

Staff Briefing Papers

Meeting Date	April 2, 2026	Agenda Item 2***	
Company	Northern States Power Co. d/b/a Xcel Energy		
Docket No.	E002/M-25-378		
	In the Matter of Northern States Power Company, dba Xcel Energy, Petition for Approval of Capacity*Connect, a Distributed Capacity Procurement (DCP) program		
Issues	Should the Commission approve Xcel Energy's proposed implementation of Phase 2 of its Capacity*Connect program?		
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✓ Relevant Documents	Date
<i>Petition and Initial Information Requests</i>	
Xcel Energy, Initial Filing and Attachment C (includes Trade Secret and public versions)	October 3, 2025
Xcel Energy Response to Minnesota Public Utilities Information Requests 1-6	October 31, 2025
<i>Initial Comments</i>	
Batch Public Comments (Example)	November 25, 2025 – February 24, 2026
Ceres	October 14, 2025
Dan Watson, Public Comment	December 3, 2025

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

✓ Relevant Documents

	Date
Renewable Energy Partners	December 9, 2025
Base Power (includes Trade Secret and public versions)	December 9, 2025
Office of the Attorney General – Residential Utilities Division (includes Trade Secret and public versions)	December 10, 2025
Fresh Energy	December 10, 2025
Clean Energy Economy Minnesota	December 10, 2025
Center for Energy and Environment	December 10, 2025
The Coalition for Community Solar Access, the Minnesota Solar Energy Industries Association, and the Solar Energy Industries Association	December 10, 2025
RIC Energy (“Joint Solar Parties”) (includes Appendix A, Appendix B, and Responses to Information Requests)	December 10, 2025
Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar	December 10, 2025
Department of Commerce – Division of Energy Resources (includes Trade Secret and public versions, as well as Trade Secret Attachments B1-3, B2-3, and B3-3)	December 10, 2025
American Association of Blacks in Energy	December 11, 2025
R Street Institute	December 11, 2025
LIUNA Minnesota/North Dakota	December 11, 2025

Reply Comments

Fresh Energy	January 9, 2026
Xcel Energy (includes Trade Secret and public versions)	January 9, 2026
Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar	January 9, 2026

Supplemental Comments

Jesse Angrist, Public Comment	January 27, 2026
Department of Commerce – Division of Energy Resources	January 27, 2026
Office of the Attorney General – Residential Utilities Division	January 27, 2026
Center for Energy and Environment	January 27, 2026
Fresh Energy	January 27, 2026
Clean Energy Economy Minnesota	January 27, 2026
Xcel Energy	January 27, 2026

✓ **Relevant Documents**

	Date
Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar	January 27, 2026
Joint Solar Parties	January 27, 2026
LIUNA Minnesota/North Dakota	January 27, 2026

Ex Parte Communications and Additional Information Requests

Minnesota Public Utilities Commission Staff to Department of Commerce – Division of Energy Resources, Ex Parte Communication	January 30, 2026
Minnesota Public Utilities Commission Staff to Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar, Ex Parte Communication	February 3, 2026
Minnesota Public Utilities Commission Staff to Joint Solar Parties, Ex Parte Communication	February 3, 2026
Minnesota Public Utilities Commission Staff to Office of the Attorney General – Residential Utilities Division, Ex Parte Communication	February 5, 2026
Minnesota Public Utilities Commission Staff to Fresh Energy, Ex Parte Communication	February 6, 2026
Minnesota Public Utilities Commission Staff to Institute for Local Self-Reliance and Solar United Neighbors, Ex Parte Communication	February 19, 2026
Xcel Responses to Information Requests 7-13 (includes Trade Secret and public versions)	March 9-10, 2026

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ACRONYMS

BESS	Battery Energy Storage System
BTM	Behind-the-Meter
C*C	Capacity*Connect Program
CEII	Critical Energy Infrastructure Information
DCP	Distributed Capacity Procurement
DER	Distributed Energy Resource
DERMS	Distributed Energy Resources Management System
DML	Daytime Minimum Load
DSES	Distributed Solar Energy Standard
DRR	Demand Response Resource
DSO	Distribution System Operator
DSRUP	Distribution System Reactive Upgrade Program
ECO	Energy Conservation and Optimization
ESR	Electric Storage Resource
FTM	Front-of-the-Meter
IDP	Integrated Distribution Plan
IRP	Integrated Resource Plan
LMR	Load Modifying Resource
MISO	Midcontinent Independent System Operator
MN DIP	Minnesota Distributed Interconnection Process
NWA	Non-Wires Alternatives
T&D	Transmission and Distribution
TPS	(Xcel's) Technical Planning Standard
RES	Renewable Energy Standard
RFP	Request For Proposal
VPP	Virtual Power Plant

EXECUTIVE SUMMARY

Xcel seeks approval for Phase 2 of Capacity*Connect, which consists of 50MW to 200MW of distribution-connected battery storage systems, aggregated and dispatched to the MISO wholesale market as a Virtual Power Plant (VPP). The Company estimated the first three years of the program would cost between \$152 to \$430 million, depending on the MW of battery storage deployed.

Uniquely, all docket participants supported the implementation of VPPs. However, they differed on the best program design, with some entities supporting Xcel’s proposal with minor modifications, while others suggested major revisions that would shift the focus of Phase 2 from a wholesale market program to a distribution-focused deployment. Ultimately, commenters coalesced around two distinct, but not necessarily mutually exclusive pathways.

The first is Xcel's original wholesale-focused program design with some modifications. The American Association of Blacks in Energy, Center for Energy and Environment (CEE), Fresh Energy, and LIUNA largely supported Xcel's proposal with small modifications around battery siting, workforce development, and equity initiatives. Xcel also offered to dedicate a small portion of the assets to examining distribution-specific benefits and values for potential expansion in future phases of Capacity*Connect. Clean Energy Economy MN, Base Power, RIC Energy, and REP offered more substantive revisions to Xcel's proposal. These recommendations would still leave Xcel's proposed focus on wholesale market dispatch intact but structurally change how resources for C*C are procured and owned.

The second is the Department's Consolidated Recommendations, signed onto in part or whole by Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar ("Cooperative Energy Futures et al."), the Joint Solar Parties¹, and the OAG. The Department's recommendations were developed in supplemental comments and combined the similar modifications of the listed participants into a complete package. The cornerstone of these recommendations is the Department's "Three-Archetype Proposal" which would rework Phase 2 of C*C into three distinct use cases that focus on distribution centric valuation:

1. Economic Arbitrage
2. Reliability and Transmission and Distribution Deferral
3. DER Congestion, Hosting Capacity, and the DSRUP Pathway

Under the proposal, Xcel would be required to site and operate C*C batteries to maximize energy arbitrage value, serve as Non-Wires Alternatives, and to relieve distribution system congestion respectively. Other recommendations included developing a Distribution Value Workplan, submission of a behind-the-meter VPP proposal, recommendations around cost recovery and transparency, and reporting, tracking, and evaluation methodologies.

Additionally, R Street Institute and over 100 members of the public recommended rejecting Xcel's proposal and requiring the Company to refile a new program that accomplishes different objectives. The recommended recommendations under these two options contain similar themes suggested by other organizations or in the Department's Consolidated Recommendations.

Staff has focused briefing papers on the key issues Commissioners will need to weigh as they consider the pathways presented. Both options have unanswered questions, especially about their overall cost and value to ratepayers, that will need to be addressed prior to program launch.

¹ The Coalition for Community Solar Access, the Minnesota Solar Energy Industries Association, and the Solar Energy Industries Association

BACKGROUND

During Xcel’s 2024-2040 Integrated Resource Plan (“2024 IRP”), the Company began exploring a new resource planning process concept: distributed capacity procurement (DCP).² Xcel proposed this concept to “leverage Xcel Energy’s planning and procurement capabilities along with a competitive DER supply chain to facilitate timely and economic deployment of DERs at scale across the distribution system.”³ Xcel intended this program to help meet the increasing load growth projected within the IRP time period.

The Commission agreed that this concept could have value, and ordered Xcel to file a proposal by October 3, 2025, including the following in its filing:

- a. An evaluation of how the Distributed Capacity Procurement program could be used to improve equity.
- b. A discussion of how the proposal impacts the Five-Year Action Plan approved in the Commission’s April 21, 2025 Order, how it impacts the IRP-forecasted annual distributed generation solar additions, and whether the DCP could be used to advance compliance with the distributed solar energy standard.
- c. An evaluation of a costs and benefits comparison between a utility-owned and managed DCP model and alternative models allowing participation from customer-owned and third party-owned resources.
- d. An evaluation of the labor standards utilized by Xcel and third-party solar installers.⁴

On October 3, 2025 Xcel filed a Petition for Approval of Capacity*Connect, a Distributed Capacity Procurement (DCP) program. In Capacity*Connect, Xcel proposed to deploy distributed energy resources to provide generating capacity and energy value as part of its resource portfolio.⁵ Xcel conducted Phase 1 of this program through its Energy Conservation and Optimization (ECO) triennial plan.

In its Petition, Xcel requested that the Commission approve:

1. Xcel’s proposed implementation of Phase 2 of Capacity*Connect, including:
 - a. Deployment of approximately 50 MW and up to 200 MW of Company owned and operated distribution-interconnected BESS by the end of 2028.
 - b. A budget range of approximately \$152 million (corresponding to the planned 50 MW deployment) to approximately \$430 million (estimated for a 200 MW deployment) through 2028.
2. Proposal to allow Capacity*Connect Phase 2 assets to bypass the MN DIP.
3. Proposal to seek recovery of C*C costs in the Renewable Energy Standard (RES) Rider.
4. Implementation of and budget for a limited deployment of a grid DERMS.

² Docket No. E-002/RP-24-67, *2024-2040 Upper Midwest Integrated Resource Plan*, [Comments \(August 9, 2024\)](#)

³ *Id.*, p. 12.

⁴ *Id.*, [Order Approving Settlement with Modifications \(April 21, 2025\)](#), Ordering Paragraph 23a-d (“2024 IRP Order”)

⁵ Docket No. E-002/M-25-378, *In the Matter of Northern States Power Company, dba Xcel Energy, Petition for Approval of Capacity*Connect, a Distributed Capacity Procurement (DCP) program*, [Initial Filing](#) (Public and Trade Secret Versions) and [Attachment C](#) (Trade Secret) (October 3, 2025)

5. A multi-part measurement and evaluation plan.
6. A new distribution-only sub-deployment proposal.

Staff has divided the background into the following sections:

- I. Capacity*Connect Program Design
- II. Proposed Budget and Cost Recovery
- III. Equity Considerations
- IV. DERMS
- V. Reporting and Evaluation

I. Program Design

In its petition, Xcel proposed installing 50-200MW of utility-owned, front-of-meter (FTM) Battery Energy Storage Systems (BESS) by the end of 2028. **[Decision Option 1.A]** These assets would range from 1-3 MW at various commercial, industrial, or community host sites, where they will act as a generating capacity resource that Xcel can control from a centralized DERMS system, and attempt to capture energy and capacity market value via participation in MISO.

Xcel proposed to partner with Sparkfund, a specialized DER deployment services company, to serve as the integrator responsible for program design refinement, host site recruitment, and turnkey delivery of the BESS portfolio, including engineering, procurement, construction, and operations and maintenance of the BESS equipment for the life of the program.

Xcel's proposal is the second phase of an ongoing program. Phase 1 of Capacity*Connect was approved by the Department of Commerce as a modification to Xcel's ECO research and demonstration portfolio in 2025.⁶ Xcel stated that, as of early March 2026, Phase 1 activities have included developing a preliminary design package for BESS archetypes with Sparkfund, and identification of nine prospective sites, including one in late-stage negotiations.⁷ Xcel stated that it has also initiated permitting and interconnection activities, and gained more information about MISO registration models. Xcel stated that the full results of the Phase 1 demonstration will be filed in its 2027 ECO Status Report (April 1, 2028).⁸

⁶ Docket Nos. E,G002/CIP-23-92 & E002/RP-24-67, *Assistant Commissioner's Decision Addenda in Response to Xcel Energy's Proposed Modifications to its 2024-2026 Energy Conservation and Optimization Triennial Plan* ([September 3, 2025](#))

⁷ Xcel Response to PUC Staff Information Request #12

⁸ Xcel Petition, p. 7.

Table 1: Xcel's Conceptual Capacity*Connect Roadmap⁹

Phase	Phase 1 (2025 - 2026)	Phase 2 (2026 - 2028)	Phase 3 (2028-2031)	Phase 4 (2031+)
Status	Approved by Department, currently in process	Under Consideration by Commission	Not yet submitted	Not yet submitted
Size	3-5 MW	50 - 200 MW	200 - 500 MW?	500+ MW
Expected Benefits	Bulk System	Bulk System	Bulk AND Distribution System	Operational Coordination Between Bulk AND Distribution plus Customer Resilience
Resource(s)	BESS	BESS	BESS and/or BESS Co-Located With Solar	BESS and/or BESS Co-Located With Solar

A. Siting

Xcel described how it would work with Sparkfund to identify sites for the BESS. First, Xcel plans to identify prospective host feeders using the following criteria:¹⁰

- A. Have at least 1 MW of available generation hosting capacity,
- B. Do not exceed feeder native loading standard,
- C. Do not serve critical customers (e.g. hospitals),
- D. Serve areas where retail load has grown and/or is expected to grow,
- E. Have feeder peaks generally aligned with system peaks, and
- F. Include environmental justice and equity perspectives, e.g. whether the area serves high concentrations of vulnerable or disadvantaged populations.

With that information, Sparkfund will perform an analysis to identify prospective host sites, do marketing and outreach, deliver contracts, and then solicit and oversee the engineering, procurement, permitting, and construction on the chosen sites.¹¹ Site hosts will receive monthly lease payments for hosting the batteries.¹²

B. MISO Participation Model

Xcel reasoned that it would focus on bulk system benefits in Phase 2 because of findings from its modeling, which showed that “the majority of benefits for distribution-connected BESS can be achieved through the participation of these assets in MISO’s energy and capacity market.”¹³ The Company outlined five potential market pathways:

⁹ Adapted by Staff from Xcel Petition, p. 5.

¹⁰ Xcel Petition, pp. 16-17.

¹¹ Xcel Petition, pp. 18-26.

¹² Xcel Petition, p. 20 (Trade Secret)

¹³ Xcel Petition, p. 26.



- DRR (Demand Response Resource) Type 1:¹⁴ The Company's preferred market participation pathway as resources could be aggregated, have less burdensome dispatch and telemetry requirements and the potential to participate in either the energy or operating reserve markets.¹⁵
- DRR Type 2:¹⁶ As assets under DRR 2 cannot be aggregated, Xcel explained it is impractical to individually register and deploy every C*C resource due to stringent metering and telemetry requirements.¹⁷
- Electric Storage Resource (ESR): Similar to DRR Type 2, Xcel noted MISO's ESR model does not allow resource aggregation and would require individual dispatch, metering, and telemetry.¹⁸
- Load Modifying Resource (LMR):¹⁹ The Company indicated this is the participation model used for most of its existing demand response resources. However, LMRs are only offered as capacity resources and must be available during system emergencies and therefore do not participate in the energy and ancillary services markets reducing potential market revenue.²⁰
- FERC Order 2222 Distributed Energy Resource Aggregation (DERA) Model: Xcel explained that while this will eventually offer a pathway, it is still under implementation and would result in a two-year delay in collecting market-based revenue.²¹

On March 9, 2026 Xcel confirmed that it has received written confirmation from MISO that Capacity*Connect systems can participate as DRR Type 1 resources.²²

C. MN DIP

Xcel proposed that Capacity*Connect Phase 2 assets would not be subject to the MN DIP.²³ **[Decision Option 37]** Xcel reasoned that the MN DIP was not developed with these types of assets in mind, and that going through MN DIP would slow the process. Xcel clarified that it would conduct a system impact study at every potential site, and that it intended to "not

¹⁴ Demand-Response Resource that participates in energy and ancillary service markets and is dispatched economically. DRRs are capacity resources that count toward meeting an LSE's Planning Reserve Margin Requirement (PRMR), just like a generator. **DRR Type I**: Provides a fixed "on-off" quantity of demand reduction. Participates in MISO market through a utility or Aggregator of Retail Customers (ARC). Must offer into the Day-Ahead market during Capacity At Risk Hours.

¹⁵ Xcel Reply Comments, p. 18

¹⁶ **DRR Type II**: Demand-Response Resource that provides a range of demand reduction, economically dispatched by the Day-Ahead Market. Must offer into the Day-Ahead market like a generator.

¹⁷ Xcel Reply Comments, p. 18

¹⁸ Xcel, Reply Comments, p. 18-19

¹⁹ **LMR**: Load-Modifying Resource, which can be demand response or non-intermittent BTMG. LMRs are not dispatched economically and don't participate in energy markets. LMRs are planning resources that count toward meeting an LSE's Planning Reserve Margin Requirement (PRMR), just like a generator. **LMR Type I**: Can respond within 6 hours and is deployed *in anticipation of* emergencies. **LMR Type II**: Can respond within 30 minutes and is deployed in emergencies.

²⁰ Xcel Reply Comments, p. 19

²¹ Xcel Reply Comments, p. 19

²² Xcel Energy, Response to Staff IR #11

²³ Xcel Petition, p. 18.

deploy C*C assets that would trigger significant upgrades.”

D. Distribution-Only Concept

In response to multiple parties’ feedback that they wished to analyze the potential distribution system value that Capacity*Connect Phase 2 assets could generate, Xcel proposed in Supplemental Comments to dedicate a portion of assets to realizing distribution value instead of MISO capacity value.²⁴ While Xcel emphasized that Phase 2 should remain focused on bulk assets, and that it is not designed as a non-wires alternative, the Company agreed that isolating some assets to study distribution-only benefits could be useful. Xcel proposed the following learning objectives, and proposed to submit an initial analysis, evaluation plan, and next steps within a year of the Commission order:

1. What are the operational, resource, and process changes needed to maximize distribution value?
2. What additional safety risks do BESS pose to employees and the public?
3. How do different charging and discharging times affect the feeder and substation transformers?
4. How does the reliability and longevity of batteries compare to standard upgrade solutions?
5. Are distribution-only batteries cost beneficial for customers?
6. What size, location, and quantity of batteries on a distribution feeder optimizes feeder loading and operations?

[Decision Option 4]

Xcel also agreed to provide an analysis in its next Integrated Distribution Plan (due November 1, 2027) on developing a Company-specific distribution value. **[Decision Option 5]**

II. Budget and Cost Recovery

A. Budget

Xcel proposed a budget for the first three years of Phase 2 (2026-2028) that would range between approximately \$152 million for 50 MW to \$430 million for 200 MW.²⁵ **[Decision Option 1.B]** This includes capital expenditures, grid DERMS, operations & maintenance, lease payments, modeling support, evaluation, planning studies, internal costs, and the fee for Sparkfund’s partnership. Xcel noted that O&M, Program Management, and Site Host Payments would continue for the life of the project.

On February 24, 2026, four months after submitting its initial petition, Xcel published a press release stating that it will be providing power for a new Google data center in Pine Island.²⁶ In the press release, Xcel stated that Google would provide a “\$50 million investment towards

²⁴ Xcel Supplemental Comments, pp. 4-6.

²⁵ Xcel Petition, Attachment B (Trade Secret).

