately \$1M per year). This savings occurs because the cost of energy (fuel + variable O&M) from peaking generation is projected to be greater than the \$30/MWh curtailment credit. Minnesota Power is projecting the cost of peaking energy to be \$41/MWh over this period, which is \$11/MWh greater than paying the curtailment credit. It is more economical for customers to pay the \$30/MWh curtailment credit than the cost to procure peaking type energy.

When industrial customers physically curtail energy it reduces the need to generate energy on the system, resulting in overall lower emissions from Minnesota Power and the regional power supply. Minnesota Power expects up to 530,000 tons of carbon dioxide ("CO₂") could be reduced over the ten-year commitment period. Actual CO₂ emissions will vary depending on participation in the product, the fuel source of curtailed energy, and the amount of energy that is physically curtailed. Figure 1 below shows the potential reduction in other key pollutants over ten years and the estimated avoided externality costs. Figure 2 below shows the potential societal cost savings of Product B under a CO₂ regulation scenario consistent with the Commission's approved CO₂ regulation penalty values.⁷

⁶ The generation characteristics, capital and O&M costs of a new combustion turbine is based of Minnesota Power's planning estimates for new resource alternatives used in the NTEC Petition (Docket No.: E015/AI-17-568)

⁷ Carbon regulation penalty is assumed to start in 2025.

Figure 1: Avoided Emissions and Associated State Externality Value

Effluent	Displaced Emissions (Tons)	Low Externality Scenario	High Externality Scenario
NOx	132	\$389,936	\$1,159,535
SOx	9	\$47,871	\$119,252
CO	88	\$117	\$206
CO2	529,200	\$6,130,583	\$28,627,151
PM25	13	\$101,949	\$254,130
Lead (Pb)	0	\$0	\$0
Mercury (Mg)	0	\$0	\$0
Total		\$6,670,457	\$30,160,275

Figure 2: Avoided CO2 Emissions and State Regulation Penalty

Effluent	Displaced Emissions (Tons)	Low Regulation Penalty	High Regulation Penalty
CO2	529,200	\$1,090,577	\$5,452,887

B. Avoided Capacity Benefit of Product B

A ten-year DR commitment is similar to the certainty that adding a resource to the power supply provides. This long-term commitment by Industrial customers gives Minnesota Power confidence this capacity is firm and will be available for meeting the Company’s resource adequacy requirements. From a resource planning perspective, the “firmness” of the product can be relied upon for meeting future capacity needs. Furthermore, the Company has committed to evaluate incremental additions of Product B above the 150 MW in future Resource Plans as a resource alternative. The proposed demand credit for Product B of \$7,000/MW-Month is competitive with the cost of building a new peaking generation as the cost of a new 228 MW combustion turbine is higher than \$7,000/MW-Month, providing customers approximately \$4.6 million of avoided investment over 10 years when compared to building a new combustion turbine.

All customers benefit from this new industrial DR Product B as it is more economical than building a new peaking generation resource. When combining the capacity savings (\$4.6 million) in avoiding new peaking generation with the avoided energy (\$10 million), it results in nearly \$15 million benefit for customers over the peaking resource along with the externality

benefits of not needing to generate additional energy. The Company has identified this product is an efficient way to gain access to additional capacity and energy for customers that provide long term benefits as we gain a commitment from customers.

VII. COST ALLOCATION, COST RECOVERY AND RATE IMPACT

Since not all DR products in this proposed suite were considered in the Company's most recent rate case, Minnesota Power is requesting to recover these costs through a new current cost recovery provision in the proposed Rider for Large Power Demand Response Service (Appendix D). Minnesota Power believes the Commission has the authority to implement a rider under both its general ratemaking authority and Minn. Stat. § 216B.05, which provides for customer-specific rates. In addition, the Company is working to implement the Commission's directives in the most recent rate case and in the NTEC proceeding, and a DR product without cost recovery would be contradictory to directives in those dockets. Furthermore, Minn. Stat. §216B.2401 sets the energy policy for the state of Minnesota, stating that "energy savings are an energy resource, and that cost-effective energy savings are preferred over all other energy resources."

Minnesota Power is providing two cost allocation methods for the Commission to consider for DR Product B and these methods are described further below. Since Product A is structured similar to the Company's current DR product, it was approved in Minnesota Power's previous rate case and as a result, the costs associated with that option have already been accounted for. The amount estimated to be recovered for Product B, assuming maximum participation, is a total cost of \$12.6 million (\$7.00/kW-month x 12 months x 150 MW). Since the benefits from all DR products, particularly Product B, flow to Minnesota Power's customers in the same way benefits from another resource would (e.g. peaking combustion turbine), the Company is proposing to recover the associated costs in a similar manner from all firm electric customers.

New DR load under Product B may displace load currently committed under Product A. In that case, Minnesota Power would credit the DR cost recovery tracker so that the Company is recovering only the incremental DR costs for Product B. As a result, the Company is proposing to recover the retail jurisdictional portion of the maximum \$12.6 million total cost of Product B as it is subscribed to, from retail customers through a rider.

A. Demand Response Product Cost Allocation

As mentioned previously, since DR products provide system benefits in the same way another resource does, the program costs can be compared to the avoided cost of building new generation infrastructure. As such, it makes sense to allocate the DR program costs using the

approved generation demand allocator (D-01) from Minnesota Power’s 2016 retail rate case. This results in the allocation of approximately \$10.6 million to retail customers if Product B is fully subscribed.

Recovery Target	\$12.6 million (max.)
Retail Recovery Target (84.360%)	\$10.6 million (max.)

From there, Minnesota Power provides two options for allocating the approximately \$10.6 million among the retail customers.

Cost Recovery Method 1 – Flat per kWh Recovery From all Firm Customers

Under this cost recovery method, which has the advantage of ease of implementation, recovery would be based on the total demand credit for Product B and firm kWh sales to retail customers. The estimate below uses numbers from the 2017 Test Year in Minnesota Power’s recent rate case to estimate the upper limit of the rate that would be charged to all customers to recover the cost of Product B. Note that the Large Power energy attributed to the participation in Product B is excluded from the total energy used to allocate costs as the interrupted energy is charged and credited through different means. The estimate below for Large Power energy attributable to participation in Product B assumes that energy is utilized at a 75 percent load factor.

Test Year Usage (Firm)	8,864,975 MWh
Less Large Power DR energy (75% LF)	<u>-985,500 MWh</u>
Demand Response Billing Units	7,879,475 MWh
Per kWh charge on Firm Energy (All Customers)	\$0.001349/kWh (max.)

Cost Recovery Method 2 – Recovery based on Rate Case Apportionment of Final Rate Increase

Another cost recovery method would be to allocate cost recovery based on the Commission’s apportionment of the final rate case revenue deficiency by customer class.⁸ Cost Recovery Method 2 aligns with the fact that Minnesota Power was directed to develop this product in the most recent rate case and it also has the advantage that it is consistent with how the Commission allocated the final rate increase in that case. The table below indicates how the cost recovery would work in this method.

Table 1: DR Cost Recovery Method 2

	Large Power	All Other Customers
Allocation (as a % of Retail)	34.182%	65.818%
Target Recovery (max.)	\$3.6 million	\$7.0 million
Test Year Firm Energy	5,574,721 MWh	3,290,254 MWh
Minus Large Power DR Energy	-985,500 MWh	
Total Billing Units	4,589,221 MWh	3,290,254 MWh
Rate	\$0.000792/kWh	\$0.002126/kWh

In addition to being consistent with apportionment of the final rate increase in the Company’s last rate case, Cost Recovery Method 2 also allocates more cost to the customer classes that benefit from peaking capacity products like DR. High load factor customers like the Large Power class, utilize more energy relative to the required capacity, whereas lower load factor customers like residential and commercial customer classes require higher ratios of capacity relative to energy consumed to reliably serve their needs.

B. Demand Response Cost Recovery and Rate Impact

Minnesota Power is requesting to add a Demand Response Surcharge on customer bills to recover the costs of the expanded DR program as it is subscribed to. As stated earlier, the

⁸ Docket No. E015/GR-16-664. Minnesota Power’s December 3, 2018 Revised Compliance Filing, Compliance Schedule 6.

Company believes the Commission has the authority to implement a cost recovery rider under both its general ratemaking authority and Minn. Stat. § 216B.05 and that implementation of a DR product without corresponding cost recovery would be contradictory to previous Commission directives.

The rate impact to a typical Residential customer's monthly bill would be a maximum increase of \$1.01, or 1.3%, under Method 1, and \$1.59, or 2.1%, under Method 2, based on monthly usage of 750 kWh. For Large Power customers, the rate impact would be a 2% increase under Method 1 and a 1.2% increase under Method 2. This rate impact does not take into consideration the reduction in the energy cost when the 150 MW of energy is curtailed or the avoided cost of procuring capacity over the 10-year period.

In addition, Minnesota Power requests approval to modify its existing Rider for Fuel and Purchased Energy to include in the Average Fuel and Purchased Energy Cost section the cost of the Physical Interruptible Energy Credit of \$30 per MWh paid to customers for avoided energy purchases under the Rider for Large Power Demand Response Service. Redlined and clean versions of the proposed modified Rider for Fuel and Purchased Energy are provided as Appendix E and F.

VIII. PROPOSED RIDER FOR LARGE POWER DEMAND RESPONSE

Minnesota Power's proposed new Rider for Large Power Demand Response Service ("DR Rider") is provided as Appendix D.

The APPLICATION section of the DR Rider specifies that it is applicable to any Large Power customer with a minimum ESA term that matches the required term (ranging from one to ten years) of the selected DR service option.

The DEFINITIONS section provides definitions of several terms used in the DR Rider.

The DEMAND RESPONSE SURCHARGE section specifies the Retail Service Schedules and Rate Codes to which the Demand Response Surcharge described above would apply. Because Minnesota Power has provided two possible options for cost recovery, both Method 1 and Method 2 are included as options in the DR Rider.

The LARGE POWER DEMAND RESPONSE PRODUCTS AND CONDITIONS section of the DR Rider contains detailed product descriptions, curtailment provisions, and other requirements for each of the three options, including:

Product 1 – Short-Term Emergency Capacity,

Product 2 – Long-Term Emergency Capacity Curtailable with Firm Load Control Periods, and

Product 3 – Market Surplus Service.

These three product options are described in more detail in section V above.

The RATE MODIFICATIONS section specifies the Demand Charge Credit, Physical Interruptible Energy Credit, and Buy-Through Pricing (as applicable) for each of the three service options. Development and support for the pricing of these options is provided in section VI above.

The DETERMINATION OF DEMAND RESPONSE BILLING DEMAND section specifies how the Demand Response Billing Demand and billing credits for the DR options will be determined, including the order in which the products will be measured and billed for customers who elect more than one DR product at a time.

The ADDITIONAL SERVICE CONDITIONS section:

- Describes in general how the duration and frequency of curtailments will be determined;
- Specifies the requirement for customers to provide curtailment equipment, and gives the Company the right to inspect and approve the installation;
- States that the Company is not liable for loss or damages caused by curtailment of service;
- Specifies that a customer who fails to follow Emergency Curtailment conditions is potentially liable for payment penalties or reimbursement of financial damages to the Company;
- Provides an option for customers to convert Product B service to Firm Service by meeting specified timing and notice requirements and paying conversion costs;
- Describes Company's intent to accredit and register the DR resource as a MISO Load Modifying Resource, and requires customers to participate in the registration procedure; and
- Requires parties to address any material change in MISO's capacity accreditation authority by negotiating a substitute accrediting authority within six months of the date of the change, subject to regulatory approval.

IX. CONCLUSION

Minnesota Power has offered, for Commission approval, a suite of new Demand Response product options that provides access to up to 150 MW of long term capacity through Demand Response from its largest industrial customers over a ten year period. This proposed suite of Demand Response products provides the optionality, flexibility, and quantification of benefits that Minnesota Power heard from stakeholders was important to consider. The Company has benefited from the intentional stakeholder outreach and cooperation with large industrial customers that occurred during this collaborative product development process and is grateful for the thoughtful participation and insight provided by all interested parties.

This unique opportunity to capture long-term Demand Response from some of the nation's largest industrial operations provides benefits to all Minnesota Power's customers in the form of avoiding building new generation infrastructure and avoiding generation emissions, while fairly compensating the participating customers for the service they provide to the system. Minnesota Power respectfully requests approval of the three Demand Response product options presented, along with the corresponding cost recovery necessary for implementation of this product suite that will provide system, environmental and customer benefits.

Dated: December 7, 2018

Respectfully submitted,



Jennifer J. Peterson
Manager – Regulatory Affairs
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 355-3202
jjpeterson@mnpower.com



Minnesota Power's Demand Response Stakeholder Workgroup Meeting #1

September 25, 2018 (Clyde Iron, 2920 W Michigan Street, Duluth MN 55806)

Please RSVP to Jennifer Peterson at 218-355-3202 or jjpeterson@mnpower.com by September 18th.

