

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

In the Matter of Xcel Energy's Petition for Load Flexibility Pilot Programs and Financial Incentive

ISSUE DATE: March 15, 2022

DOCKET NO. E-002/M-21-101

In the Matter of a Commission Investigation to Identify Performance Metrics, and Potentially, Incentives for Xcel Energy's Electric Utility Operation

DOCKET NO. E-002/M-17-401

ORDER APPROVING MODIFIED LOAD-FLEXIBILITY PILOTS AND DEMONSTRATION PROJECTS, AUTHORIZING DEFERRED ACCOUNTING, AND TAKING OTHER ACTION

**PROCEDURAL HISTORY**

On February 1, 2021, Northern States Power Company d/b/a Xcel Energy (Xcel) filed a petition for approval of four load-flexibility pilots, a performance-based financial incentive for the pilots, a load-flexibility product-development budget to fund two proposed demonstration projects and future research, and deferred accounting for potential future recovery of these costs.

By June 18, 2021, the following parties and participants filed comments:

- Center for Energy and Environment (CEE);
- Fresh Energy, Minnesota Center for Environmental Advocacy, Sierra Club, Union of Concerned Scientists, and Plug In America (jointly, the Clean Energy Groups);
- Advanced Energy Management Alliance (AEMA);
- City of Minneapolis (the City);
- R Street Institute (R Street);
- The Department of Commerce, Division of Energy Resources (the Department);
- Clean Energy Economy Minnesota; and
- Fresh Energy.

On July 28, 2021, Xcel filed reply comments.

By September 9, 2021, the following parties and participants filed reply comments:

- ChargePoint, Inc.;
- Weave Grid, Inc.;
- Fresh Energy;
- AEMA;
- CEE;
- R Street;
- The Department; and
- The City.

The Commission also received comments from Walmart, Inc. on September 21, 2021, and jointly from the Minnesota Rural Electric Association (MREA) and the Laborers International Union of North America, Minnesota & North Dakota (LIUNA) on January 4, 2022.

On January 6, 2022, the Commission met to consider the matter.

## **FINDINGS AND CONCLUSIONS**

### **I. Summary of Commission Actions**

In this order, the Commission will approve Xcel's proposed Peak Flex Credit Rider (Peak Flex Credit) pilot, Commercial Thermal Storage (CTS) pilot, and Electric Vehicle (EV) Optimization pilot, all with modifications. The Commission will deny the proposed Residential Heating, Ventilation, and Air Conditioning (HVAC) Optimization pilot without prejudice. Additionally, the Commission will approve modified Excess Supply Partners and Vehicle-to-Grid (V2G) School Bus demonstration projects and a \$200,000 budget for product research and development.

The Commission will reject Xcel's proposed performance-based incentive mechanism but will authorize the deferral of limited expenses in a load-flexibility tracker account.

Further, the Commission will ask the Executive Secretary to begin a broader discussion on the appropriate role of third-party aggregators in demand-response programs in Minnesota.

### **II. Background**

In its January 2017 order approving Xcel's 2016–2030 integrated resource plan (IRP), the Commission ordered Xcel to acquire at least 400 megawatts (MW) of additional demand response by 2023.<sup>1</sup> Demand response includes technologies and approaches to modify customer behavior to benefit the utility's broader system. For example, demand-response programs may

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<sup>1</sup> *In the matter of Xcel Energy's 2016–2030 Integrated Resource Plan*, Docket No. E-002/RP-15-21, Order Approving Plan with Modifications and Establishing Requirements for Future Resource Plan Filings, at 11, Ordering Para. 10 (January 11, 2017) (the 2017 IRP order).

offer lower rates or rebates to incentivize customers to shift their electricity consumption to avoid times of peak demand, to accommodate variable generation sources, or to curtail demand during emergencies. Effective use of demand response can enhance system reliability, reduce operation costs by avoiding or delaying the need for infrastructure investments, reduce fuel costs by shifting usage to times of low-cost generation, improve utilization of renewable and carbon-free generation sources, and offer customers savings and more control over their electric bills.

Pursuant to its obligation to acquire additional demand response, Xcel filed a petition requesting approval of four proposed load-flexibility pilot programs, two demonstration projects, and a budget for research and development of future load-flexibility products. Xcel also requested a performance-based financial incentive for the pilots and authorization to defer costs in a load-flexibility tracker account for potential recovery in a future proceeding.

Cumulatively, Xcel estimated that the proposed portfolio would achieve approximately 48.4 MW of load flexibility the 2021–2023 pilot term.

### **III. Peak Flex Credit Rider Pilot**

#### **A. Xcel Energy’s Proposal**

The proposed Peak Flex Credit pilot is a dispatchable load-shedding program for commercial customers designed to test whether a flexible offering with various options would increase customer interest in demand response. The pilot would be open to customers under Xcel’s general service (A14) or general service time-of-day (A15) rates not participating in other load-management programs. Xcel initially proposed to cap participation at 100 customers and require each to commit to reducing demand by at least 100 kilowatts (kW) during control events.

Pilot participants would choose (1) either year-round or summer-only participation, (2) standard response time (at least one hour of notice) or fast response (automatic response within 10 minutes), and (3) an annual maximum of 60 control hours (Level 1) or 100 (Level 2). Participants could avoid curtailment during non-mandatory<sup>2</sup> control events by paying a higher “buy-through” energy price. Level 1 participants would be allowed up to 20 buy-through hours, and Level 2 participants up to 60. Failure to curtail the contracted amount during mandatory control events would result in penalty charges.

Pilot participants would receive monthly bill credits based on the contracted demand-reduction amount. Bill-credit rates would vary based on the customer’s chosen participation options, with year-round participation, fast response, and Level-2 control hours earning higher credits.

Xcel proposed a budget of \$4.4 million over the 2021–2023 pilot period and estimated that the pilot would achieve approximately 42.6 MW of demand response.

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<sup>2</sup> “Non-mandatory” or “economic” events are those in which MISO day-ahead hourly locational marginal pricing exceeds typical levels. “Mandatory” events include (1) “capacity events,” when MISO declares an emergency or Xcel finds forecasted peak demand or system conditions may endanger reliability; and (2) “contingency events,” when emergency relief is required due to a loss of generation or transmission.

## **B. Comments**

### **1. Advanced Energy Management Alliance**

AEMA supported the Peak Flex Credit pilot only if it is modified to allow third-party aggregators to participate. A third-party aggregator would assemble a portfolio of interruptible load by contracting with multiple smaller customers that cannot meet the participation threshold individually. The aggregator would enroll the portfolio in the pilot, committing interruptible load in an amount less than the total agreed to by the aggregated customers (to allow flexibility if customers are unable to meet their commitments). Xcel would compensate the aggregator under the utility's tariff, and the aggregator would compensate the aggregated customers. AEMA argued that aggregation would make pilot participation feasible for more customers and help Xcel to acquire more demand response at no additional cost to the program.

Responding to consumer-protection concerns, AEMA suggested the Commission could establish a certification process to allow oversight of third-party aggregators' operations in Minnesota.

In response to Xcel's argument that the pilot was intended to study non-aggregated participation, AEMA suggested the Commission could open a portion of the pilot's capacity to aggregation and reserve the rest for direct participation so Xcel could study both.

AEMA opposed deferring aggregation to a separate pilot because it would unduly delay participation opportunities for customers, the existence of a duplicate pilot with aggregators may confuse customers, and the two pilots would have to compete against each other for customers.

In addition to allowing aggregation, AEMA recommended that Xcel significantly increase the pilot's size to make compliance with the demand-response obligation under the 2017 IRP order feasible. Xcel indicated in another docket that it plans to acquire 60 MW of demand response using yet-undetermined third-party services;<sup>3</sup> AEMA recommended bringing that 60-MW target and its budget into the Peak Flex Credit pilot to avoid the risk and cost of creating another new program close to the 2023 deadline. AEMA further argued Xcel must recover 94 MW of demand response the utility has lost since 2014 in addition to the 400-MW requirement. Adding the lost 94 MW, the 43 MW proposed by Xcel, and the 60 MW to be sought elsewhere, AEMA argued that 197 MW of demand response would be an appropriate target for the Peak Flex Credit pilot.

AEMA also recommended eliminating the proposed pilot-participation cap of 100 customers to allow Xcel to acquire more demand response. And AEMA opposed requiring participants to use Xcel's remote terminal unit if the customer has existing equipment with the same capabilities, as such a requirement would add unnecessary cost and discourage participation.

### **2. Minnesota Rural Electric Association and Laborers International Union of North America, Minnesota & North Dakota**

MREA and LIUNA opposed requiring Xcel to include third-party aggregators in the pilot. They argued that any demand-response aggregation should operate under the oversight of the regulated

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<sup>3</sup> *In re AEMA's Petition Requesting a Miscellaneous Docket to Direct Xcel Energy to Implement 400 MW of Demand Response by 2023*, Docket No. E-002/M-20-421, Compliance Filing, Attachment A (February 1, 2021).

utility to ensure transparency and public-interest outcomes, and that allowing third parties to control energy resources without oversight may undermine reliable and equitable utility service. They recommended that the Commission set aside the issue unless the Legislature specifically authorizes aggregators to operate without the utility's consent or the Federal Energy Regulatory Commission (FERC) directs the state to allow it. Alternatively, they recommended exploring third-party-aggregation issues in a separate docket before allowing aggregators to participate.

### **3. Walmart**

Walmart stated that it views demand response as a valuable tool to reduce its power usage and costs while benefiting the utility system, but it will not elect to participate in a demand-response program unless the program (1) does not impose nonperformance penalties or (2) allows third-party aggregation to manage the risk of penalties. It noted that Xcel's proposal includes a penalty and prohibits third-party aggregation, parameters under which Walmart would not participate.

### **4. City of Minneapolis**

The City supported the Peak Flex Credit pilot but recommended modifications. It argued that Xcel should reduce the per-customer participation threshold to 50 kW of interruptible load because Xcel's proposed 100-kW threshold is prohibitively high for most customers.

The City supported including third-party aggregators, arguing it would make participation feasible for more customers and would reduce the risk of penalties to participants while also reducing the risk that Xcel may fall short of its total demand-response target for the pilot.

Further, assuming that participating customers would rely on backup generators during control events, the City argued that the proposed maximum annual control-hour options are too high because they exceed the usage allowed under many backup-generator warranties.

