

STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

*In the Matter of Xcel Energy's
2019-2034 Upper Midwest
Integrated Resource Plan*

PUC Docket No. E002/RP-19-368

CLEAN ENERGY ORGANIZATIONS' INITIAL COMMENTS

On Behalf Of
Fresh Energy
Clean Grid Alliance
Union of Concerned Scientists
Minnesota Center for Environmental Advocacy

February 11, 2021

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Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history . . . recent climate changes have had widespread impacts on human and natural systems. Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

- Intergovernmental Panel on Climate Change (“IPCC”), Chair’s Vision Paper, Doc. 2, 7 (2017).

Ethical considerations, and the principle of equity in particular, are central to this report, recognizing that many of the impacts of warming up to and beyond 1.5°C, and some potential impacts of mitigation actions required to limit warming to 1.5°C, fall disproportionately on the poor and vulnerable.

- IPCC, Special Report: Global Warming of 1.5°C., 51 (2018).

It is the goal of the state to reduce statewide greenhouse gas emissions across all sectors producing those emissions to a level at least 15% below 2005 levels by 2015, to a level at least 30% below 2005 levels by 2025, and to a level at least 80% below 2005 levels by 2050.

- Minn. Stat. § 216H.02, subd.1.

Climate change threatens the very things that make Minnesota a great place to live - from our wonderful lakes to farmable land and clean air.

- Minn. Exec. Order No. 19-37 (Dec. 2, 2019)

INTRODUCTION

The clean energy nonprofit organizations Fresh Energy, Clean Grid Alliance, Union of Concerned Scientists and the Minnesota Center for Environmental Advocacy (collectively the “Clean Energy Organizations” or “CEOs”) jointly sponsor these Comments on the 2020-2034 Upper Midwest Integrated Resource Plan (“IRP”) filed by Northern States Power d/b/a Xcel Energy (“Xcel Energy,” “Xcel,” or “the Company”). These Comments were prepared with technical assistance from Anna Sommer¹ and Chelsea Hotaling² of Energy Futures Group and Matthew Richwine of Telos Energy.³

The CEOs applaud Xcel Energy for many elements presented in its resource plan (“Xcel’s Preferred Plan”). For example, CEOs are pleased to see accelerated dates for retirement of Xcel’s remaining coal plants, and are very supportive of the carbon reduction goals Xcel Energy has set, including 80 percent carbon reduction by 2030 and 100 percent carbon-free energy by 2050. In addition, we support Xcel’s proposal to add nearly 6,000 MW of new renewable energy, substantial demand response, and energy efficiency savings of over 780 gigawatt hours. However, there is a fatal flaw in Xcel’s Preferred Plan: it includes a proposed combined cycle gas plant in Becker, Minnesota (“Proposed Gas Plant”) designed to operate until 2050 or longer.

Xcel’s Proposed Gas Plant is a losing proposition for ratepayers, the State of Minnesota and even Xcel’s own goals. Adding new fossil fuel resources undermines Xcel’s own plan to be carbon-free by mid-century. Moreover, the Proposed Gas Plant will emit millions of tons of new

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greenhouse gases, thereby contributing to global warming and further undermining Minnesota's ability to reach its emission reduction goals. Finally, and most prominently, this Proposed Gas Plant is a bad deal for ratepayers. The Proposed Gas Plant and its pipeline would commit well over two billion dollars of expense to maintaining and operating last century's technology. In the near future, this Proposed Plant will be a stranded asset, and ratepayers will be footing the bill.

SUMMARY OF ARGUMENT

In Section I(A), CEOs show that despite legislation passed in 2017 regarding the Proposed Gas Plant, the Commission retains both the authority and duty to scrutinize Xcel's Preferred Plan. While in 2017 the legislature passed a bill that exempted Xcel from a Certificate of Need for the Proposed Gas Plant, this does not mean the Proposed Gas Plant is set in stone. The legislation only exempts the Proposed Gas Plant from the requirements for a Certificate of Need and siting and routing permits. It leaves in place all of the Commission's authority to approve, modify, or reject Xcel's IRP.

In Section I(B) and I(C), CEOs demonstrate that a combination of wind, solar, and battery storage will reliably meet Xcel's needs at a lower cost than the Proposed Gas Plant, refute Xcel's claims that the plant is needed for reliability, and show that the plant is not consistent with state policy.

Specifically, CEOs' modeling shows that the Proposed Gas Plant is not a least cost resource under Xcel's own assumptions or when correcting and updating Xcel's assumptions. When EnCompass is allowed to optimize the resource portfolio, it selects solar and battery hybrid resources instead of the Proposed Gas Plant in 2027. CEOs' Preferred Plan reflects this cleaner and more flexible portfolio. In all of our modeling scenarios and under three of Xcel's sensitivities, CEOs' Preferred Plan is cheaper than Xcel's Preferred Plan. When CEOs account for more recent

wind, solar and battery costs and update other project parameters, CEOs' Preferred Plan is hundreds of millions of dollars cheaper than any plan with the Proposed Gas Plant. Finally, CEOs' modeling finds that, unsurprisingly, the Proposed Gas Plant would be a significant source of new carbon dioxide ("CO₂") emissions through 2045 (and beyond).

In Section I(C), CEOs' comprehensive reliability analysis demonstrates that Xcel's claims of reliability justifications for the Proposed Gas Plant are unsupported by evidence and are not credible. Xcel relies on outdated transmission reliability analyses from its 2015 IRP that identify issues that have already been resolved. The updated reliability study CEOs commissioned shows that the Proposed Gas Plant does not solve any valid reliability issues stemming from coal plant retirements. Xcel's assertions around black-start concerns are similarly overblown: Xcel acknowledges that several other resources, including clean energy resources, can provide black-start and has put forward no evidence that the plant is an integral or least-cost black-start resource. Thus, CEOs demonstrate that reliability concerns do not justify including the Proposed Gas Plant in Xcel's Preferred Plan.

In Section II, CEOs show that pursuant to IRP law, the Commission should adopt CEOs' Preferred Plan, or at the very least, modify Xcel's Preferred Plan to exclude the Proposed Gas Plant. The statutes governing resource planning require this result when Xcel entirely failed to model renewable alternatives to the Proposed Gas Plant or make any showing that a renewable alternative was not preferable. Additionally, in Section II the CEOs demonstrate that Xcel's reliance on new fossil fuel resources puts customers at risk, and that a new, two-billion-dollar fossil fuel resource is contrary to state law and policy aimed at reducing emissions.

Finally, in Section III, CEOs identify key equity considerations that should be incorporated into Xcel's planning and processes, and provide additional suggestions and feedback for best practices in future IRP dockets.

I. THE COMMISSION SHOULD ADOPT CEOS' PREFERRED PLAN OR, AT THE VERY LEAST, MODIFY XCEL'S PLAN TO EXCLUDE THE PROPOSED GAS PLANT

In this docket, the Commission must approve, reject, or modify the IRP consistent with the public interest.⁴ To do this, the Commission identifies a set of resource options as a preferred resource plan, and the Commission's preferred resource plan "need not have been specifically proposed or advocated by the utility" or another party.⁵ When, as here, a party presents an alternative resource plan, the Commission evaluates whether the alternative would be in the public interest.⁶

Whether evaluating a utility's preferred plan or an alternative, the Commission must consider a number of factors, including adequacy and reliability of utility service; keeping customer's bills and utility rates as low as practicable; minimizing adverse socioeconomic effects and adverse effects upon the environment; enhancing the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations; and limiting the risk of adverse factors on the utility and its customers.⁷

Importantly, the Commission cannot approve a new fossil fuel plant in an IRP "unless the utility has demonstrated that a renewable energy facility is not in the public interest."⁸ As noted above, the 2017 Legislation did not alter this IRP criterion. When making the public interest

⁴ Minn. Stat. § 216B.2422, subd. 2.

⁵ Minn. R. 7843.0500, subp. 2.

⁶ Minn. R. 7843.0300, subp. 11; Minn. R. 7843.0500, subp. 1.

⁷ Minn. R. 7843.0500, subp. 3.

⁸ Minn. Stat. § 216B.2422, subd. 4.

determination, the Commission must consider whether the resource plan helps advance Minnesota’s greenhouse gas reduction goals and renewable energy standards as well as the plan’s impacts on grid reliability, the utility, and ratepayers.⁹

Xcel has failed to demonstrate that its Preferred Plan, which includes the Proposed Gas Plant, is in the public interest. The Company has made no attempt to show that a portfolio of renewable energy facilities is less favorable than its Preferred Plan which relies on a new fossil fuel plant. Indeed, Xcel did not model scenarios without the Proposed Gas Plant. Without such modeling or other demonstration, the Commission cannot make the finding that a “renewable energy facility is not in the public interest” which is required by statute in order for the Commission to approve Xcel’s Preferred Plan.

CEOs submit an alternative to Xcel’s plan that *does* satisfy the IRP statute’s mandate. As set out below, analysis and modeling by CEOs technical experts reveals that Xcel’s Preferred Plan investing in a large gas plant is more expensive than renewable energy alternatives, is not needed for reliability, is risky for ratepayers, and is contrary to Minnesota’s statutory requirement to prefer renewable energy over new fossil fuel construction. CEOs submit that, applying this range of factors, CEOs' Preferred Plan is in the public interest; CEOs urge the Commission to adopt CEOs' Preferred Plan or, at the very least, modify Xcel’s plan to remove the Proposed Gas Plant.

A. The Commission Has The Authority To Approve, Reject, Or Modify Xcel’s Preferred Plan.

State law requires that investor-owned, public utilities file periodically with the Public Utilities Commission (“PUC” or “Commission”) an integrated resource plan, i.e., a “set of resource options”¹⁰ that the utility could use to meet service needs over a forecasted period.¹¹ The

⁹ Minn. Stat. § 216B.2422, subd. 4.

¹⁰ Minn. Stat. § 216B.2422, subd. 1(d).

¹¹ Minn. Stat. § 216B.2422, subd. 2.

Commission, in turn, is charged with “approv[ing], reject[ing] or modify[ing]” the plan “consistent with the public interest.”¹²

In 2017, the Minnesota Legislature passed a bill (“2017 Legislation”) to exempt Xcel from obtaining a certificate of need (“CON”) for Xcel’s Proposed Gas Plant.¹³ The Legislature approved the following language:

“Notwithstanding Minnesota Statutes, section 216B.243 and Minnesota Statutes, chapter 216E, a public utility may, at its sole discretion, construct, own, and operate a natural gas combined cycle electric generation plant as the utility proposed to the Public Utilities Commission in docket number E-002/RP-15-21, or as revised by the utility and approved by the Public Utilities Commission in the latest resource plan”

When a public utility like Xcel seeks to add a new large energy facility to its set of resources, the Commission has three core regulatory functions over that new resource. First, in the IRP process, the Commission must determine whether a set of proposed resources that includes that new facility is in the public interest.¹⁴ Second, in the CON process, the Commission must determine whether the proposed new facility is needed.¹⁵ Third, in cost recovery proceedings, the Commission must determine whether the expenditures for the new facility are prudent.¹⁶ The 2017 Legislation only applies to one of the Commission’s core functions: the CON for the Proposed Gas Plant (and the related siting and routing permits). In other words, the Commission’s authority in this IRP and in subsequent cost recovery proceedings remains unchanged.

¹² Minn. Stat. § 216B.2422, subd. 2(a).

¹³ Laws of Minnesota 2017, chapter 5 – H.F. No. 113, section 1.

¹⁴ Minn. Stat. § 216B.2422, subd. 2(a) (“A utility shall file a resource plan with the commission periodically in accordance with rules adopted by the commission. The commission shall approve, reject, or modify the plan of a public utility, as defined in section 216B.02, subdivision 4, consistent with the public interest.”).

¹⁵ Minn. Stat. § 216B.243, subd. 3.

¹⁶ Minn. Stat. § 216B.16, subd. 6.

Under Minnesota law, an explicit statutory exception must be “construed to exclude all others.”¹⁷ Here, the plain language of the 2017 Legislation exempts Xcel from two, and only two, statutory requirements.¹⁸ First, the 2017 Legislation exempts Xcel from Minn. Stat. § 216B.243, which prohibits the siting or construction of a large energy facility without the PUC’s issuance of a CON.¹⁹ Second, the 2017 Legislation exempts Xcel from Minn. Stat. ch. 216E, which contains site permitting requirements for electric power facilities.²⁰ Thus, the plain language of the 2017 Legislation clearly does not contain any exemption from the IRP law (Minn. Stat. § 216B.2422), which requires the PUC to approve, modify, or reject Xcel’s IRP.²¹

Not only does the 2017 Legislation leave intact the Commission’s authority over the IRP, it also leaves intact the Commission’s authority over other aspects of the Proposed Gas Plant. For example, the 2017 Legislation does not exempt Xcel from the requirement to get a CON for a pipeline to service the Proposed Gas Plant. Xcel does not dispute this. During Committee hearings on the 2017 Legislation, Xcel representative Rick Evans testified to the Legislature that “[t]he Certificate of Need, which we are bypassing here, will not address the pipeline.”²²

Likewise, Xcel made plain to the legislature that the 2017 Legislation would not substitute for the Commission’s prudence determination in ratemaking:

¹⁷ Minn. Stat. § 645.19. *See also Wallace v. Comm’r of Taxation*, 184 N.W.2d 588, 594 (Minn. 1971) (“[C]ourts cannot supply that which the legislature purposely omits or inadvertently overlooks.”).

¹⁸ Laws of Minnesota 2017, chapter 5 – H.F. No. 113, section 1.