AGENDA

10:00 Coffee and Rolls (OPTIONAL)

10:30 Meeting Kick-off (Minnesota Power)

- Introductions/Welcome
- Review of Purpose and Objectives of Stakeholder Workgroup
- Overview of Agenda

10:45 Minnesota Power Overview

- Minnesota Power's System, Geography and Customer Mix
- Current Demand Response Products Offered

11:15 Audience Questions/Comments for Minnesota Power

11:30 Lunch

12:00 Demand Response Stakeholder Perspectives Panel Discussion

Panelists: Karen Turnboom (Verso Corporation), Allen Gleckner (Fresh Energy), Annie Levenson-Falk (Citizens Utility Board)

- What role should Demand Response play in power supply portfolios?
- What are industrial customers looking for in Demand Response products?
- What are some important issues utilities should consider when developing a Demand Response program for large industrial customers?

1:00 Audience Questions for Minnesota Power, Panelists – Opportunity for Attendee Comments

1:30 Travel from Clyde Iron to Verso Paper Mill (100 N Central Ave, Duluth MN 55807)

1:45 Tour of Verso's Duluth Paper Mill

- How is an industrial customer participating in Demand Response today?
- What are the impacts on operations when load is curtailed?
- What are industrial customers looking for in Demand Response products?

3:15 End

Future Demand Response Stakeholder Meeting for Residential and Small Commercial Programs – TBD

Minnesota Power's Demand Response Stakeholder Workshop - 9/25

**This sign-in roster will be provided to Verso plant personnel & submitted to the MPUC along with workshop meeting material

	Name	Organization	Workshop	Verso Tour
1	Jennifer Peterson	Minnesota Power	X	X
2	Mike Perala	MN Power	X	
3	Leah Peterson	MN Power	X	X
4	Herb Minko	MN Power	X	
5	NICK KANESKI	ENBRIDGE	X	X
6	SHANE HENRIKSEN	ENBRIDGE	X	X
7	DAVE CIVIK	MN Power	X	X
8	Alison Paulsen-Bantch	MN Power	X	
9	Frank Fredenickson	MN Power	X	
10	JAMES JARVA	USS	X	
11	Dave Stonzi	USS	X	X
12	Drew Moritz	Steel River	✓	✓
13	Phyllis A. Reha	PAR Energy - AEMA	✓	
14	Ernie Bjorklund	Bjorklund Law	X	
15	Andrew Partridge	CEE	X	
16	Rabi Wendergon	CEE	X	
17	Todd Poggiani	HiStac	X	
18	TOLAVER RAPP	CLEVELAND CLIFFS	X	
19	Danielle Winner	Dept of Commerce	X	X
20	Tom Sudo	OAG	X	
21	Jessica Tutsch	Sierra Club	X	X
22	Brian Lebus	OAG	X	X
23	Greg Chandler	UPM Blandin	X	
24	Karen Turnboom	Verso	X	X
25	Anne Wulfsberg-Falk	CUB	X	
26	Allen Gleckler	Fresh Energy	X	X
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34				

***Demand Response
Stakeholder Workgroup
Meeting #1***

September 25, 2018



Welcome to Duluth



And Thank You!



Purpose and Objective

- Purpose of today's workshop is to hear from stakeholders what considerations are important when developing a Demand Response Product for large industrial customers
- MP's role today is to LISTEN
 - Please share your insights and questions!



AGENDA

- 10:30 Meeting Kick-Off – Herb Minke
- 10:45 MP Overview – Frank Frederickson
- 11:15 Audience Questions/Comments for MP
- 11:30 Lunch
- 12:00 Stakeholder Perspectives Panel
- 1:00 Audience Questions/Comments for MP, Panelists
- 1:30 Travel to Verso Paper Mill
- 1:45 Tour of Verso's Duluth Paper Mill
- 3:15 Adjourn



What's Next After Today?

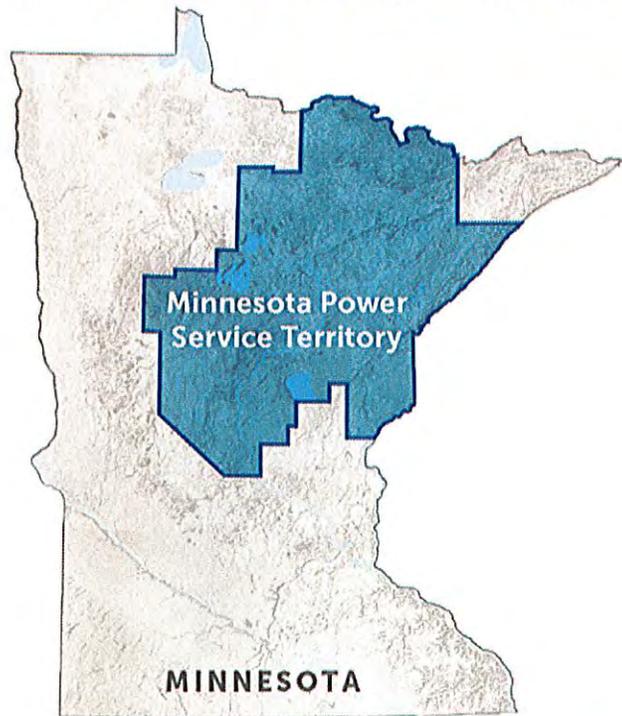
- Demand Response is a topic in multiple MP dockets:
Rate Case (16-664), Integrated Resource Plan (15-690) & Nemadji Trail Energy Center Contested Case (17-568)
- All presentations & a meeting summary will be filed in eDockets
- Rate Case Compliance Filing due end of November
- Second workshop on DR for residential/commercial customers later this fall



Minnesota Power Overview

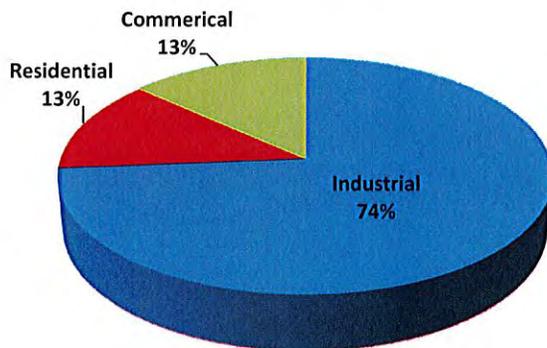


Minnesota Power Service Territory

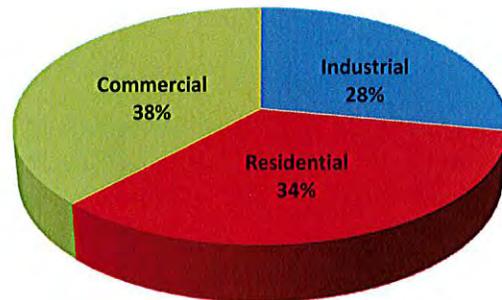


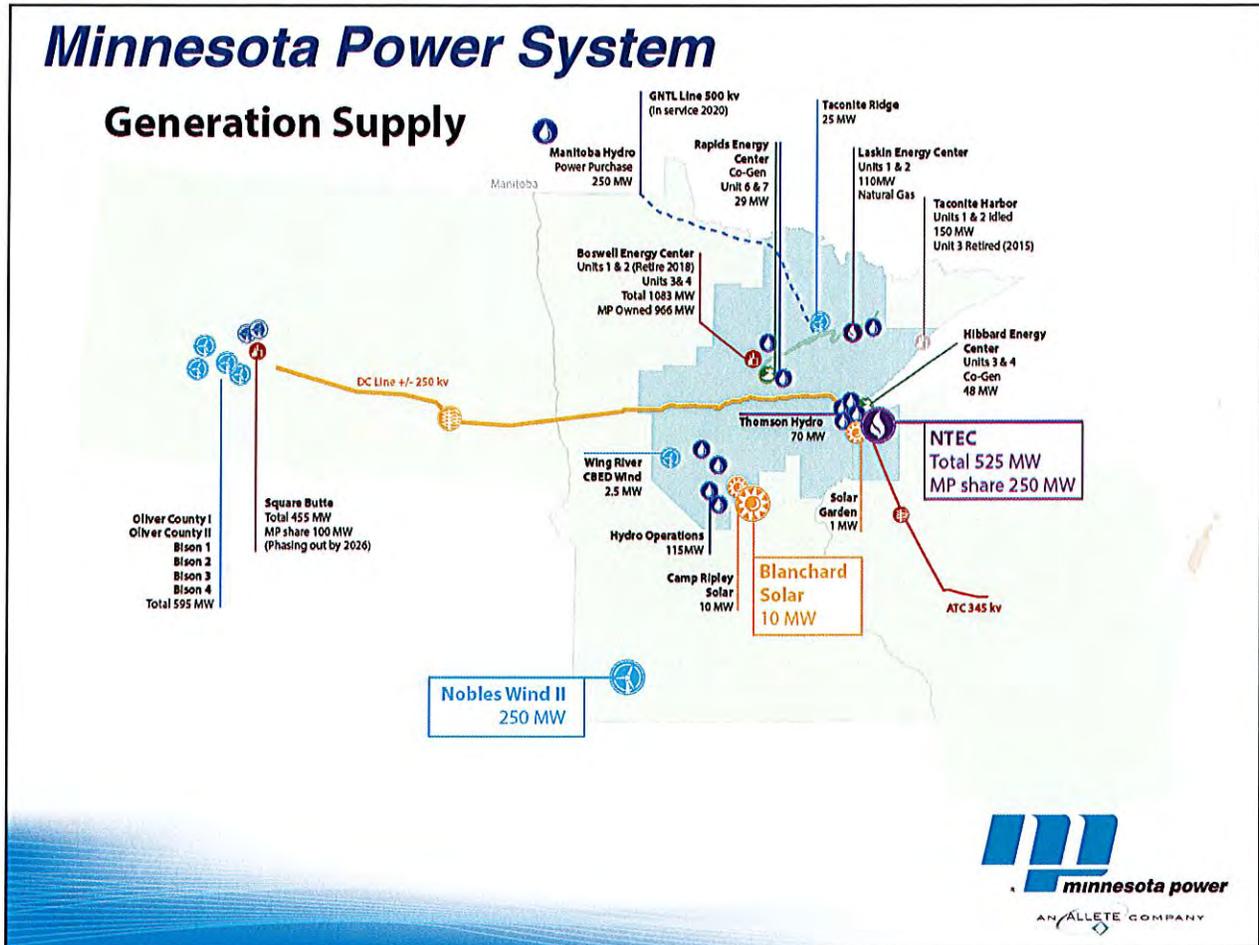
Minnesota Power Customer Concentration is Unique

Minnesota Power



US Average





Minnesota Power Current Demand Response Products

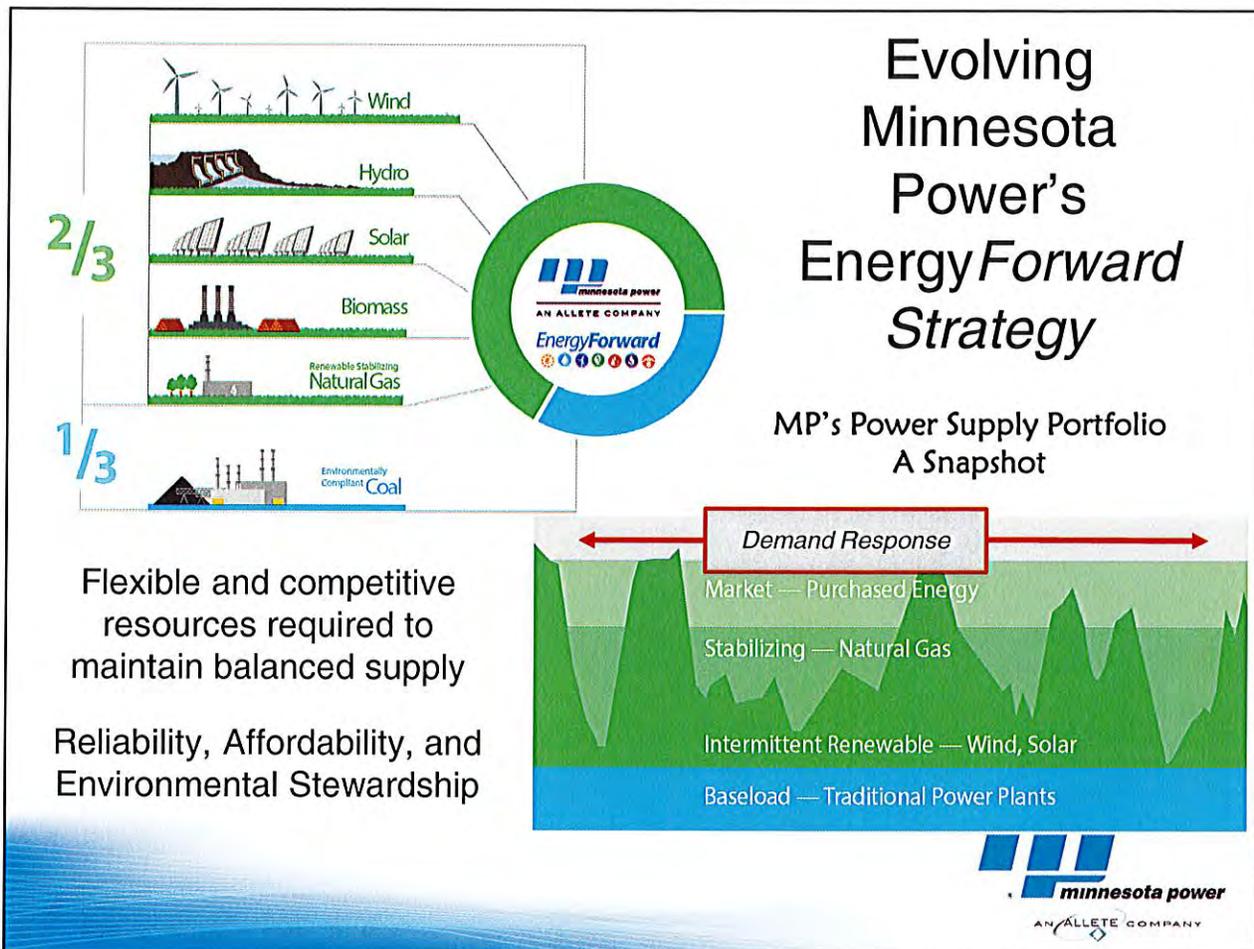
- Residential Dual Fuel
- Commercial/Small Industrial Dual Fuel
- Replacement Interruptible Service
- Large Power Incremental Production Service
- Time of Day Rate