²⁶ Press Release: Xcel Energy to power new Google data center in Minnesota, [Xcel Energy \(February 24, 2026\)](#)

Xcel Energy’s Capacity*Connect Program.” Xcel indicated that the investment would function as an offset to the Phase 2 budget and that Google would receive matched capacity credits for the megawatts the \$50 million funds. The Company indicated details on the exact mechanics of how the budget offset and capacity credits would work would be included in its forthcoming ESA with Google.²⁷

B. Cost Recovery

Xcel proposed to recover the costs of Capacity*Connect Phase 2 through the RES Rider **[Decision Option 21]**, citing Minn. Stat. § 216B.1645, subd. 1 (2), which authorizes the Commission to approve or disapprove “renewable energy objectives and standards set forth in section 216B.1691, including reasonable investments and expenditures made to...provide storage facilities for renewable energy generation facilities that contribute to the reliability, efficiency, or cost-effectiveness of the renewable facilities[.]”²⁸ Xcel reasoned that Capacity*Connect Phase 2 is designed to meet “energy and capacity needs that may otherwise need to be met by non-renewable resources” and that future phases will aim to directly support integration of distributed solar.²⁹

III. Equity

In response to the Commission’s order to describe how the program could be used to improve Equity, Xcel outlined several strategies.³⁰

First, Xcel stated its intention to consider environmental justice and equity during the search for host sites, in order to site some of its batteries in Environmental Justice Areas, non-profits/community-based organizations, and at women- and minority-owned business enterprises. This would mean these site hosts would receive ongoing lease payments for hosting the batteries.

Xcel also stated that Sparkfund’s competitive procurement process will include higher scoring for women- and minority-owned business enterprises, bidders that contract with such enterprises, and bidders with apprenticeship programs, scholarship programs, or other equity-supporting initiatives.

Xcel also stated that, in engaging with host sites, more ideas (such as community outreach at host sites) may be negotiated. Xcel stated that it will consult with the Environmental Justice Advisory Board to gather input.

IV. DERMS

The Company proposed a Distributed Energy Resources Management System (DERMS) to

²⁷ Xcel Energy, Response to Staff IR 13

²⁸ [Minn. Stat. § 216B.1645](#): POWER PURCHASE CONTRACT OR INVESTMENT

²⁹ Xcel Petition, p. 50.

³⁰ Xcel Petition, pp. 49-50.

aggregate and dispatch the proposed battery fleet.³¹ **[Decision Options 42 and 43]** Xcel clarified that, given the emergence of DERMS systems, the limited Grid DERMS it proposes will likely be a foundational steppingstone to future use cases, through which it can test a new technology system, enable visibility and control into BESS, and learn how to coordinate between distribution and commercial operations teams.³²

Xcel clarified that there are three types of DERMS, and it is proposing only Grid DERMS for Phase 2 of C*C:³³

- A. **Grid DERMS:** Proposed in this petition. This system manages front-of-meter resources for monitoring, control, and coordination of DERs. Limited applications include flexible interconnection to potentially reduce interconnection costs and timelines for customers, flexible energization to manage load during capacity-constrained periods, and deployment of BESS assets through Capacity*Connect.
- B. **Aggregator DERMS:** Intended for scaling and integration of a broad range of behind-the-meter (BTM) resources like solar and demand response assets and providing improved visibility and control for peak load management and other grid services.
- C. **Enterprise DERMS:** Intended to integrate Grid DERMS and Aggregator DERMS with other utility systems and operations to support efficient grid operation and asset utilization, enhance grid resiliency and reliability, and better enable DER participation in energy markets.

Xcel has proposed implementing the Aggregator and Enterprise types over time, after testing Grid DERMS.

The Company proposed three initial use cases for this DERMS deployment:

- 1) *Distributed Capacity Procurement for Capacity*Connect:* Will test the deployment of this new program.
- 2) *Flexible Interconnection:* Enables Grid DERMS to modify DER operating behavior (e.g. curtailing generation output during constrained events)
- 3) *Flexible Energization:* Allows new load customers to energize and interconnect while necessary upgrades are underway by managing load access during peak constraints.

Xcel stated that its budget will cover software licensing, work associated with software design, detailed requirements, testing and integration.³⁴ The Company stated that it anticipates future work and budget dedicated to expanding DERMS for future use cases, but those details are not included in its Phase 2 proposal.

³¹ Xcel Petition, Attachment D.

³² Xcel Petition, p. 27.

³³ CEE Initial Comments, p. 4.

³⁴ Xcel Petition, p. 31.

Attachment D of Xcel’s Petition contains a DERMS Roadmap, which was required by the Commission’s September 16, 2024 Order in Xcel’s 2023 Integrated Distribution Plan (IDP), Docket No. E002/M-23-452, Order Point 23. Staff anticipates discussion of the contents of the roadmap will occur as part of Xcel Energy’s 2025 Integrated Distribution Plan (Docket No. E002/M-25-142) and therefore will not spend extended time discussing this facet of the program.

V. Reporting and Evaluation

Xcel proposed the following reporting cadence [**Decision Option 45**]:

Frequency	Start Date	Reporting Element
Quarterly	90 Days After Commission Order	Quarterly status reports. Contents are detailed in Attachment A of Xcel Reply Comments, ³⁵ and include deployment and budget, BESS performance, grid DERMS, interconnection studies, equity and environmental justice, labor standards, and additional research questions/learning objectives.
One-Time	180 Days After Commission Order	Capacity*Connect Phase 2 Evaluation Plan
One-Time	April 1, 2028	Comprehensive report on Phase 1 included in 2027 Annual ECO Status Report.
One-Time	Two years after Commission order, or after commercial operation of 20 MW, whichever is sooner.	Interim Program Assessment, including measurement and verification from a third-party consultant. This shall include an analysis of a portion of locations on substation transformers with at least 2 MW of DER and at least one analysis on a substation transformer with at least 15 MW of DER. Xcel shall explain its analysis and learnings towards meeting this objective and learning about the interaction of the existing DER and the BESS, without introducing constraints or negative impacts.
One-Time	Two years after distribution-only assets have been online	Evaluation of distribution-only sub-deployment performance and benefits.

DISCUSSION

I. Summary of Party Positions

Parties were generally supportive of Xcel’s proposal to test the deployment of batteries to increase capacity on its grid. However, most parties offered at least one modification (ranging

³⁵ Xcel Reply Comments, Attachment A.

from small to large), with several recommending the Commission reject the filing and require Xcel to file a new one with large modifications.

The American Association of Blacks in Energy, Center for Energy and Environment (“CEE”), Fresh Energy, and LIUNA all overall supported the intent of the program to increase bulk system value and MISO-eligible capacity. Their modifications mostly related to diverse suppliers, evaluation and reporting, and other aspects that would not modify the core design of the program.

The following parties recommended the Commission approve the program with modifications that would more significantly reshape the proposal:

- Base Power
- Clean Energy Economy MN
- Department of Commerce – Division of Energy Resources (“the Department”)
- Cooperative Energy Futures, Environmental Law and Policy Center, Institute for Local Self-Reliance, Solar United Neighbors, and Vote Solar (“Cooperative Energy Futures et al.”)
- Institute for Local Self-Reliance and Solar United Neighbors
- Joint Solar Parties
- Office of the Attorney General – Residential Utilities Division (“OAG”)
- Renewable Energy Partners

Overarching themes from commenters were concerns about magnitude of the program’s cost given “untested assumptions,”³⁶ unclear customer benefits, exclusion of third-party ownership and behind-the-meter assets, and different priorities for siting the assets.

Over 100 public commenters and the R Street Institute urged the Commission to reject the proposal and refile it with a series of changes.

For clarity, Staff has organized the discussion in the following ways:

- A. Support for the proposal
- B. Critiques and proposed modifications, organized by discussion topic
- C. Recommendations to reject and resubmit the proposal

II. Support for Proposal

The American Association of Blacks in Energy, CEE, Fresh Energy, and LIUNA supported the proposal’s design overall.

Fresh Energy praised Xcel’s approach to bulk system benefits, arguing that this will allow Xcel to bring capacity online quickly without needing to build new fossil fuel infrastructure.³⁷ Fresh Energy noted that MISO has projected generating capacity constraints in the 2025-2026

³⁶ Department Initial Comments, p. 1.

³⁷ Fresh Energy Initial Comments, p. 2.

planning year, demonstrating that added capacity could be very valuable to the bulk system.³⁸:

*Fresh Energy's priority continues to be a C*C program that allows the Company to deliver bulk system value in Phase 2, through MISO registration, while maximizing coincident distribution value and testing the feasibility of capturing additional distribution system value in subsequent phases. Fresh Energy believes that the cost benefit analysis presented in the Company's initial filing, based largely on its ability to deliver bulk system benefits, provides justification for approval of up to 200 MW in Phase 2.³⁹*

CEE also supported Xcel's focus on bulk system benefits, and its commitment to optimizing utility-owned assets:

This is the first time a utility in Minnesota has proposed to place medium-sized BESS on the distribution system to manage distribution assets and loads, incorporate DERs into system planning and operations, and realize benefits from coordination between the bulk system and distribution system. It is critical to ensure that this first step is implemented cost-effectively and that the benefits to the system and customers are realized as Xcel pursues state policy goals.⁴⁰

LIUNA similarly supported Xcel's proposal to focus on utility-owned, front-of-meter grid batteries in Phase 2, arguing that the benefit-cost analysis of 0.96 was strong, that this program would create family-supporting union jobs, and that this phase of the program would lay the groundwork for other potential benefits and iterations through testing and evaluation.⁴¹ LIUNA painted critics as "an astroturf public engagement campaign that appears to be supported by dark money from outside Minnesota," without providing supporting evidence.⁴²

The American Association of Blacks in Energy called the program "a vital step toward modernizing the energy grid and meeting the growing electricity needs of our communities."⁴³ Any modifications proposed by these parties are discussed in the next section.

III. Critiques and Proposed Modifications

While many parties were enthusiastic about Xcel's proposal to test distributed capacity procurement, none recommended accepting Xcel's proposal with no modifications. Parties took many stances on various aspects of the program, offering modifications that ranged from small to large reworking of the program.

³⁸ *Id.*, referencing MISO PY25-26 Planning Resource Auction, Corrections, April 29, 2025.

https://cdn.misoenergy.org/2025%20PRA%20Results%20Posting%2020250529_Corrections694160.pdf.

³⁹ Fresh Energy Supplemental Comments, p. 1.

⁴⁰ CEE Initial Comments, p. 3.

⁴¹ LIUNA Initial Comments, p. 1, and Supplemental Comments, pp. 1-2.

⁴² LIUNA Initial Comments, p. 2.

⁴³ American Association of Blacks in Energy Public Comments, p. 1.

Staff presents a discussion of the proposed modifications segmented by theme:

- A. 2024 IRP Order
- B. Valuing Distribution and System Benefits
- C. Ownership, Procurement, and Eligible Assets
- D. Budget and Cost Recovery
- E. Equity
- F. MN DIP Applicability
- G. DERMS
- H. Reporting and Evaluation
- I. Data Availability

A. 2024 IRP Order

Several parties argued that this program, as proposed, did not meet the Commission’s 2024 IRP Order requirements.

Cooperative Energy Futures et al., the Joint Solar Parties, and Renewable Energy Partners noted that the Company was required in the 2024 IRP Order to include “[a]n evaluation of a costs and benefits comparison between a utility-owned and managed DCP model and alternative models allowing participation from customer-owned and third-party-owned resources.”⁴⁴ They argued that Xcel did not provide a meaningful comparison of its utility-owned model to alternative models, making it difficult to judge the costs and benefits of the program in the way they believed the Commission had intended.^{45,46,47} Renewable Energy Partners also cited Xcel’s admission that assets run the risk of reducing feeder capacity for new distributed energy resources,⁴⁸ which would run counter to the concept that the DCP could be used to “advance compliance with the distributed solar energy standard.”⁴⁹

Cooperative Energy Futures et al. also noted that the Commission’s Integrated Distribution Plan requirements include:

1. Enable greater customer engagement, empowerment, and options for energy services” and
2. Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies.”⁵⁰

Cooperative Energy Futures et al. expressed disappointment that Xcel’s proposed Phase 2 seemed not to meet the requirements above, instead focusing solely on bulk system benefits.

⁴⁴ 2024 IRP Order, Ordering Paragraph 23.c.

⁴⁵ Joint Solar Parties Initial Comments, p. 18.

⁴⁶ Cooperative Energy Futures et al. Initial Comments, p. 35.

⁴⁷ Renewable Energy Partners Initial Comments, pp. 3-4.

⁴⁸ Renewable Energy Partners Initial Comment, p. 3.

⁴⁹ 2024 IRP Order, Ordering Paragraph 23.b.

⁵⁰ *In the Matter of Xcel Energy’s 2023 Integrated Distribution Plan*, Docket No. E-002/M-23-452, [Order \(September 16, 2024\)](#), p. 2 (“2023 IDP Order”)

Cooperative Energy Futures et al. argued that this program does not, in its current design, “advance distribution value and develop meaningful insights for how to co-optimize distribution and bulk-system benefits” or “meaningfully address the opportunity for customer and third-party DER ownership,” either behind or in front of the meter.⁵¹

B. *Valuing Distribution and System Benefits*

Cooperative Energy Futures et al., the Department, the Joint Solar Parties and the OAG disagreed with Xcel’s choice to prioritize wholesale dispatch for capacity accreditation for Capacity*Connect. Instead, the Department proposed and other parties supported a “Three-Archetype Proposal.”⁵² Under this model, Xcel would implement and analyze three distinct types of use cases to investigate potential benefits beyond those to the bulk system. They recommended that Xcel site batteries at locations that will serve three “archetypes:”

- A. Economic Arbitrage: Xcel shall site a portion of C*C assets in locations selected to maximize energy market arbitrage value based on nodal Locational Marginal Pricing (LMP). This archetype must prioritize locations with the greatest spread between off-peak charging and on-peak discharging prices.
- B. Reliability and T&D Deferral: Xcel shall site a portion of C*C assets to function as Non-Wires Alternatives (NWAs) to address documented distribution reliability issues or to defer specific, budgeted infrastructure investments. Siting in this archetype should prioritize historically underinvested areas to align with equity goals, improving service quality and ensuring grid modernization benefits reach vulnerable ratepayers.
- C. DER Congestion, Hosting Capacity, and the DSRUP Pathway: Xcel shall site a portion of C*C assets on feeders with high penetration of DERs experiencing grid congestion issues, specifically those characterized by low Day-time Minimum Load (DML). To ensure these assets directly support the expansion of hosting capacity and the fulfillment of the Company’s Distributed Solar Energy Standard (DSES) obligations, they shall be implemented according to the following framework:
 - i. C*C assets focused on hosting capacity and DML shall be classified both as Flexible Interconnection assets and integrated into the Distribution System Reactive Upgrade Process (DSRUP).⁵³ As such, these assets will be paid for by developers as a DSRUP asset.
 - ii. Assets must utilize the Grid DERMS platform to actively manage and absorb excess solar generation during peak hours. This approach is designed to increase hosting capacity and defer costly traditional infrastructure upgrades.
 - iii. The Commission shall evaluate the implementation of this archetype within Docket No. E002,015,017/CI-24-288, which shall request comments on:
 - a. The technical feasibility of integrating C*C assets as Reactive Cost Share Distribution Upgrades within DSRUP.
 - b. The willingness to accept curtailment if the MISO capacity need does not

⁵¹ Cooperative Energy Futures et al. Initial Comments, p. 3

⁵² Department Supplemental Comments, Attachment, p. 1.

⁵³ Docket 24-288, *In the Matter of Establishing Tariffs for Distribution System Costs Sharing for Interconnection in Constrained Areas*

- fully align with the DSRUP capacity need.
- c. The implementation of Xcel’s adjusted revenue requirement (ARR) split between C*C and DSRUP capacity needs.

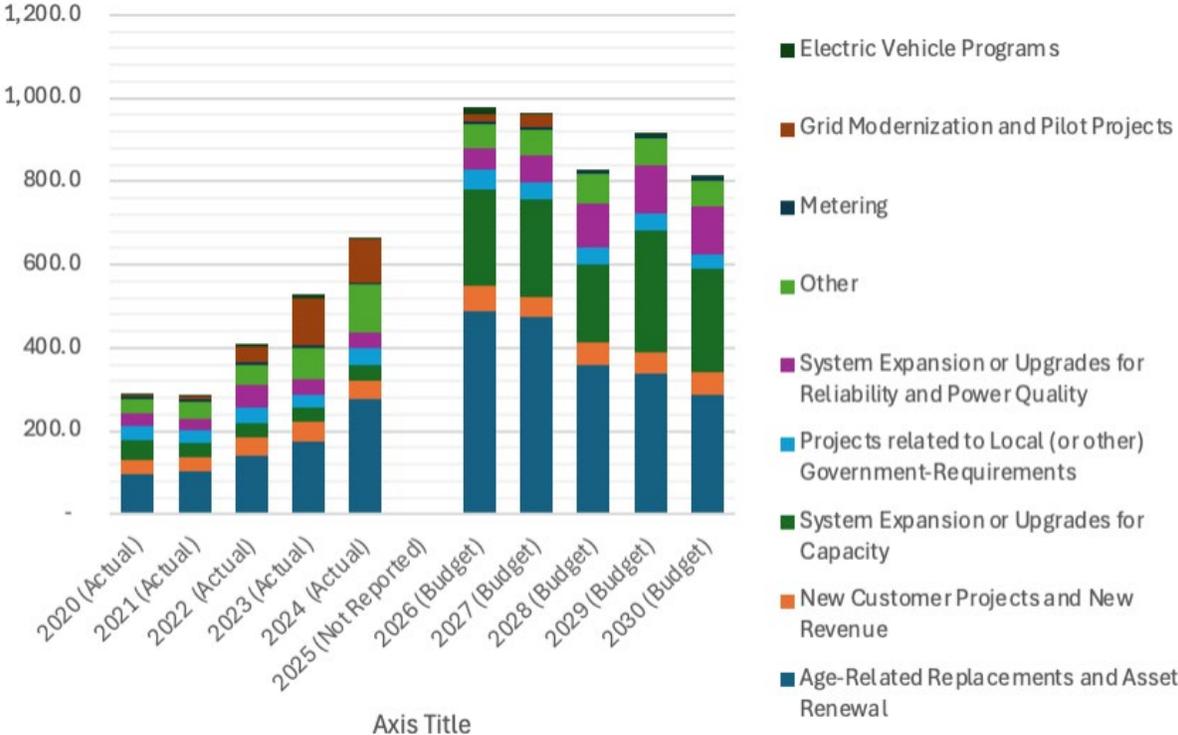
Additionally, in order to ensure the value of distribution system benefits is captured, Cooperative Energy Futures et al., the Department, the Joint Solar Parties, and the OAG coalesced around **Decision Options 9** (with JSP offering a small modification in alternative **Decision Option 10**), in order for Xcel to “establish a Minnesota-specific, transparent method to quantify both systemwide and locational avoided distribution system costs” that would guide siting and operations moving forward.⁵⁴

Distribution Valuation

Given the ballooning costs of distribution infrastructure and pointing to Commission wording from the 2024 IRP and 2023 IDP orders, multiple organizations recommended that Xcel take several steps to leverage this program to increase distribution value, rather than simply increasing capacity value for the bulk MISO market. **[Decision Options 9, 10]**

Cooperative Energy Futures et al. used Xcel’s 2025 IDP data to visualize the existing and anticipated increasing costs of its distribution system.