¹⁹ *Id.* (“Notwithstanding Minnesota Statutes, section 216B.243 and Minnesota Statutes, chapter 216E...”).
²⁰ *Id.*

²¹ Furthermore, CEOs note that the plain language of the 2017 Legislation reaffirms the PUC’s authority over the Proposed Gas Plant. The 2017 Legislation states that Xcel may construct, own, and operate the Proposed Gas Plant “as the utility proposed to the Public Utilities Commission in docket number E-002/RP-15-21, or as revised by the utility and approved by the Public Utilities Commission in the latest resource plan filed after the effective date of this section...” Laws of Minnesota 2017, chapter 5 – H.F. No. 113, section 1.

²² Xcel Representative Rick Evans, House Job Growth and Energy Affordability Policy and Finance Committee, Part 2 at 1:47:00 (Jan. 17, 2017), <https://www.house.leg.state.mn.us/hjvid/90/889666>.

Not one dime of this expense for this plant will be charged to Xcel Energy ratepayers until it has been presented to the Public Utilities Commission in a subsequent rate case, and they have determined that it is a fair, reasonable, and prudently incurred expense. So, there is no blank check here. The risk is on us to build this plant the right way, and the best way, and the lowest cost way for our customers, and then go to the Public Utilities Commission. And if we can't prove that, our ratepayers aren't going to pay for it.²³

Therefore, it is clear the 2017 Legislation provided only a limited carve-out exempting Xcel from a CON for the Proposed Gas Plant. The Commission's IRP authority was unaffected by this Legislation. Consequently, the Commission has the duty in this docket to evaluate whether Xcel's Preferred Plan, including the Proposed Gas Plant, is in the public interest, consistent with Minn. Stat. § 216B.2422, subd. 2.

B. CEOs' EnCompass Modeling Demonstrates That Xcel's Preferred Plan, Which Includes The Proposed Gas Plant, Is Not In The Public Interest.

CEOs' EnCompass modeling shows that Xcel's Proposed Gas Plant is not an economic resource with significant CO₂ emissions over its lifetime. New, carbon-free resources are less expensive and provide more flexibility into the future. CEOs retained IRP modeling experts at Energy Futures Group ("EFG") to review Xcel's EnCompass modeling and to perform new modeling for CEOs. A detailed report of Energy Futures Group's modeling and results on behalf of CEOs is provided in Attachment A. CEOs' EnCompass modeling has three central findings:

- Xcel's Proposed Gas Plant is not an economic resource.
- A resource plan that does not add new fossil resources, such as CEOs' Preferred Plan, is less expensive, provides reliable energy and capacity, and provides more flexibility into the future.
- Resource plans that do not include Xcel's Proposed Gas Plant emit significantly less CO₂.

²³ Xcel Representative Rick Evans, House Job Growth and Energy Affordability Policy and Finance Committee, Part 2 at 0:48:30 (Jan. 17, 2017), <https://www.house.leg.state.mn.us/hjvid/90/889666>.

The CEOs' modeling approach was to first directly test whether the Proposed Gas Plant is an optimal resource, using Xcel's own assumptions. Second, we developed two resource portfolios – one with the Proposed Gas Plant and one without – that could be compared against each other and to Xcel's Preferred Plan. And third, we analyzed these two resource portfolios and Xcel's Preferred Plan under different sets of assumptions about technology performance and cost. All of CEOs' EnCompass runs used the same modeling approach, settings, and reliability constraints, as Xcel used in its Supplemental filing.

1. The Proposed Gas Plant is not an optimal resource, even under Xcel's assumptions.

Xcel included the Proposed Gas Plant as a “fixed” resource in every run it provided in its resource plan.²⁴ That means that Xcel's modeling never let the model compare the Proposed Gas Plant to other resource options so that the model could choose the Proposed Gas Plant as an optimal resource – it was simply hardcoded into the modeling. To correct this deficiency, CEOs performed an identical modeling run that simply allowed the model to optimize the portfolio, i.e., to choose the Proposed Gas Plant if it was a least-cost resource. The model did *not* select the Proposed Gas Plant.²⁵ Therefore, even using Xcel's own modeling database and assumptions, the Proposed Gas Plant was not an optimal or economic resource to add to Xcel's system. Furthermore, the Proposed Gas Plant was not selected by the model in any run performed by CEOs where the Proposed Gas Plant was a selectable option.

²⁴ Xcel Energy, *Upper Midwest Integrated Resource Plan 2020-2034 Supplement*, Docket No. E002/RP-19-368 (June 30, 2020), Attachment A at 81, Table V-3 [hereinafter “Supplemental IRP”]. Xcel did complete a set of sensitivity runs analyzing different sizes for the Proposed Gas Plant. *Id.* at Attachment A, 90-91.

²⁵ The model also did not select Xcel's “generic” combined-cycle gas plant.

2. CEOs developed new resource portfolios with corrected assumptions.

After determining that the Proposed Gas Plant was not an optimal resource under Xcel’s modeling assumptions, CEOs developed two resource portfolios using updated and corrected modeling assumptions. One of these portfolios is fully optimized and the other includes the Proposed Gas Plant.

CEOs identified a number of baseline corrections and updates to Xcel’s modeling assumptions. These included correcting a handful of Xcel’s underlying financial calculations relating to battery storage,²⁶ adding the three wind and solar projects that have been approved by the Commission since Xcel filed its Supplemental IRP in June²⁷ including solar-battery hybrids as a resource option for the model, and adding long-duration storage flow batteries as a resource option for the years 2040-2045 at the very end of the modeling period. We refer to this package of modeling assumption changes as the “Xcel Corrected Base Case” scenario.

The corrections CEOs made to Xcel’s underlying assumptions in the Xcel Corrected Base Case scenario are discussed in detail in EFG’s report²⁸ and are summarized below:

- *Financial*: CEOs corrected Xcel’s levelized cost of energy (“LCOE”) calculation for batteries to be consistent in terms of “real” vs. “nominal” dollars, converted battery fixed O&M to an annual expense, and changed the battery storage project life from 10 years to 15 years to be consistent with the NREL ATB, which is Xcel’s source for battery assumptions.
- *Project Size*: CEOs changed Xcel’s assumption that battery projects had to have a minimum size of 321 MW. A 321 MW battery project is relatively large by today’s standards, and a significant benefit of battery storage is that it is highly modular (project size is very flexible and projects can be installed quickly). Therefore, it was more realistic to allow the model to choose smaller battery projects.

²⁶ We also made a small correction to Xcel’s solar calculation regarding the application of the Investment Tax Credit (“ITC”). This change resulted in slightly *higher* solar costs.

²⁷ These are Deuel Harvest (100 MW wind), Mower County (98.9 wind), and Elk Creek (78.8 MW solar), which Xcel included in its updated EnCompass database for the Wind Repowering Docket No 20-620. See Initial Filing-Wind Repowering Pet. at 29-30 (Sept. 29, 2020) (eDocket ID No. 20209-166936-01).

²⁸ Anna Sommer & Chelsea Hotaling, *A Clean Future for Xcel*, Energy Futures Group, at Section 1.1 (Feb. 2021) [hereinafter EFG Report].

- *Hybrids*: CEOs added solar-battery hybrid resources as an option for the model. Solar-battery hybrid projects are solar PV panels paired with battery storage at the same point of interconnection. Hybrids have a number of benefits compared to stand-alone solar and storage, can leverage the federal Investment Tax Credit (“ITC”), and already have a significant presence in the Midcontinent Independent System Operator (“MISO”) interconnection queue.²⁹ Despite this, Xcel did not include solar-battery hybrids as a resource option in the Company’s modeling except in a single sensitivity run. Moreover, in that sensitivity, Xcel constrained the model and only allowed hybrids to be selected in 2025 and in no other years. CEOs corrected this flaw by allowing hybrids to be selected as a resource in 2025-2040 for all modeling runs with our resource portfolios.
- *Flow Batteries*: CEOs added six- and eight-hour flow batteries as a resource option only at the very end of the modeling period, 2040 through 2045. This change was made to address the significant amount of resource retirement at the end of the modeling period, particularly the Monticello nuclear unit, and to help prevent the model from biasing results based on the very end of the modeling period, which is 20-plus years from now. Flow batteries are a battery storage technology category that are developed to provide longer-duration storage than lithium-ion batteries, which currently dominate the market. For flow battery cost assumptions, CEOs used a Technology Assessment that consultants Burns & McDonnell developed for Vectren, an Indiana utility, for its 2019-2020 IRP and the NREL ATB.³⁰ While flow batteries are not established in the current market, it is a reasonable assumption that they will be by 2040, or that a similarly priced long-duration storage option, such as Great River Energy’s Form Energy long duration storage technology,³¹ will be commercially available. The addition of flow batteries as an option at the end of the planning period did not impact the resources the model selected before 2040, and was primarily an addition to prevent unrealistic results from biasing costs during the period 2040-2045. However, we believe that the addition of long-duration, carbon-free resources as flow batteries in 2040-2045 also highlights the value of carbon-free generation available at all hours to Xcel’s system.

²⁹ See Mark Ahlstrom, *Market Design Considerations for Hybrid Power Plants and Co-located Resources*, NextEra Energy Resources, <https://cdn.misoenergy.org/20200806%20MSC%20Item%2006%20Hybrid%20Resources-Stakeholder%20Presentation464469.pdf>; Midcontinent Independent System Operator (MISO) Market Subcommittee, *Hybrid Generation Resources* (Sept. 10, 2020), [https://cdn.misoenergy.org/20200910%20MSC%20Item%2006%20Hybrid%20Resource%20Market%20Participation%20Model%20\(IR086\)472952.pdf](https://cdn.misoenergy.org/20200910%20MSC%20Item%2006%20Hybrid%20Resource%20Market%20Participation%20Model%20(IR086)472952.pdf).

³⁰ EFG Report at Section 1.1.4.

³¹ See e.g. Form Energy, *Form Energy Announces Pilot with Great River Energy to Enable the Utility’s Transition to an Affordable, Reliable and Renewable Electricity Grid* (May 7, 2020), https://formenergy.com/wp-content/uploads/2020/05/Form-Energy_-GREPilotPress-Release.pdf.

Table 1. Xcel Corrected Base Case Changes

Items Changed	Description of Changes
Approved Projects	<ul style="list-style-type: none"> • Included 3 approved wind and solar projects
Battery Storage Costs	<ul style="list-style-type: none"> • Corrected LCOE calculation to be consistent with real dollars • Converted fixed O&M to an annual expense
Battery Storage Size	<ul style="list-style-type: none"> • Allowed EnCompass to select battery storage projects in smaller sizes
Solar Costs	<ul style="list-style-type: none"> • Corrected LCOE calculation to only apply the ITC to capital costs
Solar Hybrid Resources	<ul style="list-style-type: none"> • Allowed the model to select solar hybrid resources between 2025-2040
Flow Batteries	<ul style="list-style-type: none"> • Included 6 and 8-hour flow batteries between 2040 and 2045

CEOs used the Xcel Corrected Base Case scenario to develop two new resource portfolios by running the model, with these updated inputs, through a capacity expansion optimization and changing one variable: the Proposed Gas Plant.

First, we ran a capacity expansion optimization that allowed the model the option to select the Proposed Gas Plant. It did not. Instead, the run resulted in a resource portfolio that added wind, solar, battery storage, solar-battery hybrids, flow batteries in 2040-2045, and no new fossil generation. In place of the Proposed Gas Plant, the model selected a solar-battery hybrid consisting of 1,000 MW of solar and 250 MW battery storage as the optimal resource. We refer to this resulting resource portfolio, or plan, as the “CEOs’ Preferred Plan.”

The second capacity expansion optimization was done with all of the same assumptions in the Xcel Corrected Base Case scenario detailed above, but the Proposed Gas Plant was “forced” into the model. The resulting portfolio also adds wind, solar, battery storage, solar-battery hybrids, flow batteries in 2040-2045, and no new fossil generation other than the Proposed Gas Plant. We refer to this resource portfolio, or plan, as the “Revised Xcel Preferred Plan.”

The only modeling difference between these two resource plans is the pre-determination of the Proposed Gas Plant. Both portfolios were developed using the conservative assumption

changes in the Xcel Corrected Base Case scenario. This allows us to directly analyze the impact of the Proposed Gas Plant on an apples-to-apples basis. In addition, this allowed us to compare both of these plans – CEOs’ Preferred and Revised Xcel Preferred – to Xcel’s Preferred Plan as filed.

The cumulative resource additions under both CEOs' Preferred Plan and the Revised Xcel Preferred Plan are shown below in Figure 1.



Figure 1. Cumulative New Additions (2020-2045) by Portfolio (Xcel Corrected Base Case Scenario)

Figure 2 and Figure 3 show the annual capacity additions in CEOs' Preferred Plan and Revised Xcel Preferred Plan, respectively. CEOs' Preferred Plan replaces the Proposed Gas Plant capacity added in 2027 with 1,000 MWs of hybrid solar and 250 MWs of hybrid battery storage.

