Appendix G

Demand Side Management and Conservation

Minnesota Rule 7849.0290 requires a Certificate of Need (CN) application to include information related to an applicant's energy conservation and efficiency programs and a quantification of the impact of these programs on the forecast information required by Minn. R. 7849.0270. Applicants requested and were granted an exemption to this rule requirement by the Minnesota Public Utilities Commission (Commission). Instead, Great River Energy and Xcel Energy agreed to provide a summary of their respective Integrated Resource Plan (IRP) and Energy Conservation and Optimization (ECO) filings. Applicants also agreed to provide information regarding how conservation and energy efficiency was considered by Midcontinent Independent System Operator, Inc. (MISO) in its evaluation of Tranche 2.1 and the Project. A summary of this information is provided in this appendix and/or discussed in **Section 5** of the Application.

Great River Energy

Great River Energy filed its most recent IRP with the Commission on March 31, 2023 (the 2023 Preferred Plan).[1] The 2023 Preferred Plan built on prior changes to Great River Energy's resource portfolio that significantly reduced carbon emissions while increasing carbon-free generation. The plan included only carbon-free resource additions - wind, solar, and storage. The 2023 IRP was approved by the Commission on June 11, 2024.[2]

Great River Energy's next IRP is in development and will be filed on April 1, 2026. Given Great River Energy's historic compound annual load growth of approximately 0.5 percent, Great River Energy does not anticipate major changes from its 2023 Preferred Plan. However, the 2026 IRP will incorporate a broader range of planning scenarios in response to growing uncertainties in capacity expansion and production cost modeling. These challenges are shared by utilities across the country. Key uncertainties include capital equipment costs and procurement timelines, federal policy changes, load growth driven by large interconnection requests, state policy considerations related to large new loads, compliance with Minnesota's Carbon Free by 2040 law, and the outcome of the Empowering Rural America (New ERA) program.

Considering these uncertainties, Great River Energy's 2026 IRP development will evaluate a much wider set of potential futures, including scenarios with load growth of up to 2,000 megawatts (MW; more than double Great River Energy's current system peak), as well as carbon-free and zero-carbon power supply portfolios. The scenarios will also expand the

[1] *In the Matter of Great River Energy's 2023-2037 Integrated Resource Plan, Docket No. ET-2/RP-22-75 (Mar. 31, 2023), eDockets ID 20233-194396-01, 20233-194396-06.*

[2] *In the Matter of Great River Energy's 2023-2037 Integrated Resource Plan, Docket No. ET-2/RP-22-75, ORDER ACCEPTING 2023-2037 RESOURCE PLAN AND SETTING FUTURE FILING REQUIREMENTS (June 11, 2024).*

set of selectable resource options, including multiple natural gas combustion turbines options, renewable resource cost sensitivities, demand response programs, distributed storage, and emerging technologies such as small modular nuclear reactors, and medium and long-duration energy storage. Preliminary modeling indicates that large load growth scenarios may require significant additions of storage as well as firm, dispatchable generation capacity.

As Great River Energy's member cooperatives' needs continue to evolve, the 2026 IRP will provide guidance across a wide range of potential futures. Throughout this process, Great River Energy remains committed to its Triple Bottom Line: delivering an affordable, reliable, and sustainable power supply portfolio that complies with all state and federal requirements.

Great River Energy operates one of the most robust demand response programs in the nation; these programs intentionally change its members' end-users' electric usage patterns from their normal consumption patterns in response to changes in the price of electricity or incentive payments. Great River Energy's energy efficiency programs use an "all of the above" approach to member energy efficiency engagement. The total program is made up of five components:

- **Equipment incentive programs** - These programs provide incentives for members' end users to invest in equipment having greater efficiency than equipment that meets current federal standards. Incentives are based on budget and the current commercial state of the technology. As technologies mature and the market for these technologies transform, the overall rebate for those technologies will decrease.
- **Consumer behavior programs** – Consumer behavior programs focus on educating end users about their energy use and providing relevant comparisons that seek to illustrate ways in which the member-consumer can reduce their consumption and lower their overall cost of energy. Several of Great River Energy's members have employed tools like SmartHub, which leverages member-owner investments in Advanced Metering Infrastructure to present energy consumption data through an online web portal. In addition, several members have employed direct appeals to their end users to reduce their consumption during the hottest months of the year. These "Beat the Peak" programs ask member-consumers to voluntarily reduce their consumption and are associated with contests that reward end users that realize the greatest reduction in their overall electric consumption.