Figure 1: Costs (Existing and Expected) of Xcel’s Distribution System Planning, 2020-2030⁵⁵



⁵⁴ Department Supplemental Comments, Attachment, pp. 1-2.

⁵⁵ Cooperative Energy Futures et al. Initial Comments, p. 19, referencing Xcel’s 2025 Integrated Distribution Plan Petition (Tables 6-1 and 6-2) (DOCKET NO. E002/M-25-142)

Cooperative Energy Futures et al. argued that distributed energy resources – including storage and solar plus storage – have the potential to contain costs by strategically siting projects to defer upgrades, alleviate distribution congestion, improve utilization of existing assets, and reduce future rate-base additions.

The Joint Solar Parties also compared the C*C program to “pay for performance” models in other states, which involve non-utility-owned, customer-sited battery devices, and compensate participating battery storage devices based on actual measured performance.⁵⁶ The Joint Solar Parties noted that these examples demonstrate how locational constraints can be relieved at a cost savings to ratepayers, and call into question Xcel’s model which pays for the asset regardless of performance.

The Joint Solar Parties also urged the Company to ensure that it captures additional system benefits associated with flexible interconnection and energization. As stated previously, Xcel proposed to cover those use cases, along with distributed capacity procurement, in this program, but the Joint Solar Parties argued that Xcel clearly does not intend to pursue those value systems through its program as designed:

“Modifying the program to capture additional system benefits derived from flexible interconnection and flexible energization will introduce additional, quantifiable stacked benefits to the program and incentivize Xcel to gain experience operationalizing the trade-offs between specific benefit tradeoffs.”

Clean Energy Economy MN agreed that Xcel should further develop its analysis of system benefits of this initiative and use it to shape the program going forward. **[Decision Option 6]**

The OAG argued that this approach would be “the best way to conduct that robust analysis of pilot data, which will enable the Commission, stakeholders, and Xcel to measure the actual benefits of distributed capacity and make informed planning decisions going forward.”⁵⁷

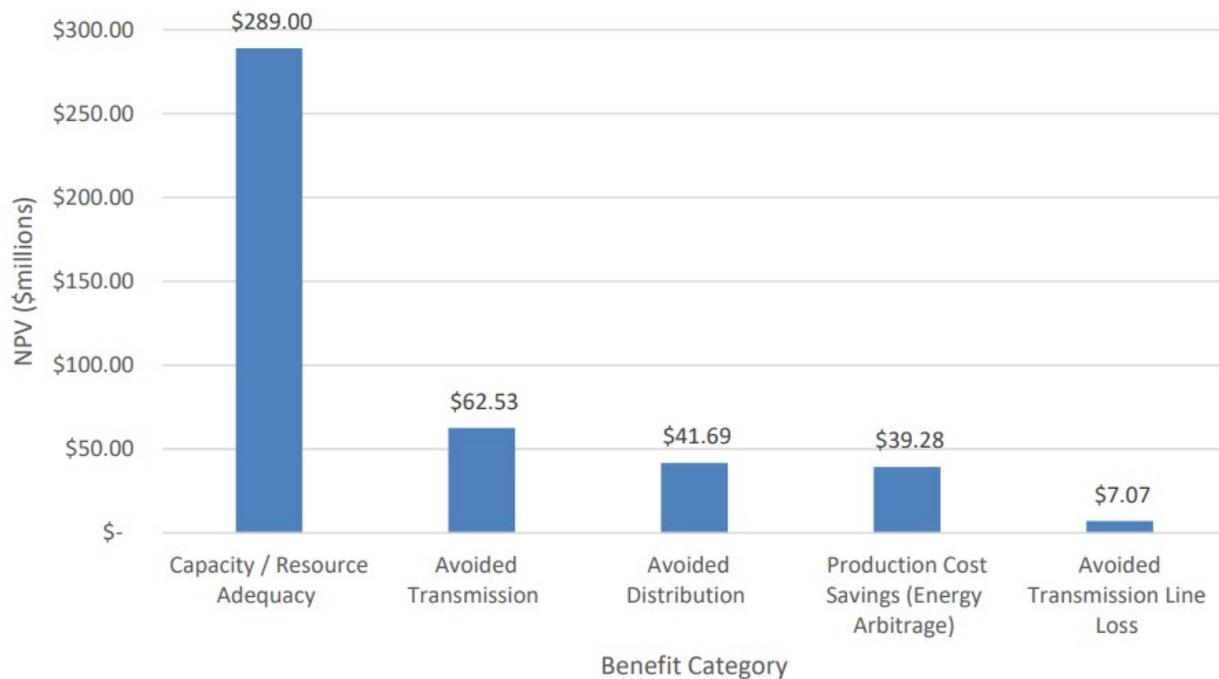
Xcel pushed back, arguing that “offering C*C assets into MISO must be the priority dispatch strategy at all times of year” and that divvying up assets into different archetypes “would erode the cost-benefit ratio.”⁵⁸ As shown below, Xcel modeled that using assets for MISO capacity/resource adequacy would generate the most value for ratepayers. The Company continued to insist that other benefits, while they may materialize, would be secondary to bulk system benefits and should not be prioritized.

⁵⁶ Joint Solar Parties Initial Comments, p. 18: “Pay for performance” VPPs are most often compared to the ConnectedSolutions programs offered by the electric distribution companies in Massachusetts.”

⁵⁷ OAG Supplemental Comments, pp. 2-3.

⁵⁸ Xcel Reply Comments, pp. 13-16.

Figure 2: Xcel's C*C Modeled Benefits⁵⁹



Fresh Energy

While Fresh Energy supported Xcel's overall focus on bulk system benefits, Fresh Energy and the Joint Solar Parties agreed that the program would be stronger if it focused on areas with specific energy disparities identified by Drs. Gabe Chan and Bhavin Pradhan.^{60,61,62} While the Joint Solar Parties endorsed the Department's recommendations described above, Fresh Energy took a more generalized and less prescriptive approach to encourage Xcel to add certain considerations into its siting criteria:⁶³

Fresh Energy recommended that Xcel should use the following secondary siting criteria, where possible, based on the following:

1. Identified reliability issues.
2. Deferred transmission and distribution investment opportunities.
3. Locations with high penetrations of DERs, grid congestion, and/or Daytime Minimum Load issues.

[Decision Option 7]

Xcel did not object to **Decision Option 7.A**, but reiterated that Capacity*Connect Phase 2 assets will not be designed to island such that an individual BESS could provide backup power in the

⁵⁹ *Id.*, p. 14.

⁶⁰ Fresh Energy Initial Comments, p. 4.

⁶¹ Joint Solar Parties Initial Comments, p. 24.

⁶² Pradhan, Bhavin; Chan, Gabriel. (2024). Racial and Economic Disparities in Electric Reliability and Service Quality in Xcel Energy's Minnesota Service Area. Retrieved from the University Digital Conservancy, <https://hdl.handle.net/11299/261434>.

⁶³ Fresh Energy Reply Comments, pp. 2-3.

event of a power outage.⁶⁴ Xcel said that it could use reliability metrics to inform siting criteria, with reliability results as an input where possible.

Xcel offered an alternative to **Decision Option 7.B**, which would exclude the word “transmission:” “while there may be some transmission benefits, due to the scale of these assets relative to the transmission system, we would not anticipate those benefits to be substantial or defer an investment.” **[Xcel Alternative Fresh Energy 7.B]**

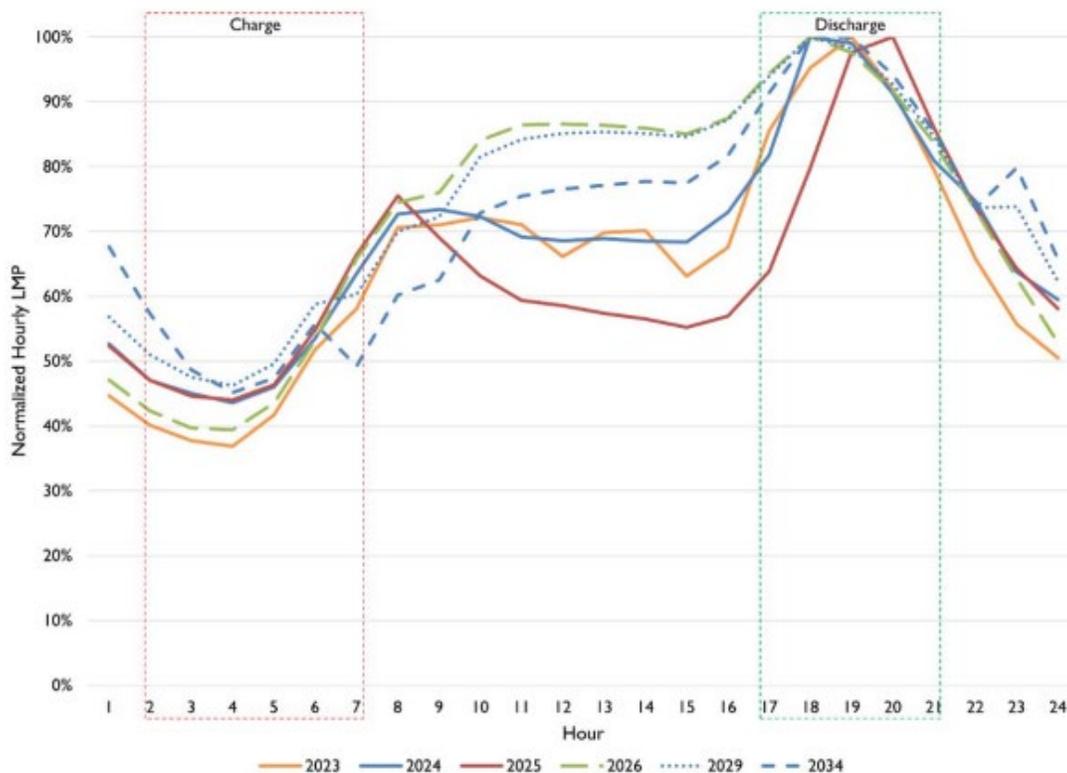
For **Decision Option 7.C**, Xcel clarified that it “will not cite BESS where there are existing Generation Hosting Capacity constraints.” As an alternative to **Decision Option 7.C**, Xcel offered to provide analysis in its Interim Program Assessment on BESS locations near certain levels of DER penetration. **[Decision Option 45.D]**

Market participation

The Department cautioned that Xcel may be overestimating the value of its battery discharge in its current proposal, given that a 4-hour discharge cycle will necessarily be discharging during the shoulder times surrounding the peak. Below is a chart created by the Department of normalized price curves, which demonstrates the time frames in which a 4-hour discharge would happen during times that are lower than the peak price.

⁶⁴ Xcel Supplemental Comments, pp. 3-4.

Figure 3: Normalized Hourly Locational Marginal Prices (LMP), 2023-2034⁶⁵



The Department also criticized Xcel’s choice to not pursue other market revenues, such as frequency regulation under the Electric Storage Resource (ESR) model. “By prioritizing administrative simplicity over full market functionality, the Company may be leaving significant ratepayer value on the table.”⁶⁶

Fresh Energy, and CEE, on the other hand, asserted that these parties misunderstood the intent of the program by conflating valuation benefits to the bulk versus distribution systems. “While coincident benefits [such as those proposed by Xcel] could be realized while operating the program for bulk system benefit in Phase II,” Fresh Energy commented, “active benefits [such as those proposed by the Joint Solar Parties, Cooperative Energy Futures et al., and the Department] require the Company to operate the C*C assets specifically to deliver value to the distribution system, which may be in tension with MISO requirements.”⁶⁷ Fresh Energy voiced support for Xcel’s focus on coincident peaks.

Xcel pushed back on the Department’s comments, stating that it is not realistic at this time to

⁶⁵ Department Initial Comments, p. 6. The data used to generate the normalized price curves in this figure is retrieved from two sources. Historical and current data (2023-2025) are based on MISO LMP averages. The future price projections (2026, 2029, and 2034) are derived from data provided by Xcel Energy in Attachment D of the Petition.

⁶⁶ Department Initial Comments, p. 7

⁶⁷ Fresh Energy Reply Comments, p. 2.

prioritize these assets for dispatch to benefit the distribution system, as the bulk system drives most of the potential benefits and has stringent participation requirements.⁶⁸ Xcel also stated that C*C is not intended to be a non-wires alternative (NWA) program that intentionally defers distribution upgrades and improves reliability. However, Xcel stated that, given stakeholder interest and the potential for the program to provide incidental distribution benefit, the Company could carve out a portion of its C*C assets to analyze, measure, and verify distribution benefits for utility-owned BESS on its system. The Company proposed to conduct additional analysis and file a proposal for this carveout within a year of Commission order.⁶⁹ **[Decision Option 4-5]**

C. Ownership, Procurement, and Eligible Assets

Many parties also debated Xcel's choice to own all of its assets and place them in front of the meter, rather than behind. Base Power,⁷⁰ Cooperative Energy Futures et al., Clean Energy Economy MN, the Institute for Local Self-Reliance and Solar United Neighbors, the Department, the Joint Solar Parties, multiple Public Commenters, Renewable Energy Partners, RIC Energy,⁷¹ and the R Street Institute⁷² criticized Xcel's exclusion of third-party ownership and behind-the-meter batteries from the program, arguing that incorporating those elements would make the program more cost-effective and useful in the long-term.

The Department, the Joint Solar Parties, and R Street Institute argued that Xcel had not made a sufficient case for why it would not incorporate behind-the-meter assets and third-party ownership, only citing vague "safety risks" and "cybersecurity risks" without enough detail or documentation.^{73,74} The Joint Solar Parties argued that the proposed program "restricts market opportunity by restricting participation to exclusively utility owned and controlled assets and obfuscating market signals from the competitive, private market, which would allow costs that exceed market rates."⁷⁵ The Joint Solar Parties also pointed to a whitepaper that Xcel had collaborated on, which stated that a hybrid model which combined elements of the utility-led and aggregator direct participation model could result in "balanced utility control with competitive market participation."⁷⁶

Cooperative Energy Futures et al. argued that, while the Company may have good reason for wanting visibility into and control over operation of the assets, "nowhere in its application does Xcel justify the need for it to own these assets."⁷⁷ The Institute for Local Self Reliance and Solar

⁶⁸ Xcel Supplemental Comments, p. 2.

⁶⁹ Xcel Supplemental Comments, pp. 4-6.

⁷⁰ Base Power Initial Comments, p. 3.

⁷¹ RIC Energy, Initial Comments pp. 1-3.

⁷² R Street Institute Initial Comments, pp. 8-9.

⁷³ Renewable Energy Partners Initial Comments, p. 1.

⁷⁴ Department Initial Comments, p. 19.

⁷⁵ Joint Solar Parties Initial Comments, p. 7.

⁷⁶ Joint Solar Parties Initial Comments, p. 13, referencing: Smart Electric Power Alliance, Decoding DERMS: Options for the Future of DER Management, (March 2025), p.12. Available at <https://sepapower.org/resource/decoding-derms-options-for-the-future-of-der-management/>.

⁷⁷ Cooperative Energy Futures et al. Initial Comments, p. 28.

United Neighbors echoed this: “Xcel does not need to own or install batteries to capture their operational benefits.”⁷⁸ Cooperative Energy Futures et al. contended that introducing third-party participation could help drive down costs by:

1. Introducing competitive pressure, while still allowing the Company to monitor and control the assets,
2. Diluting the utility’s incentive for ratepayer-funded capital expenditures, and
3. Shifting performance risk to third parties, rather than ratepayers.

The Joint Solar Parties agreed with Cooperative Energy Futures et al.’s hypothesis.⁷⁹ In a traditional VPP model, which would allow third-party ownership, the Joint Solar Parties argued that “private asset owners and aggregators bear all investment risk, operational responsibility, and the consequences of underperformance. Ratepayers benefit from performance-based structures without underwriting the capital costs of the portfolio.” The Joint Solar Parties listed the following risks of utility-only ownership:

1. Cost overruns borne by ratepayers,
2. Poor performance with no accountability,
3. Discouraging private DER investment,
4. Undermining the value and viability of other Minnesota DER programs, and
5. Losing access to value-stacked revenue streams.⁸⁰

The OAG and the Joint Solar Parties also questioned why Xcel proposed this type of program when its VPP program with competitive procurement, behind-the-meter assets, and an existing DERMS had already been approved in Colorado.⁸¹ Parties provided cost-effectiveness comparisons between the two, and this is discussed further in the “Budget and Cost Recovery” section. The R Street Institute noted that, in Xcel’s Colorado VPP program, the Company stated that it would propose competitive solicitation after the first two years of the program, because “a competitive bidding process could help induce competition that reduces costs for customers.”⁸²

Clean Energy Economy MN echoed the Joint Solar Parties’ argument that excluding third-party developers would increase financial risk onto ratepayers:

Third-party developers often engage in the most difficult aspects of project development: aggregate projects into portfolio financing, complete construction and procurement, navigate tariffs and federal tax requirements including new FEOC restrictions and more. Collectively, these expenditures represent capital that developers must carry, along with the associated financing costs. A competitive development environment ensures that these risks and carrying costs

⁷⁸ Institute for Local Self-Reliance and Solar United Neighbors Initial Comments, p.1.

⁷⁹ Joint Solar Parties Initial Comments, p. 7.

⁸⁰ Joint Solar Parties Initial Comments, p. 14.

⁸¹ Joint Solar Parties Initial Comments, p. 14 and 19.

⁸² R Street Institute Initial Comments, p. 9, referencing In the Matter of the Application of Public Service Company of Colorado for Approval of its 2025-2029 Distribution System Plan and the Grid Modernization Clause, [Settlement Testimony of Zachary D. Pollock, Proceeding No. 24A-0547E \(Aug. 15, 2025\)](#).

are borne by private market participants best positioned to manage them, rather than transferred directly or indirectly to ratepayers.⁸³

The Institute for Local Self-Reliance and Solar United Neighbors argued that allowing fully utility ownership of the assets in this phase would cause a conflict of interest between Xcel shareholder and customers:

Shareholders will earn a generous rate of return on the utility's multi-million dollar equity investment but none of that return is contingent on Xcel's performance on the purpose of this proposal.⁸⁴

RIC Energy also noted that other established renewable energy procurement programs, including the Distributed Solar Energy Standard⁸⁵ programs, use competitive bidding from third parties for projects. RIC Energy also argued that, if Xcel truly desires to learn about operating distributed storage, incorporating third-party operators with relevant experience in other states (such as Maryland, Massachusetts, and New York) would be the best way to do so.⁸⁶ Clean Energy Economy MN and the Institute for Self-Reliance/Solar United Neighbors echoed that Minnesota has a strong network of third-party developers who have gained valuable experience through community solar programs and the state's robust behind-the-meter generation market.^{87,88} Clean Energy Economy MN noted that the buildout of this program has included a significant failure rate of community solar garden projects – so if Xcel and Sparkfund were to have a similar rate of success from application acceptance to interconnection, the utility might then have to bear significant costs in stranded assets, insurance issues, and other financial losses.⁸⁹

The Joint Solar Parties affirmed that front-of-the-meter resources can also have decreased risks “when they are procured through competitive, services-based contracts, where independent companies own the assets and deliver capacity, energy, and distribution-level services under performance obligations.” The Joint Solar Parties argued that, while Sparkfund’s expertise is in “‘program design, engineering oversight, cost prudence, and regulatory alignment’,” solar and storage developers in Minnesota have the necessary qualifications in procurement, site acquisition, and managing project delivery, given the 926 MW of community solar deployed since 2013.⁹⁰ The Joint Solar Parties argued that Sparkfund’s oversight of experienced developers would allow for cost competition and shift risk to private actors.