How Demand Response Programs works on Minnesota Power's System

- Reduce energy demand during peak periods
- Minimize need to purchase energy during high priced hours
- Used to maintain reliable energy service to customers
- Displaces need to invest in new technologies





Stakeholder Perspectives Panel Discussion



Travel to Verso

- Directions
 - Use the following address for your GPS:
100 N Central Ave, Duluth MN 55807
- Parking
 - Free parking onsite at Verso
- Personal Protection Equipment
 - Please grab hearing and eye protection, as well as a safety vest before you leave



Thank You!

Discover how we are moving ***EnergyForward***



Minnesota Power's Demand Response Workshop #1

Appendix A

September 25, 2018

Duluth, MN

Audience Questions for Minnesota Power

(Following Presentations from Herb Minke & Frank Frederickson)

Question from Annie Levenson-Falk (CUB): What other DR products is MP exploring?

- MP is exploring how to expand the hours and credits for DR and how to create more value.

Question from Tolaver Rapp (Cleveland Cliffs): How does industrial DR benefit commercial and residential ratepayers?

- DR could prevent the need for peaking assets, potentially delay capital investments and reduce expensive energy

Question from Ryan Barlow (OAG): Are MP's current DR products just emergency triggers?

- Yes, currently MP's industrial DR products are based on emergency triggers but we are exploring more economic triggers as well. Our residential Dual Fuel program does currently have economic triggers.

Question from Greg Chandler (Blandin): Is DR driven by adding load or reducing generation?

- As we are changing our fleet resources we are integrating DR into our portfolio, so it's considered in our overall resource planning process.

Question from Ryan Barlow (OAG): Does MP bid DR products into MISO currently?

- We do not bid energy products into MISO, but capacity products are part of the MISO Resource Adequacy Module E.

Question from Karen Turnboom (Verso): How does MP's hydro and Manitoba Hydro purchase dispatch?

- Minnesota Power hydro is fairly dispatchable and Manitoba Hydro has blocks of energy available at all times. The Manitoba Hydro storage agreements can provide some peak stabilization.

Question from Allen Gleckner (Fresh Energy): Is there 250 MW of battery storage from the Manitoba Hydro contracts and how can it be called upon?

- The battery storage is just part of the overall 250 MW agreement and will require a few days' notice to Manitoba Hydro.

Question from Mike Perala (Minnesota Power): How often is Minnesota Power short or long on energy?

- About 50% of the time we have excess energy and 50% we are short and need to look to the market.

Question from Ryan Barlow (OAG): How often historically has RIS been called upon?

- The last significant event was in 2010 and has been called on limitedly because it is designed for emergencies only. However, there was a MISO unusual event in the summer of 2018 where expanded DR would have been beneficial with temperature forecasts off, nuclear plants in Louisiana off-line and MP's DC line down from a storm outage.

Question from Shane Henriksen (Enbridge): How many hours of interruption on a capacity and energy basis is planned?

- We are beginning to focus more on energy planning, not just capacity planning. MP includes 150 MW of DR in our resource planning models currently. RIS has 268 MW of DR from the last annual election. MP is looking for more DR assets and longer terms.

Question from Rabi Vandergon (CEE): Does MP test large customers for DR?

- [Answer from Karen Turnboom, Verso] Yes, MP tests us annually.

Question from Ryan Barlow (OAG): How is the pricing for these product being developed?

- We are reviewing the costs to build and own assets, the value of those assets and DR products and where it economic to build assets versus have DR programs in place.

Question from Shane Henriksen (Enbridge): How should DR cost allocation work given that the peaking need is primarily caused by 25% of the customers on your system, since 75% of your load is from large industrial customers who run 24/7?

- MP seeks cost-based rates, fair cost allocation, value driven cost signals and uses the class cost of service study as appropriate. MP will provide more information on how the costs for the current DR products are allocated.

Stakeholder Perspectives Panel Discussion

September 25, 2018

Duluth, MN

Moderator: Jennifer Peterson (Minnesota Power)

Panelists: Allen Gleckner (Fresh Energy), Annie Levenson-Falk (CUB), Karen Turnboom (Verso)

Brief introductory comments from each panelist.

- Karen: The Verso Duluth mill employs 250 people. Paper production has been challenged since the 2008 recession and we compete on a global market. Verso has stayed competitive through efficiency. However, energy represents 20% of our manufacturing cost and will be up to 25% by 2020. Our electric costs have more than doubled since 2007 and are 32% higher than our sister mills in other states.
- Annie: CUB is primarily focused on residential and small commercial customers and we help people with their energy bills. We look at DR like any other system resource and will compare it to other resources on things like reliability and cost. We see DR as an opportunity for customers to directly impact their own energy bills.
- Allen: Fresh Energy is a non-partisan, non-profit organizing with the goal of speeding the transition to a cleaner economy. We are excited about DR to increase renewable resources on the system and a flexible tool as we move to a 100% carbon free system. It is also an important tool to prevent stranded fossil assets and has the potential to be a cost-savings tool.

Moderated Panel Questions from Jennifer Peterson

- *What is one thing that excites you about DR and one thing that concerns you? (To all panelists)*
 - a. Karen: I am excited about the opportunity to maintain or reduce power costs for all customers. One concern is a DR program that is too complex or inflexible and prevents customers from participating.
 - b. Annie: I am excited about DR as it is potentially an under-tapped resource that is affordable and clean. There is the potential to defer investments, or put off long term investment decisions. My concern is that DR resources need to be there when called upon.
 - c. Allen: I am excited by the opportunity that exists at MP because of its unique load, 74% coming from industrial customers who are sophisticated. Some challenges would be to build a portfolio that would spread curtailment around and not be a large burden on a few customers. We don't want the same burden on the same customers who are running complex operations. We also need to think about how DR is utilized for MP systems and also utilized in MISO.
- *When developing a DR program, what key objectives should Minnesota Power be considering?*
 - a. Annie: Need to consider overall cost and value. DR that enables more renewable resources could be a lower overall cost.
 - b. Allen: A DR program should consider externalities, emissions reductions, avoiding risk of fuel prices, and other value. We still need tools to quantify that value though.
 - c. Karen: A DR program should work to optimize the dollars. It helps enhance our budget.
- *What are some key considerations that change depending on whether you are thinking about DR programs for industrial customers versus those for residential or small commercial customers?*
 - a. Karen: Not all industrial customers are the same, we have different operational considerations and there is a lot to take into account when deciding to participate in an event. We don't want to risk customers of paper

products, which interruptions can do. In DR, industrial customers are taking on risk, because we are in the market of manufacturing things, not in the business of shutting energy off. For example using an analogy told to me by Minnesota Power's Dave Chura, if we are baking a dozen cookies, we will have to make a decision whether to shut off the oven before they are ready and lose that batch of cookies, or pay more to keep the oven on to keep cooking them.

- *Related to that thought, how important is having a buy-through option in a DR program?*
 - a. Allen: A buy-through option is OK as long as there is a contractual arrangement for MISO capacity accreditation. You can't have buy-through options that wouldn't comply with MISO rules. A buy-through could limit both the company and customer's exposure to the market, but it will be important to have price signals in place for industrial customers. There could also be a value to utility customers by avoiding peaking plants and shared savings on buy through options.
- *How important is advanced notice prior to the start of a control period or curtailment? How much notice is appropriate?*
 - a. Karen: The longer the better. We need at least one hour notification but more flexibility will allow us to adjust our operations and build more inventory. We can prepare more for the next day's operations if we have more time.
 - b. Allen: The more flexible the better, and instant would be ideal, but that's not realistic, so as responsive as realistic would be good.
 - c. Annie: A portfolio of DR products is important because different programs could require different notices. For example on the residential side, many DR options don't notice interruptions for things like heat pumps. So you could use a variety of programs together.
- *How does DR compare to other resources? How does it fit with Energy Efficiency?*
 - a. Allen: On the theme of new products, you can use combinations like Time of Use rates combined with energy efficiency to look at load profiles and figure out the optimal mix for cost and flexibility.
- *What relationship do you see between the utility's use of DR for MISO or for other purposes?*
 - a. Allen: We must ensure DR products are fully accredited for capacity and see how they fit into the MISO energy market. You could structure a program to be a capacity resource and economic in the 8760 type of planning. The more flexible the product the more durable it is to changes in the MISO rules.
 - b. Annie: Having DR programs that are triggered only by MISO events or market prices is proving to not be enough. We need to consider things that are happening in Minnesota Power's territory specifically and think more creatively beyond just emergency curtailments.
- *What are the measurements or metrics of a good program? What would success look like?*
 - a. Annie: I would look at, was it there when it was called? Was it used as intended? If all customers are paying for it, it should be used. Also, is there steady enrollment, or are customers leaving the program? Are the notices and customer communications clear? Do customers know what they are signing up for?
 - b. Karen: I would say, is there steady enrollment and do customers clearly understand the need and the cost.
- *What risks are industrial customers taking on when they sign up for a DR program?*
 - a. Karen: We take on many risks, including pricing, operational and safety risk. There is additional wear and tear on equipment each time you shut it down. Sometimes when you shut it down it doesn't come back up the same way. We also need to meet our own customer needs and deliver a product on time. We don't have a large, warehouse and don't have big inventory, so most times we are manufacturing the product as it is

ordered. There is also pricing risk – we have the cost of participation and then the cost of buying through an interruption, if needed. Finally, there is a safety risk to our employees when we have to shut down equipment with little notice and then start it back up again.

- What constitutes cost-effectiveness of the program? Do we need a new framework to evaluate cost-effectiveness in DR programs?
 - a. Annie: We have the methodologies in place and can treat DR the same way as other resources like a peaking plant, but maybe there are other ways to evaluate it too.
 - b. Allen: We haven't had any new DR tariffs in a while, but we should treat DR like other generation resources. We do need to ensure we are including all relevant benefits and everyone who is benefiting should pay for it. We would be open to a potential to rate base DR products to level the field with thermal assets.
- How do you measure those system benefits?
 - a. Allen: We can use the avoided cost methodologies we already have, which is essentially the same thing as a benefit. Benefits should include qualitative ones and be broad and comprehensive. Externalities should be considered as well. The costs need to be clear, along with the benefits.
 - b. Annie: We need to consider the value on the distribution system as well, as there could be EV impacts on specific neighborhoods, for example.
- How will you know when you have the right pricing for your program?
 - a. Annie: Customer participation is a key indicator. But start with the cost, the technology to interrupt, customer payments, marketing costs, etc. Consider if it is competitive with other resources. There will be a sweet spot where customers are participating but not overpaid.
- How should cost recovery for DR programs be managed? Which customers should pay for those resources?
 - a. Allen: We should look at who benefits and who causes costs. DR shouldn't be treated differently than other proceedings, like other generation resources, and should use the Class Cost of Service Study as a guide.
 - b. Annie: Economists will disagree, as cost causation is as much as art as science, but determining cost causation is important.
- As Minnesota Power moves forward in designing a DR product for large industrial customers, what is one thing you'd want us to keep in mind?
 - a. Karen: LP customers are making and selling products in global markets and provide higher paying jobs. We need DR products that are flexible and fair to companies, and that reduce overall cost and allow customers to buy through. Fair and transparent compensation is important.
 - b. Annie: Make sure that DR is considered in resource planning like other resources.
 - c. Allen: We need to take a broad view of benefits and don't leave value on the table. Try to alleviate market concerns and consider qualitative benefits as well.