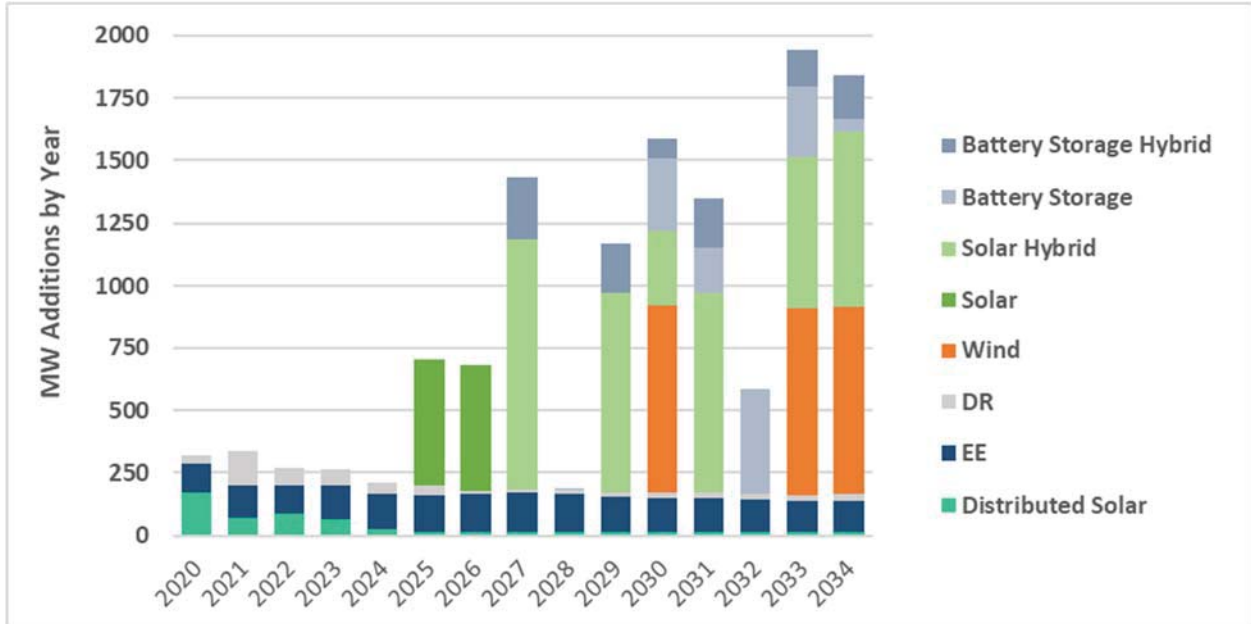


Figure 2. CEO Preferred Plan Annual Capacity Expansion Plan

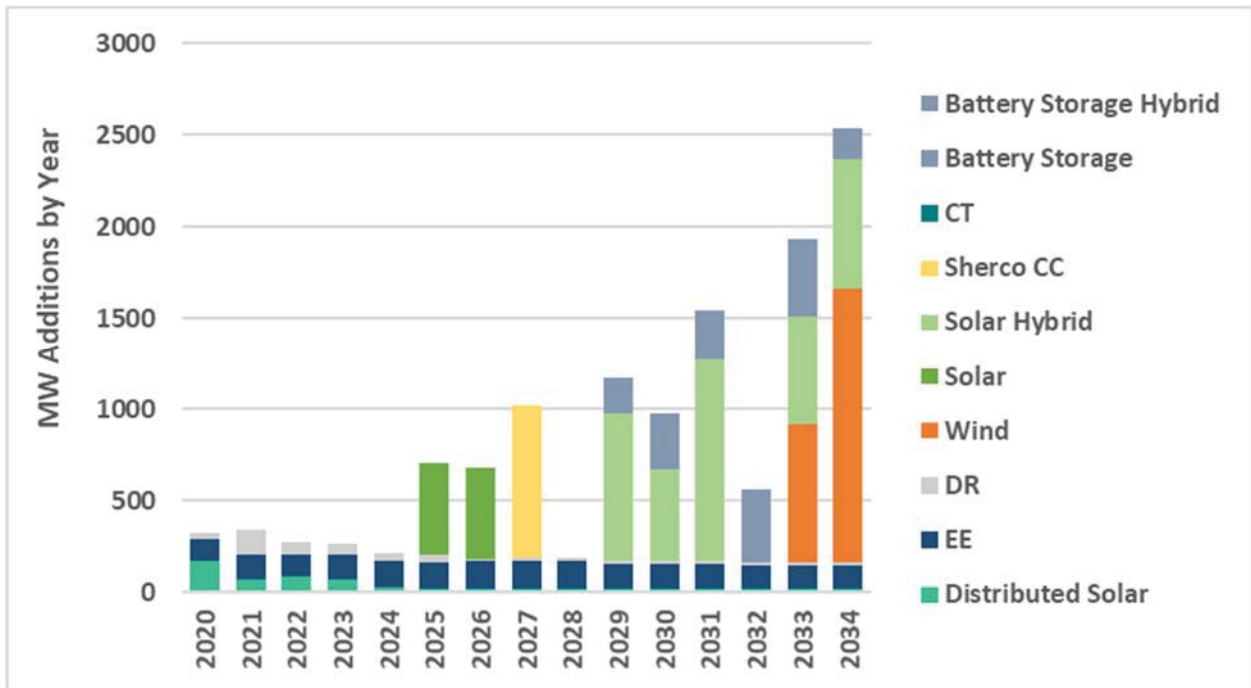


Figure 3. Revised Xcel Preferred Plan Annual Capacity Expansion Plan

3. CEOs analyzed resource plans under different scenarios.

After developing these capacity expansion plans – Revised Xcel Preferred Plan and CEOs’ Preferred Plan – we compared their costs under two additional scenarios of modeling assumption changes.

The first, which we refer to as the “CEO Base Case” scenario, includes all of the changes from the “Xcel Corrected Base Case” scenario described above, and adds reasonable updates to the cost assumptions for solar, wind, and battery storage. All of these changes are described in detail in the EFG Report and are summarized below:

- Update wind and solar costs: The NREL ATB is Xcel’s primary source for resource cost information. Since Xcel filed its Supplemental Plan in June, the ATB has been updated. This scenario uses the most recent 2020 costs for wind and solar.
- Battery storage costs: For this scenario, CEOs used battery storage pricing from actual project contracts signed in 2020 for projects coming into service in 2022 for Public Service Company of New Mexico (“PNM”). CEOs then applied the NREL ATB “mid” cost reduction forecast to the prices from actual 2020 contracts.
- Solar capacity factor update. To account for improvements in solar project design, CEOs developed solar generation profiles using NREL solar irradiance data from Minnesota and western North and South Dakota locations, which produced an average capacity factor of 25.5%, compared to Xcel’s [TRADE SECRET BEGINS... ... TRADE SECTRET ENDS].The capacity factor we calculated is nearly identical to the NREL ATB’s projection of average solar capacity factors (25.4%).³²
- Levelized cost calculation. CEOs updated how wind and solar interconnection costs are accounted for in the levelized cost calculation to be consistent with the NREL ATB’s method. Finally, for consistency, we used Xcel’s assumption for wind’s capacity factor, and applied that in the levelized cost calculation.

These changes for the “CEO Base Case” scenario, which also carries forward the changes from the “Xcel Corrected Base Case,” are reflected in Table 2

³² See also, Otter Tail Power Company Compliance Filing, *In the Matter of Otter Tail Power Company’s 2017-2031 Resource Plan*, Docket No. E017/RP-16-386 (July 1, 2020) at Ex. 1.

Table 2. CEO Base Case Scenario Changes

Input Changed	Description of Changes
Wind Costs	<ul style="list-style-type: none"> • Updated costs to 2020 ATB • Corrected capacity factor to incorporate Xcel’s modeled capacity factor
Solar Costs	<ul style="list-style-type: none"> • Updated costs to 2020 ATB • Updated capacity factor to 25.4%
Battery Storage Costs and Operating Life	<ul style="list-style-type: none"> • Costs based on pricing from PNM projects with the application of the NREL Mid Case Cost Curve • 20 year operating life based on the PNM projects
Interconnection Costs	<ul style="list-style-type: none"> • Incorporated costs into the LCOE calculation to be consistent with NREL methodology

CEOs’ third scenario carried forward all of the changes from “CEO Base Case” and additionally adjusted wind and solar interconnection cost assumptions. We refer to this as the “Lower Interconnection Costs” scenario. Xcel’s modeling assumes historically high interconnection costs for wind and solar throughout the entire planning period, reflecting the current costs for new interconnection rights in MISO Zone 1. Xcel’s modeling assumes historically high interconnection costs for wind and solar throughout the entire planning period, presumably based on the current costs for new interconnection rights in MISO Zone One. Given the likelihood of new grid infrastructure in MISO Zone One and transmission planning underway, CEOs developed a scenario to analyze lower wind and solar interconnection costs starting in 2031.³³ For this scenario, CEOs changed Xcel’s assumptions of \$500/kw for wind and \$200/kw for solar to \$200/kw for wind and \$100/kw for solar.³⁴ The full list of assumption changes in the “Lower Interconnection Cost” scenario are reflected in Table 3.

³³ EFG Report at Section 1.3.

³⁴ EFG Report at Section 1.3. CEOs’ interconnection cost assumptions are based on historical MISO interconnection costs.

Table 3. Lower Interconnection Cost Changes

Input Changed	Description of Changes
Interconnection Costs	<ul style="list-style-type: none"> • Lowered interconnection costs starting in 2031 to \$200/kW for wind and \$100/kW for solar

4. CEOs' EnCompass results.

To compare the different resource options, CEOs analyzed CEOs' Preferred Plan, Revised Xcel Preferred Plan, and Xcel's Preferred Plan using our three scenarios: "Xcel Corrected Base Case," "CEO Base Case," and "Lower Interconnection Costs," described above. The results of this comparison, presented below in Table 4 and Table 5, show that the Proposed Gas Plant is not an economic resource addition. Instead, a plan without the Proposed Gas Plant and without any new fossil generation is at least similar in cost, and is in fact less expensive, when more reasonable market assumptions are used.

Table 4. Present Value of Societal Costs ("PVSC") Net Present Value ("NPV") Results for CEO Scenarios (Millions)

Name	Xcel Corrected Base Case	CEO Base Case	Lower Interconnection Costs
Xcel Preferred Plan	\$40,801	\$39,281	\$38,814
Revised Xcel Preferred Plan	\$40,672	\$38,727	\$38,217
CEO Preferred Plan	\$40,716	\$38,482	\$38,041

Table 5. Present Value of Revenue Requirement ("PVR") NPV Results for CEO Scenarios (Millions)

Name	Xcel Corrected Base Case	CEO Base Case	Lower Interconnection Costs
Xcel Preferred Plan	\$37,794	\$36,354	\$35,888
Revised Xcel Preferred Plan	\$37,687	\$35,839	\$35,329
CEO Preferred Plan	\$37,711	\$35,596	\$35,155

CEOs' analysis shows that CEOs' Preferred Plan, which builds no new fossil generation, is less expensive than Xcel's Preferred Plan in all scenarios on both a PVSC and PVRR basis. When comparing CEOs' Preferred Plan to the Revised Xcel Preferred Plan, the results show that CEOs' Preferred Plan is less expensive in both the CEO Base Case and the Lower Interconnection Cost Scenarios and marginally more expensive under the Xcel Corrected Base Case. In other words, once reasonable wind, solar and battery cost updates are considered, a plan without the Proposed Gas Plant is several hundred million dollars less expensive.

In addition to analyzing our three scenarios of modeling assumptions, CEOs also reran three of Xcel's sensitivities using the two plans we developed.³⁵ These Xcel sensitivities are Sensitivities B-D: "B - Low Gas Prices and Market Prices", "C - High Gas Prices and Market Prices", and "D - Low Load".

The results, shown in Table 6 below, are consistent in that they find that CEOs' Preferred Plan without the Proposed Gas Plant or other new fossil generation is the least expensive in each sensitivity.

Table 6. Xcel Sensitivities B – D (\$PVSC millions)

Description	Xcel Sensitivity	PVSC	Difference From Revised Xcel Preferred Plan
Xcel Preferred Plan	B	\$39,309	
Revised Xcel Preferred Plan	B	\$38,865	\$-444
CEO Preferred Plan	B	\$38,678	\$-631
Xcel Preferred Plan	B	\$39,173	
Revised Xcel Preferred Plan	C	\$38,464	\$-709
CEO Preferred Plan	C	\$38,145	\$-1,028
Xcel Preferred Plan	D	\$40,669	
Revised Xcel Preferred Plan	D	\$39,917	\$-752
CEO Preferred Plan	D	\$39,585	\$-1,084

³⁵ EFG Report at Section 3.6.

In addition to being less expensive, CEOs' Preferred Plan results in significantly fewer CO₂ emissions. Given that Xcel's Preferred Plan includes the Proposed Gas Plant and over 4.4 gigawatts of combustion turbine fossil plants as placeholders after 2030, it is not surprising that CEOs' Preferred Plan, which does not include any new fossil generation, has dramatically fewer CO₂ emissions.

Comparing CO₂ emissions from CEOs' Preferred Plan to those from the Revised Xcel Preferred Plan essentially isolates the CO₂ impact from the Proposed Gas Plant, because the two plans are nearly identical other than the Proposed Gas Plant. Comparing these two plans reveals that once the Proposed Gas Plant is put in-service, CO₂ emissions under the Revised Xcel Preferred Plan remain higher than under CEOs' Preferred Plan through 2045. Figure 4 shows annual CO₂ emissions in CEOs' Preferred Plan compared to the Xcel Preferred Plan and the Revised Xcel Preferred Plan. After 2026, the annual CO₂ emissions in CEOs' Preferred Plan are lower than both the Xcel Preferred Plan and Revised Xcel Preferred Plan.