### **5. Fresh Energy**

Fresh Energy supported the Peak Flex Credit pilot with modifications. For pilot participants taking service under the default general time-of-use rate (A15), Fresh Energy recommended instead applying the new general time-of-use rate being piloted in Docket No. E-002/M-20-86,<sup>4</sup> which it argued will likely replace the current A15 rate after 2024. To collect the most useful data to support a future full-scale version of the Peak Flex Credit program, Fresh Energy argued Xcel should test the Peak Flex Credit with rates likely to be available after the pilot term ends.

Fresh Energy opposed capping the pilot at 100 customers because it would limit total demand-response capacity, particularly if Xcel accepts the City's suggestion to reduce the per-customer threshold to 50 kW. To increase participation without unduly increasing pilot costs, Fresh Energy recommended opening the pilot to (1) qualified customers that have compatible meters or receive an advanced meter during the pilot term, and (2) qualified general service customers participating in the time-of-use rate pilot discussed above.

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<sup>4</sup> See *In the Matter of a Petition of Northern States Power, doing business as Xcel Energy, for Approval of a General Time-Of-Use Service Tariff*, Docket No. E-002/M-20-86, Order to Conduct Pilot Programs for General Service Time-Of-Use Rates, and Setting Procedural Schedule (July 16, 2021).

To mitigate environmental impacts from customers switching to backup generators during pilot control events, Fresh Energy recommended that Xcel collect and report data on participants' backup generators and their use during control events and remove from the pilot any participant that uses a diesel, natural gas, or oil backup generator to comply with economic control events.

Fresh Energy supported gaining experience with third-party demand-response aggregators, arguing that aggregation could allow broader participation and scale of demand-response programs while improving compliance with control events. To explore this potential, Fresh Energy recommended requiring Xcel to develop a second tranche of the Peak Flex Credit pilot—in addition to the 43-MW direct-enroll tranche proposed by Xcel—that would be open to third-party aggregators and would target another 27–60 MW of demand response. Fresh Energy recommended that Xcel consult with stakeholders to develop a compliance filing describing how it will implement this second tranche. It also supported requiring Xcel, in consultation with stakeholders, to propose a process for certifying third-party aggregators.

Further, Fresh Energy recommended that Xcel file a comprehensive pilot implementation and assessment plan including a detailed breakdown of the pilot timeline, milestones, and resource requirements, and a discussion of the pilot's long-term scalability, information needed to determine if it should become a full-scale offering, and a plan for scaling it into a full offering. Fresh Energy emphasized the importance of developing a robust assessment plan at the outset, including metrics to evaluate pilot impact, process, and cost effectiveness, in order to capture lessons from the pilot and allow rapid feedback and course-correction as new information arises.

## **6. Center for Energy and Environment**

CEE generally supported the Peak Flex Credit pilot as an opportunity to increase load flexibility and to test the efficacy of different strategies to elicit operational changes from commercial customers to reduce peak load.

However, concerned about the environmental consequences of the backup generators customers may use to comply with control events, CEE recommended that Xcel report on customers' use of backup generators during control events, account for emissions and fuel costs from backup generation in cost-effectiveness analyses, and establish criteria to prevent participants from using backup power that is more carbon-intensive than Xcel's energy mix during control periods.

In response to comments supporting third-party aggregation, CEE raised concerns that third-party aggregators may not be subject to regulatory oversight. It recommended prohibiting aggregators from participating in the pilot independent of the regulated utility until there are consumer-protection mechanisms in place to oversee their operations and hold them accountable.

## **7. Department of Commerce, Division of Energy Resources**

The Department recommended that the Commission approve the proposed Peak Flex Credit pilot and impose annual reporting requirements.

Sharing environmental concerns related to backup generation, the Department supported requiring Xcel to report on customers' use of backup generators during the pilot and estimate associated pollution impacts. However, the Department did not support barring customers from participating in the pilot based on their use of more carbon-intensive backup generation.

The Department supported exploring the use of third-party aggregation because it could present a more cost-effective demand-response option to further the state's energy policy goals. The Department argued that allowing third-party aggregators to participate in the Peak Flex Credit pilot would be reasonable because it would provide useful information on the effectiveness of third-party aggregation while still gathering much of the data Xcel designed the pilot to obtain.

Alternatively, the Department suggested that the Commission could require Xcel to work with AEMA to propose a separate demand-response pilot to test the ability of third-party aggregators to participate in similar programs in the future.

## **8. R Street Institute**

R Street recommended rejecting Xcel's petition as proposed, arguing that the cost-benefit tests Xcel relied on to justify provide insufficient information to evaluate the proposal.

R Street recommended that Xcel refile the proposal with additional information, including different cost-benefit-analysis methodologies to be determined through future stakeholder discussions. R Street supported modifying the new proposal to (1) better align with Midcontinent Independent System Operator (MISO) and bulk system needs; (2) allow third-party aggregation; (3) remove the customer cap; and (4) address other issues including unnecessary control events, the risks of automated demand response, and allowing customers to use their own equipment.

Alternatively, R Street supported modifying the current pilot proposal to include third-party aggregators, allow aggregators to use their own communications equipment, and allow qualified customers that already have an advanced meter to enroll in the pilot.

## **9. Clean Energy Economy Minnesota**

Clean Energy Economy Minnesota recommended rejecting Xcel's proposal and argued the cost-benefit methodologies Xcel used are not appropriate indicators of program impact or performance. It also argued that Xcel's plan to call for demand control based on system events may risk misalignment with regional and federal markets and policy and that more information is needed on how the pilot will interact with aggregated demand-response in wholesale markets.

## **10. Xcel Energy's Reply**

Xcel agreed to reduce the participation threshold to 50 kW. Consequently, Xcel stated it would eliminate the 100-customer participation cap; with the reduced per-customer threshold, the pilot would likely need more participants to reach the targeted demand-response total.

Xcel agreed to collect backup-generation data from customers, but it opposed limiting pilot eligibility based on customers' backup power sources. Xcel also opposed reducing annual control hours to match backup-generator warranties because the pilot is intended to encourage customers to reduce power consumption during key times, not just switch to backup generation.

Xcel opposed Fresh Energy's suggestion to use the new general time-of-use rate being piloted in Docket No. E-002/M-20-86 instead of the current default A15 rate, arguing that including the new rate would obscure whether any observed changes in customer behavior are motivated by the Peak Flex Credit or by the underlying rate schedule.

Xcel argued increasing the demand-response target above 43 MW would require a larger budget. Further, it argued Fresh Energy's requested implementation and assessment plan would be needlessly expensive and duplicative of Xcel's planned measurement-and-verification process.

Xcel also opposed including third-party aggregation in the pilot, arguing that aggregators could effectively alter interruptible-load thresholds, participation makeup, and penalties, hindering the objectives to study how a specific set of incentives, disincentives, and buy-through options affect large commercial customers' behavior. Further, Xcel argued aggregators might harm customers by implementing their own penalties outside of the regulated utility's tariff. Xcel argued that, if the Commission decides to allow third-party aggregation in Minnesota, it should first develop an aggregator-certification process to protect customers.

At the Commission meeting, Xcel conceded it has no legal argument that the Commission lacks authority to require the utility to test third-party aggregators in the Peak Flex Credit pilot. And although it would prefer to exclude third-party aggregators from the pilot entirely, Xcel stated it could agree to a narrow testing of third-party aggregators in a second tranche of the pilot.

### **C. Commission Action**

With the modifications identified below, the Commission will approve the Peak Flex Credit pilot. The pilot presents a valuable opportunity to test approaches for encouraging commercial customers to participate in strategic demand control. The pilot is reasonably designed help Xcel improve its demand-response offerings and expand its demand-response capacity, producing system benefits for all customers and advancing state energy policy goals. The flexible pilot parameters will also accommodate customers' needs and afford them more choice and control over their electric bills.

#### **1. Demand-Response Capacity**

Based on the full record and the arguments presented, the Commission will require Xcel to add a second tranche of the Peak Flex Credit pilot targeting another 43 MW of demand response in addition to the first 43-MW tranche proposed by Xcel, doubling the pilot's total capacity to approximately 86 MW of demand response.

The Commission appreciates the vigorous discussion of Xcel's path to achieve its demand-response obligation under the 2017 IRP order. Although Peak Flex Credit pilot as proposed represents a significant step, it is reasonable to expand the size of this promising pilot to enhance its benefits and learning opportunities, accelerate Xcel's demand-response progress, and reduce the risk of leaving higher levels of demand response unaccounted for as the deadline approaches. Relative to Xcel's total outstanding obligation, this addition is moderate in size and affords the utility flexibility to pursue other options to fulfill its remaining demand-response needs.

#### **2. Participation Threshold and Customer Cap**

The Commission will approve Xcel's revised participation threshold of at least 50 kW of interruptible load per customer during control events. This lower threshold is reasonable and will make pilot compliance feasible for more customers.



As discussed at the Commission meeting, Xcel is expected to eliminate its originally proposed 100-customer cap to ensure the pilot can achieve the total approved demand-response capacity, taking into account the reduced per-customer threshold and increased demand-response target.

Additionally, the Commission will adopt Fresh Energy's suggestion to require Xcel to allow qualified customers that receive an advanced meter during the pilot term, and those who already have compatible metering equipment or bring their own, to enroll in the Peak Flex Credit pilot. This reasonable modification is expected to expand program eligibility and make the pilot's total demand-response target more attainable without unreasonably raising pilot costs.

Xcel shall file updated projections of the number of customers expected to participate in the pilot each year, including a breakdown by rate schedule, reflecting all approved pilot modifications.

### **3. Third-Party Aggregation**

The Commission will direct Xcel to allow third-party aggregators to participate in the second tranche of the Peak Flex Credit pilot which, as discussed above, will target an additional 43 MW of demand-response capacity. Several commenters made persuasive arguments that third-party aggregation of retail customers could facilitate broader participation and scale of demand-response programs and improve compliance with control events, potentially expanding the utility's demand-response capability and associated system benefits while advancing state energy policy goals. Xcel's defined, small-scale Peak Flex Credit pilot offers an appropriate opportunity to conduct a limited test of a specific application of third-party aggregation.