Parties offered two pathways to remedy their concerns:

⁸³ Clean Energy Economy MN Initial Comments, p. 4.

⁸⁴ Institute for Local Self-Reliance and Solar United Neighbors Initial Comments, p.2.

⁸⁵ Minn. Stat. 216B.1691 Subd. 2h(e). <https://www.revisor.mn.gov/statutes/cite/216B.1691>

⁸⁶ RIC Energy Initial Comments, pp. 2-3.

⁸⁷ Clean Energy Economy MN Initial Comments, p. 2.

⁸⁸ Institute for Local Self-Reliance and Solar United Neighbors Initial Comments, pp. 1-2.

⁸⁹ Clean Energy Economy MN Initial Comments, pp. 3-4.

⁹⁰ Joint Solar Parties Initial Comments, p. 11, referencing Xcel Energy Response to Information Request No. 1 of the Minnesota Solar Energy Industries Association, Docket No. E002/M-25-378 (November 5, 2025).

- A. Modifications to the current proposal [**Decision Options 12-16**]
- B. Proposals for a behind-the-meter Virtual Power Plant program [**Decision Options 17-19**]

Modifications to Current Proposal

Base Power, Clean Energy Economy MN, and RIC Energy proposed that Xcel modify its current proposal to incorporate third-party ownership and expand the types of assets eligible. They offered the following recommendations:

Decision Option 12: Require Xcel include competitive procurement for third-party-developed BESS in Phase 2.

- A. Require Xcel to include additional commercial constructs such as build-transfers or third-party ownership.
- B. Require competitive procurement to align with the DSES procurement framework.

Clean Energy Economy MN also recommended that Xcel should not charge third party-owned BESS demand or distribution charges if utility systems are not required to do the same.

[Decision Option 13]

In addition, Renewable Energy Partners and Base Power recommended two strategies for expanding the types of projects eligible.

Renewable Energy Partners recommended that, should the Commission order Xcel to include ratepayer-owned, behind-the-meter sites in its DERMS demonstration, Xcel also include solar plus storage sites, in order to “demonstrate how the company can achieve ‘coordinated control and dispatch’ across both company-owned and third-party owned DER assets.” **[Decision Option 14]**

Base Power recommended that Xcel incorporate smaller BESS assets into the program, so that storage assets between 5 kW and 3 MW become eligible. **[Decision Option 15]** Base Power argued that incorporating smaller assets would allow residential ratepayers to participate, which would lower costs for the system and increase resiliency.⁹¹ Base Power noted that it currently supports front-of-the-meter residential batteries today, which can participate in wholesale markets under an aggregator while supporting whole-home backup to the customer.

The Joint Solar Parties and Cooperative Energy Futures et al. also recommended that Xcel be required to conduct a quantitative economic evaluation comparing the proposed utility-managed model against alternative structures, including third-party-owned assets, customer-owned resources, and Virtual Power Plant (VPP) models. **[Decision Option 16]** The Joint Solar Parties recommended that the Commission:

- A. Establish a definitive timeline and formal requirements for the solicitation of third-

⁹¹ Base Power Initial Comments, p. 2.

- party-owned front-of-the-meter assets within the program.
- B. Direct Xcel to evaluate and incorporate a broader suite of ownership and commercial arrangements, such as "build-own-transfer" or "build-transfer" structures, to leverage competitive market expertise.
 - C. Require that all grid and siting data utilized by Xcel for project selection be made available to foster a transparent and competitive deployment environment.

The Joint Solar Parties argued that, without this comparison, the Commission “lacks a factual basis to determine whether the proposed model represents the most cost effective and efficient means of meeting system needs.”⁹²

Xcel, CEE, and LIUNA pushed back on modifying Phase 2 to include third-party ownership of assets. Xcel noted that, while the assets will not be owned by third parties, approximately 80% of the program budget will be competitively bid, including engineering, procurement, construction, equipment supply, and ongoing service and maintenance,⁹³ and CEE echoed this in its comments.⁹⁴

LIUNA also disagreed that the Commission should mandate third-party ownership in Phase 2 of Capacity*Connect.⁹⁵ While LIUNA stated that it does not object to the concept of third party ownership, LIUNA asserted that it would be “entirely impractical” to design a RFP process “for a service whose essential attributes have not been fully characterized” at this stage, given the many unknowns of the project that will be investigated as it is tested.⁹⁶

New Behind-the-Meter VPP Proposal

Alternatively, several parties recommended that Xcel develop a behind-the-meter Virtual Power Plant proposal, shaped by learnings from its Colorado program.⁹⁷ Unlike Capacity*Connect, Xcel Colorado’s Aggregated VPP program uses behind-the-meter, customer-owned resources and compensates them for energy, transmission, and distribution values separately.⁹⁸ Parties argued that this would be the best approach to ensure that this promising model be investigated in Minnesota.

The Department, with support from Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG recommended that the Commission direct Xcel to collaborate with stakeholders to develop and file a proposal for a complementary market-driven behind-the-meter Virtual Power Plant (VPP) program by July 1, 2027. **[Decision Option 17]**

⁹² Joint Solar Parties Supplemental Comments, p. 14.

⁹³ Xcel Reply Comments, p. 25.

⁹⁴ CEE Supplemental Comments, p. 4.

⁹⁵ LIUNA Supplemental Comments, p. 1.

⁹⁶ LIUNA Supplemental Comments, p. 1.

⁹⁷ Colorado Public Utilities Commission, Docket Nos. 24A-0547E & 25A-0061E, [AVPP Program Settlement Agreement](#) (Aug. 15, 2025)

⁹⁸ Joint Solar Parties Initial Comments, Appendix A, p. 3-4.

These parties recommended that the proposal include the following elements:

1. The filing must include target residential class customers across the utility territory, enable participation by customer owners, third-party operators and aggregators, and include a community-owned model targeting low-income households.
2. The community-owned model should evaluate the aggregation of multiple DERs and supported by a financially feasible tariff designed to deliver reliable financial benefits to low-income participants.
3. The proposal should include a tariff designed to provide fair compensation for the services provided by behind-the-meter assets.

CEE, Fresh Energy, and Xcel rejected the apples-to-apples comparison between Capacity*Connect Phase 2 and Xcel's Colorado program. CEE and Fresh Energy both argued that the programs were distinct enough to warrant a whole separate docket and stakeholder engagement process [**Decision Option 18**]. The parties argued that, given the differences in the models and resource types, the different siting and operational challenges necessitate further conversations with stakeholders before Xcel is ordered to submit a proposal.⁹⁹

Xcel agreed with Fresh Energy and CEE that it was "premature" to require the Company to develop such a program, and opening a separate docket for discussions was acceptable and preferable.¹⁰⁰ Xcel pointed to a variety of existing DER programs¹⁰¹ in which it said it is already addressing many of the elements that these parties wanted to see in their VPP program proposal. Xcel also reiterated the difference between its Colorado AVPP program, which it called a "short term, pay for performance program with contract lengths of five years," as opposed to DCP assets with a 20-year lifespan.¹⁰² Xcel therefore opposed **Decision Option 17**, but did not oppose **Decision Option 18**.

New Third Party-Owned Pilot

The Institute for Local Self-Reliance and Solar United Neighbors also recommended that Xcel be ordered to launch a 20 MW pilot for third party-owned Capacity*Connect resources no later than July 1, 2027, and use the data from that program's performance as the evidence to inform an independent evaluation.¹⁰³ [**Decision Option 19**]

D. Budget, and Cost Recovery

Many parties argued about whether the program is cost-effective as proposed and offered recommendations for how to contain costs.

Budget and Cost Effectiveness

⁹⁹ Fresh Energy Reply Comments, p. 4; CEE Supplemental Comments, pp. 2-3;

¹⁰⁰ Xcel Supplemental Comments, p. 7.

¹⁰¹ Xcel Supplemental Comments, Attachment A.

¹⁰² Xcel Reply Comments, pp. 22-23.

¹⁰³ PUC Staff to ILSR and SUN 2-12-26 Ex Parte Communication,

Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG questioned the accuracy of the Company's benefit-cost analysis. Cooperative Energy Futures et al. argued that the analysis "relies on several optimistic and poorly supported assumptions" about transmission and distribution deferral benefits, may overstate revenues, and understates risks and distributed resource values.¹⁰⁴ The Joint Solar Parties noted that the 0.96 is calculated under favorable estimates and decreases with less favorable estimates.¹⁰⁵ The Department also pointed out that the Benefit-Cost Ratio did not improve between the 50MW and the 200MW projected scale, raising concerns about the scale of the program.¹⁰⁶

The Joint Solar Parties referenced several studies from the Department of Energy, the Brattle Group, and Rocky Mountain Institute on Virtual Power Plants to underscore the risk of undue cost on ratepayers in the program's current utility-owned, front-of-the-meter design:¹⁰⁷

"A primary focus of the [Department of Energy's] VPP report¹⁰⁸ was on affordability for ratepayers. The report finds that one of the main advantages of deploying VPPs at scale is reducing capital expenditures of investor-owned utilities. Specifically, '[i]n addition to benefitting from avoided grid costs, Americans will benefit from spending on VPPs because the majority of VPP costs flow to participating energy consumers in the form of incentive payments (instead of paying for fuel and capital investments in utility-scale infrastructure)."

The Joint Solar Parties argued that this program's design instead shifts the risks and costs to the utility's balance sheet, and thus to ratepayers, at a high price tag.

The Joint Solar Parties, the R Street Institute, and public commenter Dan Watson provided a comparison of other states' VPP programs, noting that the C*C cost per kW may be higher than others – including its AVPP program in Colorado:^{109, 110, 111}

Table 2: Comparison of Per-kW Cost between Capacity*Connect Phase 2 and Colorado VPP Program¹¹²

State	Cost per kW	Program Size	Length
Minnesota (Proposed)	\$2,150	200 MW	20 years
Colorado (Approved)	\$624	125 MW	5 years

¹⁰⁴ Cooperative Energy Futures et al. Initial Comments, p. 31.

¹⁰⁵ Joint Solar Parties Initial Comments, p. 7.

¹⁰⁶ Department Initial Comments, pp. 8-9.

¹⁰⁷ Joint Solar Parties Initial Comments, p. 7.

¹⁰⁸ U.S. Department of Energy, PATHWAYS TO COMMERCIAL LIFTOFF: VIRTUAL POWER PLANTS, [\(September 2023\)](#)

¹⁰⁹ Joint Solar Parties Initial Comments, p. 8 and Appendix A

¹¹⁰ R Street Institute Initial Comments, p. 9.

¹¹¹ Dan Watson Public Comment

¹¹² Joint Solar Parties Initial Comments, p. 8.

Renewable Energy Partners also found the costs to be comparatively higher than the Resilient Minneapolis Project:

“Xcel’s proposed cost and pricing for the projects, the details of which are redacted from the public, seems to REP to be too high. This is based on our procurement in recent months of two, 1.0 megawatt BESS with four hours of energy storage as part of the Resilient Minneapolis Project at a cost that appears to be more than 30% less than Xcel’s proposed cost.”¹¹³

LIUNA pushed back on the critique of the .96 benefit-cost ratio, stating that utility programs with lower ratios are often accepted “in order to support initial deployment in the hope of strengthening the value proposition in future rounds. By this standard, Capacity*Connect looks like a home run.”¹¹⁴ Fresh Energy also anticipated that “subsequent phases will present improved [benefit-cost analyses] ...specifically in terms of how it can capture distribution system value streams while delivering bulk system benefits.”¹¹⁵

The OAG recommended that, along with **Decision Option 8**, the Commission limit Phase 2 to 50-60 MW and a cost cap of \$3.04 million per MW of capacity, in order to contain costs as Xcel is in its learning phase, and to stop costs from ballooning beyond Xcel’s projected budget.¹¹⁶ **[Decision Option 20]**

Cost Recovery

Renewable Energy Partners opposed Xcel’s proposal to recover costs through the RES Rider. Renewable Energy Partners pointed to the RES statute, which limits cost recovery to “provide storage facilities for renewable energy generation facilities that contribute to the reliability, efficiency, or cost-effectiveness of the renewable facilities.”¹¹⁷ Renewable Energy Partners argued that, by deploying front-of-meter assets that are utility owned and may, according to Xcel, constrain hosting capacity in some areas, the program is not currently designed in a way that will support and/or encourage renewable generation.¹¹⁸ Renewable Energy Partners also expressed concern that, by having these cost recovered through a separate line item on their bill, customers may incorrectly associate increased costs with renewable energy, when the program may not effectively encourage that. Renewable Energy Partners thus recommended the Commission reject Xcel’s request to recover the costs through the RES rider. **[Decision Option 24]**

The Department, with support from Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG, ultimately supported Xcel’s proposal to recover costs through the RES Rider and offered their own decision option language. **[Decision Option 22]** However, these parties

¹¹³ Renewable Energy Partners Initial Comments, p. 1

¹¹⁴ LIUNA Initial Comments, p.1.

¹¹⁵ Fresh Energy Supplemental Comments, p. 1.

¹¹⁶ OAG Supplemental Comments, pp. 3-4.

¹¹⁷ Minn Statute 216B.1645, subd.1(2)

¹¹⁸ Renewable Energy Partners Initial Comments, p. 4

recommended additional guardrails around cost recovery for Xcel’s contract with implementation partner Sparkfund. **[Decision Options 25 and 26]**

After Xcel revealed in Reply Comments that it is an investor in Sparkfund via a limited partnership, the OAG raised concerns that ratepayer funding may be being used to bolster a company whose success accrues only to shareholders.¹¹⁹ The Department also flagged that there was no competitive procurement process for the Sparkfund contract, and Xcel has not shown that the contract is cost-effective.¹²⁰ RIC Energy argued that Xcel had “neglected to adequately justify the necessity for the selection of SparkFund as the program administrator.”¹²¹

The combined parties thus recommended that Xcel be ordered to provide information that would justify the costs of its contract with Sparkfund **[Decision Option 25]** The OAG recommended that, should there be a difference between the Sparkfund contract and what Xcel would sign at a market rate, the Commission should disallow cost recovery from ratepayers of the difference.¹²² **[Decision Option 26]**

Xcel and LIUNA rejected concerns about Xcel’s partnership with Sparkfund. Xcel testified that it had developed the program in collaboration with Sparkfund and had a history of working together on project deployment.^{123,124} Xcel argued that its limited partnership investment does not allow “operational control of portfolio companies and we do *not* direct EIP’s¹²⁵ investment decisions,” but admitted that this would constitute an affiliated interest agreement, and therefore the Company planned to file the contract with the Commission for approval when finalized.¹²⁶

LIUNA stated that, given that “Sparkfund is one of very few organizations with relevant operational experience” with the types of battery system that Xcel intends to deploy, “it is entirely appropriate to select Sparkfund as manager of what is essentially a large-scale pilot, and we do not believe it forecloses use of competitive procurement processes in future rounds.”¹²⁷

¹¹⁹ OAG Supplemental Comments, pp. 6-7.

¹²⁰ Department Initial Comments, p. 14.

¹²¹ RIC Energy Initial Comments, p. 2.

¹²² OAG Supplemental Comments, p. 2.

¹²³ Xcel Reply Comments, pp. 25-26.

¹²⁴ Joint Solar Parties Responses to Information Requests (December 10, 2025), included an information request where Xcel stated that it had sunset one of the two programs it operated with Sparkfund due to “limited uptake.”

¹²⁵ “Xcel Energy participates as a limited partner in Energy Impact Partners (EIP), a private investment platform focused on advancing technologies that support the clean energy transition. Through this partnership, Xcel Energy holds rights to participate in advisory committees, which provide strategic input on investment priorities and emerging technologies.” Xcel Reply Comments, p. 28.

¹²⁶ *Id.*

¹²⁷ LIUNA Supplemental Comments, p. 2.

E. Equity

Renewable Energy Partners, the Department, Cooperative Energy Futures et al., the Joint Solar Parties, Fresh Energy and LIUNA, recommended steps to improve the program's focus on equity, per the Commission's order.¹²⁸

LIUNA agreed that equity considerations are essential, given that ratepayers in Environmental Justice and low-income communities can be disproportionately affected by higher rates driven by this program. LIUNA therefore urged that equity benefits should "not come at the expense of cost-effective program implementation."¹²⁹

Host Sites and Communities

Fresh Energy made several recommendations for Xcel to meet certain equity targets related to its host site and communities. As referenced earlier, Fresh Energy pointed to the Pradhan-Chan study, where researchers found that certain areas are disproportionately affected by long-duration outages ("designated communities"), and recommended several steps for ensuring that benefits are concentrated in those areas to increase equity.¹³⁰

As background, the Pradhan/Chan study analyzed service quality across Xcel's service territory and found that:

1. There is a correlation between people of color-led households and a higher number of disconnections.
2. Disadvantaged communities and high POC neighborhoods have higher instances customers experiencing lengthy interruptions (CELI).
3. There is a higher hosting capacity in communities that are disadvantaged and/or have a high proportion of residents of color.

Fresh Energy thus recommended a pathway for the program to address some of these disparities. [**Decision Option 27**] Fresh Energy pointed to Illinois' Climate and Equitable Jobs Act, where utilities are required to deliver at least 40% of grid modernization and clean-energy benefits to communities characterized by high poverty, historic economic disinvestment, and disproportionate pollution and health burdens.¹³¹ Fresh Energy therefore recommended that Capacity*Connect Phase 2 be designed to accrue at least 40% of benefits (including reliability improvements, workforce opportunities, and customer bill reductions) to Environmental Justice and energy-burdened communities.¹³²

In addition to that goal, Fresh Energy also recommended that the Commission require Xcel to

¹²⁸ 2024 IRP Order, [Ordering Paragraph 23.a.](#)

¹²⁹ LIUNA Supplemental Comments, p. 3.

¹³⁰ Pradhan, Bhavin; Chan, Gabriel. (2024). Racial and Economic Disparities in Electric Reliability and Service Quality in Xcel Energy's Minnesota Service Area. Retrieved from the University Digital Conservancy, <https://hdl.handle.net/11299/261434>.

¹³¹ Fresh Energy Initial Comments, pp. 4-5.