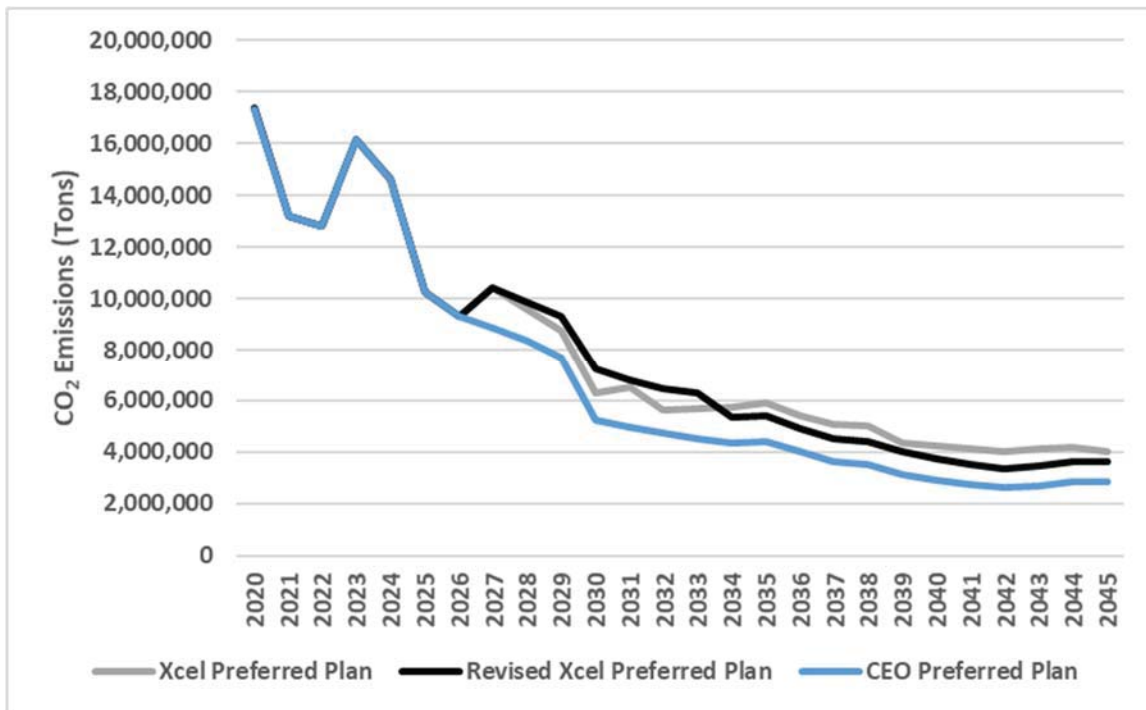


Figure 4. Annual CO₂ Emissions of the Three Resource Plans

Importantly, the Proposed Gas Plant not only drives this difference in CO₂ emissions between CEOs' Preferred Plan and the Revised Xcel Preferred Plan, but the Proposed Gas Plant accounts for a significant portion of Xcel's total CO₂ emissions as well.³⁶ Between 2027 and 2045 in the Revised Xcel Preferred Plan, the Proposed Gas Plant accounts for 36% of Xcel's total CO₂ emissions on average as shown in Figure 5.

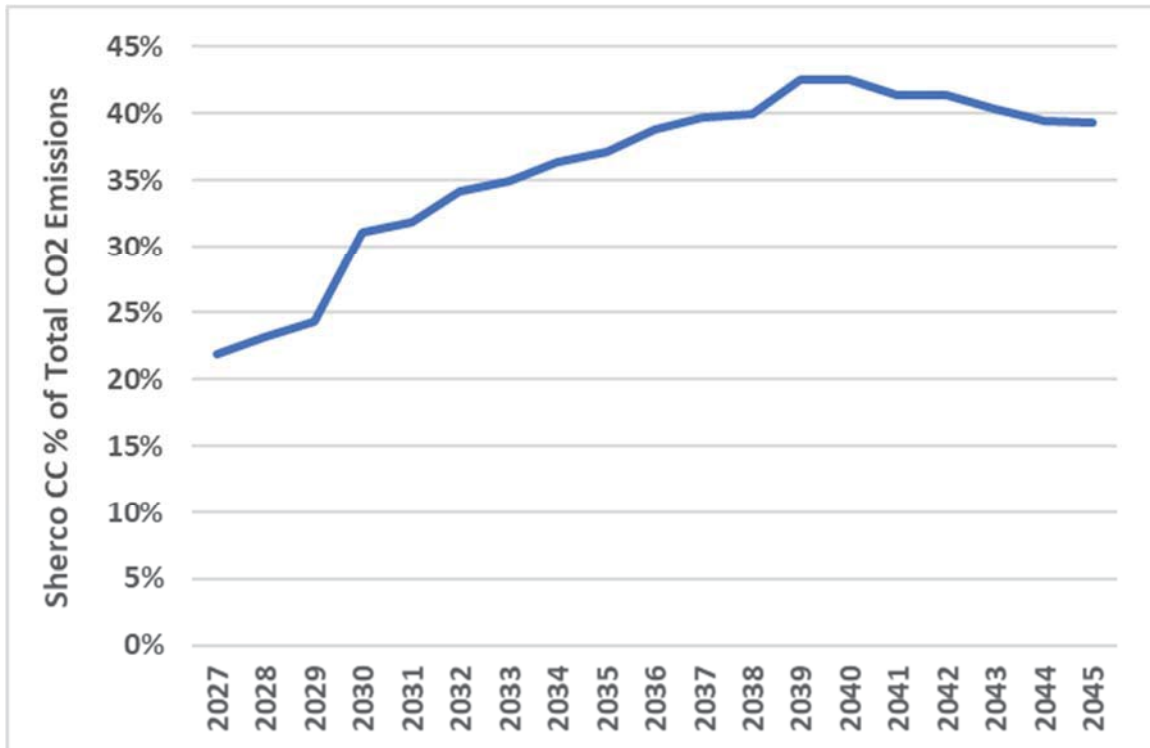


Figure 5. Proposed Gas Plant Proportion of Total Carbon Emissions (%) in Revised Xcel Preferred Plan

Therefore, not only is the addition of the Proposed Gas Plant consistently and materially more expensive than carbon-free options, but if it is the last fossil resource Xcel builds, it would account for *over one-third* of Xcel's total CO₂ emissions.

³⁶ This calculation is based on EnCompass data of total emissions from Xcel's Upper Midwest system (5 states).

5. CEOs' modeling shows the Proposed Gas Plant is not in the public interest.

CEOs' modeling shows that the Proposed Gas Plant is not an optimal resource under Xcel's own assumptions or under CEOs' corrected and updated assumptions. Under all of CEOs' modeling scenarios and three of Xcel's sensitivities CEOs' Preferred Plan is cheaper than Xcel's Preferred Plan. When CEOs account for more recent wind, solar and battery costs and other project assumptions, CEOs' Preferred Plan is hundreds of millions of dollars cheaper than any plan with the Proposed Gas Plant. Finally, CEOs' modeling finds that, unsurprisingly, the Proposed Gas Plant would be a significant source of new CO₂ emissions and other pollutants through 2045 (and beyond).³⁷ Taken together, CEOs' analysis finds that a resource plan that does not include the Proposed Gas Plant and that does not include any other new fossil generation reliably meets Xcel's needs, at least cost, with the greatest amount of CO₂ emissions reductions.

Under Minnesota law, the Commission may approve "a new . . . nonrenewable energy facility in an integrated resource plan" only if "the utility has demonstrated that a renewable energy facility is not in the public interest."³⁸ Here, Xcel has failed to make this demonstration. CEO's alternative preferred plan, submitted pursuant to Minnesota Rule 7843.0300, is preferable to Xcel's proposal and should either be adopted by the Commission or used as a basis for the Commission to construct a modified plan that excludes the Proposed Gas Plant.³⁹

C. Reliability Needs Are Not A Reasonable Justification For Including The Proposed Gas Plant In Xcel's Resource Plan.

Just as the Proposed Gas Plant is not a cost-effective resource, there is no reasonable evidence that it should be included in Xcel's resource plan for grid-scale reliability. Even though

³⁷ EFG Report at Section 3.4.

³⁸ Minn. Stat. § 216B.2422, subd. 4.

³⁹ Minn. R. 7843.0500, subp. 2 ("A preferred resource plan need not have been specifically proposed or advocated by the utility, an intervening party, or other interested person.").

Xcel's Supplemental Filing provides very little discussion or analysis of bulk transmission system-level reliability benefits from the Proposed Gas Plant, Xcel's Initial and Supplemental filings point to "critical reliability needs" from studies in its 2015 IRP as well as unspecific "black start" benefits, as support for the Proposed Gas Plant.⁴⁰ CEOs and the Sierra Club commissioned an analysis by Telos Energy ("Telos") to review Xcel's claim that the Proposed Gas Plant is needed for reliability. Telos' report, attached here as Attachment B, along with a review of Xcel's vague reliability claims together find that the Proposed Gas Plant is not needed to solve reliability issues related to Xcel's coal unit retirements and does not provide any specific or necessary reliability benefits.

Telos's assessment of Xcel's reliability justifications for the Proposed Gas Plant focused on bulk transmission system-level reliability attributes studied through specific technical analysis, primarily through the MISO Attachment Y2 studies ("Y2 studies"). Y2 studies are a reliability analysis specified by MISO that identify and evaluate any major reliability impacts from large generator retirements. As such, Y2 studies analyses are particularly relevant when considering coal retirements and reliability needs that may emerge from those retirements.

To analyze the Proposed Gas Plant's potential reliability benefits to an Xcel system with all coal plants retired, Telos performed two key assessments. First, Telos reviewed the Y2 studies from Xcel's 2015 IRP on which Xcel continues to rely. Second, Telos conducted a new Y2 study analysis to determine what, if any, reliability benefits the Proposed Gas Plant would provide once

⁴⁰ Supplemental IRP at 5, 64. ("We also continue to include the planned Proposed Gas Plant in the Supplement Preferred Plan to support both the addition of renewable resources in the mid-2020s, our black start plan, and other critical operational reliability needs.") ("Siting a CC at the existing Sherco site will cost-effectively address grid issues identified by the MISO Attachment Y2 study of the Sherco Unit 1 and 2 retirements, included as Attachment D1 of our 2015 IRP Supplement").

all of Xcel's coal plants are retired. Telos's report has two main conclusions, one from each assessment that will be discussed in more detail below:

- First, the Monticello voltage issues identified in studies from Xcel's 2015 IRP, and that remain the Company's central justification for the Proposed Gas Plant in this IRP, have been resolved by updated NERC guidance; and
- Second, when all of Xcel's coal plants are retired, the Proposed Gas Plant does not solve or reduce any valid reliability issues stemming from the coal retirements.

In short, the Proposed Gas Plant is not needed to address reliability needs due to coal plant retirement or any other significant reliability issue on the Xcel or MISO system.

Finally, Xcel also asserts that the Proposed Gas Plant would "support...our black start plan."⁴¹ Xcel's reasoning and analysis to support this claim are quite limited in both the Initial and Supplemental Filings, and do not provide a reasonable justification for the Proposed Gas Plant. Nothing Xcel has put forward indicates that the Proposed Gas Plant is an integral or least-cost part of Xcel's still-evolving black start plan. Indeed, Xcel has identified a number of other options for providing black-start and confirmed that these other options are still on the table.

Therefore, Xcel does not provide any reasonable reliability justification for the Proposed Gas Plant and CEO's more complete analysis demonstrates that the Proposed Gas Plant is not needed for any specific reliability needs.

1. The Proposed Gas Plant is not needed to address "critical reliability needs".

First, Xcel claims that the Proposed Gas Plant is needed to address "critical reliability needs," citing to two sources – the MISO Y2 study from its 2015 IRP and a Siemens study, also commissioned for the 2015 IRP.⁴² As we detail below, however, those sources do not support

⁴¹ Supplemental IRP at 5.

⁴² Supplemental IRP at 64; Xcel Energy, *Upper Midwest Integrated Resource Plan 2020-2034*, Docket No. E002/RP-19-368 (July 1, 2019), Appendix L at 2 [hereinafter "Initial IRP"].

Xcel's claim. The 2015 Y2 study is now outdated, and Xcel and NERC changes since that time have eliminated the Proposed Gas Plant-related issues found in that study. The Siemens study is also not relevant as its focus was comparing combined cycle gas plant locations. Moreover, a new Y2 analysis performed by Telos using up-to-date MISO methods, databases and powerflow software found that, even with all of Xcel's coal plants retired, the Proposed Gas Plant does not solve any reliability issues that are identified in Y2 studies. Before explaining Telos's findings in detail, we provide background on the coal retirement and reliability studies Xcel has provided to date.

a. Background: Xcel Y2 And Coal Retirement Reliability Studies.

There have been three principal bulk system transmission reliability studies performed for, or by, Xcel regarding its coal retirements:

- Submitted with Xcel's 2015 IRP:
 - MISO Attachment Y2 Study analyzing reliability needs due to the retirement of Sherco 1 & 2 ("2015 Y2 study").⁴³
 - Siemens PTI Report: Sherco 1 and 2 Replacement Power Study, Prepared for Xcel Energy Services ("2016 Siemens study").⁴⁴
- Submitted with Xcel 2019/2020 IRP:
 - Y-2 Study Report analyzing reliability needs due to the retirement of King Unit 1 and Sherco Unit 3, prepared by Xcel Energy Marketing in November 2018 ("2018 Y2 study").⁴⁵

Xcel's Initial 2019 IRP filing provides a useful description of what Y2 studies are and what they analyze. "The Y2 is a non-binding, informational study that identifies any reliability impacts of a potential future status change of a generating unit(s)."⁴⁶ More specifically, "bulk electric

⁴³ MISO, *System Support Resource Attachment Y2 Study Final Report* (August 28, 2015) (eDocket ID No. 20197-154590-04).

⁴⁴ Siemens, *Sherco 1 and 2 Replacement Power Study* (January 22, 2016) (eDocket ID No. 20197-154590-06).

⁴⁵ Initial IRP, Appendix J3.

⁴⁶ Initial IRP, Appendix L at 2.

system (BES) impacts from new or changing generation and transmission facilities are measured against standards and requirements established and enforced by the North American Reliability Corporation (NERC), per authority from FERC.”⁴⁷ Operationally, a Y2 study is the same analysis that MISO uses to determine whether or not there are adverse reliability effects when a generator is retired.⁴⁸

For example, in the case of the retirement of Sherco 1 & 2, Xcel explains that for the 2015 Y2 study, “[t]he focus of this study was on the impacts to the broader MISO grid if one or both of Sherco Units 1 and 2 ceased operation.”⁴⁹ The 2016 Siemens study from the 2015 IRP was similar to the 2015 Y2 study, but was narrower and focused on evaluating different locations *if* Xcel were to replace Sherco 1 & 2 with a new 1,500 MW combined cycle gas plant.⁵⁰ Lastly, for its 2019 Initial IRP filing Xcel prepared a Y2 study analyzing the reliability impacts from retirement of all its coal units including the King and Sherco 3 coal units. That analysis assumed the Proposed Gas Plant was in-service at the time of the King and Sherco 3 retirements.

b. Telos’s Up-To-Date Analysis Shows That The Proposed Gas Plant Is Not Needed For Reliability.