To accommodate Xcel's intent to study flexible load-shedding options among customers able to commit at least 50 kW of interruptible load individually, the Commission will allow Xcel to dedicate the first 43-MW tranche of the pilot to direct-enroll customers and restrict third-party aggregation to the second tranche. This two-tranche approach will expand the pilot's demand-response capability and learning potential without impeding Xcel's original learning objectives.

Within 60 days, Xcel shall submit a compliance filing describing in detail its plan to engage and contract with aggregators and any other program adjustments necessary to facilitate this pilot modification. Before developing this compliance filing, Xcel must engage and consider input from the stakeholders that commented on aggregation issues in this proceeding.

This order is not a broad authorization of third-party aggregation of demand response in Minnesota, nor does it predetermine any future Commission action. The approval is limited to the narrow application specified herein, confined to Xcel's Peak Flex Credit pilot.

To begin a broader inquiry into the potential role of third-party aggregators in Minnesota, the Commission will ask the Executive Secretary to request stakeholder comments on:

1. Whether the Commission should permit aggregators of retail customers to bid demand response into organized markets;
2. Whether the Commission should require rate-regulated electric utilities to create tariffs allowing third-party aggregators to participate in utility demand-response programs;

3. Whether and how the Commission should verify or certify aggregators of retail customers for demand response or distributed-energy resources before they are permitted to operate; and,
4. Whether any additional consumer protections are necessary if aggregators of retail customers are permitted to operate.

The Executive Secretary shall have discretion to set the timing and procedures for this inquiry.

#### **4. Backup Generation**

The Commission shares commenters' concerns about the potential consequences of customers shifting to backup generators to comply with Peak Flex Credit control periods. If the pilot inadvertently prompts customers to use more carbon-intensive backup power sources, that could significantly affect the environmental impact of the pilot. To address this potential problem, the Commission will direct Xcel to establish participation criteria to prevent Peak Flex Credit participants from using a backup power source that is more carbon-intensive than Xcel's electricity mix during the program's control periods.

Further, to monitor and evaluate the pilot's influence on customers' use of backup generation, the Commission will require Xcel to collect and report data on Peak Flex Credit customers' planned and actual use of backup power sources during control events and the fuels or technologies that power those backup power sources. Xcel shall gather the following information about potential pilot participants' backup power sources using the pilot application form:

- i. Does the customer have a backup generator or on-site distributed-energy resource that can be used for backup power?
- ii. When did each unit go into service?
- iii. Provide the fuel type, size, and run-time of each unit.
- iv. Does the generator(s) require an air permit(s)? If yes, provide the permit number(s).

Additionally, the Commission will require Xcel to conduct annual surveys asking Peak Flex Credit pilot participants how many hours they used each backup generator during each control event in the survey year and include these survey results in annual Peak Flex Credit reports.

Xcel will also be required to account for emissions and fuel costs associated with backup power sources in cost-effectiveness testing.

#### **5. General Time-of-Use Rate**

For pilot participants using the A15 rate, the Commission will direct Xcel to apply the general time-of-use rate being piloted in Docket No. E-002/M-20-86. As the latter rate could likely replace the former rate after the pilot concludes, incorporating the latter into the Peak Flex Credit pilot will yield data likely to be more relevant to future full-scale interruptible-tariff offerings. To

implement this modification, Xcel shall propose a methodology for calibrating Peak Flex bill credits with the demand and volumetric charges under the pilot general time-of-use service rate.

## **6. Implementation and Assessment Plan**

The Commission appreciates Fresh Energy's comments about the importance of developing a robust plan for implementing and learning from the pilot. However, the Commission does not find it necessary to require a separate implementation and assessment plan as proposed by Fresh Energy at this time. The information developed in this proceeding, Xcel's proposed pilot measurement-and-verification process, and the reporting required below are expected to provide the information and transparency necessary to allow Xcel, stakeholders, and the Commission to monitor and evaluate the pilot effectively.

## **7. Tariff**

The Commission will require Xcel to file an updated tariff reflecting the approved modifications to the Peak Flex Credit pilot within 30 days.

# **IV. Commercial Thermal Storage Pilot**

## **A. Xcel Energy's Proposal**

Xcel proposed the CTS pilot to identify customer interest in thermal storage, study the incentive amounts needed to encourage customer adoption and utilization of load shifting, and test the efficacy of controls programmed to shift load permanently or to adjust to seasonal shifting.

Pilot participants would be required to install a thermal energy storage system approved by Xcel and adjust the systems' charging and discharging schedules seasonally. Participants would receive an upfront equipment incentive to offset up to 10% of the installed cost in addition to an annual bill credit equal to 5% of the installed cost for as long as they participate in the program.

Customers would enroll in the pilot for a minimum of one year and would remain enrolled for the full three-year term if they continue to meet eligibility requirements. Xcel would conduct spot checks and an annual assessment to ensure compliance with load-shifting schedules.

Xcel estimated a total CTS pilot budget of approximately \$630,000 for the 2021–2023 term and expected the pilot to achieve approximately 2.6 MW of load flexibility.

## **B. Comments**

### **1. Fresh Energy**

Fresh Energy recommended approving the CTS pilot, arguing it would be an important step toward adopting larger scale thermal energy storage, which could be a valuable tool for shifting commercial loads to less expensive and cleaner system hours. However, to enhance the environmental benefits of the pilot, Fresh Energy recommended that Xcel require participants to use energy-storage equipment that meets efficiency criteria laid out in the Department's Technical Reference Manual for Energy Conservation Improvement Programs (CIP) and align charging schedules with the hours of highest forecasted carbon-free renewable energy generation

on Xcel's system. Additionally, Fresh Energy recommended precluding CTS pilot participants from using fossil-fuel-powered backup generators during curtailment periods.

## **2. Xcel Energy's Reply to Fresh Energy**

Xcel opposed Fresh Energy's recommendation to impose stricter equipment-efficiency standards, arguing that the suggested standards do not apply to thermal energy storage and that Xcel would conduct a custom analysis to verify that each CTS project meets program requirements and project-specific cost-effectiveness.

Xcel agreed to align charging and discharging schedules with periods of renewable generation to the extent possible considering customers' operational constraints.

## **3. Department of Commerce, Division of Energy Resources**

The Department recommended approving the CTS pilot because it would provide a valuable opportunity to study thermal-energy-storage applications, their effects on energy usage and emissions, appropriate levels of customer incentives, and cost-effectiveness.

However, the Department recommended that Xcel refrain from referring to renewable energy when describing the CTS pilot. The Department asserted that renewable curtailment is low in Minnesota and Xcel currently lacks the capability to take advantage of curtailed wind, so it would be misleading to imply that using electricity at a particular time will necessarily lead to a specific customer using renewables. For the same reason, rather than aligning charging schedules with hours of forecasted renewable energy, the Department recommended aligning charging with periods of low-cost energy.

## **C. Commission Action**

The Commission will approve the CTS pilot as modified herein. Thermal energy storage is a promising tool for shifting commercial thermal loads in ways that could improve system efficiency, reduce costs, and help to meet critical climate and emissions-reduction goals, and Xcel's proposed CTS pilot is thoughtfully designed to begin testing and learning about potential applications of this tool in Minnesota.

To ensure the CTS pilot yields accurate data that will be useful for future program development, the Commission will require Xcel to conduct spot checks to evaluate how well customers are following the charging and curtailment schedules and report on that information annually.

The Commission will adopt the Department's recommendation to require Xcel to refrain from referring to renewable energy in conjunction with the timing of CTS charging. Although aligning charging schedules with periods of high renewable generation is a reasonable goal, it would be misleading to tell customers their load-shifting activities will result in the use of renewable energy when Xcel is not currently capable of ensuring that is the case. For the same reason, the Commission will direct Xcel to align CTS charging schedules with periods of low-cost—rather than renewable—energy generation on its system to the extent possible.

Within 30 days, Xcel shall file tariff pages reflecting the final CTS pilot rates, terms, and conditions, including final customer-service agreements.

## V. Electric Vehicle Optimization Pilot

### A. Xcel Energy's Proposal

Xcel's proposed EV Optimization pilot would study the management of EV grid impacts by incentivizing customers to schedule their daily EV charging outside of Xcel's system peak hours, at staggered times designed to avoid the secondary demand spikes that may occur if all customers begin charging as soon as the off-peak period starts.

The goals of the EV Optimization pilot are to (1) provide a widely available option for EV customers to participate in managed charging; (2) reduce impacts of EVs on the bulk electric and distribution systems; (3) measure customer interest and participation; and (4) evaluate the system benefits of managed charging to support the evolution of Xcel's demand-management programs and rates, particularly related to EVs. Xcel contended that managed EV charging will reduce on-peak charging, operating costs, and local distribution problems associated with simultaneous charging as EV adoption grows.

Participants in the EV Optimization pilot would select a charging schedule from options designed to reduce strain on Xcel's system. The customer would be responsible for charging within the selected timeframe but would be able to override the schedule as needed. Xcel would assess participation annually and remove customers from the pilot if at least 25% of their charging sessions have not avoided the 3 p.m. to 8 p.m. peak period.

Xcel intends to collect charging data so it can evaluate program performance and target behavioral reinforcements (e.g., emails to customers on track to miss the 25% participation requirement encouraging adherence to charging schedules). Xcel will select one or more vendors through a competitive process to collect this data and provide related services.

The pilot would be open to residential customers who charge at home and certain commercial customers with light-duty fleets. Participating customers would be charged according to their applicable base-rate tariffs and receive monthly bill credits totaling \$50 per year for each enrolled EV as long as they remain enrolled and meet eligibility requirements.

Customers would have the option to use charging equipment they already own to participate in the pilot. Xcel argued that this option satisfies the Commission's prior order requiring Xcel to propose a bring-your-own-equipment option for participation in its EV Home Service Program or a similar offering, or explain why it is not feasible or prudent to do so.<sup>5</sup>

Xcel proposed a budget of approximately \$810,000 over the 2021–2023 pilot period, based on an estimated 1,757 participants. Xcel expected the pilot to achieve 2.3 MW of load shifting.

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<sup>5</sup> See *In the Matter of Xcel Energy's Petition for Approval of an Electric Vehicle Home Service Program*, Docket No. E-002/M-19-559, Order Approving Electric Vehicle Home Service and Voluntary Electric Vehicle Charger Service Programs as Modified, at 14–15, Ordering Para. 3 (October 6, 2020).