Audience Questions for Panelists

Question from Danielle Winner (Department of Commerce): Have you looked at DR programs utilities offer in other states that could be an example?

- Karen deferred to Drew Moratzka (LPIG). Drew noted that LPI referenced a NIPSCO product in MP's last rate case and its NTEC proceeding.

- Annie noted there are many examples on the commercial/residential side that were referenced in Xcel's DR stakeholder process

Question from Ryan Barlow (OAG): Considering the diversity of industrial customers, have you considered if there are more benefits available in specific tariffs for individual customers?

- Karen: One tariff for all LP customers creates an equal playing field for all and is transparent. Having specific customer agreements could create distrust.
- Allen: It could be possible to take a hybrid approach with optionality under one tariff. For example, you could have one option that includes MISO accreditation, and let customers choose which option works for them.

Question from Phyllis Reha (AEMA): How do you include values for system compensation?

- Allen: We could look at avoided cost methodologies, identify the benefits and quantify them. Avoided cost methodologies are folded into the calculus of fuel variability.
- Annie: It's important to have an upfront calculation where you can show expected costs and benefits and then evaluate whether those benefits were realized.

Question from Ryan Barlow (OAG): The word flexibility has been used a lot today, how would you each define it? What does it mean to you?

- Karen: Flexibility in a DR program means, does it meet the need of MISO, MP, other customer classes while still allowing Verso to say yes or no at the moment of interruption. There will be times we can't respond to the event and we need the opportunity to buy through.
- Allen: From a system perspective, dispatchability is important. Our current DR programs are currently the least flexible, they never get called and have a narrow scope. There is a range of flexibility from the current RIS program of emergency only dispatch to unlimited and instant dispatch. Somewhere closer to unlimited dispatch would be preferred.

Question from Ingrid Bjorklund (AEMA): How do you reward customers for flexibility when it allows you to not commit to a 30 year resource?

- Annie: There is real value in reducing the risk of long term financial investment for customers. Quantifying that risk is a challenge.

Question from Tolaver Rapp (Cleveland Cliffs): How do you structure rate design options so that participating customers aren't paying for it and therefore diluting the benefit of the program?

- Allen: The cost of any program would go through regular cost allocation as set in the last rate case. We'd view it similar to a CT except sharing the benefit to those that provide it.
- Annie: Allocate cost and customers pay that cost but participating customers get benefit. There would be two separate calculations – one to determine the compensation to participating customers and one for cost allocation.
- Karen: Costs should be allocated equitably.

Question from Mike Perala (MP): How would you determine the quantity of DR a customer would choose to participate in?

- Karen: We would do a cost/ benefit analysis and would depend on a lot of things like the buy-through option, what costs get allocated back to the LP class, how many hours are in the program, how often it can occur, what day of the week and time of the day, etc. The rewards would have to outweigh the risks.

Question from Jennifer Peterson (MP): Given the multiple parties you need to work with on a DR product, negotiations between MP and the industrial customers, and then collaboration with stakeholders in the regulatory process, what should be the analysis sequence in conjunction with the regulatory process?

- Annie: We don't want a situation where the utility and LP customers come to an agreement that then gets derailed later. We should have earlier conversations with more detail as the project progresses, before a regulatory filing.

Question from Rabi Vandergon (CEE): How should MP's DR programs account for shifting loads and not just load shedding? It's not part of existing programs, but something we should evaluate on the commercial/residential side going forward.



Minnesota Power's Demand Response Stakeholder Workgroup Meeting #2

November 20, 2018 (Saint Louis County Building, Lake Superior Room, Duluth MN)

AGENDA

10:30 Meeting Kick-off

- Introductions/Welcome
- Review of Purpose and Objectives of Stakeholder Workgroup
- Overview of Agenda

10:45 Minnesota Power Overview

- Minnesota Power's System, Geography and Customer Mix
- Current Demand Response Products Offered

11:00 Demand Response Programs for Residential and Commercial Customers (Rabi Vandergon, Center for Energy and the Environment)

- Overview of successful DR programs elsewhere
- Best Practices – what has worked, what hasn't
- Important Considerations

11:30 Lunch

11:45 Demand Response Stakeholder Perspectives Panel Discussion

Panelists: Tony Mancuso (Saint Louis County), James Hietala (WLSSD), Mindy Granley (UMD), Michelle Robbins (MP)

- What are residential customers looking for in Demand Response products?
- What are commercial customers looking for in Demand Response products?
- What are some important issues MP should consider when developing a Demand Response program?

12:45 Questions for Minnesota Power, Panelists; Opportunity for Attendee Comments & Discussion

1:30 Tour of Saint Louis County's Solar Arrays, Energy Efficiency Updates

2:30 End

***Demand Response
Stakeholder Workgroup
Meeting #2***

November 20, 2018



Welcome to Duluth



and Thank You!

Purpose and Objective

- Purpose of today's workshop is to discuss residential and commercial demand response options and to hear from stakeholders what is important to them.
- MP's role today is to LISTEN
 - Please share your insights and questions!

AGENDA

- 10:30 Meeting Kick-Off
- 10:45 MP Overview
- 11:00 Demand Response Programs for Residential and Commercial Customers – Rabi Vandergon
- 11:30 Lunch
- 11:45 Stakeholder Perspectives Panel
- 12:45 Audience Questions/Comments for MP, Panelists
- 1:30 Tour of Saint Louis County Building
- 2:30 Adjourn

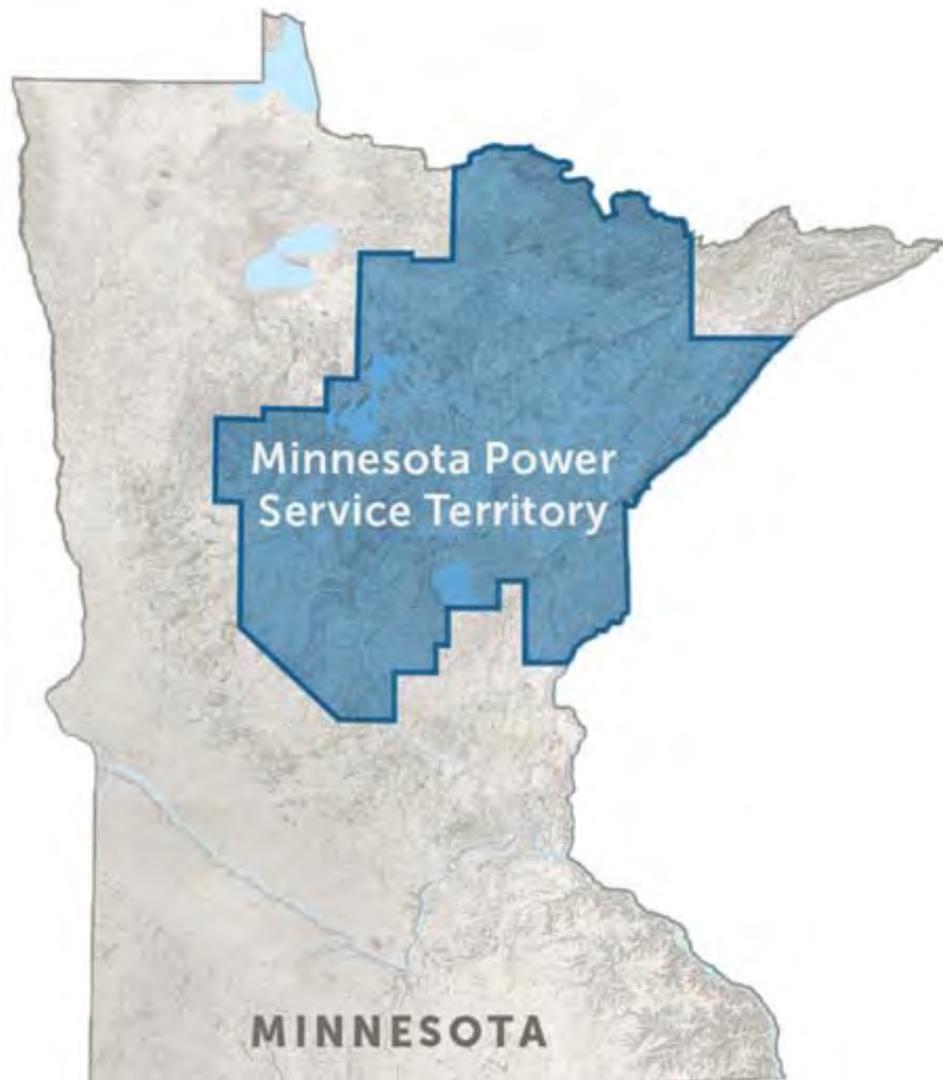
What's Next After Today?

- Demand Response is a topic in multiple MP dockets
- All presentations & a meeting summary will be filed in eDockets
- MP will take into consideration feedback during the 2020 IRP process