Telos’s analysis shows that the Proposed Gas Plant does not solve any reliability issue on Xcel’s or MISO’s systems when all of Xcel’s coal is retired.

⁴⁷ *Id.* at 3.

⁴⁸ *Id.*

⁴⁹ *Id.* at 2.

⁵⁰ Initial IRP, Appendix L at 2 (“We retained Siemens to study the effects of potential phased retirement of one or both Sherco Units on the transmission system, technical implications (including voltage analyses and transient stability analyses) and upgrade costs associated with replacement of one or both Units at alternate locations on the NSP System, and the potential impacts of the cumulative effect of additional larger generation unit retirements on the NSP System, in particular the Monticello Nuclear Plant due to proximate location in Sherburne County and one Prairie Island Unit in combination with Sherco Units 1 and 2).

i. Telos report background.

Telos Energy is an industry leader in power systems engineering, power electronic controls, and system stability.⁵¹ Telos's Report is authored by one of its founding partners, Matthew Richwine. Mr. Richwine is a Power Systems engineer who, before co-founding Telos, previously worked for General Electric in its Energy Consulting department where he led a team developing transmission planning models and studies for GE's renewables business. CEOs retained Telos to review Xcel's three reliability studies described above, as well as to conduct a new Y2 analysis specifically evaluating the Proposed Gas Plant's impact when all of Xcel's coal units are retired.

To do so, Telos developed two study scenarios and analyzed those scenarios following MISO's Y2 study methods,⁵² using the most up-to-date MISO model database available,⁵³ and using Siemens PTI's PSSE power system simulation software package.⁵⁴ These are the same study methods, model databases and software that MISO uses for its Y2 studies, such as Xcel's previous Y2 studies.⁵⁵ More specifically, "Telos conducted an 'AC Contingency Analysis' to identify potential violations of the regional transmission system's reliability standards that might result from either the retirement of Sherco 1 & 2 or the retirement of all of Xcel's remaining coal units."⁵⁶

⁵¹ Matthew Richwine, *Sherco & A.S. King Retirement Bulk Transmission Reliability Analysis*, Telos Energy, at 32 (January 27, 2021) [hereinafter "Telos Report"].

⁵² Telos Report at 6-7. MISO's Y2 study methods are described in its Transmission Planning manual. *See Business Practices Manual: Transmission Planning*, MISO Manual No. 020 (May 2, 2020).

⁵³ Telos used MISO's MTEP19 model database, the most recent database available. MISO's MTEP20 model was not finalized until Fall 2020. For reference, see Xcel's 2018 Y2 study used the MISO MTEP17 database. Initial IRP, Appendix J3.

⁵⁴ Telos Report at 7.

⁵⁵ The Telos Report explicitly notes when any minor variations from previous Y2 methods were necessary when updating these analyses.

⁵⁶ Telos Report at 2.

ii. *Telos Report Study Scenarios.*

The Telos Report analyzed two study scenarios. The first scenario reviewed and updated Xcel's 2015 Y2 study that considered retiring only Sherco 1 & 2 and found voltage violations related to the Monticello plant. This "Sherco 1 & 2 Only" scenario was included because the 2015 Y2 continues to be Xcel's only substantive justification for reliability benefits from the Proposed Gas Plant. Telos's second scenario studied reliability issues that emerged when all of Xcel's coal plants were retired and was specifically designed to isolate whether the Proposed Gas Plant would address any of those reliability issues. This scenario, called the "Full Retirement" scenario, is the most relevant to this IRP as it includes all proposed coal retirements and is tailored directly to analyzing the Proposed Gas Plant.

The "Sherco 1 & 2 Only" scenario updated and re-ran Xcel's 2015 Y2 study that looked at impacts from retiring only Sherco 1 & 2 with 2024 as the study year. The only change compared to Xcel's 2015 Y2 was that Telos used the most recent available MISO database, MISO Transmission Expansion Plan ("MTEP") 19, whereas the 2015 Y2 used MISO's MTEP 14 database. The MTEP 19 database also included updates to the Monticello Nuclear Power Interface Requirements ("NPIR"), which was updated in May 2019 and officially changed the voltage tolerance for the Monticello plant for purposes of NERC reliability requirements.⁵⁷ This official change to the voltage tolerance requirements at Monticello is important because Xcel's 2015 Y2 study identified dozens of voltage violations at the Monticello plant based on the old, more restricted Monticello NPIR voltage tolerances.⁵⁸ However, based on the updated NPIR, voltage

⁵⁷ Telos Report at 6; *see also* NERC Reliability Standard NUC-001-3, which requires the Monticello plant owner (Xcel) and the operator of the interconnected transmission (Xcel and Great River Energy) to mutually agree and adhere to the NPIR, as consistent with NERC reliability requirements.

⁵⁸ Telos Report at 6.

issues previously identified at the Monticello plant were no longer present, with the exception of one minor violation that could be mitigated through operational adjustments.⁵⁹

The “Full Retirement” scenario updated and re-ran Xcel’s 2018 Y2 study that looked at impacts from retiring all of Xcel’s coal units with 2029 as the study year. This Full Retirement scenario also added 2,500 MW of solar generation to the study year database consistent with Xcel’s Preferred Plan. Finally, in order to specifically isolate the reliability impacts from the Proposed Gas Plant, Telos ran this Full Retirement scenario both with and without the Proposed Gas Plant in-service. By doing the same analysis while only changing whether the Proposed Gas Plant was in-service, Telos was able to compare the reliability violations that were found both with and without the Proposed Gas Plant to determine: 1) what reliability issues emerged when all of Xcel’s coal was retired; and 2) which, if any, of these issues the Proposed Gas Plant solved. To illustrate how the Proposed Gas Plant was specifically analyzed in this way, consider the following hypothetical example:

- 1) A Y2 analysis finds two reliability violations, one at substation X and one at substation Y, when all of Xcel’s coal is retired and the Proposed Gas Plant is not in-service;
- 2) The same analysis is re-run with the Proposed Gas Plant and finds a reliability violation at substation X, but not substation Y.
- 3) One can conclude that the addition of the Proposed Gas Plant solves the reliability issue at substation Y, but does not address the reliability violation at substation X, because the violation at substation X shows up in both instances.

In this way, the Telos analysis in the Full Retirement scenario is directly tailored to isolate whether the addition of the Proposed Gas Plant would resolve grid-level reliability issues on Xcel’s or MISO’s systems.

⁵⁹ Telos Report at 13.

iii. *Telos Report Findings.*

Telos's results from both the Sherco 1 & 2 Only and Full Retirement scenarios found that the Proposed Gas Plant does not solve any reliability issues identified in the Y2 analyses.

Full Retirement Scenario

Telos found that in the Full Retirement scenario, adding the Proposed Gas Plant did not solve any reliability issues. More specifically, it found:

“[O]ur analysis of the Full Retirement scenario finds that the addition of the [Proposed Gas Plant] does not reduce the number of valid thermal or voltage violations. The [Proposed Gas Plant] does not materially mitigate any valid thermal or voltage violations that could be expected to arise as a result of the retirement of all Sherco coal units and the King coal unit in the 2029 scenario studied.”⁶⁰

Similar to the results of Xcel's 2018 Y2 analyzing retirement of all coal plants, Telos's report found several thermal and voltage violations in need of mitigation by 2029 (like operational adjustments, shunt compensation, and/or line reconductoring or rebuild).⁶¹ However, Telos found that adding the Proposed Gas Plant did not change or materially reduce any of these violations. Therefore, Telos's Y2 analysis replicating Xcel's most recent 2018 Y2 study, which mirrors the resources in Xcel's Preferred Plan, found that the Proposed Gas Plant does not resolve any material reliability issues when all of Xcel's coal is retired.

Sherco 1 & 2 Only Scenario

Telos's Sherco 1 & 2 Only scenario found that the previously identified voltage violations at the Monticello plant are no longer present due to updates to Monticello's NPIR thresholds, other than one minor violation. Otherwise, Telos's analysis found few violations, all of which could likely be mitigated through low-cost operational adjustments (like generation dispatch or transformer tap settings) or, in the worst case, could require some reinforcements, such as adding

⁶⁰ Telos report at 11.

⁶¹ Telos report at 11.

shunt capacitors, or potentially reconductoring one line.⁶² Notably, none of the violations in this Sherco 1 & 2 Only scenario were mitigated by the addition of the Proposed Gas Plant because the Proposed Gas Plant did not mitigate the violations that were still found in the more complete Full Retirement Scenario.⁶³

Therefore, in addition to finding that the Proposed Gas Plant did not resolve any material reliability issue in the Full Retirement scenario (which is most relevant to this IRP) Telos found that the reliability issues in Xcel's 2015 Y2 study were minimal and that the Monticello voltage issues were entirely resolved save for one minor and inexpensively solved instance. This finding is particularly relevant because Xcel's 2015 Y2 study continues to be the only substantive analysis the Company relies on to support its claim that the Proposed Gas Plant is needed to solve "critical reliability needs." Moreover, Xcel's claim from its 2019 IRP Initial Filing that "we need a large grid-stabilizing resource to ensure we can operate Monticello within the requirements of our NRC operating license" is no longer a valid concern.⁶⁴

Therefore, Telos's Report showed that: (1) Xcel's only basis for its claims that the Proposed Gas Plant provides bulk system reliability benefits is no longer relevant; and (2) an updated analysis that considers all of Xcel's coal plant retirements, and that specifically isolates reliability benefits from the Proposed Gas Plant, does not identify a single instance where the Proposed Gas Plant resolves a material reliability issue. Together these findings demonstrate that Xcel has no reasonable basis to claim that the Proposed Gas Plant is needed to solve reliability issues on the Xcel or MISO transmission system.

⁶² Telos Report at 13.

⁶³ Telos Report at 13.

⁶⁴ Initial IRP, Appendix L at 6.

c. Xcel's Other "Critical Reliability Needs" Claims Are Unsupported.

Next, Xcel's IRP contains two very general mentions of findings from Xcel's 2016 Siemens study which was filed in the Company's 2015 IRP. Xcel claims that the 2016 Siemens study found that the Proposed Gas Plant would provide "power deliverability" (also known as "transfer capability" or "generator deliverability") and "system regulation" benefits.⁶⁵ Telos reviewed the Siemens study and Xcel's claims and concluded they are unsubstantiated for two main reasons.⁶⁶ First, the purpose of the Siemens study was to compare different locations for a 1,500 MW combined cycle gas plant when Sherco 1 & 2 are retired.⁶⁷ It compared siting a new 1,500 MW combined cycle plant at the Sherco site versus three other locations and generally found that if Xcel were to build a very large new combined cycle, the Sherco site was the closest to major load centers compared to the other locations considered.⁶⁸ In this way, the Siemens study does not provide findings that are generally applicable – it is only comparing the Sherco location to three other hypothetical combined cycle plants. Second, system regulation is a general power system characteristic and an Eastern Interconnection-wide general reliability attribute. It is not a reliability issue that must be resolved at the level of a specific generator.⁶⁹ Therefore, it is a dramatic overstatement to claim that a combined cycle plant at the Sherco site specifically is needed for system regulation.

⁶⁵ Initial IRP, Appendix L at 3-4.

⁶⁶ Telos Report, Appendix D.

⁶⁷ Telos Report, Appendix D at 26.

⁶⁸ *Id.*

⁶⁹ *Id.*

“Power deliverability” refers to “the ability of groups of generators in an area to operate at their maximum capability without being limited by transmission constraints, i.e., without being bottled-up.”⁷⁰ The Siemens study found that, compared to the three other locations it studied, the Sherco site had superior power deliverability because the transmission system was already designed with large power plants at the Sherco site. However, this finding does not indicate any specific need or reliability benefit from the Proposed Gas Plant. As the Telos report explains:

The deliverability of a generator is not a function of the generating resource, but rather, the transmission network between the generator and the load center. Because the Proposed Gas Plant interconnects to the high-voltage transmission network at 345kV, which has very high capability for power transmission, and is located a relatively short distance from the Twin Cities load center, the Sherco location is advantageous for power generation. This deliverability advantage applies to any type of power generation located at the Sherco site, regardless of the underlying resource. Therefore, this is a general siting aspect that is advantageous to the Sherco site relative to more remote sites; however, it is not a specific reliability attribute of a generator.⁷¹

Thus, the Siemens study’s conclusion that the Sherco site is preferable over other sites for location of a 1,500 MW gas plant says nothing about whether a gas plant is preferable to other possible resource options, which is the question before the Commission.

“System regulation” refers to the ability of a generator to adjust its power output up or down in order to achieve some objective of the system operator, like balancing load and generation or managing system frequency.⁷² Xcel states that the Siemens study “addresses the heavy reliance of the system on Sherco Units 1 & 2 for system regulation” and that the Proposed Gas Plant addresses system regulation issues because it is electrically similar to Sherco 1 & 2.⁷³ However, Telos’s review found that the Siemens study focused primarily on steady-state operation and

⁷⁰ See *Business Practices Manual: Transmission Planning*, MISO Manual No. 020, 4.5.2 (May 2, 2020) (defining what MISO calls “Generator Deliverability”).

⁷¹ Telos Report, Appendix D at 25.

⁷² *Id.* at 26.

⁷³ Initial IRP, Appendix L at 4.

transient stability⁷⁴ and did not evaluate Sherco 1 & 2 or a replacement combined cycle for system regulation, which typically occurs in the timeframe of tens of seconds to minutes. Therefore, Telos's review found that "the Siemens study does not support Xcel's statement that the system has a heavy reliance on Sherco 1 & 2 for system regulation."⁷⁵ The Telos report also provides more detail on system regulation, including how system regulation is an Eastern Interconnection-wide issue and is not dependent on the contribution of a single power plant, and how wind, solar and battery storage are resources that also provide system regulation.