## **B. Comments**

### **1. R Street Institute**

R Street opposed the EV Optimization pilot, arguing that it seemed to be designed to allow Xcel to obtain data from non-Xcel equipment and services so it can use that data to create a better program for itself in the future, which raises anticompetitive concerns in R Street's view. R Street argued that Xcel should make its existing EV programs compatible with additional equipment providers instead of limiting equipment choice to this new pilot.

### **2. Department of Commerce, Division of Energy Resources**

The Department initially recommended approving the EV Optimization pilot, despite concluding that it would not be cost-effective, because the pilot is reasonably designed to provide insights into how to manage EV charging to avoid demand spikes during off-peak hours in a way that will eventually decrease rates as EV adoption increases.

At the Commission meeting, however, the Department revised its position based on subsequent developments in Xcel's ongoing project to deploy advanced metering infrastructure (AMI). The Department recommended that the Commission deny Xcel's proposal without prejudice and that Xcel consider filing a future proposal taking into account AMI capabilities. For example, the Department suggested that AMI could facilitate the disaggregation of EV charging from the rest of the household load, eliminating the need for a separate solution to monitor EV charging, and that AMI could automate staggered EV charging to reduce administrative and vendor costs.

### **3. City of Minneapolis, ChargePoint, and WeaveGrid**

The City supported the EV Optimization pilot as an innovative way to help EVs contribute to an efficient, affordable grid. WeaveGrid and ChargePoint also supported Xcel's proposal.

### **4. Clean Energy Groups**

The Clean Energy Groups generally supported the pilot as a forward-thinking, low-risk way to prepare for greater transportation electrification, but they recommended certain modifications. To protect consumer data and privacy, the Clean Energy Groups recommended requiring Xcel to allow customers to opt out of sharing nonessential data and requiring Xcel and its vendors to follow any applicable data-related standards adopted by the Commission.

They also recommended expanding pilot eligibility to residential customers who lack access to home charging. Xcel's vendors could use vehicle-based technology to track charging patterns, and Xcel could offer a bill credit for avoiding peak hours at public charging stations.

Additionally, the Clean Energy Groups recommended giving pilot participants on time-varying rates a lower bill credit than those not on time-varying rates. Customers taking service under Xcel's time-varying EV-charging rate schedules already do most of their EV charging off peak, so the additional bill credit available through this pilot is unlikely to improve their charging behaviors. Further, because customers already save money through time-varying rates, the Clean Energy Groups argued it would be more equitable to increase the relative EV-Optimization-pilot incentive for participants who are not also benefiting from a time-varying rate.

The Clean Energy Groups disputed Xcel's contention that this proposal fulfills the Commission's prior directive to propose a bring-your-own-charger option for the EV Home Service Program or a similar offering.<sup>6</sup> They argued that the proposed \$50 annual incentive for participating in the EV Optimization pilot is not equivalent to the savings a customer could accrue in the EV Home Service Program. Accordingly, the Clean Energy Groups recommended requiring Xcel to update the Commission on its progress toward proposing a bring-your-own-charger option in the EV Home Service Program or in an alternative program with equivalent customer benefits.

## **5. Xcel Energy's Reply**

Xcel agreed to follow any Commission-adopted data standards, but it opposed a requirement to ask customers if they prefer to opt out of sharing nonessential data. Xcel argued that an opt-out opportunity is unnecessary because the utility does not plan to collect nonessential data, and that presenting the choice could cause customer confusion about what data will be collected.

Xcel opposed the suggestion to offer lower bill credits to customers on time-varying rates, arguing that equal bill credits will allow Xcel to study whether customers respond differently to bill credits than to time-varying rates.

Xcel also opposed expanding eligibility to residential customers without access to home charging, arguing that not having a specified charging location would impair this group's ability to stagger their charging times and manage their impacts on the distribution system.

### **C. Commission Action**

The Commission will approve the EV Optimization pilot as modified below. As EVs become a more significant contributor to electricity demand in Minnesota, utilities have an opportunity to reduce system costs and local distribution issues through effective managed-charging programs. Xcel's EV Optimization pilot is reasonably designed to explore this potential.

The Commission appreciates the Clean Energy Groups' thoughtful analysis of Xcel's proposal and suggested modifications. Given the limited scale and the specific objectives of this pilot, however, the Commission agrees with Xcel that it is reasonable to require home charging access as a condition of pilot eligibility for residential customers. Further, the Commission finds it reasonable to offer equal participation incentives to all pilot participants while Xcel gathers data on the effects of various rate structures and bill-credit offerings on charging behavior.

To protect consumer data and privacy, the Commission will require Xcel and its vendors to follow any applicable data-related standards adopted by the Commission. Further, if Xcel or its vendors collect any nonessential data, Xcel must allow customers to opt out during enrollment.

The Commission will ask Xcel to expand on certain pilot details to avoid customer confusion and to aid the Commission and stakeholders in evaluating pilot performance. As agreed at the Commission meeting, Xcel shall file, within 30 days, answers to the following questions:

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<sup>6</sup> *Id.*

1. How does Xcel plan to track enrollment and compliance for customers that have multiple cars, especially fleets, if using a charger-based option?
2. How does Xcel plan to track peak reductions for the pilot, given that some customers are already enrolled in time-varying rates and are charging their vehicles off peak?
3. If Xcel changes the set charging schedules as it indicated it may do in its petition, how will it inform customers on time-varying rates about how it could impact their bills? Specifically, if a charging overlaps with a mid-peak or on-peak period, will Xcel communicate that information to customers?
4. In the customer-service agreement, Xcel indicated it reserves the right to modify all pilot incentives based on future performance, pilot modifications, technology upgrades, and changes to Xcel's electrical distribution system. How will Xcel inform the Commission of such changes? How would this impact the pilot budget?

Also within 30 days, Xcel must file tariff pages reflecting final EV Optimization pilot rates, terms, and conditions. The Commission will delegate authority to the Executive Secretary to approve modifications to the pilot via notice if no stakeholders or Commission staff object or file notice to object within 30 days of Xcel's filing.

Finally, the Commission agrees with the Clean Energy Groups that the option to participate in the EV Optimization pilot with customer-provided equipment is not equivalent to allowing a bring-your-own-charger option in the EV Home Service Program as understood in the October 6, 2020, order. The Commission will therefore require Xcel to propose an option for customers who buy, install, and maintain their own chargers to participate in the EV Home Service Program. Alternatively, if Xcel finds it is not feasible or prudent to allow customers to use their own chargers in that program, Xcel must explain why and provide cost information to support its position. Xcel shall file this proposal or explanation by June 1, 2023.

## **VI. Residential Heating, Ventilation, and Air Conditioning Optimization Pilot**

### **A. Xcel Energy's Proposal**

Xcel proposed a Residential HVAC Optimization pilot that would offer customers incentives for (1) converting their natural-gas water heaters to electric pump water heaters and (2) offsetting or replacing natural-gas furnace usage with air-source heat pumps or ground-source heat pumps that also provide high-efficiency electric cooling.

The pilot's goals are to identify: (1) customer interest in switching from natural gas to electric water heating or space heating and cooling, (2) what level of bill credit is needed to encourage customers to pursue electrification, and (3) the efficacy of controls programmed to shift heat-pump water-heater demand to align with periods of low emissions. Xcel also intends to use the pilot to analyze how to measure and define load-shifting impact. Further, Xcel argued that beneficial electrification under this pilot would generate new load that will contribute to fixed-cost recovery for the benefit of all customers.



Participating customers would purchase new HVAC equipment from a list of options approved by Xcel. To incentivize electrification and offset equipment costs, participants would receive recurring monthly bill credits for the 2021–2023 pilot term.

Customers installing a demand-management-capable heat-pump water heater would also be invited to enroll in a smart-water-heater demand-response component of the HVAC pilot. These customers would receive an initial one-time incentive for enrolling and a recurring monthly bill credit for being available to shift their water heating to non-peak hours.

Xcel proposed a budget of approximately \$1.5 million for the pilot and estimated that it would yield 786 kW of summer peak demand reduction.

## **B. Comments**

### **1. Fresh Energy**

Fresh Energy generally supported the proposed Residential HVAC Optimization pilot to advance beneficial electrification as a means of improving system efficiency, reducing energy costs, and facilitating greater integration of renewable and emissions-free energy. However, Fresh Energy recommended (1) modifying the list of eligible equipment to ensure it is as energy efficient and cold-climate-capable as possible, (2) offering the pilot in tandem with CIP weatherization programs, (3) targeting households that have received weatherization services, and (4) maximizing the number of weatherized low-income households in the pilot. Fresh Energy argued that these modifications would better capture the cost-saving, emissions-reduction, and load-management benefits of electrification and would generate more useful pilot data.

### **2. Center for Energy and Environment**

CEE supported the proposed pilot, arguing that heat pumps are the most promising technology available to reduce emissions from natural-gas consumption and help the state meet greenhouse-gas-reduction goals. However, CEE recommended adding upfront rebates to offset 50% of the new equipment costs, requiring participants to receive a home energy-efficiency audit, and requiring Xcel to communicate with customers about how their heating and cooling costs are likely to change, to maximize the pilot's benefits and address cost challenges.

Additionally, CEE recommended that Xcel review its existing electric heating rate options to ensure they accurately reflect the value of the additional load and load-flexibility for customers installing an air-source heat pump and maintaining an existing gas heating backup source. If existing rates do not reflect the added value of these electrified loads, CEE argued Xcel should adjust the rates or develop new rate offerings. CEE recommended that the Commission require Xcel to do this whether the pilot is approved or not.

### **3. Department of Commerce, Division of Energy Resources**

The Department evaluated the cost-effectiveness of the proposed pilot and equipment options both from a societal perspective and to participating customers. It concluded that six of the 12 equipment options—all air-source heat pumps and ground-source heat pumps—would be cost-effective during the pilot term. The Department found the mini-split heat pumps and heat-pump water-heater options not cost effective and, therefore, recommended denying their inclusion in

the pilot to avoid placing customers at risk of higher bills. The Department recommended approving the pilot with respect to the cost-effective equipment options.

At the Commission meeting, the Department supported some of the modifications proposed by Fresh Energy and CEE, including that Xcel review its existing electric heating rate options and ensure they reflect the added value of air-source heat pumps.