Minnesota Power Overview

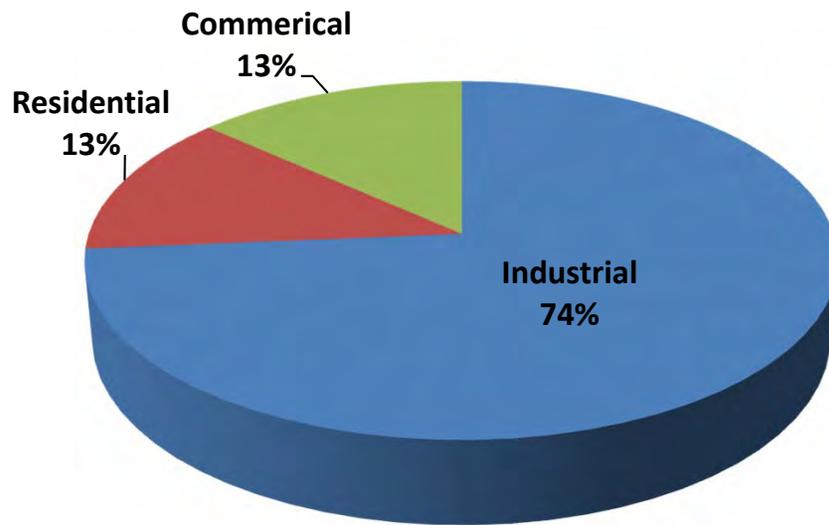


Minnesota Power Service Territory

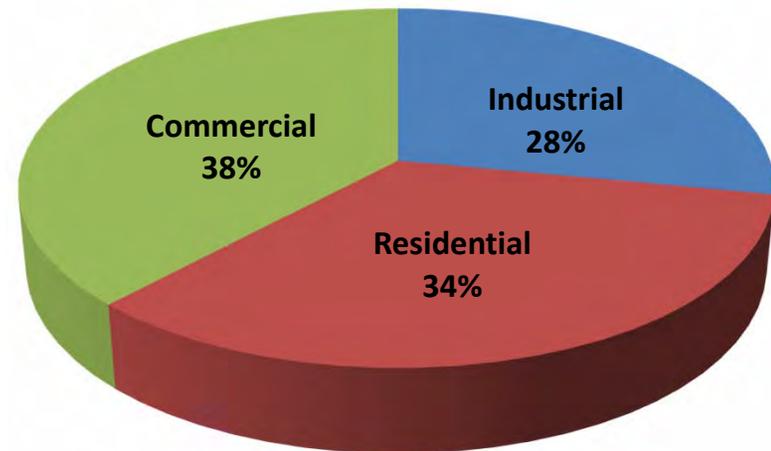


Minnesota Power Customer Concentration is Unique

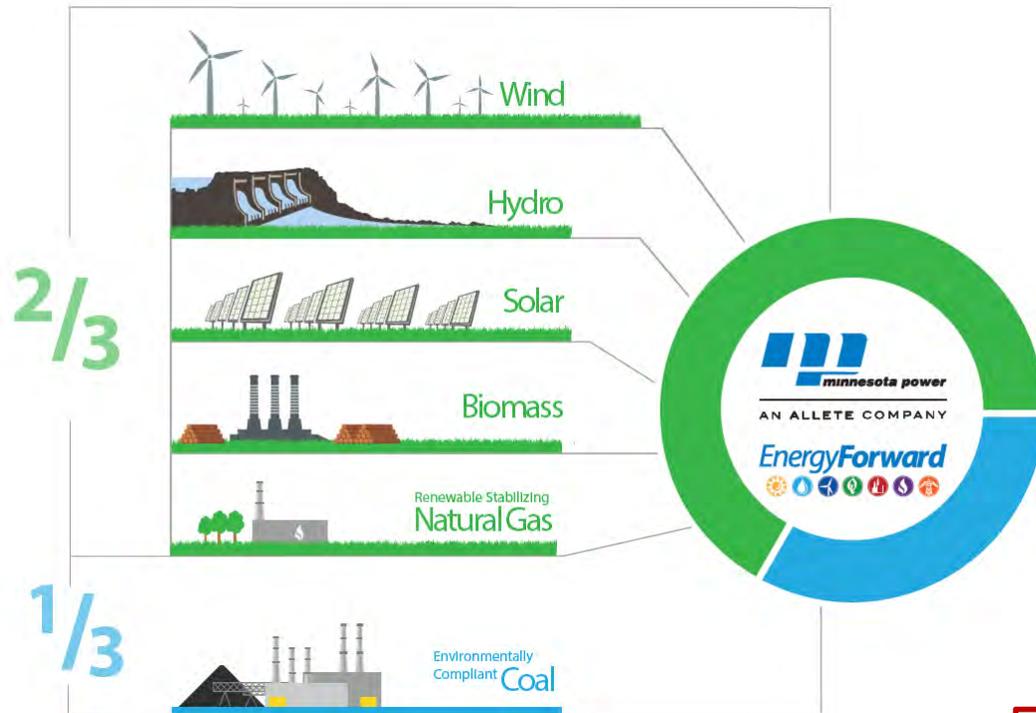
Minnesota Power



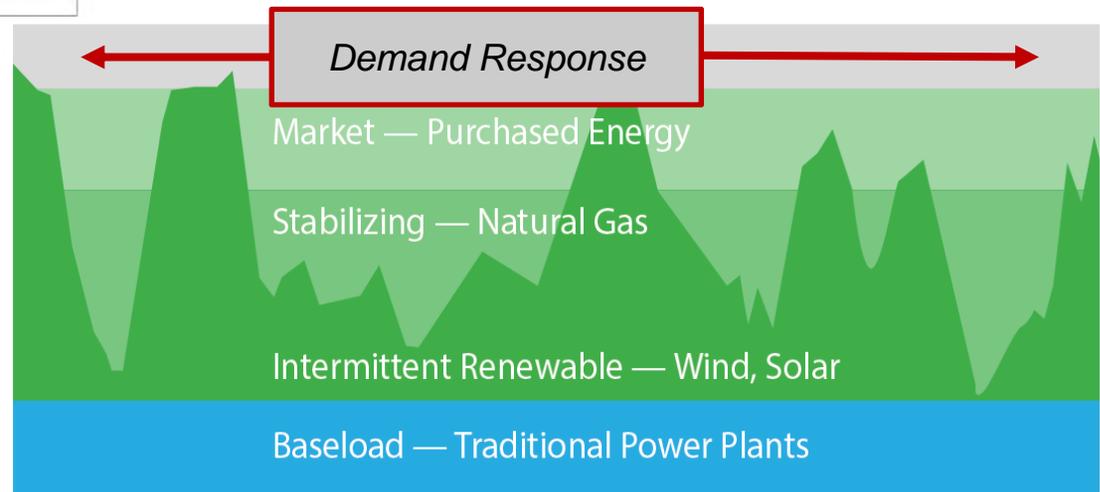
US Average



Evolving Minnesota Power's EnergyForward Strategy



MP's Power Supply Portfolio A Snapshot



Flexible and competitive resources required to maintain balanced supply

Reliability, Affordability, and Environmental Stewardship

Minnesota Power Current Demand Response Products

- Residential Dual Fuel
- Commercial/Small Industrial Dual Fuel
- Replacement Interruptible Service
- Large Power Incremental Production Service
- Time of Day Rate

How Demand Response Programs works on Minnesota Power's System

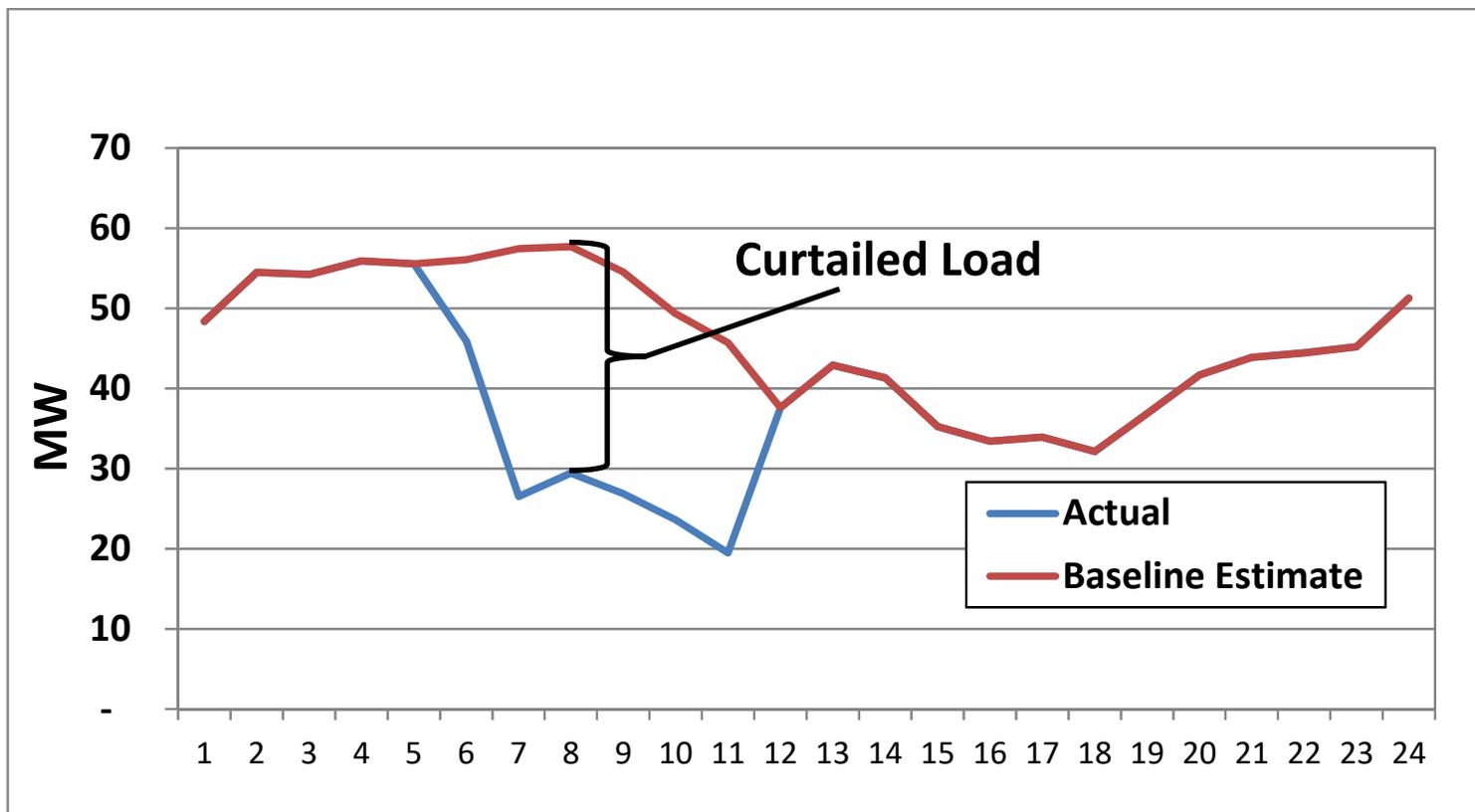
- Reduce energy demand during peak periods
- Minimize need to purchase energy during high priced hours
- Used to maintain reliable energy service to customers
- Displaces need to invest in new technologies

Dual Fuel



MP notifies dual fuel customer when interruptions will occur through text message, e-mail, or company website

Dual Fuel



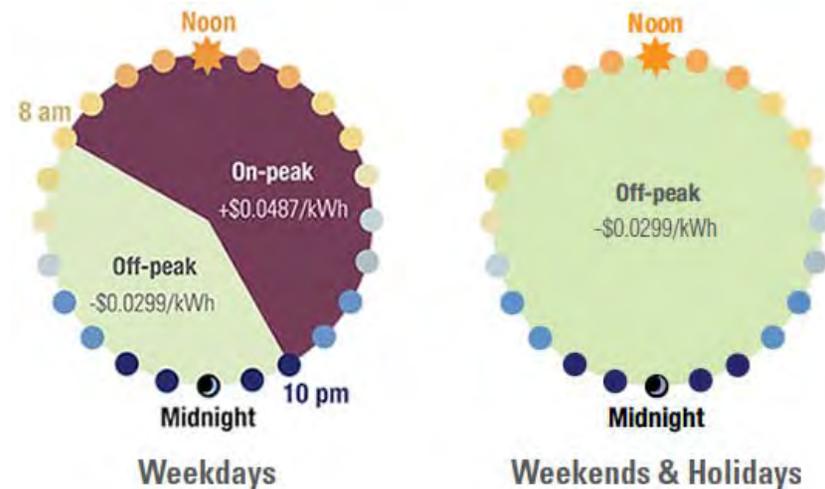
Time-Of-Day Overview

- Customers have the potential to save money by shifting electricity use from on-peak hours to off-peak hours.
- Minnesota Power can pass cost savings on to customers by charging a discounted rate for off-peak usage.
- Electricity used during on-peak hours when demand is higher will cost more.
- During periods when energy demands on Minnesota Power are particularly high, customers will be charged an even higher rate.

Defining Peak Periods

Off-Peak hours are *Monday-Friday from 10 p.m. to 8 a.m. and all day on weekends and holidays*

On-Peak hours are the hours that electricity use is typically the highest: *Monday-Friday from 8 a.m. to 10 p.m.*



Critical Peak Pricing (CPP) will occur when MISO is experiencing high energy demands - most likely in the winter and summer when there is a high level of heating and cooling needs.

Planned Events

Planned (non-emergency) CPP events will be limited to 3 hour windows from *12-3pm in the summer and 5-8pm in the winter.*

CPP Event Windows

Summer	12:00–3:00 p.m.
Winter	5:00–8:00 p.m.
Emergency Event	8 hours maximum at any time

- Participants will be notified (via phone and on the website) by 8pm the day prior to a planned event giving them the opportunity to reduce or shift usage during the event and minimize the effect of the increased rate on their bill

**The maximum CPP allowed is 50 hours per year*



Residential/Commercial DR Considered in Long-Term Planning

Hot Water Program

- Cycle electric hot water customers to reduce peak energy demand
- Program potential is 7 MW

Air Conditioning Program

- Cycle electric air conditioning customers to reduce peak energy demand
- Program potential is 7 MW

Stakeholder Perspectives Panel Discussion

Thank You!

Discover how we are moving ***EnergyForward***



Questions for Center for Energy & the Environment

- Q (from Buddy Robinson): How many hours is the typical Dual Fuel residential customer interrupted per year?
 - *It's possible for the company to call 2,638 hours per year. Normally we have between 4 and 10 interruptions per year, around 4-6 hours per interruption*

- Q (from Jennifer Peterson, MP): On DR potential studies, are there any correlations between what programs performed better in different climates?
 - *Yes, there are some irrigation DR programs that don't work in areas with crops that can't have their water source interrupted, and there are some refrigeration programs that actually cause more energy usage to recover from interruptions*

- Q (from Ryan Barlow, OAG): How does a smart thermostat opt out program work?
 - *Customers choose what hours apply when they enroll.*

- Q (from Buddy Robinson): Is there any interest in looking at a different regulatory regime for utilities, maybe one that includes a variable rate of return to encourage more efficiency? How can we maintain profits while using less energy?
 - *Xcel Energy currently has an open docket to look at performance incentives and is considering those questions (docket 17-401)*
 - *(from OAG) The OAG is very interested in performance metrics, but is cautious of incentives. Disincentives are an option too, as is just using metrics to report on performance.*

Demand Response (DR) Panel #2 Questions – November 20, 2018

- Opening: introduce panelists and offer a few minutes for them to provide an overview of their organization, role and/or high level thoughts on DR
 - James Heitela (WLSSD): WLSSD is a unique government agency that handles waste water and solid waste services. We are much more than a municipal plant. 95% of the time WLSSD deals with waste water and the majority of electric accounts are small but generate a lot of demand. Waste water treatment and pumping stations are some of the largest demand accounts on the systems. One challenge for WLSSD is there are things out of our control like when the wastewater is coming in from customers and needs to be treated. We can do a lot but not in isolation and don't want to be counterproductive to what MP wants.