In conclusion, Xcel's claim that the Proposed Gas Plant is supported by a need for power deliverability and system regulation are wholly unsupported.

2. Xcel's black start planning is not a reasonable justification for the Proposed Gas Plant.

In addition to the Company's unsupported transmission system reliability claims, the only other reliability justification Xcel provides for the Proposed Gas Plant is that the Proposed Gas Plant would "support" the Company's black start plan.⁷⁶ However, the Proposed Gas Plant's potential role in Xcel's ongoing black start alternatives analysis and planning is not a reasonable justification for an 800-plus MW combined-cycle gas plant. Nothing Xcel has put forward indicates that the Proposed Gas Plant is an integral or least-cost part of Xcel's evolving black start plan. Indeed, Xcel's filing identifies a number of other options and confirms that Xcel is continuing to develop a black start plan.

"Black start" is essentially a restoration plan "in the event of a widespread or catastrophic grid outage."⁷⁷ Sherco units 1 & 2 are currently part of Xcel's black start plan and Xcel states that

⁷⁴ Transient stability here refers to fast response stabilization under 10 seconds.

⁷⁵ Telos Report, Appendix D at 26.

⁷⁶ Supplemental IRP at 5.

⁷⁷ Supplemental IRP, Attachment A at 113.

the Proposed Gas Plant would be able to replace those coal units in the black start plan as a Target Unit.⁷⁸ At the same time, Xcel acknowledges that its black start planning is on-going and that there are options both for black start plans and for different black start-capable resource options. For example, Xcel states that while the Proposed Gas Plant could serve as a Target Unit, “we continue to evaluate Target Unit options as part of our black start planning process.”⁷⁹ And, importantly, that “[o]ur full black start analysis is still underway, and we are working to identify various potential options for black start critical resources.”⁸⁰ That Xcel’s black start plan will need to undergo changes makes sense given the upcoming retirements of all of its coal generators.⁸¹

Importantly, however, Xcel has not provided any cost-benefit analysis showing that an 835 MW combined cycle gas plant at the Sherco site is a cost-effective black start resource compared to another type of generator at the Sherco site (for example a solar-storage hybrid) or an existing or new resource at a different location. Indeed, Xcel’s 2019 and 2020 IRP filings identify other options presumably being considered in Xcel’s ongoing black start planning.⁸² Xcel’s Preferred Plan also has a proxy placeholder for up to 2,600 MW of “firm peaking resources” that are represented by combustion turbines in the plan, but could ultimately be other technologies with similar resource attributes. These new peaking resources are certainly viable black start options, as Xcel states, “[w]e expect that, depending on the specific resource type, some of the firm peaking resources projected to be added between 2030 and 2034 could also be available to provide black

⁷⁸ *Id.* at 116; *see also* Initial IRP, Appendix L, at 5.

⁷⁹ *Id.* at 116.

⁸⁰ *Id.*

⁸¹ *See* Response to CEOs IR 28 at Attachment A p. 29 (Jul 23, 2019) (eDocket ID No. 20197-154590-02) (“Each of our current non-renewable generating plants plays a unique role in the black start process.”)

⁸² *See also*, CEO I.R. 28, Attachment A at 30, Table 9, which estimates black start alternative restoration paths all with cost estimates between [TRADE SECRET ...TRADE SECRET ENDS]

start services.”⁸³ Storage is no doubt included in the “firm peaking resources” category, and battery storage is a technology that can provide black start services.⁸⁴ Xcel highlights this point in its 2019 IRP filing discussing energy storage: “Energy storage can help with grid reliability and resilience by providing: . . . Black start capability, or the ability to restart the entire electric system in the event the whole system goes down.”⁸⁵

Despite the myriad alternative options and ongoing black start planning, Xcel has not provided a cost-benefit analysis analyzing whether the Proposed Gas Plant is a cost-effective or least cost solution as part of a black start plan. Rather, it appears this analysis is on-going. Xcel states that for black start “[w]e continue to examine a broad range of [black start] alternatives that will provide the needed system resilience and reliability benefits, long-term cost-effectiveness, and consider and balance environmental impacts; these alternatives include building new units, retrofitting existing units, and energy storage technology options.”⁸⁶ Therefore, not only is justifying the Proposed Gas Plant on the basis of black start premature, but if Xcel is emphasizing that a robust cost-benefit analysis of all reasonable alternatives is necessary for evaluating its black start plan as a whole, then we should certainly expect a similarly robust analysis to justify a more than \$2 billion gas plant and pipeline investment on the basis that it could provide secondary black start services. Without such an analysis, black start cannot be a reasonable justification for the Proposed Gas Plant.

In sum, Xcel’s claims that the Proposed Gas Plant is reasonably included in its Preferred Plan based on reliability needs or justifications is unsupported by evidence and not credible. Reliability concerns do not weigh in favor of Xcel’s Preferred Plan.

⁸³ Supplemental IRP at 5.

⁸⁴ Supplemental IRP, Attachment A at 99.

⁸⁵ Initial IRP, Appendix F7 at 7-8.

⁸⁶ Supplemental IRP, Attachment A at 117.

II. THE COMMISSION SHOULD REJECT XCEL’S PREFERRED PLAN BECAUSE XCEL HAS FAILED TO SHOW THAT THE PLAN, WITH THE PROPOSED GAS PLANT, IS IN THE PUBLIC INTEREST

Xcel has failed to provide a record that demonstrates its Preferred Plan is in the public interest. As a consequence, the Commission should adopt CEOs’ Preferred Plan or, at the very least, modify Xcel’s plan to remove the Proposed Gas Plant. Rejecting the Proposed Gas Plant is the only result that can be squared with Minnesota law for multiple reasons. First, Xcel failed to model renewable alternatives to the Proposed Gas Plant, as required by the IRP statute. Instead, Xcel presented the Proposed Gas Plant as the only choice. And that choice – a new fossil fuel resource – is directly at odds with Xcel’s goals, putting customers at financial risk. Second, Xcel presented a Preferred Plan that is at odds with state policy aimed at reducing Minnesota’s emissions. Because the Proposed Gas Plant is at odds with both the IRP statute and with broader state policy, the Commission should adopt CEOs’ Preferred Plan or, at the very least, modify Xcel’s Preferred Plan to remove the Proposed Gas Plant.

A. Xcel’s Preferred Plan Does Not Comply With Minnesota Resource Planning Laws.

The Commission’s core regulatory duties in reviewing a utility’s IRP are to ensure the plan is in the public interest and that the utility has complied with the IRP rules.⁸⁷ Nothing in the 2017 Legislation or the record exempts or hinders the Commission from this core function.⁸⁸ In this resource plan, Xcel has skipped a step. Specifically, Xcel proposed a new fossil fuel resource without considering renewable alternatives. This directly violates the rules for resource planning, and hinders the Commission’s ability to find the Proposed Gas Plant is in the public interest.

⁸⁷ Minn. Stat. § 216B.2422, subd. 2.

⁸⁸ Laws of Minnesota 2017, chapter 5 – H.F. No. 113, section 1; See Section I(A) of this Comment discussing that the 2017 Legislation only exempts Xcel from the new large energy facility CON and siting and routing permits.

Furthermore, Xcel asks the Commission to approve a new fossil fuel resource, which is directly at odds with the Company's own future plans and Minnesota's guiding policies. Because of Xcel's failures, the Commission must find that the Proposed Gas Plant is not in the public interest and the Commission should adopt CEOs' Preferred Plan or, at the very least, modify Xcel's Preferred Plan by removing the Proposed Gas Plant.

1. Xcel's plan fails to model renewable alternatives to the proposed gas plant.

First, the Commission should not approve Xcel's Preferred Plan because Xcel failed to model any renewable alternatives to its Proposed Gas Plant. Minnesota law explicitly requires a utility proposing a new fossil fuel plant to evaluate renewable energy alternatives and demonstrate that a renewable alternative is not in the public interest.⁸⁹ Minnesota law also explicitly forbids the Commission from approving a new fossil fuel plant in an IRP unless the utility has made that showing: "The commission shall not approve a new or refurbished nonrenewable energy facility in an integrated resource plan ... nor shall the commission allow rate recovery pursuant to section 216B.16 for such a nonrenewable energy facility, unless the utility has demonstrated that a renewable energy facility is not in the public interest."⁹⁰

In 2017, the Commission found there was likely a need for capacity "coinciding with the retirement of Sherco 1 in 2026," and also said it was "premature...to determine with specificity the fuel type and location to address the identified 750 MW capacity need."⁹¹ The Commission went on to say,

⁸⁹ Minn. Stat. § 216B.2422, subd. 4.

⁹⁰ Minn. Stat. § 216B.2422, subd. 4.

⁹¹ Minn. Public Utilities Commission, *In the Matter of Xcel Energy's 2016–2030 Integrated Resource Plan, Order Approving Plan with Modifications and Establishing Requirements for Future Resource Plan Filings*, Docket No. E-002/RP-15-21, 9 (Jan. 11, 2017).

The Commission will also require Xcel to evaluate and pursue other resource options between 2023 and 2030. In light of rapidly changing costs among potential energy and capacity sources, Xcel must maintain flexibility and consider a broad range of resource options. In addition to requiring evaluation of combinations of supply-side, demand-side, and transmission alternatives to address its 750 MW need identified above, Xcel's plan must include the acquisition of no less than 400 MW of additional demand response by 2023.⁹²

The Commission clearly envisioned that Xcel would consider all resource options capable of meeting the system needs, not just the Proposed Gas Plant.⁹³ Thus, the burden remains with Xcel to demonstrate in this proceeding that a renewable alternative to its proposed new gas plant would not be in the public interest. Xcel has failed to make any such demonstration and has not met its burden.

2. Xcel's plan fails to limit the risk of adverse effects on customers.

Second, the Commission should not approve Xcel's Preferred Plan because it creates significant risks for future ratepayers. In a resource plan the PUC must consider the plan's ability to "limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control."⁹⁴ Xcel's Proposed Gas Plant increases, rather than limits, the financial risks for customers.

Specifically, Xcel's Preferred Plan creates financial risk for its customers by setting a company goal to be net zero carbon by 2050, while at the same time proposing a 2.1 billion-dollar, brand-new, carbon emitting gas plant.⁹⁵ In 2019, Xcel CEO Ben Fowke said:

⁹² *Id.* at 10.

⁹³ *Id.*

⁹⁴ Minn. Stat. §216B.2422; Minn. R. Ch. 7843.

⁹⁵ Supplemental IRP, Attachment A at 69, Table IV-14.

By 2050 unless the [thermal] plants are burning RNG,⁹⁶ which is certainly a possibility, you wouldn't want them on the grid . . . That is a number of decades away, and I think you need to take early action on how we get off coal and how we maintain reliability and affordability. We're going to have to work with these technologies to get the last bits of carbon off our system, but for now we need to take early action, and gas is the way to get us there.⁹⁷

Xcel fails to provide any information on why customers should be expected to foot the bill for a new gas plant while, at the same time, Xcel makes concrete plans to move away from fossil fuels.⁹⁸

This contradiction creates risk for ratepayers, who will be expected to pay for stranded assets such as the Proposed Gas Plant.

Furthermore, it is well-established that the cost of renewable energy is declining. A new gas plant could easily become uneconomic to operate before the end of its useful life.⁹⁹ New direction in federal climate policy disfavoring fossil fuels may make operating fossil fuel plants like the Proposed Gas Plant more expensive due to regulatory changes. These factors put ratepayers at additional risk for the Proposed Gas Plant becoming uneconomic to operate, and a stranded asset.

⁹⁶ "RNG" is an abbreviation for renewable natural gas.

⁹⁷ Rich Nemec, *Xcel Embracing Natural Gas in Zero-Carbon Strategy*, Natural Gas Intelligence (Aug. 2, 2019), <https://www.naturalgasintel.com/xcel-embracing-natural-gas-in-zero-carbon-strategy/>.

⁹⁸ Xcel states, "However, achieving the long-term vision of zero-carbon electricity requires technologies that are not cost effective or commercially available today." *Xcel Energy aims for zero-carbon electricity by 2050*, Xcel Energy (Dec. 4, 2018), [https://www.xcelenergy.com/company/media_room/news_releases/xcel_energy_aims_for_zero-carbon_electricity_by_2050#:~:text=4%2C%202018\)%E2%80%94Xcel%20Energy,electricity%20to%20customers%20by%202050.&text=%E2%80%9CXcel%20Energy's%20exciting%20announcement%20today,Pueblo%2C%20Summit%20County%2C%20Ft.](https://www.xcelenergy.com/company/media_room/news_releases/xcel_energy_aims_for_zero-carbon_electricity_by_2050#:~:text=4%2C%202018)%E2%80%94Xcel%20Energy,electricity%20to%20customers%20by%202050.&text=%E2%80%9CXcel%20Energy's%20exciting%20announcement%20today,Pueblo%2C%20Summit%20County%2C%20Ft.)

⁹⁹ "Even as clean energy costs continue to fall, utilities and other investors have announced plans for over \$70 billion in new gas-fired power plant construction through 2025. RMI research finds that 90% of this proposed capacity is more costly than equivalent [Clean Energy Portfolios] . . . and, if those plants are built anyway, they would be uneconomic to continue operating in 2035, well ahead of the ends of their planned economic lifetime. Continued investments in these power plants will present stranded cost risk for customers, shareholders, and society, while locking in 100 million tons of CO₂ emissions each year." *Clean Energy Portfolios*, Rocky Mountain Institute (2019), <https://rmi.org/insight/clean-energy-portfolios-pipelines-and-plants/>.