#### **4. Xcel Energy's Reply**

At the Commission meeting, in light of the new Energy Conservation and Optimization (ECO) Act<sup>7</sup> and in recognition of the fact that the Residential HVAC Optimization pilot is primarily an electrification program which may not fit well in this load-flexibility portfolio, Xcel stated it would not oppose a decision to deny the pilot without prejudice, in which case it would consider new options under the ECO Act, revise the pilot, and file an updated proposal in the future.

Also at the meeting, Xcel agreed to review and consider adjusting its electric-heat rate offerings as recommended by CEE, even if the HVAC pilot is denied.

#### **C. Commission Action**

The Commission will deny the Residential HVAC Optimization pilot proposal without prejudice, and Xcel may propose a revised pilot aligned with ECO Act implementation in the future. The newly enacted ECO Act addresses efficient fuel-shifting programs, and the Department is developing guidance to implement the legislation in a process that includes stakeholder input regarding appropriate methodologies for evaluating beneficial electrification proposals. ECO Act implementation will provide a better framework for considering such projects.

The Commission will adopt CEE's recommendation to require Xcel to review its existing electric heating rate options to ensure they accurately reflect the value of the additional load and load flexibility for customers installing an air-source heat pump and maintaining an existing gas-heating backup source. If existing rates do not reflect the added value of these electrified loads, Xcel should adjust them or develop new rate offerings. Electric heat-pump technology offers promising opportunities to improve energy efficiency, reduce harmful emissions, and reduce system costs and customer bills, and it is reasonable to require Xcel to ensure its rate offerings accurately reflect this value.

### **VII. Product Development Proposals**

In addition to the four pilot programs, Xcel proposed a budget to support research and development of future load-flexibility products, including two proposed demonstration projects.

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<sup>7</sup> Minn. Stat. § 216B.241, subd. 11(d).

## **A. Excess Supply Partners Demonstration Project**

### **1. Xcel Energy's Proposal**

Xcel proposed the Excess Supply Partners<sup>8</sup> demonstration project to test active load-shifting mechanisms and evaluate their value to customers and to Xcel's system. Xcel stated that it aims to use load-shifting to avoid curtailment of renewable generation when demand falls below renewable supply, an issue that could increase operations and maintenance costs and hinder Xcel's potential to reduce carbon emissions. Xcel proposed that commercial customers could mitigate renewable curtailment by shifting their usage away from times of higher carbon-based generation and toward times of potential renewable curtailment.

Under the proposed demonstration project, a small group of commercial customers with interval meters would be invited to enroll in an active demand-response program. Xcel would provide consulting services to guide the customers in receiving signals and shifting usage to times that are beneficial to the system. Participants would receive a bill credit of \$0.01/kWh for every kWh shifted to identified times. Xcel proposed a budget of \$381,433 for this project.

### **2. Comments**

The Department argued that the demonstration project would provide a valuable opportunity for Xcel to learn how to communicate with commercial customers on a day-ahead, hourly basis in a way that is responsive to bulk-system information and convenient for customers to act upon. Therefore, the Department recommended approving the demonstration project.

However, the Department recommended prohibiting Xcel from referring to renewable energy in describing the project and requiring Xcel to rename the project to highlight that it will help customers reduce costs by shifting consumption to lower-cost periods. The Department contended that renewable curtailment in Minnesota is rare and usually caused by highly local transmission congestion, and Xcel lacks the ability to ensure a customer's load shifting under this project will avoid renewable curtailment. Thus, it would be misleading to market the project as a way to utilize renewables (as opposed to low-cost energy).

### **3. Commission Action**

The Commission will approve Xcel's proposed Excess Supply Partners demonstration project with the modification recommended by the Department. The project is reasonably designed to study how Xcel can effectively communicate with commercial customers to encourage strategic load shifting. An effective mechanism for shifting load to lower-cost times could produce customer and system benefits even though the project as currently designed cannot ensure renewable-curtailment avoidance. Further, insights learned from this demonstration project could prove useful if Xcel pursues future programming tailored to reducing renewable curtailment.

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<sup>8</sup> Xcel referred to this project as "Renewable Supply Return" in its initial filing, but proposed to rename it "Excess Supply Partners" in response to the Department's recommendation.

## **B. Vehicle-to-Grid Demonstration Project**

### **1. Xcel Energy's Proposal**

In its proposed Vehicle-to-Grid (V2G) demonstration project, Xcel would work with school districts and school-bus operators to dispatch bus batteries during a maximum of 15 summer system peak-demand events per year, collect charging and discharging data, and study the value and effects of vehicle-to-grid dispatching on the distribution system. Project participants would receive a rebate for charging equipment, but those rebates are pending in another docket<sup>9</sup> and are excluded from the \$440,000 budget requested in this docket.

Xcel intends to use the results of this study to build a product offering that would compensate customers for dispatching bus batteries to encourage wider adoption of electric school buses.

### **2. Comments**

#### **a. ChargePoint**

ChargePoint supported the V2G demonstration project as a novel solution to advance school-bus electrification while managing potential adverse grid impacts and generating system benefits.

#### **b. City of Minneapolis**

The City supported the proposed V2G demonstration project but recommended that Xcel work closely with fleet managers when establishing program parameters to ensure the terms work well for schools and bus operators.

#### **c. Clean Energy Groups**

The Clean Energy Groups generally supported the proposed V2G demonstration project, but they requested that Xcel more specifically define the vehicle-to-grid applications it plans to test or develop a stakeholder process to determine what should be tested. Further, they recommended removing the annual cap on control events to avoid limiting the value electric buses can provide to the system. They also recommended that Xcel include the V2G project in its EV annual report filed in Docket No. E-002/M-15-111.

Additionally, to streamline the approval process, the Clean Energy Groups encouraged Xcel to include the cost of charging-equipment rebates in the V2G budget in this docket instead of relying on the approval of rebates in Docket No. E-002/M-20-745.

#### **d. Department of Commerce, Division of Energy Resources**

The Department recommended approving the proposed school bus V2G program because it has potential to generate benefits for all participants; electric school buses could earn revenue for

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<sup>9</sup> *In the Matter of Xcel Energy's Petition for Approval of Electric Vehicle Programs as part of its COVID-19 Pandemic Economic Recovery Investments*, Docket No. E-002/M-20-745.

serving as a flexible load that can be charged during periods of low system prices and discharged to supply electricity during demand peaks, which could reduce overall system costs.

#### **e. Xcel Energy's Reply**

At the Commission meeting, Xcel agreed to work closely with fleet managers when establishing parameters for the project and agreed to include the project in its EV annual reporting.

Given the small scale of the project, Xcel did not believe the stakeholder process recommended by the Clean Energy Groups was necessary, but it stated it would take comments on the demonstration project into consideration before beginning a full-scale vehicle-to-grid program.

Xcel opposed the recommendation to move the charging equipment rebates into this docket because that would materially change its budget request and because a substantive discussion about the rebates is already underway in the other docket.

### **3. Commission Action**

The Commission will approve the proposed school bus V2G demonstration project because it is reasonably designed to test the potential for electric school buses to serve as a valuable flexible load that could be used to reduce system costs for the benefit of all Xcel customers while also reducing the net cost of electrifying school-bus fleets. As agreed at the meeting, Xcel must work with fleet managers when establishing program parameters to ensure the terms work well for schools and bus operators. Xcel shall also include this project in its EV annual report.

## **C. Product Development and Research Budget**

### **1. Xcel Energy's Initial Proposal**

In addition to the two demonstration projects discussed above, Xcel requested a three-year budget to research and develop future demonstration projects whose details are yet to be determined. Xcel initially requested a \$2.7 million budget for 2021–2023, which would include funding to develop three additional demonstration projects in 2022 and two additional demonstration projects in 2023, at an estimated cost of \$200,000 per demonstration project.

### **2. Comments and Revised Proposal**

The Department argued that Xcel's initial request for a \$2.7 million product-development and research budget, with few details regarding how it intended to spend the budget, was unreasonable. The Department recommended that Xcel seek approval of any future development projects in a separate docket when it can provide project descriptions, budgets, and objectives sufficient to allow meaningful Commission consideration and oversight of the proposals.

Xcel subsequently reduced its request to \$200,000 to fund third-party evaluation and reporting support on the pilots already proposed, rather than future research and demonstration projects. The Department found the revised \$200,000 budget reasonable and recommended approving it.

### **3. Commission Action**

The Commission finds reasonable and will approve Xcel's revised request for a \$200,000 product-development and research budget as described in Xcel's reply comments.

## **VIII. Incentive Mechanism**

### **A. Xcel Energy's Proposal**

Xcel proposed a financial incentive mechanism that would reward Xcel's performance each year if the pilots achieve at least 50% of their annual demand-response goals. The award would be calculated as a variable percentage—from 5% to 15%—of the sum of bill credits customers received under the pilots. The award percentage would be calculated based on the amount of demand-response actually achieved compared to the goal, according to the following formula:

$$\text{Percent of Bill-Credit Spend} = 10\% * \text{Actual MW} / \text{Goal MW}$$

For example, if the pilots achieved 100% of their annual goal, Xcel would receive an incentive equal to 10% of customer bill credits. Achieving 50% of the goal would earn a 5% award, and achieving 150% of the goal would earn a 15% award. Xcel proposed to cap the incentive at 15%.

Starting in 2023, Xcel would cap the incentive so it does not exceed the pilot portfolio's net benefits for the year. Xcel argued this cap would ensure the pilots' benefits exceed their costs and would incentivize the utility to maximize costs avoided while minimizing pilot expenditures.

Xcel contended that avoided system costs would exceed spending on the pilots in 2023, and that the total incentive amount would be less than Xcel's lost opportunity to invest and earn a return on capital assets if load-flexibility options reduce the need for future generation capacity. Xcel also argued that the proposed incentive mechanism is responsive to a 2020 Commission order that directed Xcel to propose a demand-response incentive mechanism.<sup>10</sup>

### **B. Comments**

#### **1. Fresh Energy**

Fresh Energy did not oppose the limited application of Xcel's revised incentive mechanism to these specific pilots, but it did not support applying this design beyond these pilots.