 - Tony Mancuso (Saint Louis County): Saint Louis County has a wide variety of facilities – a truck shop, a jail, office buildings, a land fill, recycle center and more. We are doing a lot but need to be educated – we don't know all the options available to us on the demand side. We've worked well with MP's CIP team and have made a lot of good progress on Energy Efficiency. Smart thermostats may work in the office buildings in nights and weekends when no one is in the buildings. We don't have big loads to manage. We are willing to invest in the right things but need a good partner, like MP has been on energy efficiency and renewable investments through CIP but maybe DR is the next step. Our policy makers are county commissioners and they think green – both on the environment and financially.

- Michelle Robbins (MP Distribution Supervisor and Residential Dual Fuel Customer): As a supervisor of distribution service representatives, I work with customers on new services, answering demand questions, and have representatives across the service territory. I've also been a residential Dual Fuel customer for several years.
- Mindy Granley (UMD Sustainability Coordinator): I manage sustainability efforts for UMD, a public institution with a \$3 million per year electricity bill. Our peak load is 6 MW and now up to 7 MW after our air conditioning building upgrades so we are always interested in reducing our usage and in sustainability efforts.

Current Experience with DR

- (Tony) How is the county currently participating in DR?
 - *We have a building in Virginia, MN that is on dual fuel. It's a pretty hands off program, we don't have to do much to manage participating in that.*
- (Michelle) As a dual fuel residential customer, how does DR work for you?
 - *I spent a lot of time comparing costs and my bills before I made the decision to participate and it is a financial benefit of about \$250 per year for me. I also have a ground source heat pump. Overall it's been a pretty easy experience for me.*
- (Michelle) From an MP perspective, what sort of feedback do you hear from customers regarding DR programs?
 - *Customers feel like we don't interrupt them for a long time and then they get interrupted several times at once – normally in January when it's coldest. With TOD customers are looking for more options and flexibility such as health care shift workers.*

Implementation of DR Programs

- (James) As a commercial customer, what kind of flexibility do you need to successfully implement a DR program?
 - *If we know ahead of time we could work with our customers to shift operations. The price points will define how we operate, along with clear feedback on costs. WLSSD is considering putting in a 1.6 MW CHP methane gas and generators. We are brand new at this and there are a lot of variables. We'll need some time to react and also a clear price benefit to participate.*
- (Mindy) How does DR compare to other resources? How does it fit with Energy Efficiency Programs?
 - *We are thinking of a lot of things from a research perspective, including energy storage. We're also looking at chilled water, loop and air conditioning programs as that's a big part of our load. We are also thinking about multiple goals – a financial benefit but also environmental benefits and maybe research opportunities. Culture change is also really important in implementing new programs.*
 - *(Michelle) I agree that culture change is really important. We put climate controls in our buildings at MP's Herbert Service Center and learned that people want control over the settings*
 - *(Mindy) There is a balance. We can't make the climate too uncomfortable for people, they still need to be productive.*
 - *(Tony) Our experience are younger employees are more open to changing behavior, but we need to engage and educate and offer an alternative instead of just taking stuff away.*
- (All) Is there a limit to the amount of curtailing that would be acceptable? How much is too much?
 - *Depends but depends on level of curtailment and more importantly the impacts on temperature and comfort.*
- (Tony) How important is advanced notice prior to the start of a control period or curtailment? How much notice is appropriate?
 - *Not too much, we just need some advanced notice.*
- (James) What do you think are viable methods of load reduction during DR events?

- *We could change the levels in our basins, run more generators, shift our testing. If we had notice we could take load off and our operations could be slowed down*
- (Tony) For DR products, would your preference be to have technology that automatically takes load off line or communication from the utility to have the customer take the load off yourself?
 - *For the most part MP could take care of that if there was a schedule we could agree on*
- (Mindy) How do you think customers should be compensated for taking load off the system? (i.e. the current dual fuel programs offer a lower energy rate for energy signed up for the program)
 - *A lower rate or savings that would allow us to reinvest in energy efficiency or renewables. It's hard for us to get upfront capital investment and the university has competing priorities so it would be great if compensation provided us some money to do other things*
 - *(James) We don't need a fast payback, but we do have other infrastructure demands on our capital. Cost certainty can help increase the priority of the investment.*
 - *(Tony) We are all in the same boat with increasing infrastructure costs*

New Programs

- (James) Currently MP offers dual fuel heating DR program. What additional programs would you like to see MP offer in the future? What would your organization be interested in seeing?
 - *The CIP PowerGrant program is flexible. WLSSD could be a good source to experiment on what might works for the future. MP could provide some options for WLSSD to try out.*
- (Michelle) What do you think the main goal of a DR program should be?
 - *Most customers comment on the cost of the program, but we can't lose sight of how important flexibility or reliability is. Because while customers may complain about cost, they expect energy reliability.*
- (Mindy) What are the measurements or metrics of a good program? What does success look like?
 - *Metrics are really important – you could have both financial and kWh metrics. Also, how do you use this program to execute the most renewables and do the most good overall. Capturing environmental benefits is important, as are cost savings and energy savings.*
- (James) What risks do commercial customers take when they sign up for a DR program?
 - *We are taking a risk whenever we have to make an investment. For example, is there an expectation that we need to do something for our control systems. For WLSSD, investment sometimes means risk and our board is risk averse. We need certainty to try something new.*
 - *(Mindy) The university could take a risk if we could capture research grants to gain some learning opportunities. Need weigh risks against benefits and carbon goals.*
- (Tony) What barriers would prevent you all from participating in a program?
 - *There is a strong reliability barrier, there are certain things (like electricity) we just can't not have. And we also need budget stability. Cutting edge is ok for us, but bleeding edge is not. Predictability is key.*
- (Tony) Who are the right people within an organization like yours to talk to about DR?
 - *Our design professionals don't seem to ask the right questions up front. We are getting designs that aren't thoughtful enough. The County has an integrated design process and considers energy efficiency, the life cycle of the building and minimal maintenance. CIP has be a great tool for education and I think we need something similar for DR.*

Conclusion

- (All) As Minnesota Power moves forward and thinks about DR for residential and commercial customers, what's the one thing you'd want us to keep in mind?
 - *(Mindy) Help us identify where we can cut demand. We don't have a lot of information, Notice time also helps with figuring out how to cover capital investment needs.*

- *(Michelle) Keep costs low for everyone, offer flexibility and different options*
- *(Tony) CIP has been fantastic, is longstanding and entrenched in the community. Maybe DR could work in a similar way for education, benefits, risks and costs.*
- *(James) From 2012-2016 WLSSD reduced its demand by 25% and energy by 26% but there is still more opportunity. We need to be environmentally and fiscally responsible.*

Audience Questions

Q (Ingrid Bjorklund, AEMA): What is the commercial potential for DR in MP's service territory?

- *A: Currently a low percentage for dual fuel customers, but requires a second source. Potential opportunities with newer DR products.*

Q (John Kundert, Department of Commerce): What is the source for dual fuel back?

- *A; Primarily propane gas.*

Q (Jim Richardson, Pequot Tool) Has MP looked at an interruptible rate for General Service customers?

- *A; On a limited basis given load shed options for General Service customers.*

<u>Hour Ending</u>	<u>Firm Load</u> <u>(MW)</u>	<u>Firm Service Level</u> <u>(MW)</u>	<u>Firm Load Control</u> <u>(MW)</u>	<u>Buy-through</u> <u>(MW)</u>	<u>Note</u>
	<u>A</u>	<u>B</u>	<u>AVG(RED Cells) - A</u>	<u>MAX (A - B, 0)</u>	
100	100	50			
200	100	50			
300	100	50			
400	100	50			
500	90	50			
600	90	50			
700	90	50			
800	90	50			
900	55	50	45	5	Firm Load Control Period Begins
1000	55	50	45	5	
1100	55	50	45	5	
1200	55	50	45	5	
1300	55	50	45	5	Firm Load Control Period Ends
1400	100	50			
1500	100	50			
1600	100	50			
1700	100	50			
1800	100	50			
1900	100	50			
2000	100	50			
2100	100	50			
2200	100	50			
2300	100	50			
2400	100	50			

ALERT: Five-hour Firm Load Control Period called: Beginning at HE 900

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

APPLICATION

Applicable to any customer taking service under Large Power Service Schedule 74, having a minimum contract term of at least the duration of the respective demand response product, and subject to the Conditions below.

The total availability of Product B under this Rider is limited to 150 MW of demand response. In the event that Customers request a total of more than 150 MW of Product B, the Company shall apply an appropriate methodology to allocate the MW based on number of months under contract and typical customer service requirement.

DEFINITIONS

Demand Response Billing Demand: Capacity volume associated with the Rider for Large Power Demand Response Products A, B and C that will receive Demand Charge Credits on a monthly basis, as specified herein.

Demand Response Contract Demand: The aggregate of Customer's accredited capacity of Products A, B and C under this Rider.

Firm Load Control Period: Period in which participating Customers can either physically reduce their energy or buy-through at the Company's incremental energy cost plus an adder, as specified herein.

Firm Service Level: Customer's targeted demand reduction threshold that is specified when customer registers for Products A, B and C.

Emergency Curtailment: Requirement for participating Customers to physically reduce load to their Firm Service Level.

DEMAND RESPONSE SURCHARGE [Method 1]

For Customers taking service under all retail rate schedules except Competitive Rate Schedules – Rate Codes 73 and 79 – a demand response surcharge of _____¢ per kWh shall apply in addition to all charges for firm service, not including any Large Power Demand Response Service, taken under Company's standard rate schedules.

OR

DEMAND RESPONSE SURCHARGE [Method 2]

For Customers taking service under all retail rate schedules except Competitive Rate Schedules – Rate Codes 73 and 79 – a demand response surcharge as specified below shall apply in addition to all charges for firm service, not including any Large Power Demand Response Service, taken under Company's standard rate schedules:

Rate Class	Demand Response Surcharge
Large Power Customers	_____¢ per kWh
All other applicable Retail Rate Customers	_____¢ per kWh

Filing Date _____ MPUC Docket No. _____
Effective Date _____ Order Date _____

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

LARGE POWER DEMAND RESPONSE PRODUCTS AND CONDITIONS

There are three optional Demand Response products available to Customers. The characteristics and conditions for each product are as follows:

Large Power Demand Response Product A - Short-Term Emergency Capacity

Product A is a one-year emergency-only capacity product. A minimum one-year Demand Response commitment and one-year term remaining on Customer's Electric Service Agreement at time of selection is required for this product. Product A includes a Demand Charge Credit as detailed in the Rate section below. The Company will call on this capacity as allowed under the requirements to accredit capacity for satisfying resource adequacy requirements or to mitigate local system emergency events.

Short-Term Emergency Capacity must meet applicable requirements to accredit capacity for satisfying resource adequacy requirements, including, but not limited to, maximum number of annual emergency curtailments, maximum duration of emergency curtailments, and seasons in which emergency curtailments can occur.

Before an Emergency Curtailment, the Company will provide the lesser of (1) at least two hour' advance notice, or (2) the notice that is required in connection with requirements to accredit capacity for satisfying resource adequacy requirements.

Large Power Demand Response Product B - Long-Term Emergency Capacity Curtailable with Firm Load Control Periods

A minimum ten-year commitment and minimum ten-year remaining term on Customer's Electric Service Agreement (ESA) at time of selection is required for this product. Product B includes a Demand Charge Credit and a Physical Interruptible Energy Credit detailed in the Rate section below.

Product B has two circumstances in which the capacity can be called upon by Minnesota Power:

1. For emergency capacity as required to accredit capacity for satisfying resource adequacy requirements.
2. For Firm Load Control Periods as allowed under the provisions in this Rider.

The following are the requirements for the emergency capacity provision of Product B:

The Company will call on the emergency capacity as allowed under the requirements to accredit capacity for satisfying resource adequacy requirements or to mitigate local system emergency events.

Long-Term Emergency Capacity must meet applicable requirements to accredit capacity for satisfying resource adequacy requirements, including, but not limited to, maximum number of annual emergency curtailments, maximum duration of emergency curtailments, and seasons in which emergency curtailments can occur. Firm Load Control Periods will not count toward the requirements for accrediting Capacity for resource adequacy purposes.

Filing Date _____ MPUC Docket No. _____
Effective Date _____ Order Date _____

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

Before an emergency curtailment, the Company will provide the lesser of (1) at least two hour advance notice, or (2) the notice that is required in connection with requirements to accredit capacity for satisfying resource adequacy requirements.