3. Xcel’s plan is inconsistent with other guiding policies.

The Minnesota Legislature has repeatedly demonstrated in state laws both an intention to cut greenhouse gas emissions and a preference for renewable energy. For example, a resource plan must include an analysis, based on appropriate modeling, detailing how “the deployment of energy storage systems” could meet identified needs and ancillary services.¹⁰⁰ It must likewise include “the least cost plan for meeting 50 and 75 percent” of identified need through a combination of conservation and renewable energy resources.¹⁰¹ Minnesota law requires the PUC to select non-fossil fuel alternatives if they are cost-effective.¹⁰² In IRP proceedings, the Commission must consider whether the proposed plan minimizes adverse effects upon the environment.¹⁰³ The utility must use the Commission’s externality values when selecting resource options for its IRP,¹⁰⁴ and the Commission must consider the likely costs of future greenhouse gas regulation. The state’s renewable energy standards¹⁰⁵ and conservation goals,¹⁰⁶ likewise evidence the desire of lawmakers to disfavor new investments in fossil fuel facilities. All of these requirements make clear the important role the transition away from carbon-emitting resources and toward renewables must play in the Commission’s public interest determination.

B. The Proposed Gas Plant Is Contrary To State Policy.

The Commission should also adopt CEOs’ Preferred Plan, or at the very least, modify Xcel’s Preferred Plan, because the Proposed Gas Plant is contrary to State Policy. Minnesota’s Next Generation Energy Act (“NGEA”) established statewide goals for cutting greenhouse gas

¹⁰⁰ Minn. Stat. § 216B.2422, subd. 7.

¹⁰¹ Minn. Stat. § 216B.2422, subd. 2(c).

¹⁰² Minn. Stat. § 216B.243, subd. 3a.

¹⁰³ Minn. R. 7843.0500, subp. 3(C)

¹⁰⁴ Minn. Stat. § 216H.06.

¹⁰⁵ Minn. Stat. § 216B.1691.

¹⁰⁶ Minn. Stat. §§ 216B.2401, 216B.241.

emissions.¹⁰⁷ However, the state is not meeting its targets. Governor Walz stated his intention to put Minnesota back on track with Executive Order 19-37, which called for putting “our state at the forefront of finding solutions to climate change.”¹⁰⁸ Building a new fossil fuel plant that will emit large amounts of CO₂ and other pollutants for the next 30 years or more directly contradicts the law and the Governor’s order.

For example, despite Xcel’s goals for significant emissions reductions, the Proposed Gas Plant will emit over 35 million tons of carbon dioxide CO₂ by 2045. Additionally, the plant will emit thousands of tons of nitrogen oxides (“NOx”) which are harmful gases,¹⁰⁹ and particulate matter (“PM10” and “PM2.5”), which cause serious health problems when inhaled¹¹⁰ The science is clear. To avoid the worst impacts of climate change, we need to cut global carbon dioxide emissions in half by 2030 and reach net zero emissions by 2050.¹¹¹ This will require transitioning away from fossil fuels to renewable energy and other zero carbon energy sources.

Xcel seeks to build a new gas plant and to rely on uncertain and expensive future carbon negative strategies to solve its carbon problem. Not building this plant is a far easier, cheaper, and more beneficial solution. The Proposed Gas Plant would add millions of tons to Xcel’s carbon budget, accounting for 40 percent of the Company’s total CO₂ emissions in 2045. Removing or offsetting these emissions would require carbon capture or carbon sequestration at an immense scale and uncertain, but undoubtedly high, cost to customers. As our analysis above demonstrates, this is completely unnecessary. We can avoid these emissions by moving forward with a resource

¹⁰⁷ Minn. Stat. Ch. 216H.

¹⁰⁸ Minn. Exec. Order No. 19-37 (Dec. 2, 2019), <http://mn.gov/governor/news/index.jsp?id=1055-412110>.

¹⁰⁹ U.S. Evtl. Protection Agency, *Basic Information About Nitrogen Dioxide* (Sept. 8, 2016), <https://www.epa.gov/no2-pollution/basic-information-about-no2#What%20is%20NO2>

¹¹⁰ U.S. Evtl. Protection Agency, *Particulate Matter (PM) Basics* (Oct. 1, 2020), <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM>.

¹¹¹ IPCC, *Special Report: Global Warming of 1.5°C.*, Section C.1: Emission Pathways and System Transitions Consistent with 1.5°C Global Warming (2018), <https://www.ipcc.ch/sr15/chapter/spm/>.

plan that does not include new fossil fuel resources – a plan that is cheaper today *and* avoids the future risks to ratepayers presented by the Proposed Gas Plant.

It is a very high bar under Minnesota law to show that a fossil fuel plant is in the public interest when compared with a renewable energy alternative. State law also provides that it is the Commission’s duty to ensure “that environmental amenities and values, whether quantified or not, will be given at least equal consideration in decision-making along with economic and technical considerations.”¹¹² Further, it is the “continuing responsibility of the state government to use all practicable means . . . [to] minimize the environmental impact from energy production and use.”¹¹³ Xcel has not provided a plan that is in the public interest, so the PUC cannot approve the fossil fuel alternative. The PUC cannot approve a new fossil fuel plant when clean, reliable, and cost-effective renewable alternatives exist.

Besides the benefits to public health and the environment, approving renewable energy alternatives instead of a new fossil fuel plant would have positive socio-economic benefits for the company, its customers and the state as a whole. In 2019, Minnesota employed approximately 62,000 workers in good paying jobs in wind, solar and other clean energy enterprises.¹¹⁴ The wind and solar industry have brought in \$7.9 billion¹¹⁵ and \$1.4 billion¹¹⁶ in investments, respectively, to local Minnesota communities. Each year, the wind industry alone pays \$15.5 million in Minnesota state and local taxes.¹¹⁷ These industries bring high quality jobs. On average, in 2013

¹¹² Minn. Stat. § 116D.03, subd. 2(3).

¹¹³ Minn. Stat. § 116D.02, subd 2(9).

¹¹⁴ Clean Jobs Midwest, *Minnesota Fact Sheet* (2020), https://www.cleanjobsmidwest.com/wp-content/uploads/2020/06/Minnesota_ExecSum_CJM2020.pdf.

¹¹⁵ American Wind Energy Association, *Wind Energy in Minnesota*, <https://www.awea.org/Awea/media/Resources/StateFactSheets/Minnesota.pdf>.

¹¹⁶ Minn. Dept. of Commerce, Division of Energy Resources, *Minnesota Solar Fact Sheet* (February 2019), <https://mn.gov/commerce-stat/pdfs/solar-fact-sheet.pdf>.

¹¹⁷ Clean Grid Alliance, *Minnesota Wind Energy Facts* (2021), <https://cleangridalliance.org/minnesota-wind-energy>.

jobs in the clean energy economy paid 42 percent higher than the statewide average for all jobs.¹¹⁸ CEOs' Preferred Plan benefits Xcel and the State by ensuring maintained growth of the clean energy industry and jobs and revenue that come with it. Likewise, the CEOs' Preferred Plan makes Xcel and the State less reliant on natural gas, a fuel source that Minnesota has to import.¹¹⁹ Thus, both Xcel and Minnesota are well positioned to benefit as the transition away from fossil fuel sources spreads throughout the country and internationally.

All of the negative consequences of a new gas plant could be avoided with the CEOs' Preferred Plan detailed in these comments. Our experts, using Xcel's data and the same modeling software used by Xcel, have provided ample evidence that Xcel's reliability, energy, and capacity needs can be met using a combination of additional solar, wind energy, and battery storage at a lower cost than Xcel's Preferred Plan. Additionally, Xcel already has multiple options for natural gas-generated electricity from its own existing units and from the region to help it manage its growing renewable energy fleet. Consequently, the Commission should adopt CEOs' Preferred Plan, as it is both in the public interest and in harmony with state policy which disfavors new fossil fuel resources.

III. CEOS' ANALYSIS OF OTHER ISSUES IN XCEL'S PREFERRED PLAN

A. Resource Planning Should Address And Advance Energy Equity.

The electricity sector, like most industries in the United States, has historically underserved and unfairly burdened under-resourced communities, especially Black, Indigenous, and people of color ("BIPOC") communities. Resource planning proceedings, where important decisions about power plant additions are made play a critical role in shaping environmental justice outcomes and

¹¹⁸ John Melville, Renae Steichen, & Janine Kaiser, Minn. Dept. of Commerce, *Minnesota Clean Energy Economy Profile*, at 4 (Oct. 2014), <https://mn.gov/commerce-stat/pdfs/mn-clean-energy-econ-full-rpt.pdf>.

¹¹⁹ U.S. Energy Information Administration, *State Profile and Energy Estimates: Minnesota* (May 21, 2020), <https://www.eia.gov/state/analysis.php?sid=MN#88>.

local economic development for years and decades. Minnesota and Xcel Energy are making progress on all of these fronts, but we can do more to ensure the electricity system supports the economic and physical well-being of all Minnesotans. This work is particularly important now, as we enter the second year of the COVID-19 pandemic and elevated demands for racial justice.

Xcel has signaled that it takes this history seriously and is beginning to take bigger strides to advance equity and energy justice through its operations and programs, proposing to double Conservation Improvement Program spending for low-income families, providing rate and disconnection relief during the COVID-19 pandemic, expanding access to solar incentives for multifamily buildings and businesses rebuilding after civil unrest, continuing to prioritize local labor, and working with power plant host communities to ensure a just transition to clean energy. CEOs echo the following suggestions from the Energy Efficiency For All (“EEFA”) coalition for continuing to improve equity outcomes through resource planning.

1. Procedural justice.

Resource planning is technical and resource intense, but also quite important and impactful to customers. IRPs regularly engender more public comment than most other proceedings. Equitable access to participation in the process is essential for facilitating equitable outcomes. We encourage Xcel to undertake additional effort to engage renters, BIPOC, and under-resourced households in focus groups, advisory committees, and stakeholder conversations related to resource planning, resource siting, program design, and educational efforts. This work can include providing support (including financial support) to facilitate participation.

2. Climate and environmental justice.

Xcel should form an environmental justice advisory group that the Company would be accountable to. This group would advise the Company on matters ranging from resource planning and siting to program design and partnerships, working to ensure that new investments and

programs are responsive to customer needs, maximize benefits for under-resourced communities, and advance energy access and equity. The group should be composed of a diverse group of Xcel customers, with representation from renters, BIPOC, and under-resourced households.

3. Racial equity commitments.

We recommend that Xcel develop and publish racial equity goals for its workforce and Board of Directors. The first step of this process should be improved data collection and disclosure, which will be essential to ensuring smart goal setting and effective oversight. Members of the CEOs group participated in the Energy Utility Diversity Group (“EUDG”) in 2019, which was an important step forward in the conversation around diversity in Minnesota’s energy sector. The EUDG found that reporting metrics are certainly not sufficient to solve these systemic challenges, but are an important step toward understanding existing barriers, identifying opportunities for improvement, and developing potential long-term solutions. We recommend that Xcel collect and report data on overall workforce diversity, diversity of its executive officers, and diversity of its Board of Directors. The company should then develop hiring and recruiting plans with specific benchmarks for improvement, working toward overall racial equity goals.

B. Recommendations For Innovation In Today’s Grid.

1. Xcel correctly withdrew the initial plan’s “reliability requirement.”

In its July 2019 filing, Xcel included a new concept that it referred to as “the Reliability Requirement.” The company defined this as a minimum amount of firm, dispatchable resources to meet customers’ energy needs whenever they peak.¹²⁰ Xcel stated that, “[t]o develop the Requirement, [it] analyzed industry insights and data from case studies, including the 2019 polar vortex and normal winter and summer days.”¹²¹

¹²⁰ Initial IRP at 55.

¹²¹ Initial IRP at 55.

The CEOs and other parties submitted information requests to Xcel seeking to understand the basis for this novel Reliability Requirement.¹²² Ultimately, however, in its June 2020 Supplement, Xcel withdrew the Reliability Requirement, stating that, “[i]n the course of discussion regarding supplemental analysis—and specifically addressing the inclusion of a Reliability Requirement in our initial modeling—the Commission directed us to undertake hourly chronological modeling analysis of our proposed portfolio in order to better evaluate reliability and resource attribute concerns.”¹²³

The CEOs concur with Xcel’s removal of the Reliability Requirement because it would have created a new standard for reliability, built it into the planning process, and declared it an absolute requirement not subject to economic evaluation. There are several existing layers of reliability assessments, planning standards, and authorities with attention to, or responsibility for, reliability. Yet, in its July 2019 Plan, Xcel made no reference to or reliance on any of the existing practices. In addition, Xcel’s approach to the Reliability Requirement would also have departed from existing practices for recognizing the capacity credit, or contribution to resource adequacy, from a significant set of resources; namely, wind and solar. For these reasons, the CEOs support Xcel’s withdrawal of the initial Reliability Requirement in favor of the EnCompass model’s hourly chronological capabilities.

2. Xcel should continue evaluating the need for and type of additional firm dispatchable resources in 2030-2034.

Xcel’s EnCompass modeling results selected approximately 2,600 MW of firm, peaking resources to be installed in the 2030-2034 timeframe. The company incorporated the capacity amount into its Preferred Plan, while leaving the type of resource technology neutral. Although

¹²² See, e.g., CEO IRs 53, 55, 64-67, and 78.

¹²³ Supplemental IRP at 15.

Xcel used natural gas combustion turbines for modeling purposes, it recognized that the additions could also consist of hydrogen-fueled generation,¹²⁴ energy storage, demand response, or potentially other options—depending on various factors, including cost, reliability, and state policy goals.¹²⁵

The CEOs support Xcel’s decision to keep these type of potential long-term future needs technology-neutral in this IRP. Utilities are increasingly choosing to avoid new investments in natural gas as they transition their resource portfolios. For example, both Great River Energy¹²⁶ and Consumers Energy in Michigan¹²⁷ have recently announced plans to phase out coal-fired generation and replace them with various combinations of clean energy resources without building new gas plants. The costs of technologies such as energy storage continue to rapidly decline, while demand response and energy efficiency programs continue to improve and expand. The CEOs expect that investments in new natural gas plants will increasingly look less desirable than they already are, and assert that Xcel was wise to leave this possibility of future resource addition technology neutral.