- **Supply-side efficiency** – Efficiency is a central focus of Great River Energy's culture of business improvement. Recent generation efficiency improvements include combustion turbine tuning to minimize heat rates and major overhauls of several combustion turbines based on operating hours. In addition, Great River Energy has also been actively engaging with third-party wind forecasting developers to identify improvements in day-ahead wind forecasting ability. Additional efficiency gains are being developed with regard to Ambient Adjusted Ratings of Great River Energy's transmission lines which will aid in reducing both congestion charges and renewable energy generation curtailment.
- **Market transformation** – Great River Energy's long history of efficiency engagement with members has resulted in member-consumers who are well-versed in the benefits associated with investments in efficiency. As the market share of products that carry labels indicating efficient products (e.g., ENERGY STAR®) has expanded, many members have adopted these technologies without taking advantage of rebate programs.
- **Demand response** – Great River Energy's robust demand response efforts are focused on modifying the load curve during the periods of monthly peak demand, as well as ongoing efforts to shift as many end uses to off-peak periods as possible. The effort to shift end uses to off-peak periods is most pronounced in the areas of electric storage water heating and electric vehicle charging efforts.

Great River Energy plans the following energy efficiency program activities throughout the Five-Year Action Plan identified in the IRP:

- Survey members regarding key electric end uses within homes and businesses;
- Participate in research to further characterize energy efficiency end use technologies, including the expansion of the efficient fuel switching opportunities;
- Work with members to identify and market new programs that improve awareness of energy consumption, increase the adoption of efficient end-use technologies where practical, and minimize rate impacts; and
- Further evaluate the efficiency opportunities within our members' service territories.

Xcel Energy

Within Xcel Energy, the Regulatory Policy team is responsible for filing its conservation and efficiency programs at Xcel Energy. Christopher Shaw is the individual who submits these details to the DOC-DER for approval.

Consistent with its exemption request, Xcel Energy provides the summary below of the conservation information in the most recent IRP and CIP/Energy Conservation and Optimization (ECO) filings.

For decades, Minnesota has been a national leader in energy efficiency. The state's utility-sponsored energy efficiency programs are among the longest-standing in the country, and Minnesota is the only Midwestern state that is consistently ranked in the top ten on the American Council for an Energy Efficient Economy's (ACEEE) State Energy Efficiency Scorecard. Minnesota utilities' energy savings achievements through demand side management (DSM) have saved billions of dollars for customers and avoided millions of tons of greenhouse gas and other pollutants while creating and supporting jobs in the state.[3] Indeed, based on 2024 data, the Company has saved nearly 13,588 gigawatt-hours (GWh) of energy and 4,829 MW of demand and 22.7 million cubic feet of natural gas savings, since 1990. Xcel Energy's electric CIP portfolio has surpassed the statewide target of 1.5 percent every year since 2011, with a peak of electricity savings of 1.90 percent in 2024.[4]

Xcel Energy's 2024-2026 ECO Triennial Plan provides a description of specific energy conservation and efficiency programs that Xcel Energy has considered.[5] A list of specific energy conservation and efficiency programs implemented can be found in the Executive Summary of its ECO Status Reports. Xcel Energy provides these in detail on the Xcel Energy website.[6] A review of ongoing new measures is conducted as new technologies are identified and reviewed compared to the cost-effective analysis required by the Minnesota Department of Commerce. All additional programs reviewed, and their approvals, can be found in Docket No. E.G002/CIP-23-92 as required by the Minnesota Department of Commerce through a "Modification Approval." Xcel Energy continues to strive to provide customers with a wide variety of options for saving energy.[7] The Triennial Plan proposed ambitious goals of saving