#### **2. Clean Energy Economy Minnesota, R Street Institute, and City of Minneapolis**

Clean Energy Economy Minnesota and R Street argued that any performance-based incentive should encourage the utility to change its performance or initiate efforts it otherwise would not undertake due to a lack of incentives. They argued that the load-flexibility pilots were proposed to fulfill a preexisting demand-response requirement with no significant changes to Xcel's

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<sup>10</sup> *In the Matter of Commission Investigation to Identify Performance Metrics, and Potentially, Incentives for Xcel Energy's Electric Utility Operation*, Docket No. E-002/CI-17-401, Order Establishing Methodologies and Reporting Schedules (April 16, 2020).

performance and no additional risk to the utility, so any incentive mechanism for these pilots would not serve the purpose of incentive mechanisms. Further, R Street argued that Xcel's proposal to reward itself even if the pilots meet substantially less than their goal is unreasonable.

The City agreed that an incentive mechanism is inappropriate because the load-flexibility pilots are tied to a prior Commission mandate and not a voluntary performance or policy goal.

### **3. Center for Energy and Environment**

CEE opposed the proposed incentive mechanism because it is not clear Xcel will experience a long-term reduction in earning opportunities as a result of these small-scale, limited-duration pilots. It recommended that the Department or Xcel, in a separate docket, propose an incentive mechanism for all load-management programs using the framework set forth in the ECO Act.

### **4. Department of Commerce, Division of Energy Resources**

The Department recommended rejecting Xcel's proposed incentive mechanism, arguing that it would be unreasonable to approve a financial incentive for acquiring demand response that Xcel is already obligated to acquire under the 2017 IRP order.

The Department argued that any future proposals for load-management incentive mechanisms should be developed in the context of a stakeholder group that considers a broad array of perspectives, includes significant analysis of financial consequences for customers and utilities, and responds to the direction of the ECO Act.

### **5. Xcel Energy's Reply**

Xcel disputed the arguments that an incentive mechanism is unreasonable because of the existing mandate to acquire demand response. Xcel argued that the pilots have additional value beyond the MW goals, including the pursuit of innovative program design and taking early action to learn and engage in creative thinking about how to develop a more flexible electric system.

Further, Xcel argued that approving the incentive mechanism proposed for these pilots would not impede a broader ECO-Act-driven stakeholder discussion in the future; rather, incentive-mechanism information from these pilots could benefit future stakeholder discussions.

## **C. Commission Action**

The Commission will reject the proposed financial incentive mechanism. A substantial driving factor behind the approved load-flexibility pilots is to help Xcel make progress toward its existing obligation to acquire 400 MW of additional demand-response capacity by 2023 under the 2017 IRP order, and the record does not support a finding that any further incentive beyond that mandate is reasonable to induce Xcel to pursue these pilots at this time.

## **IX. Deferred Accounting**

### **A. Xcel Energy's Proposal**

Xcel requested authorization to track 2021–2023 costs of the load-flexibility pilots and product-development fund in a tracker account for potential future recovery. Xcel argued that deferred accounting is appropriate based on the scope and scale of the programs, would provide Xcel the ability and incentive to expand load-flexibility options for customers more quickly, and would support the pursuit of new ideas for load flexibility in Minnesota.

### **B. Legal Standard**

The Commission has broad authority under Minn. Stat. § 216B.10 to establish a system of accounts to be kept by utilities and to require reporting and conduct audits of those accounts. By rule, the Commission requires utilities to implement the uniform system of accounts established by the Federal Energy Regulatory Commission.<sup>11</sup> However, the Commission may approve a utility's request for an exception to the applicable uniform system of accounts for good cause shown under Minn. R. 7825.0300, subp. 4.

One type of special accounting treatment that may be permitted for good cause is deferred accounting, a regulatory tool that allows a utility to postpone the standard accounting treatment otherwise required for a particular item. Deferred accounting primarily is used to hold utilities harmless when they incur out-of-test-year expenses that, because they are unforeseen, unusual, and large enough to have a significant impact on the utility's financial condition, should be eligible for possible recovery in the next rate case. Deferred accounting has also been permitted when utilities have incurred sizeable expenses to meet important public-policy mandates.

### **C. Comments**

#### **1. Department of Commerce, Division of Energy Resources**

The Department initially opposed deferred accounting and recommended that Xcel instead include any incremental costs of the load-flexibility programs in its upcoming rate case. The Department argued that deferred accounting is inappropriate because Xcel had not shown that the costs are incremental to labor costs already included in base rates and CIP programs.

Further, the Department contended that deferred accounting generally is problematic because it results in tracking only increases and not decreases in costs outside a rate case, which results in rates that are overstated and unreasonable.

#### **2. Xcel Energy's Reply**

Xcel argued that most of the load-flexibility program costs are for bill credits specific to the pilots and the labor-related components are incremental costs appropriate for deferral. Xcel itemized the costs in the following table:

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<sup>11</sup> Minn. R. 7825.0400.



<b>Table 1. Deferred Expenditures by Category<sup>12</sup></b>		
	<b>Cumulative Total</b>	<b>% of Total</b>
Bill Credits	\$4,828,564	57%
Customer Services (Equipment Cost)	\$540,271	6%
Program Administration (including labor)	\$1,277,470	15%
Advertising & Promotions	\$579,005	7%
Measurement and Verification (evaluations)	\$134,900	2%
Product Development & Research	\$1,071,433	13%
<b>Total</b>	<b>\$8,431,643</b>	<b>100%</b>

### **3. Department of Commerce, Division of Energy Resources' Reply**

The Department agreed that the first two categories of costs in Xcel's table, Bill Credits and Customer Services (Equipment Costs), likely are incremental costs, but it argued the remaining categories appear to be labor costs already included in base rates. Therefore, the Department recommended limiting rate recovery of load-flexibility-program costs to the first two categories.

The Department recommended that Xcel include these costs in its upcoming rate case rather than deferring them to an unspecified future proceeding. Alternatively, if the Commission authorizes deferred accounting, the Department recommended that the Commission limit rate recovery to the first two categories of Xcel's expenditures table.

At the Commission meeting, the Department noted that the amounts listed in the table were calculated based on the assumption that all of Xcel's proposed load-flexibility programs would be approved. Accordingly, the Department requested that Xcel file an updated table showing the final expenditure amounts reflecting the Commission's decisions in this docket within 30 days.

#### **D. Commission Action**

With the limitations adopted below, the Commission finds good cause to authorize deferred accounting under Minn. R. 7825.0300, subp. 4. Xcel's substantial portfolio of load-flexibility programs presents important opportunities to study various demand-response offerings and their potential value to customers, to Xcel's system, and to broader state energy policy goals.

Further, the pilots are designed to make critical progress toward Xcel's demand-response mandate, including the modified Peak Flex Credit pilot with twice the demand-response capacity Xcel planned for in its original petition. Limited deferred-accounting treatment is reasonable to support the appropriate acceleration of Xcel's demand-response efforts through these pilots.

To protect customers, the Commission will adopt the Department's recommendation to limit the expenses eligible for deferral to the first two categories of costs listed in Table 1, above: Bill Credits and Customer Services (Equipment Costs). As the Department noted, Xcel calculated the expenses listed in Table 1 assuming its petition would be approved in its entirety, but the final decisions in this order will alter those calculations. Accordingly, the Commission will require Xcel to file an updated table reflecting the decisions in this order within 30 days.

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<sup>12</sup> Xcel Reply Comments at 17, Table 4 (July 28, 2021).

## **X. Annual Demand-Response Compliance Reports**

### **A. Xcel Energy's Proposal**

Xcel agreed to track all costs, operational details, and other relevant information for the pilots and demonstration projects and report the information annually in its Demand Response Compliance Report, filed on February 1 each year in Docket No. E-002/M-20-421.

In addition to total spending and narrative on research and development activities and achievements, Xcel proposed to report on the following details for each pilot:

- Total number of participants and equipment type;
- Number of participants;
- Reduction of load (Gen. kW, Gen. kWh) as a result of equipment installation;
- Load Shifting (Number of participating customers, Available MW and MWh during times contingency events and/or shifts to particular times of the day Verification data as available).

Additionally, Xcel proposed to report on the following data unique to the Peak Flex Credit pilot:

- Total expenditures;
- Number of participants;
- Number of participants opting for fast versus standard response time;
- Number of participants opting for seasonal participation;
- Potential demand reduction available (Gen. kW, Gen. kWh (where applicable));
- Actual load relief during control events:
  - Capacity/Contingency Events
    - Number of participants in event
    - Actual load shed
    - Failure to control penalties
  - Economic Events
    - Number of participants in event
    - Number of participants choosing a buy-through price
    - Actual load shed
    - Load relief as a function of buy-through price.

### **B. Comments**

The Department agreed with Xcel's proposal for annual reporting and recommended also including following additional details on the Peak Flex Credit pilot:

- The number of control events and hours for each type of event,
- The buy through rates of each economic event, and
- When customers fail to control, the number of participants and associated kW that were not controlled.

In reply comments, Xcel agreed to report on this additional information.

### C. Commission Action

The Commission finds reasonable and will adopt Xcel's proposed reporting requirements, as modified in Xcel's reply comments. Xcel shall include this information in the Demand Response Compliance Report filed annually on February 1 in Docket No. E-002/M-20-421.

### ORDER

1. The Commission approves Northern States Power Company d/b/a Xcel Energy's revised Peak Flex Credit Rider pilot and tariff as modified in Xcel's reply comments, and modified as follows:
  - a. Xcel shall allow third-party aggregators to participate in a second tranche of the Peak Flex Credit pilot targeting an additional 43 MW of demand-response capacity, and make a compliance filing within 60 days describing in detail how Xcel will engage and contract with aggregators and any other program adjustments that need to be made. Xcel must engage and consider input from parties that commented on the Peak Flex Credit and aggregation in this proceeding before developing the compliance filing.
  - b. Xcel shall collect and report data about whether Peak Flex Credit customers have one or more backup power sources that they plan to use during demand reduction control events, and the fuel or technology that powers the customer's backup power source.
  - c. Xcel shall account for emissions and fuel costs associated with the backup power source in cost-effectiveness testing.
  - d. Xcel shall establish participation criteria to prevent participants from using a backup power source that is more carbon-intensive than Xcel's electricity mix during the pilot program's curtailment periods.
  - e. Xcel shall gather the following information about potential pilot participants' backup generation using the Peak Flex Credit application form:
    - i. Does the customer have a backup generator or on-site distributed-energy resource that can be used for backup power?
    - ii. When did each unit go into service?
    - iii. Provide the fuel type, size, and run-time of each unit.
    - iv. Does the generator(s) require an air permit(s)? If yes, provide the permit number(s).
  - f. For customers using or opting into the A15 rate schedule: Xcel shall pilot the Peak Flex Credit in combination with Xcel's proposed general time-of-use service rate being piloted in Docket No. E-002/M-20-86 rather than with the current

default A15 rate. Xcel shall propose a methodology for calibrating the bill credits under the Peak Flex Credit pilot with the demand and volumetric charges general time-of-use service rate to be piloted through Docket No. E-002/M-20-86.