In addition to clean, non-emitting resources being increasingly cost effective by 2030, it is also possible that the amount of additional capacity in this “firm peaking” or “firm dispatchable”

¹²⁴ CEOs note that the premise of hydrogen as a decarbonization pathway hinges on whether the hydrogen itself is generated in a way that is carbon free—by, for example, using renewable electricity to produce the hydrogen fuel through electrolysis. Regardless of how it is generated, however, the combustion of hydrogen can result in significant emissions of nitrogen oxides (NOx) similar to or worse than that from natural gas, requiring environmental justice factors to be considered in locating hydrogen combustion facilities. For a recent discussion related to hydrogen, see Julie McNamara, *What’s the Role of Hydrogen in the Clean Energy Transition?*, Union of Concerned Scientists (Dec. 9, 2020), <https://blog.ucsusa.org/julie-mcnamara/whats-the-role-of-hydrogen-in-the-clean-energy-transition>.

¹²⁵ See, e.g., Supplemental IRP at 68.

¹²⁶ *Major power supply changes to reduce costs to member-owned cooperatives*, Great River Energy (May 7, 2020), <https://greatriverenergy.com/major-power-supply-changes-to-reduce-costs-to-member-owner-cooperatives/>.

¹²⁷ David Eggert, *Consumers Energy plan to close coal plants, boost renewables approved*, Crain’s Detroit Business (June 10, 2019), <https://www.craindetroit.com/energy/consumers-energy-plan-close-coal-plants-boost-renewables-approved>.

category may be much lower, may be needed later, or may not be needed at all. Approaches to successfully integrating high levels of variable renewable generation should also include a strong focus on improving regional transmission systems to share electricity across different geographic areas.¹²⁸ There is an urgent need for stakeholders—including Xcel, the Commission, and Minnesota elected officials—to elevate our collective efforts to ensure MISO moves forward with cost-effective transmission upgrades that reflect and enable the large amounts of additional wind and solar deployment necessary to achieve utility and state goals while keeping costs affordable for customers. Transmission projects take many years to complete; by starting now, we can seize the benefits offered by the interconnected grid system and reduce or defer the amount of additional dispatchable resources needed to achieve high levels of renewable deployment.

3. Xcel and the commission should continue evaluating economic dispatch and seasonal operations of fossil units.

The terms self-commitment, economic commitment, and seasonal dispatch all refer to ways in which generation facilities will operate to meet upcoming energy needs. Self-commitment, an option available in MISO’s wholesale electricity market, enables a participant to pre-determine that a unit will be committed to operate (typically at its economic minimum level) regardless of market price. Conversely, under economic commitment and dispatch, MISO will not dispatch a resource until market prices meet or exceed the unit’s production costs, subject to reliability requirements. Finally, seasonal dispatch is when a facility suspends normal operations during parts of the year and only runs if required for reliability.

¹²⁸ Xcel acknowledges that, “[p]articularly for variable renewables, increasing geographic diversity [through transmission solutions] can reduce the effects of weather correlation; in other words, access to resources across broader areas makes it less likely that a localized renewable drought will result in energy shortfalls for that system’s customers.” Supplemental IRP at 98.

The CEOs support Xcel's switching of Sherco 2 and the King Plant to seasonal dispatch and support the company's inclusion of those reduced operations into its IRP modeling.¹²⁹ Xcel's modeling estimated net savings from this change of \$90-\$131 million from 2020 to 2028, in addition to reducing the net CO₂ emissions of Xcel's Minnesota fleet by 3.7-6.5 million tons per year from 2020-2023.¹³⁰ The CEOs also support the Commission's request during its October 28, 2020, meeting that Xcel provide additional analysis of moving Sherco 1 and 3 to economic commitment and/or seasonal dispatch as part of the Commission's investigatory docket into utility self-commitment and self-scheduling.¹³¹ There is a likely opportunity for savings at these units using an economic commitment-based strategy, and the CEOs look forward to reviewing Xcel's analysis.

The majority of gas-fired units are offered on an economic basis except in limited circumstances such as testing, but a meaningful amount of gas capacity in MISO (approximately 8 percent) is self-committed uneconomically.¹³² This is a topic the Commission could consider for further inquiry as it continues the investigation into power plant operations and opportunities for further customer savings and emission reductions. As deployment of clean energy resources such as wind and solar continues to increase, it may be possible to achieve additional cost savings for customers by shifting existing gas units to economic commitment and/or seasonal operations.

¹²⁹ Xcel Energy, *Plan to Offer Generating Resources into the MISO Market on a Seasonal Basis*, Docket E002/M-19-809 (December 20, 2019).

¹³⁰ *Id.* at 12.

¹³¹ Order Evaluating Self-Commitment and Self-Scheduling Reports and Establishing Additional Filing Requirements at 7-8 (Jan. 11, 2021) (eDocket ID No. 20211-169710-01).

¹³² Midcontinent Independent System Operator (MISO), *Informational Forum Presentation* (April 21, 2020),

<https://cdn.misoenergy.org/20210119%20Informational%20Forum%20Presentation%20513499.pdf>.

4. Improvements to avoided cost analyses could result in additional energy efficiency and distributed generation resources.

The Minnesota Department of Commerce concluded its 2021-2023 Conservation Improvement Program (“CIP”) cost-effectiveness proceeding in February 2020.¹³³ One outcome of that proceeding was a directive to form a Cost-Effectiveness Advisory Committee leading up to the 2024-2026 CIP Triennials. Among the topics this Advisory Committee is likely to explore is the issue of how utilities calculate the avoided costs of energy efficiency and distributed generation.

The manner in which avoided costs are calculated—the valuation of energy, capacity, and emissions savings—is crucial. Avoided costs (i.e., the benefits of not constructing or operating conventional generation) are compared to the costs of energy efficiency or distributed energy resources (“DERs”) to determine the value of these alternatives. This comparison is a key factor in determining the size of efficiency and DER programs utilities ultimately implement. A recent report by the Union of Concerned Scientists examined the traditional approach—used in Minnesota and other states—of calculating avoided costs and compared it to alternative methods that better reflect the value of energy efficiency and distributed generation while maintaining simplicity and transparency.¹³⁴ Ensuring that avoided cost analyses are more transparent, accessible, and auditable can help provide better and clearer information to utilities, regulators, and stakeholders on the value that efficiency and small-scale renewables provide to the energy system. These improvements could lead Xcel to pursue additional amounts of these clean energy

¹³³ Minn. Dept. of Commerce, *CIP Gas and Electric Utilities – 2021-2023 Cost-Effectiveness Review*, Docket No. G999/CIP-18-782, E999/CIP-18-783 (Feb. 11, 2020).

¹³⁴ Joe Daniel & James Gignac, *Energy and Emissions Benefits From Minnesota Energy Efficiency Investments: Improving the Analytical Approach to How Minnesota Values Energy Efficiency*, Cambridge, MA: Union of Concerned Scientists (Aug. 2020), <https://ucsusa.org/resources/benefits-from-minnesota-energy-efficiency>.

resources, producing additional cost savings for consumers and further reducing emissions from coal- and gas-fired generation.

C. Renewable Energy, Battery Storage, And Demand Response Can Provide More Grid Services Than Xcel's Filing Indicates.



























Xcel's June 30, 2020 supplement includes a discussion in Attachment A, Section VI of the Company's understanding of the reliability services and other grid capabilities ("Resource Attributes") that different resource types can provide.¹³⁵ Telos reviewed this discussion as part of the Technical Reliability Review commissioned by CEOs¹³⁶ and found that Xcel's characterization of Resource Attributes is misleading, outdated, or incorrect in several places. Xcel's characterization of Resource Attributes understates the capabilities of wind, solar, and fast-burst balancing resources like demand response and battery storage. It also overstates the capabilities of some transmission solutions.

The figure below offers a revised version of Xcel's Resource Attribute table, correcting for these deficiencies.

¹³⁵ Supplemental IRP, Attachment A.

¹³⁶ *Sherco & A.S. King Retirement Technical Reliability Review*, Telos Energy (November 25, 2020) at Appendix B.

Telos revised Figure VI-1: Resource Attributes Mapped to Resource Types

		Resource Types	Firm Traditional – Baseload	Firm Traditional – Intermediate or Peaking	Variable Renewables	Fast-Burt Balancing	Transmission Solutions
Resource Attributes	Response Duration & (Frequency of Need)	Examples	Coal, Nuclear, Biomass, Run-of-river Hydro	CC, CT	Standalone Wind, Solar	DR, Standalone Battery Storage	Synchronous condensers, HVDC, Static Var Compensators
Essential Reliability Services	Milliseconds – (Continuous)	Spinning reserve, inertial response, frequency regulation, voltage control	 		 		 
Flexibility	Minutes – Hours (Daily)	Ramp rates, cycling, minimum runtime			 		
Energy Availability	Hourly – Multiday (Continuous)	Long duration availability, secure fuel supply					
Black Start	Minutes – Hours (Infrequent, emergency only)	Starts and runs on zero load, secure fuel supply	 			 	

Telos’s analysis found deficiencies with Xcel’s representation of resource attributes in the following areas:

1. Essential reliability services – variable renewables.

This category as postulated by Xcel mixes several different types of services, which cut across the capabilities of various technologies. It is more accurate and informative to break out the individual services and associate those with technology capability. It is also important to differentiate between technical capability and current industry practice, which are not always aligned.

Today’s wind and solar plants have excellent capability to provide all of the essential reliability services (spinning reserve, frequency regulation, and voltage control) with the exception of inertial response, which is only provided by “traditional” generators today. Contrary to Xcel’s

statements in the IRP supplement, wind and solar resources out-perform traditional generators in terms of speed and accuracy of providing these reliability services.¹³⁷

Wind and solar are also capable of providing primary frequency response in the “up” direction when operated with headroom; the limitation Xcel notes on this issue is based on operational decisions not technology capability. Further, the assertion that services provided by battery storage are duration-limited is partly incorrect. For services where there is no exchange of active power, batteries act like traditional transmission assets called STATCOMs and are not duration-limited. For these reasons, we modified the coding for “Essential Reliability Services – Variable Renewables” from yellow to half green and half yellow.

2. Essential reliability services – transmission.

Xcel’s representation of transmission capabilities in providing essential reliability services is also misleading. Of the listed technologies (synchronous condensers, HVDC, SVCs), only synchronous condensers are capable of providing inertial response and only HVDC is capable of providing spinning reserve. Telos also points out that wind and solar are capable of providing the same services as HVDC and Flexible AC Transmission Systems since they use the same underlying power electronics technology (and of course, wind and solar can simultaneously provide power). Because no single resource can provide all of the listed essential reliability services, we modified the coding for “Essential Reliability Services – Transmission” from green to yellow.

¹³⁷ *Avangrid Renewables Tule Wind Farm: Demonstration of Capability to Provide Essential Grid Services*, California Independent System Operator (March 11, 2020), <https://www.caiso.com/Documents/WindPowerPlantTestResults.pdf>.

3. Flexibility – variable renewables.

Wind and solar have very fast bidirectional ramping capability, operating on the scale of seconds rather than minutes or hours. Wind and solar resources have no cycling or minimum runtime requirements, which increases their flexibility.¹³⁸ The requirement for renewable “fuel” to be available is better captured separately in the “Energy Availability” row. For these reasons, “Flexibility – Variable Renewables” is more appropriately coded green rather than yellow.

4. Black-start.

Battery storage can provide black-start capability and has performed this service in the field. Xcel correctly points out that batteries must have sufficient charge in order to provide black-start, but this is an operational decision and not a technology limitation. Similarly, Xcel notes black-start resources may need to provide power for up to 24 hours, longer than the ratings of most batteries. However, it is unlikely that a battery would need to discharge at full capacity for the duration of an extended black-start scenario. For instance, a 30MW 4-hour battery could discharge for 24-hours at up to 5 MW. Lastly, black-start is an extremely rare need on the US power grid, and has never been called on in MISO. In comparison, Essential Reliability Services, Flexibility, and Energy Availability are called on continuously each day.

¹³⁸ *Id.*

CONCLUSION

Xcel's IRP presents the Commission with a choice that pits the future against the past. Xcel's Preferred Plan and CEOs' Preferred Plan both would provide reliable electricity to Xcel's customers for years to come. But the similarities end there. Xcel's plan would go backwards, to an over-reliance on fossil fuel infrastructure. Xcel's plan is more expensive to build and operate than the CEOs' Preferred Plan. Over the life of Xcel's planned fossil fuel plant, millions of tons of harmful CO₂ emissions and other dangerous pollutants will harm the health of Minnesotans and the natural world. Allowing Xcel to proceed with the Proposed Gas Plant puts Minnesotans at risk of continued pollution, expensive future plant upgrades, or both. Instead, risks can be reduced with clean energy alternatives, as costs of wind and solar energy and battery storage are expected to continue to decline over time. CEOs' Preferred Plan offers an alternative vision at the same price (or lower price). It invests in homegrown clean energy industries that will create investment and jobs here in Minnesota.

The CEOs respectfully requests the Commission:

1. reject Xcel's Preferred Plan and adopt CEOs' Preferred Plan; or
2. approve Xcel's Preferred Plan with the following modifications:
 - a. Remove the Proposed Gas Plant (or "Sherco CC") from Xcel's resource plan;
 - b. Add a hybrid resource consisting of 1,000 MW of solar and 250 MW of four-hour battery storage in 2027.

Respectfully submitted,

Dated: February 11, 2021

/s/ Ellen Anderson

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