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[3] *Docket No. E, G002/CIP-23-92. 2024-2026 Xcel Energy ECO Triennial Plan (January 29, 2024). ("Triennial Plan") at 2.*

[4] *Docket No. E,G002/CIP-23-92. 2024 CIP Status Report (April 1, 2025).*

[5] *Docket No. E,G002/CIP-23-92. 2024-2026 Xcel Energy ECO Triennial Plan (January 29, 2024). ("Triennial Plan").*

[6] *Xcel Energy. Minnesota Demand-Side Management. Available online at: https://www.xcelenergy.com/company/rates_and_regulations/filings/minnesota_demand-side_management.*

[7] *Xcel Energy's next Triennial Plan will be submitted on June 1, 2026.*

1,871 GWh, 672 MW, and 3,532,624 dekatherms over the three-year period and at a cost of $587 million.

The proposed electric savings goals also aligned with Xcel Energy's DSM commitments in the IRP. In reviewing the Triennial Plan, the Minnesota Department of Commerce concluded that, "Xcel's 2024-2026 overall energy savings goals are generally aligned with the overall results from the Minnesota Energy Efficiency Potential Study." [8]

In its 2024 CIP Status Report, Xcel Energy stated that, for more than a decade, it had exceeded the State of Minnesota's energy targets. Specifically, in 2024, the electric portfolio met and surpassed the state's new energy savings target of 1.75 percent,[9] achieving nearly 516 GWh of electric savings, or 1.90 percent of sales.[10] Xcel Energy spent a total of $168 million to achieve its savings results, including $139 million on electric programs and $29 million on natural gas programs.[11]

Likewise, Xcel Energy's IRP filing included energy efficiency (EE) and demand response (DR) investments.[12] In the Commission's April 21, 2025, Order the Commission directed Xcel Energy to achieve an annual level of at least 580 GWh of programmatic energy savings. The Company's current 2024-2026 Triennial Plan meets these requirements.

MISO Conservation and Energy Efficiency Considerations

MISO's base forecasts for conservation, energy efficiency, and demand response (collectively referred to by MISO as "Distributed Energy Resources" [DER]) are developed by aggregating each MISO member's forecasts. To consider a broader range of potential DER outcomes to "bookend" uncertainty, MISO creates forecasts considering varying adoption rates, technological advancements, and economic factors in the MISO Transmission Expansion Plan Futures process. MISO's forecasts are developed for each of MISO's ten Local Resource Zones, to consider regional differences, and then are aggregated to a MISO-wide forecast.

Consistent with previous cycles, in the MTEP24 Futures MISO commissioned Applied Energy Group (AEG) to develop DER technical potential for the MISO footprint. The technical potential is the maximum feasible amount of DER. AEG developed estimates of DER impacts through survey of MISO load-serving entities (LSE) and secondary research. To support modeling, AEG compiled DER programs by type and cost into program blocks. DER were modeled as program

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[8] *Docket Nos GE002/CIP-23-92. E7030/CIP-23-99, G7033 and E7031/CIP-23-100, G7034 and E7032/CIP-23-101, G7036 and E7035/CIP-23-102 Decision (December 1, 2023) at 64.*

[9] *Minn. Statute § 216B.214.*

[10] *Docket No. E,G002/CIP-23-92, 2024 Energy Conservation and Optimization Consolidated Filing* at 3 (Apr. 1, 2025).

[11] *Id. at 3.*

[12] *Id.*

blocks in three main categories: Demand Response (DR), Energy Efficiency (EE), and Distributed Generation (DG). Programs also fall into two sectors: Residential and Commercial and Industrial (C&I); see **Table G-1** for details on DER programs considered by MISO in MTEP24.