¹³² PUC Staff to Fresh Energy Ex Parte Communication, p. 6.

direct at least 25% of cumulative host payments to sites that are located in the designated communities identified by the Pradhan-Chan study, certified diverse businesses; and/or community-based organizations serving the designated areas. **[Decision Option 28]**

LIUNA agreed that this program offered an opportunity to provide benefits to Environmental Justice and low-income communities, and provided a more generalized recommendation that Xcel prioritize siting opportunities in Environmental Justice communities where pursuing these opportunities is consistent with larger program priorities. **[Decision Option 29]**

Renewable Energy Partners argued that ordering Xcel to site behind-the-meter assets in Environmental Justice communities would be a much more effective equity tool than what Xcel had proposed, focusing “both on saving energy costs for the host and strategically to create some resiliency hubs for EJ communities during an extended grid failure.”¹³³ **[Decision Option 14]**

Suppliers

Renewable Energy Partners and Fresh Energy also offered recommendations for how Xcel should contract with diverse vendors. Renewable Energy Partners recommended that Xcel be required to contract with Minority-Owned Business Enterprises and/or Women-Owned Business Enterprises for at least 25% of its project budget.¹³⁴ **[Decision Option 30]**

Fresh Energy offered a more extensive list of ways that Xcel should work with diverse suppliers. Fresh Energy noted that “supplier diversity outcomes in Minnesota remain modest relative to the scale of utility procurement” – under 8% of Northern States Power’s procurement is from female-owned, minority-owned, veteran-owned, and/or small businesses.¹³⁵ Fresh Energy thus recommended the Commission order Xcel to do the following to encourage sourcing from diverse suppliers **[Decision Option 31]**:¹³⁶

- A. Set a target that at least 25% of total Phase II spend is with certified diverse suppliers with transparent annual reporting.
- B. Require prime contractors to report and meet targets for subcontractor diversity, ensuring that diversity is embedded throughout the supply chain.
- C. Unbundle contracts so smaller businesses can realistically bid on discrete scopes of work.
- D. Pre-qualify a short list of diverse suppliers and provide:
 - a. An informational session to help them prepare competitive responses to RFPs.
 - b. Automatic invitations to bid on relevant RFPs.
- E. Include at least two external evaluators on RFP selection panels to provide independent oversight of equity goals.
- F. Pay diverse suppliers on project milestones throughout the project.

¹³³ Renewable Energy Partners Initial Comments, p. 2.

¹³⁴ Renewable Energy Partners Initial Comments, p. 2.

¹³⁵ Fresh Energy Supplemental Comments, p. 3.

¹³⁶ PUC Staff to Fresh Energy Ex Parte Communication, p. 5.

- G. Identify diverse suppliers with relevant capabilities for C*C. Using Xcel and Sparkfund’s own vendor records and external directories (e.g., state-certified diverse suppliers, minority- and women-owned business databases), identify diverse businesses with the capabilities necessary to execute the C*C program, including, but not limited to:
 - a. Electrical contracting and construction for distribution-connected projects;
 - b. Site preparation and civil work;
 - c. Engineering, integration and installation for storage; and
 - d. Community engagement and community-based organization partners in the designated areas.
- H. Prequalify a cohort of diverse suppliers capable of performing portions of the C*C work.
- I. Host at least two “meet-the-buyer” or match-making sessions in 2026 where the pre-qualified firms can connect with Xcel, Sparkfund, and prime contractors to better understand upcoming C*C RFPs and subcontracting opportunities.
- J. Provide technical assistance (funded through the Training Fund (see recommendation below)) to help the pre-qualified firms meet utility safety, insurance, and performance requirements.
- K. Report annually on:
 - a. The number and names of diverse firms contacted, prequalified, and invited to bid on C*C work;
 - b. The number and percentage of contracts and subcontracts awarded to diverse businesses; and
 - c. Multi-year relationships that continue beyond initial C*C contracts (i.e., whether the project helped grow a small number of capable diverse suppliers into ongoing utility vendors).

In addition, Fresh Energy recommended that the Company dedicate at least 1% of its total budget to technical assistance and training to diverse businesses and local workers to encourage participation in C*C contracts.¹³⁷ **[Decision Option 32]**

The American Association of Blacks in Energy also recommended the Commission order specific measures to ensure that Xcel prioritizes local, diverse suppliers and contractors. These recommendations included setting diverse supplier goals, targeted outreach and bidding support for local diverse firms, unbundling contracts into smaller, more accessible packages, and transparency and reporting.¹³⁸ **[Decision Option 33]**

LIUNA recommended that Xcel focus on equity through employment, including:

1. Ordering Xcel and Sparkfund to partner with Building Strong Communities in order to leverage the program to expand access to construction careers for underserved communities.
2. Ordering Xcel and Sparkfund explore opportunities to involve firms based in Environmental Justice communities that can show that they deliver local equity benefits, working through Xcel’s existing certified business pipeline and additional outreach by

¹³⁷ Fresh Energy Initial Comments, p. 8.

¹³⁸ American Association of Blacks in Energy Public Comment, pp. 1-2.

Sparkfund.

[Decision Option 34]

Equity – Other Initiatives

Fresh Energy recommended that Xcel create a C*C-specific Equity Advisory Group (ESAG) to advise on various aspects of the program throughout its rollout.¹³⁹ Fresh Energy applauded Xcel’s continued work with the Environmental Justice Advisory Board, but stated that “periodic outreach is most effective when paired with a standing-program-specific forum[.]”¹⁴⁰ Fresh Energy recommended that an Xcel and Sparkfund executive be present at each meeting, and that Xcel compensate participants. **[Decision Option 35]**

The Department, supported by Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG provided a more general recommendation to order Xcel to refine its equity approach around quantifiable metrics.¹⁴¹ These parties also recommended that the Commission order Xcel to do proactive, targeted outreach to local, diverse firms and provide support for participation in the bidding process. **[Decision Option 36]**

F. MN DIP Applicability

Clean Energy Economy MN, Cooperative Energy Futures et al., the Department, the Joint Solar Parties, RIC Energy, and R Street Institute raised concerns about Xcel’s proposal to bypass the MN DIP process when interconnecting C*C assets.

First, the Joint Solar Parties argued that allowing Xcel to bypass the MN DIP could be a violation of the MN DIP rules, pointing to several definitions:

1. MN DIP 1.1.1 states that the MN DIP process “applies to any Distributed Energy Resource (DER) no larger than 10 MW interconnecting to, and operating in parallel with, an Area EPS distribution system in Minnesota.”¹⁴²
2. MN DIP defines “Distributed Energy Resource” as “[A] source of electric power that is not directly connected to a bulk power system. DER includes both generators and energy storage technologies capable of exporting active power to an EPS.”¹⁴³
3. The definition of ‘Interconnection Customer’ is ‘The person or entity, including the Area EPS Operator, whom will be the owner of the DER that proposes to interconnect a DER(s) with the Area EPS Operator’s Distribution System.’¹⁴⁴
4. Nothing in the MN DIP states that FTM utility-owned and -controlled, dispatchable DERs should be exempted.

¹³⁹ Fresh Energy Initial Comments, p. 4.

¹⁴⁰ Fresh Energy Supplemental Comments, pp. 4-5.

¹⁴¹ Department Supplemental Comments, p. 3.

¹⁴² State of Minnesota, Distributed Energy Resources Interconnection Process, p. 2. (“MN DIP”) https://mn.gov/puc/assets/MN%20DIP%202025%20Clean%20April%2024%202025_tcm14-623149.pdf

¹⁴³ MN DIP, p. 23.

¹⁴⁴ MN DIP, p. 23.

Parties also argued that this would undermine a fair and competitive marketplace to allow Xcel to jump the queue when other projects must go through the MNDIP. Cooperative Energy Futures et al. argued that, should Xcel solicit third-party bids, its ability to avoid the 12-18 month MNDIP process would give it a tremendous competitive advantage.¹⁴⁵ The Joint Solar Parties echoed this concern, stating that this would “degrade the integrity of MN DIP and diminish the Commission’s regulatory authority over DER interconnection.”¹⁴⁶ The R Street Institute argued that Xcel, in trying to define these assets as grid assets instead of DER, was deliberately trying to define “DER in a way that only it can do and only it can benefit from.”¹⁴⁷

Ultimately, parties offered several pathways for Commission consideration, should it agree that Xcel’s proposal to bypass the MN DIP should not be approved as proposed.

1. RIC Energy and Clean Energy Economy MN recommended that Xcel adhere to the same MN DIP policy as third parties (meaning that, if Xcel can bypass the MN DIP for Capacity*Connect assets, so could third parties, and vice versa). **[Decision Option 38]**
2. The Department, supported by Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG recommended that Xcel use different approaches to MN DIP for different scenarios **[Decision Option 39]**:
 - a. For C*C assets that increase generation-hosting capacity **[Decision Option 8.C]**, authorize an expedited interconnection process for C*C assets that maintains functional compliance with MN DIP technical safety and grid protection standards.
 - b. For C*C assets that maximize energy market arbitrage value **[Decision Option 8.A]**, or function as NWA’s **[Decision Option 8.B]**, authorize C*C projects to be exempt from the MN DIP if the C*C interconnection utilizes generation-hosting capacity reserved by Xcel’s Technical Planning Standard (TPS).¹⁴⁸ Direct Xcel to prioritize the siting of assets at distribution nodes with high generation-hosting capacity to minimize deployment delays and avoid triggering significant system upgrades.
 - c. Direct Xcel to ensure that all utility assets that use the Technical Planning Standard reserved capacity or bypass MN DIP for expedited interconnection do not displace or negatively impact DER applicants already in the existing queue. If Xcel chooses not to use the TPS-reserved capacity for C*C assets that decrease generation-hosting capacity, those C*C assets must proceed through the MN DIP.
 - d. Require Xcel to document interconnection studies and distribution upgrades for each site in quarterly reports to ensure safety and reliability, even if bypassing

¹⁴⁵ Cooperative Energy Futures et al. Initial Comments, p. 33.

¹⁴⁶ Joint Solar Parties Initial Comments, p. 22.

¹⁴⁷ R Street Institute Initial Comments, p. 10.

¹⁴⁸ The Technical Planning Standard allows the interconnection net flow of distributed energy resources up to 80 percent of the limiting equipment thermal rating, which could be at either the substation transformer or feeder level. Docket No. E-002/C-23-424, *In the Matter of the Formal Complaint and Request for Relief by the Minnesota Solar Advocates*, Order Dismissing Complaint (February 27, 2024)

the full MN DIP administrative process or utilizing the TPS reserved capacity.

3. The R Street Institute recommended the Commission reject Xcel's proposal to bypass MN DIP as part of its overall recommendation to reject and order Xcel to refile its petition. **[Decision Option 56]**

G. DERMS

CEE supported the approval of the DERMS budget and design. **[Decision Options 42 and 43]**. CEE asserted that Xcel's DERMS proposal was "comprehensive, methodical, and phased approach to implementing DERMS at scale through its planned roadmap."¹⁴⁹ CEE also referenced the Smart Electric Power Alliance study previously referenced by the Joint Solar Parties to support Xcel's incremental approach.¹⁵⁰

The Department agreed that investment in the Company's proposed Grid DERMS was necessary and prudent, as were its proposed use cases.¹⁵¹ However, the Department stressed that "approval must be conditioned on ensuring the platform is designed with open architecture that supports future interoperability." The Department and Renewable Energy Partners referenced FERC Order 2222,¹⁵² stating that it was imperative that Xcel invest in a system that would allow for expansion into future use cases such as behind-the-meter and third-party owned BESS.¹⁵³

The Department, Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG supported the DERMS budget on the condition that Xcel develop it with an open architecture capable of integrating with third-party aggregators. **[Decision Option 44]**¹⁵⁴

The Joint Solar Parties also questioned why Xcel would not use the DERMS already underway in Colorado to cut costs, prevent duplicative efforts, and ensure long-term usefulness of the system. In Colorado, the Joint Solar Parties shared that Xcel issued an RFP to vendors after developing over 100 use cases and more than 1,000 functional requirements. The Joint Solar Parties urged Xcel to use the learnings already funded by Colorado ratepayers to develop its Minnesota DERMS system: "Minnesota ratepayers should not be asked to finance duplicative discovery, software procurement, or organizational restructuring work that Xcel has already undertaken elsewhere."¹⁵⁵

The Department stated that the DERMS roadmap satisfied the Commission's 2023 IDP order.

R Street Institute recommended rejecting Xcel's DERMS proposal, deeming it unnecessary and

¹⁴⁹ CEE Initial Comments, p. 3.

¹⁵⁰ CEE Initial Comments, p. 6.

¹⁵¹ Department Initial Comments, p. 20.

¹⁵² Docket No. RM18-9-000, *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, [Order No. 2222 \(September 17, 2020\)](#)

¹⁵³ Renewable Energy Partners Initial Comments, p. 2

¹⁵⁴ Department Supplemental Comments, p. 2.

¹⁵⁵ Joint Solar Parties Initial Comments, p. 17.

redundant because DER owners already have visibility and control of their DERs.¹⁵⁶ R Street Institute instead recommended that Xcel investigate already-existing DERMS solutions rather than building one from scratch with ratepayer funding. **[Decision Option 56]**

H. Reporting and Evaluation

Cooperative Energy Futures et al., the Department, Fresh Energy, the Joint Solar Parties, and the OAG recommended modifications to Xcel's reporting and evaluation proposal.

Fresh Energy

Fresh Energy recommended that the Company be required to file an evaluation framework, created with stakeholder input, specifying what will be evaluated and reported on in the Interim Program Assessment, within 180 days of the order. This should include, at a minimum:

- A. How DERMS dispatch decisions reflect tradeoffs between bulk and distribution system benefits.
3. The extent to which concurrent benefit streams were realized in Phase 2.
4. Alignment between MISO dispatch requirements and dispatch for distribution system value, understanding the Company is not expected to dispatch these assets for distribution system value in Phase 2.
5. Detailed discussion of its experience siting C*C assets.
6. For assets sited using a secondary distribution criterion **[Decision Option 7]**, an analysis of the potential benefits had the asset been operated to capture a specific distribution value stream. This should be informed by a feeder-level power flow analysis and an associated cost-benefit analysis.¹⁵⁷

[Decision Option 46]

Fresh Energy agreed that the program assessment should be conducted by a third party and filed after 20 MW of capacity is operational or after 2 years, whichever is first, as proposed by Xcel **[Decision Option 45.B-C]**. Fresh Energy noted that siting may pose challenges and learning opportunities not yet anticipated and should be documented and reported.¹⁵⁸ Fresh Energy also recommended delegating authority to the Executive Secretary to open a comment period for feedback on the interim evaluation plan. **[Decision Option 47]**

The Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG

The Department, supported by Cooperative Energy Futures et al., the Joint Solar Parties, and the OAG recommended several reporting and evaluation mechanisms tied to their program design recommendations. These recommended that the evaluation include a methodology for quantifying avoided transmission and distribution costs and asset accreditation with MISO, and quarterly status reports covering deployment of the different archetypes. **[Decision Option 48 and 49]**

The parties also recommended that Xcel be ordered to retain a third-party evaluator after 20

¹⁵⁶ R Street Institute Initial Comments, p. 12.

¹⁵⁷ Fresh Energy Supplemental Comments, pp. 2-3.

¹⁵⁸ Fresh Energy Supplemental Comments, pp. 2-3.

MW of capacity is operational or after two years (whichever occurs first), and to include:

- A. A detailed discussion of how Grid DERMS dispatch decisions reflect tradeoffs between bulk system and distribution system benefits.
- B. A detailed discussion of how Xcel's DERMS investments to date are capable of integrating with third-party aggregators [**Decision Option 44**], and any associated challenges and next steps.
- C. An analysis documenting which concurrent benefit streams were realized and the alignment between MISO dispatch requirements and distribution system value.
- D. A detailed discussion of the challenges and barriers faced when siting DCP assets in Phase 2.

[Decision Option 50]

The Joint Solar Parties modified the Department's decision option to clarify that the evaluation should be independent of Xcel, conducted by the Department of Commerce, and should specifically measure the cost and benefits of each archetype in Decision Option 8 with a comparative analysis for each. [**Decision Option 51**]¹⁵⁹

The OAG recommended that this evaluation, when available, should be filed in this docket for a 90-day negative check-off period. The OAG recommended that, if comments are filed, the Commission should schedule a notice of reply comment, hearing, and that no Capacity*Connect assets should be installed during this review time.¹⁶⁰ [**Decision Option 52**] The OAG reasoned that this formal process would ensure close review of the program in its early stages, recognizing the "inherent uncertainty of and need for flexibility in implementing pilot programs."¹⁶¹ Staff made some small changes to this decision option for clarity.

Fresh Energy supported **Decision Options 48 and 49** as an alternative if the Commission does not select **Decision Option 46**.¹⁶²

I. Data Availability

Fresh Energy, the Institute for Local Self-Reliance and Solar United Neighbors, and RIC Energy made recommendations to increase transparency around Xcel's program.

Fresh Energy recommended that the Company be ordered to public a live, public map of Capacity*Connect sites with the following information, with the goal of allowing stakeholders to track whether Xcel was delivering on its equity objectives:

- A. Location of projects, as appropriate given CEI considerations;
- B. Total number of MW and projects and MW and number of projects deployed in the designated areas;
- C. Total spend and percentage of spend with diverse suppliers;
- D. Jobs created (with as much geographic and demographic detail as feasible);

¹⁵⁹ PUC Staff to Joint Solar Parties Ex Parte

¹⁶⁰ OAG Supplemental Comments, p. 5.

¹⁶¹ OAG Supplemental Comments, p. 6.

¹⁶² PUC Staff to Fresh Energy Ex Parte

- E. Total number and dollar amount of host payments and number and dollar amount of host payments going to site hosts in the designated areas. ¹⁶³

[Decision Option 53]

The Institute for Local Self-Reliance and Solar United Neighbors urged the Commission to order Xcel to make its siting data available to all parties developing projects connected to Xcel’s grid (e.g. load hosting capacity, feeders with coincident peaks to the bulk system).¹⁶⁴

RIC Energy echoed the call for additional transparency into siting data. By refusing to disclose eligible feeders, RIC Energy argued that “this creates uncertainty for third-party developers in current interconnection queues who will have no visibility into whether or not their project could be potentially impacted by an Xcel owned storage project.”¹⁶⁵ RIC Energy recommended that the Commission “enact safeguard to ensure transparency into program administration,” including:

- A. The public disclosure of feeder eligibility,
- B. Program administrator selection criteria, and
- C. Significant and appropriate justification for underlying cost assumptions.

[Decision Option 54]

II. Recommendations to Reject and Resubmit

113 Public Commenters signed a letter expressing the following concerns about Xcel’s proposed plan:¹⁶⁶

1. Lack of savings: Xcel did not explain how this would save ratepayers money, which these commenters deem essential to a successful distributed power plant.
2. Ownership: This effort is concentrated within Xcel’s power as a monopoly utility. Commenters noted that “in many other states Distributed Power Plants are being operated by third parties...[t]his creates competition that lowers prices.”

These commenters recommended that the Commission reject the proposal and order Xcel to submit a new proposal that:

1. Expands competition by allowing for a competitive process where third parties can operate a Distributed Power Plant.
2. Allows consumers with solar, batteries, and other energy controlling devices such as smart thermostats to participate in the Distributed Power Plant.
3. Guarantees savings to Xcel energy customers.
4. Requires Xcel to purchase grid services (more electricity to the grid at times of peak demand for example) from Distributed Power Plants at a rate that saves them money.

[Decision Option 55]

The R Street Institute agreed that Xcel would need to resubmit its proposal to address

¹⁶³ Fresh Energy Initial Comments, pp. 8-9.

¹⁶⁴ Institute for Local Self-Reliance and Solar United Neighbors Initial Comments, p.3.

¹⁶⁵ RIC Energy Initial Comments, p. 2.

¹⁶⁶ Example: [Kim Wright](#)

its criticisms.¹⁶⁷ **[Decision Option 56]** Many of its criticisms were aligned with other parties and described in previous sections, such as exclusion of third-party ownership, deviation from its Colorado VPP program, and making data publicly available.