The following are the provisions under which Minnesota Power will utilize the Firm Load Control Periods

1. The maximum annual hours of Firm Load Control Periods in any calendar year shall not exceed 600 hours. Hours called due to emergency capacity events are separate from the requirements for Firm Load Control Periods.
2. There shall be a maximum of two Firm Load Control Periods per day.
3. There shall be a maximum of 12 hours of Firm Load Control per day.
4. The maximum duration of any Firm Load Control Period occurrence shall be 12 hours.
5. The minimum duration of any Firm Load Control Period occurrence shall be 4 hours.
6. No more than four (4) Firm Load Control Periods may occur in any seven (7) consecutive days of the one-week period from Sunday through Saturday.
7. Minimum Firm Load Control Period advance notice: either Day-Ahead through e-mail notice by 4:00 p.m. on the day prior to the Firm Load Control Period, or Real-Time with four (4) hour' advance notice through e-mail notice on the day of a Firm Load Control Period.
8. Firm Load Control Periods shall occur at the sole discretion of the Company.
9. Customer has the option to interrupt load or to continue normal operations and be subject to buy-through pricing for energy associated with Product B used during the Firm Load Control Period.
10. The procedures that Minnesota Power intends to follow for calling a Firm Load Control Period will include comparing the Company's forecasted incremental cost to serve, including applicable market energy prices for the Company's load zone, to the Physical Interruptible Energy Credit.
11. Company shall provide a good faith estimate of the estimated buy-through price during the Firm Load Control Period, based upon the information available to Company. If the Company's estimate of the buy-through price changes, the Company will attempt to notify customers before such changed price become applicable, in order that Customers may adjust their buy through amount, if desired.
12. The Company will not have a Firm Load Control Period under this Rider for the sole purpose of making non-firm sales.

Large Power Demand Response Product C – Market Surplus Service

Contract periods of three or five-year are available, provided that Customer's Electric Service Agreement duration at time of bidding is at least as long as the Market Surplus Service contract, and provided that neither the Customer nor the Company has served an Electric Service Agreement cancelation notice. The Company will facilitate identification of options for

Filing Date _____ MPUC Docket No. _____
Effective Date _____ Order Date _____

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

a customer's excess demand response capacity that doesn't fit into Large Power Demand Response Product A or B.

RATE MODIFICATIONS

The following charges and credits are applicable in addition to all charges for service being taken under Company's standard Large Power rate schedule:

Demand Response Product A - Short-Term Emergency Capacity

Demand Charge Credit:

For each month that Short-Term Emergency Capacity is provided, the Customer shall receive a per kW billing credit based on the annual market price representative of market conditions as determined by the Company. Such credit shall be applied to the demand charges billed under Schedule 74. Customer will be notified of the annual credit amount by the preceding November for the following Midcontinent Independent System Operator (MISO) planning year.

Demand Response Product B - Long-Term Emergency Capacity Curtailable with Firm Load Control Periods

Demand Charge Credit:

For each month that Long-Term Emergency Capacity Curtailable with Firm Load Control Periods is provided, the Customer shall receive a billing credit of \$7.00 per kW-month. Such credit shall be applied to the demand charges billed under Schedule 74.

Physical Interruptible Energy Credit:

For each month that Large Power Long-Term Capacity Service is taken, the Customer shall receive a billing credit of \$30 per MWh for energy usage on Minnesota Power's system that is physically reduced during a Firm Load Control Period when called on by Minnesota Power. The credit for an applicable hour will be applied to the difference between:

- (a) the greater of (1) customer's Firm Service Level or (2) their actual firm load during the Firm Load Control Period, and
- (b) the expected firm load, based on a four-hour average of the higher of the four hours before notification of the Firm Load Control Period or the four hours before the Firm Load Control Period begins.

Buy-Through Pricing

Buy-through pricing shall consist of an energy adder plus the Company's hourly incremental energy costs during the time of the sale, including MISO market costs incurred by the Company. The energy adder will be set at \$5.00 per MWh and will apply to energy taken by Customer during Firm Load Control Periods. The buy-through pricing for an applicable hour will be applied to the difference between the Customer's Firm Service Level and the actual firm load during the Firm Load Control Period.

Filing Date _____ MPUC Docket No. _____
Effective Date _____ Order Date _____

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

Demand Response Product C- Market Surplus Service

Demand Charge Credit:

For each month that Market Surplus Service is provided and Minnesota Power has identified an option for customer's excess demand response capacity that results in revenue for the Company, the Customer shall receive a per kW Demand Charge Credit. Such credit shall be determined by the company and applied to Customer's demand charges billed under Schedule 74.

DETERMINATION OF DEMAND RESPONSE BILLING DEMAND (Monthly)

Demand Response Billing Demand shall be calculated as follows:

The lesser of: (1) the Demand Response Contract Demand, or (2) Customer's nominated demand under Schedule 74 plus, if applicable, Maximum Replacement Amount less Firm Service Level.

Any reduction in the Demand Response Billing Demand from the Demand Response Contract Demand will first reduce Product B, second Product A and third Product C.

The Customer's monthly Schedule 74 Billing Demand shall be calculated in accordance with Schedule 74.

CUSTOMER'S FAILURE TO COMPLY WITH REQUESTED INTERRUPTIONS OR CURTAILMENT

A Customer is deemed to have failed to comply with the emergency capacity requirements when Minnesota Power calls on the emergency capacity and the Customer's actual firm load, as measured by the meters installed by the Company (netted across aggregated Customer facilities, if applicable), has not decreased to the Firm Service Level.

In the event that the Customer fails to follow an Emergency Curtailment request by Minnesota Power and such failure results in (a) any financial penalties being imposed upon the Company, and/or (b) financial damages resulting from non-completed or replacement wholesale sales or purchases, the Customer shall reimburse the Company for that portion of the penalty and/or financial damages caused by their failure, within 15 days of notification by Minnesota Power. In the event that the Customer follows Emergency Curtailment conditions as specified herein, the Customer shall not be liable for any (a) penalties imposed on the Company, or (b) financial damages resulting from non-completed or replacement wholesale sales or purchases. Penalties and charges may include, but are not limited to, penalties associated with disqualification of the emergency capacity as accredited capacity.

ADDITIONAL SERVICE CONDITIONS

1. The duration and frequency of curtailments and interruptions shall be at the sole discretion of the Company and follow the product conditions as stated above.

Filing Date _____ MPUC Docket No. _____
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Marcia A. Podratz
Director - Rates

RIDER FOR LARGE POWER DEMAND RESPONSE SERVICE

2. The Customer must provide, at its expense, a means of curtailing or interrupting its demand response load upon receiving a command or signal from the Company. The Company reserves the right to inspect and approve the installation.
3. The Company shall not be liable for any loss or damage, including consequential damages, caused by or resulting from any curtailment or interruption of service.
4. Customers shall have the option to reduce MW of Product B and convert them to firm service through a written notice to Minnesota Power no later than October 1 of the year prior to the next MISO planning year. Within 90 days of receipt of such written notice, Minnesota Power shall advise the Customer of any capacity or energy charge premiums associated with converting demand response service to firm service. Such charges would be calculated to keep other customers and the Company completely unaffected by the Customer's decision to convert Product B to firm service.
5. Company intends to accredit and register the demand response MW as a capacity resource with MISO (or successor entity), in accordance with Module E Tariff and Business Practices Manual for Resource Adequacy. Customer agrees to participate fully in the registration procedure.
6. In the event of a material change in MISO's (or any successor organization) capacity accreditation authority, the party's shall in good faith determine the most appropriate substitute accrediting and rate or cost determination authority within six months of the date such a change was made. Except as mutually agreed by the party's, no changes in MISO responsibilities shall materially and adversely affect either party's rights or obligations under the Electric Service Agreement. Any changes would be subject to regulatory approval.

Filing Date _____ MPUC Docket No. _____
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Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR FUEL AND PURCHASED ENERGY ADJUSTMENT

APPLICATION

Applicable to electric service under all Company's Retail Rate Schedules except Competitive Rate Schedules Rate Codes 73 and 79.

There shall be added to or deducted from the monthly bill an amount per kilowatt-hour determined as the amount by which the Fuel and Purchased Energy (FPE) Costs divided by the actual Kilowatt-Hour Sales is greater than or less than the Base Cost of Energy as specified below.

The System Average Fuel and Purchased Energy Cost shall be the FPE Cost divided by the Kilowatt-Hour Sales. The System Average FPE Adjustment shall be the System Average FPE Cost less the System Average Base Cost of Energy. The applicable FPE Adjustment will be included monthly on each customer's bill according to customer's rate class.

AVERAGE FUEL AND PURCHASED ENERGY COST

The Fuel and Purchased Energy Cost shall be the **sum** of the following during the first two of the preceding three months:

- (a) The fossil and nuclear fuel consumed in Company's generating stations,
- (b) The net energy cost of energy purchases, exclusive of capacity or demand charges (irrespective of the designation assigned to such transaction) when such energy is purchased on an economic dispatch basis, this encompasses energy being purchased to substitute for Company's own higher cost energy,
- (c) The actual identifiable fossil and nuclear fuel costs associated with energy purchased for reasons other than identified in (b) above,
- (d) The cost of steam from other sources used in the generation of electricity at the Company's generating stations,
- (e) The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy,

Filing Date	<u> June 28, 2018 </u>	MPUC Docket No.	<u> E015/GR-16-664 </u>
Effective Date	<u> December 1, 2018 </u>	Order Date	<u> May 29, 2018 </u>

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR FUEL AND PURCHASED ENERGY

- (f) The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback,
- (g) The cost of the Physical Interruptible Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Large Power Demand Response Service,
- (hg) Fuel and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691 excluding the cost of fuel and purchased energy related to meeting the Solar Energy Standard,
- (ih) All RTO (Regional Transmission Organization) energy market costs net of revenues, excluding administrative costs,
- (ji) The cost of the purchase of SO₂ allowances,
- (kj) The Time of Generation Adjustment as calculated in the Rider for Solar Energy Adjustment
- and **less**
- (lk) Revenues from the sale of SO₂ allowances,
- (ml) The cost of fossil and nuclear fuel and the cost of steam from other sources recovered through inter-system sales including the fuel and steam costs related to economy energy sales and other energy sold on an economic dispatch basis and
- (nm) Net revenues from the sale of environmental attributes from any Commission approved contract.

The Kilowatt-Hour Sales shall be Company's total kilowatt-hour Sales of Electricity, excluding inter-system sales referred to in (l) above and solar energy production and purchases referred to in (g) above; all for the first two of the preceding three months.

CLASS COST FACTORS

A separate Class Cost Factor shall be applied to calculate the Base Cost of Energy and FPE Adjustment for each Rate Class.

Rate Class	Class Cost Factor
Residential	1.01406
General Service	1.03518
Large Light & Power	1.00982
Large Power	0.99024
Municipal Pumping	1.01571
Lighting	0.82572

Filing Date June 28, 2018 MPUC Docket No. E015/GR-16-664
Effective Date December 1, 2018 Order Date May 29, 2018

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR FUEL AND PURCHASED ENERGY

BASE COST OF ENERGY

The System Average Base Cost of Energy is 2.121¢/kWh. The class-specific Base Cost of Energy for each rate class is obtained by multiplying 2.121¢/kWh by the applicable Class Cost Factor.

Rate Class	Base Cost of Energy
Residential	2.15082¢/kWh
General Service	2.19562¢/kWh
Large Light and Power	2.14183¢/kWh
Large Power	2.10030¢/kWh
Municipal Pumping	2.15432¢/kWh
Lighting	1.75135¢/kWh

FUEL AND PURCHASED ENERGY ADJUSTMENT

The FPE Adjustment for each rate class shall be determined by multiplying the System Average FPE Adjustment by the applicable Class Cost Factor.

Filing Date June 28, 2018 MPUC Docket No. E015/GR-16-664
Effective Date December 1, 2018 Order Date May 29, 2018

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

RIDER FOR FUEL AND PURCHASED ENERGY

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- (d) The cost of steam from other sources used in the generation of electricity at the Company's generating stations,
- (e) The cost of the Released Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Released Energy,
- (f) The cost of the Buyback Energy Credit paid to Customer(s) for avoided energy purchases under the Rider for Voluntary Energy Buyback,
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- (h) Fuel and purchased energy expenses incurred by the Company over the duration of any Commission approved contract, as provided for by Minnesota Statutes, Section 216B.1645, to satisfy the renewable energy obligations set forth in Minnesota Statutes, Section 216B.1691 excluding the cost of fuel and purchased energy related to meeting the Solar Energy Standard,
- (i) All RTO (Regional Transmission Organization) energy market costs net of revenues, excluding administrative costs,
- (j) The cost of the purchase of SO₂ allowances,
- (k) The Time of Generation Adjustment as calculated in the Rider for Solar Energy Adjustment

and **less**

RIDER FOR FUEL AND PURCHASED ENERGY

- (l) Revenues from the sale of SO₂ allowances,
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Municipal Pumping	2.15432¢/kWh
Lighting	1.75135¢/kWh

FUEL AND PURCHASED ENERGY ADJUSTMENT

The FPE Adjustment for each rate class shall be determined by multiplying the System Average FPE Adjustment by the applicable Class Cost Factor.