Table G-1
MTEP24 Distributed Energy Resource Programs [a]

DER Type	Program Block	DER Program(s) Included
DR	C&I Demand Response	Curtailable & Interruptible, Other DR, Wholesale Curtailable
DR	C&I Price Response	C&I Price Response
DR	Residential Direct Load Control	Res. Direct Load Control
DR	Residential Price Response	Res. Price Response
EE	C&I High-Cost EE	Customer Incentive High, New Construction High
EE	C&I Low-Cost EE	Customer Incentive Low, Lighting Low, Construction Low, Prescriptive Rebate Low, Retro-commissioning Low
EE	C&I Mid-Cost EE	Customer Incentive Mid, Lighting Mid, Construction Mid, Prescriptive Rebate Mid, Retro-commissioning Mid
EE	Residential High-Cost EE	Appliance Incentives High, Appliance Recycling, Low Income, Multifamily High, New Construction High, School Kits, Whole Home Audit High
EE	Residential Low-Cost EE	Appliance Incentives Low, Behavior Programs, Lighting, Multifamily Low, New Construction Low, School Kits, Whole Home Audit Low
DG	C&I Customer Solar PV	C&I Customer Solar PV
DG	C&I Utility Incentive Distributed Generation	Combined Heat & Power, Community-Based DG, Customer Wind Turbine, Thermal Storage, Utility Incentive Battery Storage
DG	C&I Utility Incentive Solar PV	C&I Utility Incentive Solar PV
DG	Residential Customer Solar PV	Res. Customer Solar PV
DG	Residential Utility Incentive Distributed Generation	Customer Wind Turbine, Electric Vehicle Charging, Thermal Storage, Utility Incentive Battery Storage
DG	Residential Utility Incentive Solar PV	Res. Utility Incentive Solar PV
A	See **Appendix E.2** – MISO Futures Series 1A Report. Page 49	

During the program selection phase to develop the MTEP24 Futures, each block was offered against supply-side alternatives (e.g., new renewable resources, natural gas power plant, battery storage, etc.) to determine economic viability. For all three MTEP24 Futures, MISO's transmission planning tool, EGEAS – an integrated resource planning tool - determined the lowest cost combination of supply and demand size resources to serve the forecasted gross demand and energy. **Tables G-2** and **G-3** provide the MTEP24 Futures 20-year technical potential and additions to the MISO footprint. Additions ("Added") are those which were economically superior (lower cost) than other alternatives and were included in the MTEP24 Futures planning models. All values in **Tables G-2** and **G-3** are in addition to DER included in

MISO load-serving entity base forecasts.

According to AEG data, Future 1A DER program levels represent minimum expected resource levels. Therefore, Future 1A programs are included as minimum within the base model of all Series 1A scenarios. Futures 2A and 3A employ all F1A program amounts and allow incremental program blocks (the difference of total F2A or F3A programs and F1A levels) for selection.

Table G-2
DER Capacity (GW): 20-Year Technical Potential Additions in MISO in MTEP24 Futures [a]

MTEP24 DERs Capacity (GW)	**Future 1A**	**Future 2A**		**Future 3A**	
Technical Potential and Added	Added	Added	Potential	Added	Added
Demand Response (DR)	10.8	11.2	11.2	11.2	11.0
Energy Efficiency (EE)	17.7	19.4	17.7	20.5	20.5
Distributed Generation (DG)	19.9	19.9	19.9	28.6	20.5

[a] See **Appendix E.2**, Page 48 for additional details.

Table G-3
DER Capacity (GWh): 20-Year Technical Potential Additions in MISO in MTEP24 Futures [a]

MTEP24 DERs Capacity (GWh)	**Future 1A**	**Future 2A**		**Future 3A**	
Technical Potential and Added	Added	Added	Potential	Added	Added
Demand Response (DR)	1,051	1,147	1,147	1,154	1,142
Energy Efficiency (EE)	75,620	80,247	75,620	78,763	78,763
Distributed Generation (DG)	34,977	34,977	34,977	48,173	35,993

[a] See **Appendix E.2**, Page 48 for additional details.