In addition to criticisms addressed by other parties, R Street Institute urged Xcel to explore its role as a Distribution System Operator (DSO), rather than needing to own all assets. R Street Institute noted that Xcel had previously advocated for this in Docket No. E-999/CI-22-600, investigating third-party aggregation of retail customers.¹⁶⁸ A DSO system would allow Xcel to have visibility into and management of DERs, without needing to own them. **[Decision Option 56.K]**

Jesse Angrist, an Electrical and Computer Engineering student at Princeton University, similarly recommended rejection on the grounds that Xcel's analysis overestimated the capacity payments in comparison to its recent IRP and did not provide sufficient justification for the higher values. Angrist also questioned Xcel's assumptions around distribution value and the cost of batteries. Therefore, Angrist recommended Xcel be required to submit additional analytical information and modify the proposal before it would be in the public interest to approve it. **[Decision Option 57]**

STAFF ANALYSIS

As noted in the introduction, parties have largely coalesced around two potential pathways under which Xcel's Capacity*Connect Phase 2 proposal can proceed. First, the Commission may choose to approve Xcel's proposal, with or without modifications, which would result in a program focused on optimization for the wholesale market. Alternatively, the Commission may choose to approve the Department's proposal to segment Capacity*Connect Phase 2 into three distinct use-cases to test both wholesale and distribution-focused optimization.

Below Staff offers considerations on various components of parties' proposals.

I. Benefit/Cost Analysis Results and Overall Value

In its overall cost benefit analysis of C*C, Xcel outlined multiple benefits that it claimed would offset the costs of the program, with the following results. Notably, avoided distribution, transmission line loss, and avoided transmission benefits are key components in getting the benefit/cost ratio close to 0.96, which indicates that the program will cost slightly more than the benefits it is estimated to provide.

¹⁶⁷ R Street Institute Initial Comments

¹⁶⁸ E999/CI-22-600, *In The Matter Of A Commission Investigation Into The Potential Role Of Third-Party Aggregation Of Retail Customers*, [Xcel Reply Comments \(March 23, 2023\)](#), p. 10.

Table 3: C*C Phase 2 Benefit-to-Cost (\$ millions NPV)

	\$ NPV millions
<i>Benefits</i>	
Production Cost Savings	39.28
Capacity / Resource Adequacy	289.00
Avoided Distribution Benefit	41.69
Avoided Transmission Line Loss	7.07
Avoided Transmission Benefit	62.53
Total Benefits	439.56
<i>Costs</i>	
Capital Expenses	288.58
O&M Expenses	252.35
Investment Tax Credits	(82.88)
Total Costs	458.05
Benefit/Cost Ratio (BCR)	0.96

But while Xcel quantifies these additional benefits in its BCA, it stated multiple times throughout its narrative that it intends to only pursue one value stack at a time: wholesale capacity value, with a small carveout for distribution and transmission capacity value. It thus seems contradictory to stack these values in its BCA. In addition to contradictory narrative, Staff has also worked with the Commission's Regional Energy Program staff to investigate whether these benefits could be stacked and has found that this may not even be possible based on how MISO's capacity accreditation frameworks operate. Staff created Table 4 to depict the interaction of different potential benefits for distribution batteries.

Table 4: Stackability of Capacity*Connect Benefits

The X (horizontal) and Y (vertical) axes each name a potential Capacity*Connect value stream, and Staff describes whether the two intersecting value streams could be stacked for the benefit of ratepayers.

	Energy (prod. cost savings)	Avoided transmission charges	Avoided distribution capacity upgrades
Capacity (Resource Adequacy)	<p><i>Yes</i></p> <p>Energy prices are usually highest when capacity is needed most</p> <p>Economic dispatch of batteries available during capacity accreditation hours</p> <p>Batteries routinely earn revenue from both</p> <p>*Caveat: locations w/ transmission congestion can drive battery charging when system is peaking</p>	<p><i>It Depends</i></p> <p>Capacity accreditation hours must occur at the coincident peak used to assess transmission charges to obtain both benefits.</p>	<p><i>Unlikely without specific actions</i></p> <p>Capacity accreditation hours must occur coincidentally with distribution feeder peak load</p> <p>Depends on the types of loads connected to feeder</p> <p>Battery must be configured to realize distribution benefits</p>
Energy (prod. cost savings)		<p><i>Yes</i></p> <p>Energy prices tend to be high during coincident peak used to assess transmission charges.</p> <p>*Caveat: locations w/ transmission congestion can drive battery charging when system is peaking</p>	<p><i>It Depends</i></p> <p>Battery charging/discharging follows the real-time or day-ahead LMP, but most distribution customers do not base consumption on dynamic pricing.</p> <p>If wholesale energy prices are high when a distribution feeder peaks, a battery will discharge and lower the distribution peak.</p>
Avoided transmission charges			<p><i>It Depends</i></p> <p>To stack, distribution feeder peak must occur coincident to MISO peak used to assess transmission charges.</p>

For distribution-connected resources to bring value to the distribution system through avoided upgrades, increased hosting capacity, or increased reliability, the resources must be sited and operated in such a manner to do so. Simply placing a battery on the distribution system does not result in avoided distribution benefits, and in some cases may end up having the reverse

impact, causing upgrades if there is not enough available hosting capacity. While Xcel has indicated it plans to look at the potential co-benefits during future phases of C*C, the lack of specifics of how it will at minimum avoid adverse impacts to the distribution system leaves Staff concerned, given the wide swath of already-constrained hosting capacity across Xcel's service territory.

If the benefits of Phase 2 of C*C come primarily from wholesale market dispatch, the Commission will need to consider the overall costs of the program, Xcel's need for capacity, and the potential impacts to the distribution system as it weighs program approval.

Additionally, the cost of Capacity*Connect is significant. Xcel estimated the first three years of operation to cost between \$152 million and \$430 million in capital and O&M expenditures. While Xcel did not provide a public estimate of the ongoing O&M expenses, in its Cost-Benefit Analysis the NPV of O&M expenses was \$252 million compared to \$288 million NPV for capital expenses. Xcel provided estimates of the customer bill impacts at \$430 million of investment, outlined in Table 5, and the net impact to customer rates when MISO revenues are accounted for in Table 6.

**Table 5: Estimated Annual Customer Bill Impacts
\$430 million* Investment Level¹⁶⁹**

Year	Residential	SCI Non-Demand	Demand	Lighting	Total
2026	\$11.45	\$13.59	\$387.05	\$11.41	\$24.97
2027	\$11.32	\$13.52	\$384.90	\$11.37	\$24.70
2028	\$11.19	\$13.44	\$382.83	\$11.34	\$24.43
2029	\$11.06	\$13.37	\$380.86	\$11.31	\$24.17
2030	\$10.92	\$13.31	\$379.00	\$11.29	\$23.90

*Does not include MISO revenues.

**Table 6: Net Annual Impact to Customer Rates
Capacity*Connect Phase 2 at \$430M Investment Level and Estimated MISO Market
Revenue¹⁷⁰**

Year	Residential	SCI Non-Demand	Demand	Lighting	Total
2026	\$0.51	\$0.61	\$17.35	\$0.51	\$1.12
2027	\$0.65	\$0.78	\$22.14	\$0.65	\$1.42
2028	\$0.74	\$0.89	\$25.40	\$0.75	\$1.62
2029	\$0.33	\$0.40	\$11.35	\$0.34	\$0.72
2030	\$0.33	\$0.40	\$11.49	\$0.34	\$0.72

Staff also asked Xcel whether they performed modeling to assess the total net PVSC and PVRR

¹⁶⁹ Xcel Energy, Response to Staff IR #7

¹⁷⁰ Xcel Energy, Response to Staff IR #9

costs and benefits as part of its resource portfolio compared to a baseline capacity expansion plan. The Company indicated it had not as EnCompass modeling would not capture non-bulk-system benefits.¹⁷¹

II. 2025 IRP Order and Resource Need

Capacity*Connect originated out of the Commission’s April 21, 2025 Order in the Company’s 2024 Integrated Resource Plan. Also in that Order the Commission ordered Xcel to “pursue 600 MW of standalone storage to be installed by a target date of end-of year 2030.”¹⁷² In its petition, Xcel indicated that while Capacity*Connect was “consistent” with the approved five-year IRP action plan, it would not offset any of the 600MW of standalone storage capacity.

Additionally, since the IRP Order, Xcel conducted new modeling which indicated its need had grown, necessitating the procurement of 3,500 additional MW of carbon free resources on top of its existing planned acquisitions. Table 7 is based on Xcel’s December 12, 2025 filing for its Near-Term RFP.¹⁷³

Table 7: Five-Year Action Plan, Planned Resources, and Additional Resource Needs (MW)

	2024 IRP Approved Five-Year Action Plan	2024 RFP Portfolio, Dev Transfer, and ERAS Projects Included in the 2024 RFP Analysis	Additional Need Beyond Existing Acquisitions	Updated Resource Need by End of 2030
Standalone Storage	600	916	0	916
Wind	3,200	1,800	1,800	3,600
Solar	400	768	1,700	2,468
Total	4,200	3,484	3,500	6,984

Xcel has also either submitted or received approval for over 3 GW of storage (including C*C) over the past two years, depicted in Table 8. Staff notes the resources in Table 8 are comprised of resources acquired through the Firm Dispatchable Proceeding, the Sherco Long Duration Energy Storage Pilot, the 2024 RFP Portfolio, and submitted ERAS projects.

¹⁷¹ Xcel Energy, Response to Staff IR #12

¹⁷² Ordering Paragraph 4

¹⁷³ Xcel Energy, Initial Filing, Docket 25-429, p. 7

Table 8: Xcel Approved and Pending Storage Additions

Facility	Nameplate MW	Year of Addition	Status
<i>Firm Dispatchable Docket (23-212)</i>			
North Star Energy Storage	100	2027	Approved
Onward Mankato Energy Center BESS	12	2028	Approved
Sherco Solar West Energy Storage	300	2027	Approved
Panamint-Cottage Grove BESS	80	2028	Verbally Approved
<i>Subtotal</i>	492		
<i>Pilots, 2024 RFP, ERAs projects</i>			
Sherco Long Duration Energy Storage	10	2028	Approved
Blue Lake Energy Storage	135.5	2027	Verbally Approved
Crowned Ridge Storage	120	2027	Verbally Approved
Mayhew Lake Storage	100	2028	Verbally Approved
Sherco Solar South Energy Storage	300	2027	Verbally Approved
Tenaska Crane Storage	200	2028	Verbally Approved
Nobles Energy Storage	300	2028	Pending Cmsn Approval
Benton II Energy Storage	300	2028	Pending Cmsn Approval
Sandhill Energy Storage	200	2028	Pending Cmsn Approval
Lake Charlotte	150	2028	Submitted to ERAS
Redwood Energy Storage	200	2028	Submitted to ERAS
Little Rock Wind/Storage	300	2028	Submitted to ERAS
Capacity*Connect	200	2028	Pending
<i>Subtotal</i>	2,515.5		
Total	3,007.5		

While the Company has indicated it will need an additional 3,500 MW of resources on top of the approved 2024 IRP plan, this modeling and forecast has not been evaluated by stakeholders or the Commission. Regardless, Xcel has been successful in procuring large amounts of utility scale storage over the past few years. Thus, it is not clear to Staff from this record what the scale of Xcel's anticipated capacity deficit through 2030 is, especially after accounting for recent project approvals. As a result, it is not clear to Staff whether Capacity*Connect would help to fulfill an established and unmet capacity need.

Staff notes that the Commission may, and regularly does, approve resource procurements that differ somewhat in size, type, or timing from the utility's most recently approved 5-year Action Plan. However, if a proposed resource is outside this scope, the Commission typically evaluates whether the resource is necessary for meeting statutory obligations, for addressing changes in load forecast or market conditions, and if it can be expected to deliver savings for customers.

III. Department Consolidated Recommendations

As noted above to realize quantifiable distribution benefits from Capacity*Connect resources, distribution-oriented siting and operational components must be intentionally integrated as

part of the program. Two of the three Department “Archetypes” from the Consolidated Recommendations focus on deploying C*C batteries to benefit the distribution system. Staff agrees with the Department and other stakeholders that using distribution-sited resources, including battery storage, can be a key tool to affordably addressing the capacity expansion of the distribution system due to load growth and distribution congestion from large amounts of interconnected DERs.

However, the distribution focused Archetypes are fundamentally different use cases than what Xcel has proposed and, as presented in this proceeding, are still largely conceptual in nature. While many components of the Consolidated Recommendations appeared in stakeholder’s initial comments, the final compiled version was not submitted until supplemental comments. This version includes new recommendations that Xcel has not had an opportunity to address. Additionally, **Decision Options 8.B and 8.C** have substantial overlaps with other Commission processes including the IDP¹⁷⁴ and the grid upgrade proceedings.¹⁷⁵ While battery energy storage could address some of the distribution upgrades identified in those proceedings, using it would be a new endeavor for Xcel and should be reviewed and approved by the Commission as a complete, detailed proposal rather than the high level plan presented here. Staff is particularly concerned by **Decision Option 8.C**, which was not presented until Supplemental Comments and is not mentioned anywhere else in the record. The DSRUP process referenced in this recommendation was only recently verbally approved at the Commission’s February 26 Agenda Meeting after over a year of development.¹⁷⁶ DSRUP is a generic standard applied across all investor-owned utilities, not just Xcel. To try and modify this program before it is launched risks delaying program rollout and complicating what is already a new, complex process for utilities and developers.

The Department Consolidated Recommendations also outlined the development of a Distribution Value Identification & Avoided Distribution Cost Workplan. Similar to the analysis above, Staff is concerned that the scope of this recommendation goes beyond the boundaries of Capacity*Connect as a standalone program. There are also potential feasibility concerns about whether Xcel has the necessary data and modeling software necessary to implement these recommendations, and what level of results it would be able to share due to data security concerns.

Staff therefore recommends that if the Commission is interested in the Department’s recommendations it modify the implementation approach by requiring Xcel to develop and file a pilot project based on Decision Option 8, with the goal of the pilot to develop the Distribution Value Workplan outlined in Decision Option 9. Staff has included this as Decision Option **Decision Option 11** and has included a placeholder development time of 180 days.

¹⁷⁴ Specifically, Xcel’s non-wires alternatives (NWA) which are filed as part of its IDP. Current IDP Docket No E002/M-25-142.

¹⁷⁵ Proactive Grid Upgrades, Docket E002/CI-24-318; Reactive Grid Upgrades (DSRUP), Docket E002;E015;E017/CI-24-288.

¹⁷⁶ See Docket No. Docket E002; E015;E017/CI-24-288, *In the Matter of Establishing Tariffs for Distribution System Costs Sharing for Interconnection in Constrained Areas*, also known as Reactive Distribution Upgrades

IV. Behind-the-Meter VPP Proposal

Multiple commenters suggested Xcel develop a behind-the-meter VPP proposal similar to its Aggregated VPP program in its Colorado service area [**Decision Options 17 and 18**]. Staff believes that requiring the development and filing of BTM VPP program could be a compliment to either the Department's or Xcel's pathways, or adopted as a standalone option.

V. MNDIP Applicability

Staff shares stakeholder concerns about the integrity of the MN DIP process if Xcel is allowed to exempt itself from the existing process. The Commission addressed similar concerns in its approval of Xcel Energy's Resiliency Service Program, in which the Company would install, own, and operate customer sited DERs to provide higher levels of reliability for participating customers. The Commission adopted the following order point to mitigate concerns about the Company circumventing the interconnection process, which Xcel agreed to:

All interconnection applications must be handled by a third-party vendor and must abide by all applicable Minnesota interconnection standards and all internal Xcel policies, including the Company's technical planning standards and insurance requirements. In applying the applicable interconnection standards and policies, Xcel shall not treat participating and non-participating customers differently for interconnection purposes. If unexpected or unplanned Company incurred interconnection costs are required, the customer must pay and undergo studies as set forth in the Minnesota Distributed Energy Resources Interconnection Process (MN DIP). If distribution upgrades are required, the customer must pay them in accordance with MN DIP.¹⁷⁷

Staff recommends that if the Commission approves C*C, it adopt a similar provision as proposed in Decision Option 40. However, Staff does acknowledge that some portions of MN DIP may be impractical for the Company to apply, such as paying itself for conducting an interconnection study. Therefore, Staff recommends the Company be required to make a compliance filing outlining which portions of MN DIP it believes would be contradictory to apply to itself and the proposed solution. [**Decision Option 41**]

VI. DERMS

Implementation of a DERMS is critical for maximizing the benefits DERs can bring to the distribution system. In the instant proceeding Xcel has requested a very limited DERMS implementation to support C*C, rather than a full DERMS implementation that will be necessary for more advanced distribution optimization. Staff suggests that broader DERMS integration discussions and decisions be addressed in Xcel's IDP, which will be before the Commission this summer.

¹⁷⁷ DOCKET NO. E-002/M-22-170, *In the Matter of Xcel Energy's Petition for Approval of a Resiliency Service Program*, [ORDER APPROVING RESILIENCY SERVICE PROGRAM WITH MODIFICATIONS AND REQUIRING ANNUAL REPORTS](#) (March 15, 2023), Ordering Paragraph 1.a

VII. RES Rider Recovery

In the Commission's February 26, 2026 Verbal Decision on Xcel's 2024 RFP (Docket 24-230), it did not allow recovery of the Blue Lake BESS through the RES rider. This decision aligned with the Department's recommendation to deny Blue Lake BESS rider recovery as it was not "directly related" to a specific renewable project, a requirement under Minn. Stat. § 216B.1645, subd. 2a(a)(3). The Commission will need to determine if similar conditions apply for C*C.

Alternatively, if the Commission did not deem recovery under 216B.1645, subd. 2a appropriate, Xcel noted that C*C would also qualify for RES recovery under 216B.16, subd. 7e. That subdivision allows recovery for energy storage pilot projects approved by the Commission. Xcel explained:

*The statute defines "pilot project" as one that is (i) owned, operated, and controlled by a public utility to optimize safe and reliable system operations, and (ii) deployed at a limited number of locations in order to assess the technical and economic effectiveness of its operations. The learning phase we have proposed fits this definition. The storage assets will be owned, operated, and controlled by Xcel Energy with the aim of optimizing operations safely and reliably while maximizing benefits to customers. The assets would be deployed at a smaller number of locations (no more than 200) to test the technical and economic effectiveness and the scalability of Capacity*Connect.*

While C*C is a new and innovative program, the statute defines "pilot" as being deployed at a "limited number of locations."¹⁷⁸ Staff disagrees that a minimum of 50 sites is a "limited number." To contrast, the Commission previously considered rider recovery under Subd. 2e for two pilot projects: Xcel Energy's 10 MW Form Energy Long Duration Energy Storage Pilot,¹⁷⁹ and Otter Tail Power's flow battery pilot at the University of Minnesota Morris.¹⁸⁰ The Commission approved Xcel Energy's request, and no party had issues with the rider recovery portion of Otter Tail's pilot project. Both proposed projects were for a single battery installation and had total pilot costs far lower than Phase 2 of Capacity*Connect. Staff notes that Phase 1 of Capacity*Connect was also approved as a research and development project through ECO and had a similar size and scope to the Form Energy and Morris Flow Battery pilots.