STATE OF MINNESOTA)
)ss
COUNTY OF ST. LOUIS)

AFFIDAVIT OF SERVICE VIA
ELECTRONIC FILING

SUSAN ROMANS of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 7th day of **November, 2018**, she served Minnesota Power’s Petition for Large Power Demand Response in **Docket Nos. E015/M-18-735, E015/RP-15-690, E015/GR-16-664 and E015/AI-17-568** and on the Minnesota Public Utilities Commission and the Office of Energy Security via electronic filing. The persons on E-Docket’s Official Service List for this Docket were served as requested.



Susan Romans

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_18-735_M-18-735
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_18-735_M-18-735
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_18-735_M-18-735
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620 St. Paul, MN 55164-0620	Electronic Service	No	OFF_SL_18-735_M-18-735
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_18-735_M-18-735
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_18-735_M-18-735
Ian	Dobson	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_18-735_M-18-735
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_18-735_M-18-735
Dave	Frederickson	Dave.Frederickson@state.mn.us	MN Department of Agriculture	625 North Robert Street St. Paul, MN 551552538	Electronic Service	No	OFF_SL_18-735_M-18-735
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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_18-735_M-18-735
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Marion Ann	McKeever	N/A	Satellites Country Inn	9436 W Hwy 61 Schroeder, MN 55613	Paper Service	No	OFF_SL_18-735_M-18-735

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Herbert	Minke	hminke@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_18-735_M-18-735
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_18-735_M-18-735
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David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_18-735_M-18-735
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Britt	See Benes	britt@ci.aurora.mn.us	City of Aurora	16 W 2nd Ave N PO Box 160 Aurora, MN 55705	Electronic Service	No	OFF_SL_18-735_M-18-735
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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Charles	Zelle	charlie.zelle@state.mn.us	Department of Transportation	MN Dept of Transportation 395 John Ireland Blvd St. Paul, MN 55155	Electronic Service	No	OFF_SL_18-735_M-18-735

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Sara	Bergan	sebergan@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Carolyn	Berninger	cberninger@mncenter.org	Minnesota Center for Environmental Advocacy	26 E. Exchange St., Suite 206 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Elizabeth	Brama	ebrama@briggs.com	Briggs and Morgan	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620 St. Paul, MN 55164-0620	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Leigh	Currie	lcurrie@mncenter.org	Minnesota Center for Environmental Advocacy	26 E. Exchange St., Suite 206 St. Paul, Minnesota 55101	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Ian	Dobson	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Bret	Eknes	bret.eknes@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	No	OFF_SL_17-568_Official CC Service List
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_17-568_Official CC Service List
Janice	Hall	N/A	Cook County Board of Commissioners	411 W 2nd St Court House Grand Marais, MN 55604-2307	Paper Service	No	OFF_SL_17-568_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Peter	Madsen	peter.madsen@ag.state.mn.us	Office of the Attorney General-DOC	Bremer Tower, Suite 1800 445 Minnesota Street St. Paul, Minnesota 55101	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Marion Ann	McKeever	N/A	Satellites Country Inn	9436 W Hwy 61 Schroeder, MN 55613	Paper Service	No	OFF_SL_17-568_Official CC Service List
Jennifer	Mersing	jennifer.mersing@stoel.com	Stoel Rives LLP	600 University St Ste 3600 Seattle, WA 98101	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	7400 Lyndale Ave S Ste 190 Richfield, MN 55423	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Sean	Stalpes	sean.stalpes@state.mn.us	Public Utilities Commission	121 E. 7th Place, Suite 350 Saint Paul, MN 55101-2147	Electronic Service	No	OFF_SL_17-568_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kristin	Stastny	kstastny@briggs.com	Briggs and Morgan, P.A.	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_17-568_Official CC Service List
Susan	Williams	laurie.williams@sierraclub.org	Sierra Club	1536 Wynkoop St Sierra Club Denver, Colorado 80202	Electronic Service	Yes	OFF_SL_17-568_Official CC 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_17-568_Official CC Service List

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_16-664_PUC Official Service List General Rate Case
Lori	Andresen	info@sosbluewaters.org	Save Our Sky Blue Waters	P.O. Box 3661 Duluth, Minnesota 55803	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Peter	Beithon	pbeithon@otpc.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Sundra	Bender	sundra.bender@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 Saint Paul, MN 55101-2147	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Sara	Bergan	sebergan@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
David F.	Boehm		Boehm, Kurtz & Lowry	Suite 1510 36 East Seventh Street Cincinnati, OH 45202	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Elizabeth	Brama	ebrama@briggs.com	Briggs and Morgan	2200 IDS Center 80 South 8th Street Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Jon	Brekke	jbrekke@greenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Michael J.	Bull	mbull@mncee.org	Center for Energy and Environment	212 Third Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Cartella	David.Cartella@cliffsnr.com	Cliffs Natural Resources Inc.	200 Public Square Ste 3300 Cleveland, OH 44114-2315	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Greg	Chandler	greg.chandler@upm.com	UPM Blandin Paper	115 SW First St Grand Rapids, MN 55744	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Steve W.	Chriss	Stephen.chriss@walmart.com	Wal-Mart	2001 SE 10th St. Bentonville, AR 72716-5530	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620 St. Paul, MN 55164-0620	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Lisa	Daniels	lisadaniels@windustry.org	Windustry	201 Ridgewood Ave Minneapolis, MN 55403	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Ian	Dobson	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Ron	Elwood	relwood@mnlisap.org	Mid-Minnesota Legal Aid	2324 University Ave Ste 101 Saint Paul, MN 55114	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
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_16-664_PUC Official Service List General Rate Case

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_16-664_PUC Official Service List General Rate Case
John R.	Gasele	ygasele@fryberger.com	Fryberger Buchanan Smith & Frederick PA	700 Lonsdale Building 302 W Superior St Ste 700 Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Bruce	Gerhardson	bgerhardson@otpc.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Barbara	Gervais	toftemn@boreal.org	Town of Tofte	P O Box 2293 7240 Tofte Park Road Tofte, MN 55615	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Janice	Hall	N/A	Cook County Board of Commissioners	411 W 2nd St Court House Grand Marais, MN 55604-2307	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
J Drake	Hamilton	hamilton@fresh-energy.org	Fresh Energy	408 St Peter St Saint Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Sam	Hanson	shanson@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 South Eighth Street Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Robert	Harding	robert.harding@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Annete	Henkel	mui@mutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St.Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Shane	Henriksen	shane.henriksen@enbridge.com	Enbridge Energy Company, Inc.	1409 Hammond Ave FL 2 Superior, WI 54880	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Valerie	Herring	vherring@briggs.com	Briggs and Morgan, P.A.	2200 IDS Center 80 S. Eighth Street Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
James	Jarvi	N/A	Minnesota Ore Operations - U S Steel	P O Box 417 Mountain Iron, MN 55768	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2265 Roswell Road Suite 100 Marietta, GA 30062	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Kelsey	Johnson	Kjohnson@taconite.org	Iron Mining Association	324 West Superior Street Suite 502 Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Travis	Kolari	N/A	Keetac	PO Box 217 Keewatin, MN 55753	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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_16-664_PUC Official Service List General Rate Case
Ganesh	Krishnan	ganesh.krishnan@state.mn.us	Public Utilities Commission	Suite 350121 7th Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
David	Langmo	david.langmo@sappi.com	Sappi North America	P O Box 511 2201 Avenue B Cloquet, MN 55720	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Emily	Larson	eLarson@duluthmn.gov	City of Duluth	411 W 1st St Rm 403 Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Annie	Levenson Falk	annielf@cubminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota Street, Suite W1360 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
LeRoger	Lind	llind@yahoo.com	Save Lake Superior Association	P.O. Box 101 Two Harbors, MN 55616	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Eric	Lindberg	elindberg@mncenter.org	Minnesota Center for Environmental Advocacy	26 E Exchange St Ste 206 Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Patrick	Loupin	PatrickLoupin@Packaging Corp.com	Packaging Corporation of America	PO Box 990050 Boise, ID 83799-0050	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Kavita	Maini	kmains@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Sarah	Manchester	sarah.manchester@sappi.com	Sappi North American	255 State Street Floor 4 Boston, MA 02109-2617	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Tony	Mancuso	mancusot@stlouiscountymn.gov	Saint Louis County Property Mgmt Dept	Duluth Courthouse 100 N 5th Ave W Rm 515 Duluth, MN 55802-1209	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Keith	Matzdorf	keith.matzdorf@sappi.com	Sappi Fine Paper North America	PO Box 511 2201 Avenue B Cloquet, MN 55720	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Daryl	Maxwell	dmaxwell@hydro.mb.ca	Manitoba Hydro	360 Portage Ave FL 16 PO Box 815, Station Main Winnipeg, Manitoba R3C 2P4 Canada	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Matthew	McClincy	MMcClincy@usg.com	USG	35 Arch Street Clouquet, MN 55720	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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_16-664_PUC Official Service List General Rate Case
Herbert	Minke	hminke@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
James	Mortenson	james.mortenson@state.mn.us	Office of Administrative Hearings	PO BOX 64620 St. Paul, MN 55164-0620	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
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_16-664_PUC Official Service List General Rate Case
Rolf	Nordstrom	rnordstrom@gpsid.net	Great Plains Institute	2801 21ST AVE S STE 220 Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Kate	O'Connell	kate.oconnell@state.mn.us	Department of Commerce	Suite 50085 Seventh Place East St. Paul, MN 551012198	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kevin	O'Grady	kevin.ograd@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Christopher J.	Oppitz	N/A	-	110 1/2 1ST ST E Park Rapids, MN 56470-1695	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Elanne	Palcich	epalcich@cpinternet.com	Save Our Sky Blue Waters	P.O. Box 3661 Duluth, MN 55803	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Max	Peters	maxp@cohasset-mn.com	City of Cohasset	305 NW First Ave Cohasset, MN 55721	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
William	Phillips	wphillips@aarp.org	AARP	30 E. 7th St Suite 1200 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Marcia	Podratz	mpodratz@mnpower.com	Minnesota Power	30 W Superior S Duluth, MN 55802	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Tolaver	Rapp	Tolaver.Rapp@cliffsnr.com	Cliffs Natural Resources	200 Public Square Suite 3400 Cleveland, OH 441142318	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Ralph	Riberich	rriberich@uss.com	United States Steel Corp	600 Grant St Ste 2028 Pittsburgh, PA 15219	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Buddy	Robinson	buddy@citizensfed.org	Minnesota Citizens Federation NE	2110 W. 1st Street Duluth, MN 55806	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Santi	Romani	N/A	United Taconite	P O Box 180 Eveleth, MN 55734	Paper Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Susan	Romans	sromans@allete.com	Minnesota Power	30 West Superior Street Legal Dept Duulth, MN 55802	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Thomas	Scharff	thomas.scharff@versoco.com	Verso Corp	600 High Street Wisconsin Rapids, WI 54495	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Ann	Schwieger	ann.schwieger@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Britt	See Benes	britt@ci.aurora.mn.us	City of Aurora	16 W 2nd Ave N PO Box 160 Aurora, MN 55705	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	7400 Lyndale Ave S Ste 190 Richfield, MN 55423	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Doug	Shoemaker	dougs@mnRenewables.org	Minnesota Renewable Energy	2928 5th Ave S Minneapolis, MN 55408	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Brett	Skyles	Brett.Skyles@co.itasca.mn.us	Itasca County	123 NE Fourth Street Grand Rapids, MN 557442600	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
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_16-664_PUC Official Service List General Rate Case
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Robert	Tammen	bobtammen@frontiernet.net	Wetland Action Group	PO Box 398 Soudan, MN 55782	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
David	Thornton	J.David.Thornton@state.mn.us	MN Pollution Control Agency	520 Lafayette Road St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Jim	Tieberg	jtieberg@polymetmining.com	PolyMet Mining, Inc.	PO Box 475 County Highway 666 Hoyt Lakes, MN 55750	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Jessica	Tritsch	jessica.tritsch@sierraclub.org	Sierra Club	2327 E Franklin Ave Minneapolis, MN 55406	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Karen	Turnboom	karen.turnboom@versoco.com	Verso Corporation	100 Central Avenue Duluth, MN 55807	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kodi	Verhalen	kverhalen@briggs.com	Briggs & Morgan	2200 IDS Center 80 South Eighth Street Minneapolis, Minnesota 55402	Electronic Service	Yes	OFF_SL_16-664_PUC Official Service List General Rate Case
Kevin	Walli	kwalli@fryberger.com	Fryberger, Buchanan, Smith & Frederick	380 St. Peter St Ste 710 St. Paul, MN 55102	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
Cam	Winton	cwinton@mnychamber.com	Minnesota Chamber of Commerce	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case
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_16-664_PUC Official Service List General Rate Case
Scott	Zahorik	scott.zahorik@aeoa.org	Arrowhead Economic Opportunity Agency	702 S. 3rd Avenue Virginia, MN 55792	Electronic Service	No	OFF_SL_16-664_PUC Official Service List General Rate Case