- g. Xcel shall allow qualified customers that receive an advanced meter during the pilot term, and those who already have compatible metering equipment or bring their own, to enroll in the Peak Flex Credit pilot.
  - h. Xcel shall provide an updated number of projected Peak Flex Credit pilot participants per year and an estimate of the number of participants on the A14 rate schedule versus the forthcoming A15 pilot rate schedule per year.
  - i. Xcel shall conduct annual surveys of Peak Flex Credit participants for each year of the pilot. The survey shall ask customers how many hours each backup generator was used during each Peak Flex Credit curtailment event called in the survey year. Survey results shall be included in annual Peak Flex Credit reports or on another reporting schedule determined by the Commission.
2. Xcel shall file an updated Peak Flex Credit pilot tariff reflecting approved modifications to the Peak Flex Credit pilot within 30 days.
3. The Commission authorizes the Executive Secretary to request comments on:
- a. Whether the Commission should permit aggregators of retail customers to bid demand response into organized markets;
  - b. Whether the Commission should require rate-regulated electric utilities to create tariffs allowing third-party aggregators to participate in utility demand response programs;
  - c. Whether and how the Commission should verify or certify aggregators of retail customers for demand response or distributed energy resources before they are permitted to operate; and
  - d. Whether any additional consumer protections are necessary if aggregators of retail customers are permitted to operate.
4. The Commission approves Xcel's proposed CTS pilot with the following modifications:
- a. Xcel shall align charging periods for the CTS pilot with the hours of low-cost energy generation on Xcel's system as much as possible.
  - b. Xcel shall evaluate how well customers are following both charging and curtailment schedules during spot checks for this program, and report on this information in annual reports.
  - c. Xcel shall refrain from referencing renewable energy generation in conjunction with the timing of the CTS charging.

- d. Xcel shall file tariff pages reflecting final CTS pilot rates, terms, and conditions, including final customer service agreements, within 30 days of the order.
5. The Commission denies the Residential HVAC Optimization pilot without prejudice.
6. Xcel shall review its existing electric heating rate options, including the Back-up Relief Rate Plan, to ensure that they accurately reflect the value of the additional load and additional load flexibility for customers installing an air source heat pump and maintaining an existing gas heating backup source. If existing rates do not reflect the added value of these electrified loads, the rates should be adjusted, or new rate offerings should be developed.
7. The Commission approves the EV Optimization pilot with the following modifications:
  - a. If Xcel collects nonessential data, Xcel shall ask and provide an option for customers to opt out of the nonessential data sharing during pilot enrollment.
  - b. Xcel and its vendors must follow any applicable standards relating to data adopted by the Commission.
  - c. Reporting on the EV Optimization pilot must be included in Xcel's EV Annual Report.
  - d. Xcel shall file tariff pages reflecting final EV pilot rates, terms, and conditions, within 30 days.
  - e. The Commission delegates authority to the Executive Secretary to approve, via notice, modifications to the pilot, including those outlined above, if no stakeholder or Commission staff objects or files notice to object within 30 days of the filing.
8. By June 1, 2023, Xcel shall propose an option for participation in the Home EV Service Program that would allow customers to buy, install, and maintain their own chargers, including models not currently deployed in the Program—or explain why it is not feasible or prudent to do so, and provide cost information to support this position.
9. Within 30 days, Xcel shall make a compliance filing answering the following questions:
  - a. How does Xcel plan to track enrollment and compliance for customers that have multiple cars, especially fleets, if using a charger-based option?
  - b. How does Xcel plan to track peak reductions for the pilot, given that some customers are already enrolled in time-varying rates and are charging their vehicles off peak?
  - c. If Xcel changes the set charging schedules as it indicated it may do in its petition, how will it inform customers on time-varying rates about how it could impact their bills? Specifically, if a charging overlaps with a mid-peak or on-peak period, will Xcel communicate that information to customers?

- d. In the customer-service agreement, Xcel indicated it reserves the right to modify all pilot incentives based on future performance, pilot modifications, technology upgrades, and changes to Xcel's electrical distribution system. How will Xcel inform the Commission of such changes? How would this impact the pilot budget?
10. The Commission approves Xcel's revised budget request for \$200,000 for product research and development.
11. The Commission approves Xcel's proposed Excess Supply Partners demonstration project with the following modifications:
  - a. Remove all reference to any forms of renewable energy while describing the program itself, Xcel's motivation, and the potential results.
  - b. Rename the project to "Cost Reduction Partners," or some other name that does not reference renewable energy, Xcel's motivation, and the potential results of the project.
12. The Commission approves the V2G School Bus Demonstration Project.
13. Xcel shall work closely with fleet managers when establishing program parameters under the V2G pilot program.
14. Xcel must include in its EV Annual Report information on the V2G School Bus Demonstration Project.
15. The Commission rejects the revised incentive mechanism proposed by Xcel.
16. The Commission approves Xcel's proposed deferral of pilot expenses and financial incentives in a load flexibility tracker account, as limited below.
17. The rate recovery of load flexibility programs is limited to the first two categories of costs shown on Table 1 above, for "Bill Credits" of \$4.829 million and "Customer Services (Equipment Costs)" of \$0.54 million. These amounts are based on the assumption that the Commission approved all the projects. 30 days after the Commission's decision, Xcel should submit new numbers for Table 1 based on the projects approved by the Commission, including the resulting amounts for Bill Credits and Customer Services (Equipment Cost).
18. The Commission approves Xcel's proposal, as revised in reply comments, to track all cost, operational details, and other relevant information for the pilots and demonstration projects and report this information as part of its established Demand Response Compliance Report to be filed annually on February 1 in Docket No. E-002/M-20-421. In addition, to total spending and narrative regarding the activities and achievements as part of research and development efforts, Xcel will report on following details for each pilot:
  - a. Total number of participants and equipment type.
  - b. Number of participants.

- c. Reduction of load (Gen. kW, Gen. kWh) as a result of equipment installation.
  - d. Load Shifting (Number of participating customers, Available MW and MWh during times contingency events and/or shifts to particular times of the day Verification data as available.)
19. In addition to the details listed in paragraph 18, Xcel shall report on the following additional details for the Peak Flex Credit pilot:
- a. Total expenditures
  - b. Number of participants
  - c. Number of participants opting for fast versus standard response time
  - d. Number of participants opting for seasonal participation
  - e. Potential demand reduction available (Gen. kW, Gen. kWh (where applicable))
  - f. Actual load relief during control events:
    - i. Capacity/Contingency Events
      - o Number of participants in event
      - o Actual load shed
      - o Failure to control penalties
    - ii. Economic Events
      - o Number of participants in event
      - o Number of participants choosing a buy-through price
      - o Actual load shed
      - o Load relief as a function of buy-through price
20. This order shall become effective immediately.

BY ORDER OF THE COMMISSION



Will Seuffert  
Executive Secretary



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## **CERTIFICATE OF SERVICE**

I, Chrishna Beard, hereby certify that I have this day, served a true and correct copy of the following document to all persons at the addresses indicated below or on the attached list by electronic filing, electronic mail, courier, interoffice mail or by depositing the same enveloped with postage paid in the United States mail at St. Paul, Minnesota.

**Minnesota Public Utilities Commission**  
**ORDER APPROVING MODIFIED LOAD-FLEXIBILITY PILOTS AND**  
**DEMONSTRATION PROJECTS, AUTHORIZING DEFERRED ACCOUNTING,**  
**AND TAKING OTHER ACTION**