If the Commission supports **Decision Options 22**, Staff has offered **Decision Option 23** as an alternative to avoid the promise of future cost recovery.

¹⁷⁸ Minn. Stat. s 216B.16, subd. 7e states: (f) For the purposes of this subdivision:

(1) "energy storage system" has the meaning given in section [216B.2422, subdivision 1](#); and
 (2) "pilot project" means a project that is (i) owned, operated, and controlled by a public utility to optimize safe and reliable system operations, and (ii) deployed at a limited number of locations in order to assess the technical and economic effectiveness of its operations.

¹⁷⁹ DOCKET NO. E-002/M-23-119, *In the Matter of Xcel Energy's Petition for a Long-Duration Energy Storage System Pilot Project at Sherco*, [ORDER APPROVING PILOT PROJECT](#) (August 1, 2023), Ordering Paragraph 4

¹⁸⁰ Docket No. E-017/M-25-325, *In the Matter of Otter Tail Power Company's Petition for a Proposed Energy Storage System Pilot at the University of Minnesota Morris*.

VIII. Equity and Reporting Recommendations

Staff notes the applicability of these recommendations will largely depend on the overall path the Commission takes with the Capacity*Connect proposal. Staff does not take a position on any of the individual recommendations, but believes the record is well developed to allow the Commission to decide on the different options recommended by commenters. However, Staff believes **Decision Options 27 and 28** may result in unintended consequences if they are adopted with the Department's Three-Archetype proposal. Under Archetypes B and C, requiring additional siting criteria could eliminate areas of the grid where siting C*C resources would have the most value if they are not also in an Environmental Justice or energy-burdened community.

IX. Decision Option Guide

As noted above, stakeholders primarily aligned behind two pathways: adoption of Xcel's original proposal (with or without modifications) and the Department's Consolidated Recommendations. However, within each pathway there are numerous decision options, some of which can be adopted with either path. To aid in the Commission's decision-making, Staff has created a table indicating which decision options in each section are compatible with each pathway. This does not reflect any individual party position (Staff will request those from parties and provide them prior to the agenda meeting) but rather is meant to indicate potential combinations under each pathway. If the Commission chooses to reject the program [**Decision Option 3**], it may still choose among the following options:

May choose between

- Decision Option 17
- Decision Option 18

With the option to include Decision Option 19 with either 17 or 18

*May choose **one** of the following:*

- Decision Option 55
- Decision Option 56
- Decision Option 57

Below, Staff has outlined two main pathways that parties have coalesced around:

	Xcel Wholesale Proposal <i>Decision Options that would preserve Xcel's focus on bulk system benefits.</i>	Department Distribution Proposal <i>Decision Options that would shift the program's focus to distribution benefits.</i>
Approval	<i>Choose Decision Option 1</i>	<i>Choose Decision Option 2</i>
1. Valuing Distribution System Benefits	<i>May choose any combination of the following:</i> <ul style="list-style-type: none"> - Decision Option 4 - Decision Option 5 - Decision Option 6 - Decision Option 7 	<i>Must choose one of the following combinations:</i> <ul style="list-style-type: none"> - Decision Option 8 and 9 OR 10 - Decision Option 11

2. Ownership, Procurement, and Eligible Assets	<p><i>May choose any combination of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 12 - Decision Option 13 - Decision Option 14 - Decision Option 15 - Decision Option 16 	<p><i>May choose:</i></p> <ul style="list-style-type: none"> - Decision Option 16
3. New Behind-the-Meter VPP Proposal	<p><i>May choose between</i></p> <ul style="list-style-type: none"> - Decision Option 17 - Decision Option 18 <p><i>With the option to include Decision Option 19 with either 17 or 18</i></p>	<p><i>May choose between</i></p> <ul style="list-style-type: none"> - Decision Option 17 - Decision Option 18 <p><i>With the option to include Decision Option 19 with either 17 or 18</i></p>
4. Budget and Cost Recovery	<p><i>May choose: Decision Option 20</i></p> <p><i>Must select one of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 21 - Decision Option 22 - Decision Option 23 - Decision Option 24 <p><i>May choose Decision Option 25 with the option to include Decision Option 26</i></p>	<p><i>May choose: Decision Option 20</i></p> <p><i>Must select one of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 21 - Decision Option 22 - Decision Option 23 - Decision Option 24 <p><i>May choose Decision Option 25 with the option to include Decision Option 26</i></p>
5. Equity	<p><i>May choose any combination of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 27 - Decision Option 28 - Decision Option 29 - Decision Option 30 - Decision Option 31 - Decision Option 32 - Decision Option 33 - Decision Option 34 - Decision Option 35 - Decision Option 36 	<p><i>May choose any combination of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 29 - Decision Option 30 - Decision Option 31 - Decision Option 32 - Decision Option 33 - Decision Option 34 - Decision Option 35 - Decision Option 36
6. MN DIP Applicability	<p><i>Must choose one of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 37 - Decision Option 38 - Decision Options 40 and 41 	<p><i>Must choose one of the following:</i></p> <ul style="list-style-type: none"> - Decision Option 37 - Decision Option 38 - Decision Option 39 - Decision Options 40 and 41

7. DERMS	<p><i>May choose:</i></p> <ul style="list-style-type: none"> - Decision Options 42 AND 43 <p><i>With the option to include Decision Option 44</i></p>	<p><i>May choose:</i></p> <ul style="list-style-type: none"> - Decision Options 42 AND 43 <p><i>With the option to include Decision Option 44</i></p>
8. Reporting and Evaluation	<p><i>May choose either of the following options:</i></p> <ul style="list-style-type: none"> - Decision Option 45 - Decision Option 46 AND 47 	<p><i>May choose any combination of the following options:</i></p> <ul style="list-style-type: none"> - Decision Option 48 - Decision Option 49 - Decision Option 50 OR 51 <p><i>If 50 or 51 are chosen, may also select Decision Option 52</i></p>
9. Data Availability	<p><i>May choose either:</i></p> <ul style="list-style-type: none"> - Decision Option 53 - Decision Option 54 	<p><i>May choose:</i></p> <ul style="list-style-type: none"> - Decision Option 53
Resubmit	<i>n/a</i>	<i>n/a</i>

DECISION OPTIONS

Approval

The Commission may choose one of the three following decision options. If Commissioners choose to modify the program, it must choose at least one of the modifications in Sections 1-9.

1. Approve Xcel Energy's implementation of Capacity*Connect Phase 2 as a learning phase, including:
 - A. Deployment of approximately 50-200 MW of Company-owned and operated distribution-interconnected BESS by the end of 2028.
 - B. A budget range of approximately \$152 million (corresponding to the planned 50 MW deployment) to approximately \$430 million (estimated for a 200 MW deployment) through 2028.

(Xcel)
2. Approve Xcel's Capacity*Connect Phase 2 Program with modifications. *(American Association of Blacks in Energy, Base Power, Center for Energy and Environment, Clean Energy Economy MN, Cooperative Energy Futures et al., Department, Fresh Energy, Institute for Local Self-Reliance and Solar United Neighbors, Joint Solar Parties, LIUNA, OAG, Renewable Energy Partners, RIC Energy)*
3. Reject the Capacity*Connect Phase 2 Program as proposed, without prejudice. *(Public Commenters, R Street Institute)*

Modifications

Each of the following sections captures decision options related to different parts of the proposed program, as well as additional party recommendations. If relevant, a section shall contain Xcel's proposal first, which the Commission may choose to approve. If there are modifications proposed by parties, they are listed after Xcel's proposal, and the Commission may choose to select those if it wishes to modify that part of the proposal.

Section 1: Valuing Distribution and System Benefits

The Commission may choose any combination of Decision Options 4 – 7.

4. Within one year of the Commission Order, Xcel shall file an initial analysis, evaluation plan, and next steps on distribution-only sub-deployment. Operational learning objectives will include:
 - A. What are the operational, resource, and process changes needed to maximize distribution value?
 - B. What additional safety risk do BESS pose to employees and the public?
 - C. How do different charging and discharging times affect the feeder and substation transformers?
 - D. How does the reliability and longevity of batteries compare to standard upgrade solutions?
 - E. Are distribution-only batteries cost beneficial for customers?
 - F. What size, location, and quantity of batteries on a distribution feeder optimizes feeder loading and operations?

(Xcel)
5. By November 1, 2027, Xcel shall file development of NSPM-specific distribution benefit value with its 2027 Integrated Distribution Plan (IDP).
(Xcel)
6. Require Xcel during the implementation of Phase 2 to develop a full accounting of the system benefits and the value of those benefits to conduct a comprehensive cost/benefit analysis for use in future procurements and in Phase 3 of the C*C program.
(Clean Energy Economy MN)
7. Require Xcel to add secondary siting criteria that maximize its ability to learn from Phase 2. This should include siting, where possible, based on:
 - A. Identified reliability issues. *(Xcel NOT opposed)*
 - B. Deferred transmission and distribution investment opportunities. *(Xcel alternative below)*
 - C. Locations with high penetrations of DERs, grid congestion, and/or Daytime Minimum Load issues. *(Xcel opposed)*

The Company shall use the data collected from these assets to construct theoretical test cases that demonstrate how these resources would have performed if dispatched for

distribution benefits. These test cases should be reported in the Interim Program Assessment.

(Fresh Energy, Center for Energy and Environment)

Xcel Alternative Fresh Energy 7.B Deferred ~~transmission and~~ distribution investment opportunities. *(Xcel Alternative)*

OR

The Commission may choose Decision Options 8 and 9, 8 and 10, or 11.

8. Direct Xcel to implement a diversified siting and operational strategy by testing the following three distinct archetypes to validate the full range of potential system benefits for Phase 2:
 - A. Economic Arbitrage: Xcel shall site a portion of C*C assets in locations selected to maximize energy market arbitrage value based on nodal Locational Marginal Pricing (LMP). This archetype must prioritize locations with the greatest spread between off-peak charging and on-peak discharging prices.
 - B. Reliability and T&D Deferral: Xcel shall site a portion of C*C assets to function as Non-Wires Alternatives (NWA) to address documented distribution reliability issues or to defer specific, budgeted infrastructure investments. Siting in this archetype should prioritize historically underinvested areas to align with equity goals, improving service quality and ensuring grid modernization benefits reach vulnerable ratepayers.
 - C. DER Congestion, Hosting Capacity, and the DSRUP Pathway: Xcel shall site a portion of C*C assets on feeders with high penetration of DERs experiencing grid congestion issues, specifically those characterized by low Day-time Minimum Load (DML). To ensure these assets directly support the expansion of hosting capacity and the fulfillment of the Company's Distributed Solar Energy Standard (DSES) obligations, they shall be implemented according to the following framework:
 - i. C*C assets focused on hosting capacity and DML shall be classified both as Flexible Interconnection assets and integrated into the Distribution System Reactive Upgrade Process (DSRUP). As such, these assets will be paid for by developers as a DSRUP asset.
 - ii. Assets must utilize the Grid DERMS platform to actively manage and absorb excess solar generation during peak hours. This approach is designed to increase hosting capacity and defer costly traditional infrastructure upgrades.
 - iii. The Commission will evaluate the implementation of this archetype within Docket No. E002,015,017/CI-24-288, and will request comments on:
 - a. The technical feasibility of integrating C*C assets as Reactive Cost Share Distribution Upgrades within DSRUP.
 - b. The willingness to accept curtailment if the MISO capacity need

does not fully align with the DSRUP capacity need.

- c. The implementation of Xcel's adjusted revenue requirement (ARR) split between C*C and DSRUP capacity needs.

(Department Supplemental, OAG Supplemental/Ex Parte, JSP Supplemental, CEF et al. supplemental)

AND

9. Order Xcel to develop, file, and execute a Distribution Value Identification & Avoided Distribution Cost Workplan as a core component of Phase 2 implementation. Xcel shall file the Workplan within 180 days after the Commission Order. The Workplan must establish a Minnesota-specific, transparent method to quantify both systemwide and locational avoided distribution system costs for distribution-connected storage and aggregated DER, and apply that method to Phase 2 siting, operations, and benefit-cost evaluation. At a minimum, the Workplan must include:
- A. Project-level distribution need statement and study scope for each Phase 2 asset (feeder/substation context; constraints addressed; operational objective(s); relevant planning horizon).
 - B. Feeder- and substation-level power-flow modeling across the system, including—for feeders with identified grid needs—at least a “wires-only” case and a “DER-inclusive” case, to identify constraints, quantify impacts, and test dispatch requirements and operating envelopes.
 - C. Minnesota-specific marginal distribution cost methodology that translates distribution planning drivers (capacity, reliability, voltage, losses, hosting capacity, etc.) into avoided-cost metrics suitable for benefit-cost analysis (e.g., \$/kW-year and other appropriate units), with clear assumptions, data sources, and ranges/uncertainty bounds.
 - D. Ex-ante distribution value forecasts identifying candidate deferrals/avoidances and expected distribution benefits, plus a corresponding ex post measurement and verification plan to evaluate realized distribution outcomes and explain variance.
 - E. Discussion of how Xcel plans to integrate A through D above into the complementary behind-the-meter Virtual Power Plant program developed under Department Decision Option 17.

(Department, OAG, Cooperative Energy Futures et al.; Xcel Opposed)

OR

10. Require a Phase 2 “Distribution Value Identification & Avoided Distribution Cost Workplan” (with deliverables, deadlines, and reporting). The Commission should require Xcel to develop, file, and execute a Distribution Value Identification & Avoided Distribution Cost Workplan as a core component of Phase 2 implementation. Xcel shall file the Workplan within 180 days after the Commission Order. The Workplan must establish a Minnesota-specific, transparent method to quantify avoided generation, transmission, and distribution values ~~both systemwide and locational avoided-distribution system costs~~ for distribution-connected storage and aggregated DER, and

apply that method to Phase 2 siting, operations, and benefit-cost evaluation. At a minimum, the Workplan must include:

- A. Project-level distribution need statement and study scope for each Phase 2 asset (feeder/substation context; constraints addressed; operational objective(s); relevant planning horizon).
- B. Feeder- and substation-level power-flow modeling across the system, including—for feeders with identified grid needs—at least a “wires-only” case and a “DER-inclusive” case, to identify constraints, quantify impacts, and test dispatch requirements and operating envelopes.
- C. Minnesota-specific marginal distribution cost methodology that translates distribution planning drivers (capacity, reliability, voltage, losses, hosting capacity, etc.) into avoided-cost metrics suitable for benefit-cost analysis (e.g., \$/kW-year and other appropriate units), with clear assumptions, data sources, and ranges/uncertainty bounds.
- D. Ex-ante distribution value forecasts identifying candidate deferrals/avoidances and expected distribution benefits, plus a corresponding ex post measurement and verification plan to evaluate realized distribution outcomes and explain variance.
- E. Discussion of how Xcel plans to integrate A through D above into the complementary behind-the-meter Virtual Power Plant program developed under Decision Option 17.
- F. A description of how the avoided cost values will be used to evaluate bids in a competitive RFP process.

(Joint Solar Parties modification of Department Decision Option 10 above; Xcel opposed)

OR

11. Require Xcel, in conjunction with stakeholders, to develop a new VPP pilot proposal based on Decision Option 8. As part of the pilot project Xcel must develop, file, and execute a Distribution Value Identification & Avoided Distribution Cost Workplan as described in Decision Option 9. Require Xcel to file the new pilot for approval within [180 days] of the Commission’s Order.

(Staff)

Section 2: Ownership, Procurement, and Eligible Assets

The Commission may choose any combination of Decision Options 12 – 16.

12. Require Xcel to include competitive procurement for third-party-developed BESS in Phase 2. *(Base Power, Clean Energy Economy MN, RIC Energy)*
 - A. Require Xcel to include additional commercial constructs such as build-transfers or third-party ownership in Phase 2.
(Base Power, Clean Energy Economy MN)
 - B. Require competitive procurement to align with the DSES procurement framework in Phase 2.
(RIC Energy)

13. If Xcel does not charge utility-owned BESS demand or distribution charges, order Xcel not to charge third-party-owned BESS demand or distribution charges. (*Clean Energy Economy MN*)
14. Order Xcel to incorporate solar-plus-storage behind-the-meter assets into Phase 2 of Capacity*Connect. (*Renewable Energy Partners*)
15. Require Xcel to include individual storage assets between 5kW and 3MW in size as part of Phase 2 of the C*C program. (*Base Power*)
16. Require Xcel to conduct a quantitative economic evaluation comparing the proposed utility-managed model against alternative structures, including third party-owned assets, customer-owned resources, and Virtual Power Plant (VPP) models.
 - A. Establish a definitive timeline and formal requirements for the solicitation of third-party-owned front-of-the-meter assets within the program.
 - B. Direct Xcel to evaluate and incorporate a broader suite of ownership and commercial arrangements, such as "build-own-transfer" or "build-transfer" structures, to leverage competitive market expertise.
 - C. Require that all grid and siting data utilized by Xcel for project selection be made available to foster a transparent and competitive deployment environment. (*Joint Solar Parties, Cooperative Energy Futures et al.*)

Section 3: New Behind-the-Meter VPP Proposal

The Commission may choose between Decision Options 17 or 18, with the option to include Decision Option 19 with either.

17. Direct Xcel to collaborate with stakeholders to develop and file a proposal for a complementary market-driven behind-the-meter Virtual Power Plant (VPP) program by July 1, 2027.
 - A. The filing must include target residential class customers across the utility territory, enable participation by customer owners, third-party operators and aggregators, and include a community-owned model targeting low-income households.
 - B. The community-owned model should evaluate the aggregation of multiple DERs, and supported by a financially-feasible tariff designed to deliver reliable financial benefits to low-income participants.
 - C. The proposal should include a tariff designed to provide fair compensation for the services provided by behind-the-meter assets. (*Department, Joint Solar Parties, OAG, Cooperative Energy Futures et al.*)

OR

18. Delegate authority to the Executive Secretary to open a separate docket for the purpose of developing a behind-the-meter Virtual Power Plant program. Require Xcel to submit

compliance filings reporting on the progress of the Colorado AVPP program and its relevance to Minnesota as part of the new docket. (*Fresh Energy, Center for Energy and Environment; Xcel Not Opposed*)

19. Require Xcel to launch a 20 MW pilot for third party-owned Capacity*Connect resources no later than July 1, 2027, and use the data from that program's performance as the evidence to inform the independent evaluation in Decision Option 51. (*Institute for Local Self-Reliance and Solar United Neighbors*)

Section 4: Budget and Cost Recovery

20. Impose a Phase 2 program capacity limit of 50-60 MW and a cost cap of \$3.04 million per MW of capacity. (*OAG*)

The Commission must choose one of the following:

21. Approve Xcel's proposal to recover costs for Phase 2 of Capacity*Connect through its Renewable Energy Standards rider. (*Xcel*)

OR

22. Authorize future cost recovery of Phase 2 of Capacity*Connect through the RES Rider, subject to Commission review and approval of specific costs. (*Department, Joint Solar Parties, OAG, Cooperative Energy Futures et al.*)

OR

23. Determine that prudent costs of Phase 2 of Capacity*Connect are eligible for recovery through the RES rider, subject to Commission review and approval of specific costs in a future proceeding. (*Staff modification of Decision Option 22*)

OR

24. Reject Xcel's proposal to recover all costs for Phase 2 of Capacity*Connect through the RES rider. (*Renewable Energy Partners*)

The Commission may only choose Decision Option 26 if it chooses Decision Option 25.

25. Require Xcel to provide information on mechanisms to ensure transparency and accountability in the sole-source selection of Sparkfund, including market-rate justification for costs. (*Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG*)
26. Disallow recovery from ratepayers of the difference between the value of the contract Xcel signs with Sparkfund and the market rate for a comparable contract as demonstrated in Decision Option 25. (*OAG*)

Section 5: Equity

The Commission may choose any combination of Decision Options 27 – 36.

27. Require Xcel and Sparkfund to design and implement Phase 2 of the C*C so that, to the greatest extent technically and economically feasible, at least 40% of total, measurable project benefits accrue to Environmental Justice communities, high energy-burdened areas, and the communities identified in the Pradhan-Chan study as being disproportionately affected by long-duration outages. Benefits shall be defined broadly to include reliability and power-quality improvements, economic development and supplier diversity, host-site payments and community benefits, workforce and training opportunities, and any net customer bill or arrearage reductions. If the 40% threshold is not achieved, the Company shall file an explanation and a compliance plan with additional steps to close the gap.

(Fresh Energy)

28. Require that at least 25% of cumulative host payments for Phase 2 go to site hosts that are either:

- A. Located in Environmental Justice communities, high energy-burdened areas, and the communities identified in the Pradhan-Chan study as being disproportionately affected by long-duration outages; and/or
- B. Certified diverse businesses; and/or
- C. Community-based organizations serving Environmental Justice communities, high energy-burdened areas, and the communities identified in the Pradhan-Chan study as being disproportionately affected by long-duration outages.

If less than 25% is achieved, the Company shall file an explanation and a compliance plan with additional steps to close the gap. Xcel and Sparkfund shall work with each host to determine the benefits the host would like to receive and include host benefits in each host-site agreement.

(Fresh Energy)

29. Order Xcel to prioritize siting opportunities in Environmental Justice communities where pursuing these opportunities is consistent with larger program priorities in Phase 2.

(LIUNA)

30. Require Xcel to contract with Minority-Owned Business Enterprises and/or Women-Owned Business Enterprises for at least 25% of its project budget for Phase 2.

(Renewable Energy Partners)

31. Require the following actions to support sourcing from diverse suppliers in Phase 2:

- A. Set a target that at least 25% of total Phase II spend is with certified diverse suppliers with transparent annual reporting.
- B. Require prime contractors to report and meet targets for subcontractor diversity, ensuring that diversity is embedded throughout the supply chain.
- C. Unbundle contracts so smaller businesses can realistically bid on discrete scopes

of work.

- D. Pre-qualify a short list of diverse suppliers and provide:
 - i. An informational session to help them prepare competitive responses to RFPs.
 - ii. Automatic invitations to bid on relevant RFPs.
- E. Include at least two external evaluators on RFP selection panels to provide independent oversight of equity goals.
- F. Pay diverse suppliers on project milestones throughout the project.
- G. Identify diverse suppliers with relevant capabilities for C*C. Using Xcel and Sparkfund’s own vendor records and external directories (e.g., state-certified diverse suppliers, minority- and women-owned business databases), identify diverse businesses with the capabilities necessary to execute the C*C program, including, but not limited to:
 - i. Electrical contracting and construction for distribution-connected projects;
 - ii. Site preparation and civil work;
 - iii. Engineering, integration and installation for storage; and
 - iv. Community engagement and community-based organization partners in the designated areas.
- H. Prequalify a cohort of diverse suppliers capable of performing portions of the C*C work.
- I. Host at least two “meet-the-buyer” or match-making sessions in 2026 where the pre-qualified firms can connect with Xcel, Sparkfund, and prime contractors to better understand upcoming C*C RFPs and subcontracting opportunities.
- J. Provide technical assistance (funded through the Training Fund (see recommendation below)) to help the pre-qualified firms meet utility safety, insurance, and performance requirements.
- K. Report annually on:
 - ii. The number and names of diverse firms contacted, prequalified, and invited to bid on C*C work;
 - iii. The number and percentage of contracts and subcontracts awarded to diverse businesses; and
 - iv. Multi-year relationships that continue beyond initial C*C contracts (i.e., whether the project helped grow a small number of capable diverse suppliers into ongoing utility vendors).

(Fresh Energy)

- 32. Require at least 1% of the Phase 2 program budget be dedicated to:
 - A. Technical assistance for diverse businesses preparing to participate in RFPs (e.g., support with proposals, compliance, insurance/bonding, project management systems); and
 - B. Training local workers, with an emphasis on residents of the designated areas, to qualify for jobs associated with C*C projects.

(Fresh Energy)

33. Order Xcel to do the following during Phase 2 of Capacity*Connect:
- A. Require specific, measurable goals for the inclusion of Minority-Owned, Women-Owned, Veteran-Owned, and Small Business Enterprises in all tiers of the supply chain and contracting for this project.
 - B. Targeted Outreach and Bidding Support: Mandate proactive, targeted outreach to local, diverse firms and provide resources or mechanisms to support their participation in the bidding process, which can often be challenging for smaller entities.
 - C. Unbundling Contracts: Encourage the unbundling of larger contracts into smaller, more accessible packages that local and diverse firms are better equipped to handle, increasing their opportunities for participation.
 - D. Transparency and Reporting: Require transparent reporting on contractor and supplier diversity metrics throughout the project's duration to ensure accountability and track the success of these inclusive efforts.

(American Association of Blacks in Energy)

34. Order Xcel to:
- A. Partner with Building Strong Communities in order to leverage the program to expand access to construction careers for underserved communities.
 - B. Explore opportunities to involve firms based in Environmental Justice communities that can show that they deliver local equity benefits, working through Xcel's existing certified business pipeline and additional outreach by Sparkfund.

(LIUNA)

35. Direct Xcel to create a C*C-specific Equity Advisory Group that meets with Xcel and Sparkfund at least four times per year to ensure site selection, host benefits, engagement of diverse suppliers, and workforce outcomes meaningfully reach under-represented communities. Require an Xcel executive to attend each meeting and recommend a Sparkfund executive attend each meeting. Require Xcel to pay compensation to the C*C-specific Equity Advisory Group.

(Fresh Energy)

36. Require Xcel to refine its equity approach to track specific, quantifiable metrics such as the percentage of subcontracting dollars awarded to MWBE and evidence of active consultation with host communities—to include residents not receiving host payments—in EJ areas regarding site aesthetics and safety.

- A. Mandate proactive, targeted outreach to local, diverse firms and provide resources or mechanisms to support their participation in the bidding process, which can often be challenging for smaller entities.

(Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG, Fresh Energy)

Section 6: MNDIP Applicability

The Commission must choose one of the following:

37. Approve Xcel's proposal to allow Capacity*Connect Phase 2 assets bypass the MN DIP during interconnection. *(Xcel)*

OR

38. Order Xcel to apply the same MNDIP policy to third parties as to itself as a utility during Phase 2 implementation. *(Clean Energy Economy MN, RIC Energy)*

OR

39. Order Xcel to adhere to the following standards for Capacity*Connect assets and the MN DIP:
- A. For C*C assets that increase generation-hosting capacity, authorize an expedited interconnection process for C*C assets that maintains functional compliance with MN DIP technical safety and grid protection standards.
 - B. For C*C assets that maximize energy market arbitrage value, or function as NWAs, authorize C*C projects to be exempt from the MN DIP if the C*C interconnection utilizes generation-hosting capacity reserved by Xcel's Technical Planning Standard (TPS). Direct Xcel to prioritize the siting of assets at distribution nodes with high generation-hosting capacity to minimize deployment delays and avoid triggering significant system upgrades.
 - C. Direct Xcel to ensure that all utility assets that use the TPS reserved capacity or bypass MN DIP for expedited interconnection do not displace or negatively impact DER applicants already in the existing queue. If Xcel chooses not to use the TPS-reserved capacity for C*C assets that decrease generation-hosting capacity, those C*C assets must proceed through the MN DIP.
 - D. Require Xcel to document interconnection studies and distribution upgrades for each site in quarterly reports to ensure safety and reliability, even if bypassing the full MN DIP administrative process or utilizing the TPS reserved capacity.
- (Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG)*

OR

If the Commission chooses Decision Option 40, it must also choose Decision Option 41.

40. Require that all Capacity*Connect resources submit an interconnection application that must be handled by a third-party vendor and must abide by all applicable Minnesota interconnection standards and all internal Xcel policies, including the Company's technical planning standards and insurance requirements. In applying the applicable interconnection standards and policies, Xcel shall not treat Capacity*Connect resources differently from customer owned resources for interconnection purposes. If unexpected

or unplanned Company incurred interconnection costs are required, Xcel must undergo studies as set forth in the Minnesota Distributed Energy Resources Interconnection Process (MN DIP).

(Staff recommendation)

AND

41. Require Xcel to make a compliance filing within 90 days of the Commission's Order indicating which portions of MNDIP would be logistically impractical to apply to itself and the recommended solution.

(Staff recommendation)

Section 7: DERMS

The Commission may choose Decision Options 42 and 43, with the option of including Decision Option 44.

42. Approve Xcel's proposed implementation of a limited deployment of a grid distributed energy resources management system (DERMS).

(Xcel)

43. Approve Xcel's proposed DERMS budget of \$2.9 million.

(Xcel, Center for Energy and Environment)

44. Require Xcel to develop DERMS with an open architecture capable of integrating with third-party aggregators.

(Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG, Fresh Energy)

Section 8: Reporting and Evaluation

The Commission may choose Decision Option 45, OR Decision Options 46-47. Alternatively, the Commission may choose any combination of 48, 49, 50 or 51.

45. Order Xcel to make the following additional filings related to analysis, measurement and verification, and reporting for Phase 2 of Capacity*Connect:

- A. Within three months after the Commission Order, Xcel shall file quarterly reports (see Attachment A to the Company's Reply Comments), continuing at least until the Interim Program Assessment.
- B. Within six months (180 days) of the Commission Order, Xcel shall file a Capacity*Connect Evaluation Plan.
- C. No later than two years after Commission approval, Xcel shall file an Interim Program Assessment, including measurement and verification (M&V) from a third-party consultant, to be filed after commercial operation of 20 MW or two years from Phase 2 approval, whichever is sooner.

- D. This Interim Program Assessment will include an analysis of a portion of locations on substation transformers with at least 2 MW of DER and at least one analysis on a substation transformer with at least 15 MW of DER. Xcel shall explain its analysis and learnings towards meeting this objective and learning about the interaction of the existing DER and the BESS, without introducing constraints or negative impacts.
- E. After distribution-only assets have been online for at least two years, Xcel shall file an evaluation of distribution-only sub-deployment performance and benefits.

(Xcel)

46. Require Xcel to propose an approach for evaluating the following in its evaluation plan for Phase 2:
- A. How DERMS dispatch decisions reflect tradeoffs between bulk and distribution system benefits.
 - B. The extent to which concurrent benefit streams were realized in Phase 2.
 - C. Alignment between MISO dispatch requirements and dispatch for distribution system value, understanding the Company is not expected to dispatch these assets for distribution system value in Phase 2.
 - D. Detailed discussion of its experience siting C*C assets.
 - E. For assets sited using Decision Option 7, an analysis of the potential benefits had the asset been operated to capture a specific distribution value stream. This should be informed by a feeder-level power flow analysis and an associated cost-benefit analysis.

(Fresh Energy)

47. Delegate authority to the Executive Secretary to open a comment period following the submission of the Interim Program Assessment to allow stakeholders to provide input on the report and program progress. *(Fresh Energy)*

OR

48. Require Xcel to file a Capacity*Connect Phase 2 Evaluation Plan within 180 days of the Commission Order, including a methodology for quantifying avoided T&D costs and asset accreditation with MISO. The evaluation plan shall also include a framework for data collection and developing tests cases to measure potential distribution value for archetypes in Decision Option 8.
(Department Supplemental, Cooperative Energy Futures et al., Joint Solar Parties, OAG, Fresh Energy Alternative to Decision Option 46)
49. Require Xcel to file quarterly program status reports covering deployment status, budget expenditures, archetype performance (with M&V data), Grid DERMS efficacy, interconnection studies, labor standards compliance, and equity progress.
(Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG, Fresh Energy)
50. Direct Xcel to conduct a Comprehensive Third-Party Evaluation after 20 MW of capacity is operational or after 2 years, whichever occurs first, and include the following:

- A. A detailed discussion of how Grid DERMS dispatch decisions reflect tradeoffs between bulk system and distribution system benefits.
- B. A detailed discussion of how Xcel's DERMS investments to date are capable of integrating with third-party aggregators, and any associated challenges and next steps.
- C. An analysis documenting which concurrent benefit streams were realized and the alignment between MISO dispatch requirements and distribution system value.
- D. A detailed discussion of the challenges and barriers faced when siting DCP assets in Phase 2.

(Department, Cooperative Energy Futures et al., Joint Solar Parties, OAG, Fresh Energy Alternative to Decision Option 46)

OR

51. Request that ~~the Department Xcel to~~ conduct a an Independent, Comprehensive ~~Third-Party~~ Evaluation that includes information relevant to that evaluation after 20 MW of capacity is operational or after 2 years, whichever occurs first.
- A. A detailed discussion of how Grid DERMS dispatch decisions reflect tradeoffs between bulk system and distribution system benefits.
 - B. A detailed discussion of how Xcel's DERMS investments to date are capable of integrating with third-party aggregators (Decision Option 44), and any associated challenges and next steps
 - C. An analysis documenting which concurrent benefit streams were realized and the alignment between MISO dispatch requirements and distribution system value.
 - D. A detailed discussion of the challenges and barriers faced when siting DCP assets in Phase II.
 - E. The cost and benefits of each use case in Decision Option 8, with a comparative analysis for each use.
- (Joint Solar Parties modification of Decision Option 50)*

If the Commission chooses Decision Options 50 or 51, it may also choose 52.

52. The Comprehensive Third-Party Evaluation shall result in a report that Xcel shall file in this docket. If comments are filed within 90 days of Xcel's filing that recommend any modifications or rejections to the program based on the evaluation, the Commission's Executive Secretary will issue a notice of reply comment period and hearing. Xcel shall not initiate the installation of any C*C assets until the 90-day comment period is concluded or the order after hearing is issued, whichever comes first. *(Staff modification of OAG)*

Section 9: Data Availability

The Commission may choose any of Decision Options 53-54.

53. Require the Company publish a live, public map of C*C sites showing:
- A. Location of projects, as appropriate given CEI considerations;
 - B. Total number of MW and projects and MW and number of projects deployed in the designated areas;
 - C. Total spend and percentage of spend with diverse suppliers;
 - D. Jobs created (with as much geographic and demographic detail as feasible);
 - E. Total number and dollar amount of host payments and number and dollar amount of host payments going to site hosts in the designated areas.

(Fresh Energy)

54. Enact safeguards to ensure transparency into Capacity*Connect program administration, including requiring:
- A. The public disclosure of feeder eligibility,
 - B. Program administrator selection criteria, and
 - C. Significant and appropriate justification for underlying cost assumptions.

(RIC Energy)

Resubmit

If the Commission chooses Decision Option 3 (to reject the proposal), it may also choose any of these Decision Options:

55. Order Xcel to submit a new proposal that:
- A. Expands competition by allowing for a competitive process where third parties can operate a Distributed Power Plant.
 - B. Allows consumers with solar, batteries, and other energy controlling devices such as smart thermostats to participate in the Distributed Power Plant.
 - C. Guarantees savings to Xcel energy customers.
 - D. Requires Xcel to purchase grid services (more electricity to the grid at times of peak demand for example) from Distributed Power Plants at a rate that saves ratepayers money.

(Public Commenters)

56. Order Xcel to re-file the C*C proposal within six months of the submission of its 2027 Annual ECO Report with the following modifications:
- A. Prohibit Xcel from owning DER under this program
 - B. Direct Xcel to provide a behind-the-meter option for participation in C*C.
 - C. Allow smaller commercial and residential customers to participate in C*C.
 - D. Direct Xcel to consider a Bring Your Own DERMS solution to minimize costs to Xcel, customers, and developers, and identify any barriers to developing it.
 - E. Direct Xcel to file a cost-benefit analysis of third-party-owned resources.

- F. Direct Xcel to develop a competitively procured product for all services, not just technology and construction.
 - G. Direct Xcel to create a competitively procured aggregated virtual power plant solicitation modeled on Colorado's AVPP program.
 - H. Direct Xcel to make all grid data necessary for developer, aggregator, and customer participation publicly available.
 - I. Prohibit utilization of a single third-party implementer.
 - J. Reject Xcel's proposal to be exempt from the MN DIP.
 - K. Direct Xcel to consider a DSO alternative.
- (R Street Institute)*

57. Order Xcel to submit a new proposal that:

- A. Considers at least three values for the Cost Of New Entry escalation rate in its sensitivity analysis, which should span a realistic range of possible CONE escalation rates.
- B. Analyzes the strength and significance of these values in determining the cost-benefit ratio of the proposal.
- C. States transparently the (sets of) assumptions which lead to each value under consideration.
- D. Explains how these assumptions differ from those of their most recent Integrated Resource Plan in those cases where the considered escalation rates diverge from the 2% escalation rate assumed in the same IRP.
- E. Considers at least three interest rate forecasts, which meaningfully span a range of possible future macroeconomic environments, and expand their sensitivity analysis to evaluate the net present value of the proposal using the evolving discount rate determined by each of these forecasts.
- F. Evaluates in Xcel's analysis the strength and significance of the chosen interest rate forecast on the program's cost-benefit ratio.
- G. States, in the case of each forecast, how the projected future WACC values compare with those assumed in Xcel's most recent Integrated Resource Plan.
- H. Reevaluates Xcel's claims that prioritizing capacity revenue is the most cost-effective design for the C*C program in light of a revised sensitivity analysis of the program's costs and benefits which must include a representative range of possible CONE escalation rates as well as a representative range of possible distribution deferral values
- I. Obeys a principle of maximizing particular as opposed to general benefit when deploying and operating BESS units. Specifically, to the extent that any individual study reveals that a BESS unit would provide more distribution deferral value than capacity revenue, it should be deployed and operated to capture this distribution value, rather than enrolled for the lesser capacity revenue.
- J. Coordinates at least some of Xcel's distributed capacity procurement in Phase 2 of C*C with the specific aim of accelerating the interconnection process of distributed loads and generators, and require that Xcel (or another party) report on the status of these efforts by no later than the Interim Program Assessment (or equivalent significant reporting milestone).

- K. Conceives and/or adopts a public methodology to quantify and monetize the “time to power” benefit of distributed capacity procurement.
- L. Implements this methodology, using transparent inputs to forecast the potential monetary benefit of time to power under the current proposal, as well as using observations of DCP’s effect on interconnection time to document actual time to power benefits as soon as these observations are available.
- M. Ensures Xcel’s quarterly reports include updated cost-benefit analyses which incorporate observed program costs, revised parameter estimates, and updated uncertainty ranges for key assumptions.
- N. Presents a variety of "cost futures" in each interim report, with transparent discussion of how and why projections have changed from previous report.
- O. At minimum, if full model revisions are not feasible on a quarterly basis, records and reports all observations of operational and program cost data on a quarterly basis, including those proposed by the Minnesota Department of Commerce, so that the Commission or interested parties may conduct independent analyses by the time of the Interim Program Assessment.

(Public Commenter Jesse Angrist)