Docket Number **E002/M-21-101, E002/M-17-401**

Dated this 15th day of March, 2022

/s/ Chrishna Beard



First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Gary	Ambach	Gambach@slipstreaminc.org	Slipstream, Inc.	8973 SW Village Loop  Chanhassen, MN 55317	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Alison C	Archer	aarcher@misoenergy.org	MISO	2985 Ames Crossing Rd  Eagan, MN 55121	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Susan	Arntz	sarntz@mankatomn.gov	City Of Mankato	P.O. Box 3368  Mankato, MN 560023368	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Mara	Ascheman	mara.k.ascheman@xcelenenergy.com	Xcel Energy	414 Nicollet Mall Fl 5  Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Jessica L	Bayles	Jessica.Bayles@stoel.com	Stoel Rives LLP	1150 18th St NW Ste 325  Washington, DC 20036	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
David	Bender	dbender@earthjustice.org	Earthjustice	1001 G Street NW Suite 1000 Washington, District of Columbia 20001	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Tracy	Bertram	tbertram@ci.becker.mn.us		12060 Sherburne Ave Becker City Hall Becker, MN 55308-4694	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
James J.	Bertrand	james.bertrand@stinson.com	STINSON LLP	50 S 6th St Ste 2600  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Jessica	Beyer	jbeyer@greatermankato.com	Greater Mankato Growth	1961 Premier Dr Ste 100  Mankato, MN 56001	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Ingrid	Bjorklund	ingrid@bjorklundlaw.com	Bjorklund Law, PLLC	855 Village Center Drive #256  North Oaks, MN 55127	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
James	Canaday	james.canaday@ag.state.mn.us	Office of the Attorney General-RUD	Suite 1400 445 Minnesota St. St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-101_21-101 Official Service List
Thomas	Carlson	thomas.carlson@edf-re.com	EDF Renewable Energy	10 2nd St NE Ste. 400  Minneapolis, Minnesota 55413	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
John	Coffman	john@johncoffman.net	AARP	871 Tuxedo Blvd.  St. Louis, MO 63119-2044	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400  St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-101_21-101 Official Service List
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Brooke	Cooper	bcooper@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022191	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174  Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Matthew	Deal	matthew.deal@chargepoint.com	ChargePoint, Inc.	254 Hacienda Ave  Campbell, CA 95008	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, 401-8  Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
J.	Drake Hamilton	hamilton@fresh-energy.org	Fresh Energy	408 St Peter St Ste 350 Saint Paul, MN 55101	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Scott F	Dunbar	sdunbar@keyesfox.com	Keyes & Fox LLP	1580 Lincoln St Ste 880 Denver, CO 80203	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Mike	Fiterman	mikefiterman@libertydiversified.com	Liberty Diversified International	5600 N Highway 169 Minneapolis, MN 55428-3096	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Edward	Garvey	edward.garvey@AESLconsulting.com	AESL Consulting	32 Lawton St Saint Paul, MN 55102-2617	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Katherine	Hamilton	katherine@aem-alliance.org	Advanced Energy Management Alliance	1701 Rhode Island Ave, NW Washington, DC 20036	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Kim	Havey	kim.havey@minneapolismn.gov	City of Minneapolis	350 South 5th Street, Suite 315M Minneapolis, MN 55415	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Philip	Hayet	phayet@jkenn.com	J. Kennedy and Associates, Inc.	570 Colonial Park Drive Suite 305 Roswell, GA 30075-3770	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W  Farmington, MN 55024	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Annete	Henkel	mui@mutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St. Paul, MN 55101	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.	445 Etna Street Ste. 61 St. Paul, MN 55106	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2950 Yellowtail Ave.  Marathon, FL 33050	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Sarah	Johnson Phillips	sarah.phillips@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
William D	Kenworthy	will@votesolar.org	Vote Solar	332 S Michigan Ave FL 9  Chicago, IL 60604	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Thomas	Koehler	TGK@IBEW160.org	Local Union #160, IBEW	2909 Anthony Ln  St Anthony Village, MN 55418-3238	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Frank	Kohlasch	frank.kohlasch@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd N.  St. Paul, MN 55155	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Michael	Krikava	mkrikava@taftlaw.com	Taft Stettinius & Hollister LLP	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Carmel	Laney	carmel.laney@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.	8300 Norman Center Drive Suite 1000 Bloomington, MN 55437	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Annie	Levenson Falk	annief@cupminnesota.org	Citizens Utility Board of Minnesota	332 Minnesota Street, Suite W1360  St. Paul, MN 55101	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC	961 N Lost Woods Rd  Oconomowoc, WI 53066	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E  St. Paul, MN 55106	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Emily	Marshall	emarshall@mojlaw.com	Miller O'Brien Jensen, PA	120 S. 6th Street Suite 2400 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Mary	Martinka	mary.a.martinka@xcelenergy.com	Xcel Energy Inc	414 Nicollet Mall 7th Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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_21-101_21-101 Official Service List
Taylor	McNair	taylor@gridlab.org		668 Capp Street  San Francisco, CA 94110	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Brian	Meloy	brian.meloy@stinson.com	STINSON LLP	50 S 6th St Ste 2600  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Joseph	Meyer	joseph.meyer@ag.state.mn.us	Office of the Attorney General-RUD	Bremer Tower, Suite 1400 445 Minnesota Street St Paul, MN 55101-2131	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Gregory C.	Miller	gmiller@dakotaelectric.com	Dakota Electric Association	4300 220th Street West  Farmington, MN 55024	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis	350 S. 5th Street Room M 301 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022093	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Evan	Mulholland	emulholland@mncenter.org	Minnesota Center for Environmental Advocacy	1919 University Ave W Ste 515  Saint Paul, MN 55101	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Alan	Muller	alan@greendel.org	Energy & Environmental Consulting	1110 West Avenue Red Wing, MN 55066	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Kristin	Munsch	kmunsch@citizensutilityboard.org	Citizens Utility Board of Minnesota	309 W. Washington St. Ste. 800 Chicago, IL 60606	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Amanda	Myers	amanda@weavegrid.com	Weave Grid, Inc.	222 7th Street 2nd Floor San Francisco, California 94103	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment	212 3rd Ave N Ste 560  Minneapolis, MN 55401	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
J	Newberger	Jnewberger1@yahoo.com	State Rep	14225 Balsam Blvd  Becker, MN 55308	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220  Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
M. William	O'Brien	bobrien@mojlaw.com	Miller O'Brien Jensen, P.A.	120 S 6th St Ste 2400  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Ric	O'Connell	ric@gridlab.org	GridLab	2120 University Ave  Berkeley, CA 94704	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Regulatory	OTP	OTPRRegulatory@otpc.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 56538	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Carol A.	Overland	overland@legalectric.org	Legaelectric - Overland Law Office	1110 West Avenue  Red Wing, MN 55066	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Jessica	Palmer Denig	jessica.palmer-Denig@state.mn.us	Office of Administrative Hearings	600 Robert St N PO Box 64620 St. Paul, MN 55164	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Audrey	Partridge	apartridge@mncee.org	Center for Energy and Environment	212 3rd Ave. N. Suite 560  Minneapolis, Minnesota 55401	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
J. Gregory	Porter	greg.porter@nngco.com	Northern Natural Gas Company	1111 South 103rd St  Omaha, NE 68124	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Greg	Pruszinske	gpruszinske@ci.becker.mn.us	City of Becker	PO Box 250 12060 Sherburne Ave Becker, MN 55308	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_21-101_21-101 Official Service List
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_21-101_21-101 Official Service List
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750  St. Paul, MN 55101	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Jacob J.	Schlesinger	jschlesinger@keyesfox.com	Keyes & Fox LLP	1580 Lincoln St Ste 880  Denver, CO 80203	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Doug	Scott	dscott@gpisd.net	Great Plains Institute	2801 21st Ave Ste 220  Minneapolis, MN 55407	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List



First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350  Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_21-101_21-101 Official Service List
Patricia F	Sharkey	psharkey@environmentalla wcounsel.com	Midwest Cogeneration Association.	180 N LaSalle St Ste 3700 Chicago, IL 60601	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Joshua	Smith	joshua.smith@sierraclub.or g		85 Second St FL 2  San Francisco, California 94105	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Ken	Smith	ken.smith@districtenergy.c om	District Energy St. Paul Inc.	76 W Kellogg Blvd  St. Paul, MN 55102	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Beth H.	Soholt	bsoholt@windonthewires.or g	Wind on the Wires	570 Asbury Street Suite 201  St. Paul, MN 55104	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Anna	Sommer	ASommer@energyfuturesg roup.com	Energy Futures Group	PO Box 692  Canton, NY 13617	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Mark	Spurr	mospurr@fvbenergy.com	International District Energy Association	222 South Ninth St., Suite 825  Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Byron E.	Starns	byron.starns@stinson.com	STINSON LLP	50 S 6th St Ste 2600  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
James M	Strommen	jstrommen@kennedy- graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7  Minneapolis, MN 554011993	Electronic Service	Yes	OFF_SL_21-101_21-101 Official Service List
Thomas	Tynes	jjazynka@energyfreedomcoalition.com	Energy Freedom Coalition of America	101 Constitution Ave NW Ste 525 East  Washington, DC 20001	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Lisa	Veith	lisa.veith@ci.stpaul.mn.us	City of St. Paul	400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Julie	Voeck	julie.voeck@nee.com	NextEra Energy Resources, LLC	700 Universe Blvd  Juno Beach, FL 33408	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Samantha	Williams	swilliams@nrdc.org	Natural Resources Defense Council	20 N. Wacker Drive Ste 1600 Chicago, IL 60606	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Laurie	Williams	laurie.williams@sierraclub.org	Sierra Club	Environmental Law Program 1536 Wynkoop St Ste 200 Denver, CO 80202	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine	225 South Sixth Street, Suite 3500  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List
Jeff	Zethmayr	jzethmayr@citizensutilityboard.org	Citizens Utility Board	309 W. Washington, Ste 800  Chicago, IL 60606	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Patrick	Zomer	Pat.Zomer@lawmoss.com	Moss & Barnett PA	150 S 5th St #1200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_21-101_21-101 Official Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400  St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_17-401_Official
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_17-401_Official
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406	Electronic Service	No	OFF_SL_17-401_Official
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_17-401_Official
Katherine	Hamilton	katherine@aem-alliance.org	Advanced Energy Management Alliance	1701 Rhode Island Ave, NW  Washington, DC 20036	Electronic Service	No	OFF_SL_17-401_Official
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_17-401_Official
Gregory C.	Miller	gmiller@dakotaelectric.com	Dakota Electric Association	4300 220th Street West  Farmington, MN 55024	Electronic Service	No	OFF_SL_17-401_Official
Kristin	Munsch	kmunsch@citizensutilityboard.org	Citizens Utility Board of Minnesota	309 W. Washington St. Ste. 800 Chicago, IL 60606	Electronic Service	No	OFF_SL_17-401_Official
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220  Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_17-401_Official
Regulatory	OTP	OTPRegulatory@otpc.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 56538	Electronic Service	No	OFF_SL_17-401_Official

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Audrey	Partridge	apartridge@mncee.org	Center for Energy and Environment	212 3rd Ave. N. Suite 560  Minneapolis, Minnesota 55401	Electronic Service	No	OFF_SL_17-401_Official
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_17-401_Official
Joseph L	Sathe	jsathe@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-401_Official
Doug	Scott	dscott@gpisd.net	Great Plains Institute	2801 21st Ave Ste 220  Minneapolis, MN 55407	Electronic Service	No	OFF_SL_17-401_Official
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350  Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_17-401_Official
Patricia F	Sharkey	psharkey@environmentalallawcounsel.com	Midwest Cogeneration Association.	180 N LaSalle St Ste 3700 Chicago, IL 60601	Electronic Service	No	OFF_SL_17-401_Official
James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	150 S 5th St Ste 700  Minneapolis, MN 55402	Electronic Service	No	OFF_SL_17-401_Official
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7  Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_17-401_Official
Christopher	Villarreal	cvillarreal@rstreet.org	R Street Institute	1212 New York Ave NW Ste 900 Washington, DC 20005	Electronic Service	No	OFF_SL_17-401_Official
Jeff	Zethmayr	jzethmayr@citizensutilityboard.org	Citizens Utility Board	309 W. Washington, Ste 800  Chicago, IL 60606	Electronic Service	No	OFF_SL_17-401_Official