MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers

Meeting Date	December 6, 2018		Agenda Item *5
Company	Xcel Energy (Xcel or the Company)		
Docket No.	**E002/RP-15-21** **In the Matter of Xcel Energy's 2016–2030 Integrated Resource Plan**		
Issues	Should the Commission approve Xcel's request to delay filing its next resource plan from February 1, 2019 to July 1, 2019?		
Staff	Sean Stalpes	Sean.Stalpes@state.mn.us	651-201-2252

✓ **Relevant Documents**	**Date**
Xcel Energy, *Request for Extension*	October 15, 2018
Xcel Energy, *October 22, 2018 Workshop 6 Materials*	October 23, 2018
Xcel Energy, *Response to PUC Information Request No. 36*	November 19, 2018
Center for Energy and the Environment, *Comments*	November 19, 2018
Community Power, *Comments*	November 19, 2018
Department of Commerce, *Comments*	November 19, 2018

I. Statement of the Issues

Should the Commission approve Xcel's request to extend the due date to file its next resource plan from February 1, 2019 to July 1, 2019?

II. Background

On January 11, 2017, the Commission issued its *Order Approving Plan with Modifications and Establishing Requirements for Future Resource Plan Filings* (the IRP Order) in Xcel Energy's 2016-2030 resource plan (the 2015 IRP) proceeding. Among other things, the Commission:

- made a finding that it is reasonable for Xcel to acquire at least 1,000 MW of wind by 2019;
- required that Xcel shall acquire approximately 650 MW of solar in 2016–2021 through a combination of the Company's community solar gardens program or other acquisitions;
- approved Xcel's schedule to retire Sherco 2 in 2023 and Sherco 1 in 2026;
- made a finding that it is more likely than not there will be a need for approximately 750 MW of intermediate capacity coinciding with the retirement of Sherco 1 in 2026; and
- required Xcel to acquire no less than 400 MW of additional demand response by 2023.

The Commission also required Xcel to file its next resource plan on February 1, 2019.

By way of background, in the September 29, 2016 staff briefing papers for the instant docket (which was heard at the October 6 and October 13, 2016 Commission meetings), staff proposed "Decision Option R.5," to require Xcel to file its next resource plan on July 2, 2018. The July 2, 2018 filing date was initially supported by Xcel, the Department, and the Clean Energy Organizations. Xcel supported this date on the presumption that its proposed 763 MW natural gas combined cycle plant, to be located at the Sherco site, would be approved in the IRP.

However, during the hearing it was discussed whether further record development was necessary in a certificate of need (CN) proceeding, in order to assess alternatives or a combination of alternatives to replace the capacity and energy removed from Xcel's system as a result of retiring the coal-fired Sherco 1 and 2 units. The parties and Commission discussed the advantages and disadvantages of the July 2018 IRP filing date relative to a later date in light of an additional CN process.

Xcel agreed to file the CN petition, but was concerned about the possible overlap between the CN and next IRP. Xcel stated that "providing certainty on both the closure and what's coming

behind it allows us to move forward with the next resource plan and not have to worry about as these schedules start to overlay on top of one another."[1]

The Clean Energy Organizations[2] and the Department[3] maintained their support for a July 2018 IRP filing date, with or without a CN proceeding, given the number of issues Xcel would be evaluating in its next IRP.

Ultimately, the Commission determined it is likely there is a need for approximately 750 MW of intermediate capacity coinciding with the retirement of Sherco 1 in 2026, but a CN process will further evaluate resource alternatives.[4] At the same time, the Commission's order shared the views of the Department and CEO with regard to the nuclear and King replacement scenarios:

> Major plant retirements are coming over Xcel's planning horizon in upcoming resource planning cycles, and it is important that Xcel, the Commission, and stakeholders regard system needs holistically. As this proceeding demonstrated, individual plant retirements can give rise to complex locational and system concerns that, without sufficiently forward-looking planning, may constrain future decisions. Considering the future of Xcel's system as a whole as its generation fleet ages will help maximize planning flexibility.[5]

Staff believes this context is important because, as will be discussed later, one of the most important factors that staff considered in reviewing Xcel's extension request was when Xcel's next IRP might be able to come before the Commission. At the October 13, 2016 hearing, it was clear that all parties, Xcel included, acknowledged the great magnitude of issues the next resource plan will address. And in a sense, the filing date of the next IRP has already been delayed because time was allocated to accommodate the CN process (which obviously did not happen). Given that Xcel's last IRP was filed on January 2, 2015, another delay would mean that roughly four-and-a-half years will have passed in-between initial petitions for Xcel's IRPs.

With this being said, Xcel has done a remarkable and commendable job in bringing interested stakeholders into the planning process, and staff certainly supports more transparency and stakeholder involvement. At the same time, however, staff also believes there is a point at which it becomes critical that the Commission has oversight of and is involved in the steps Xcel will be taking in its fleet transformation.

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[1] Docket No. 15-21, Hearing Transcript, at 47-48 (October 13, 2018).

[2] Docket No. 15-21, Hearing Transcript, at 117-118 (October 13, 2016).

[3] Docket No. 15-21, Hearing Transcript, at 116-117 (October 13, 2016).

[4] Commissioner order, at 9 (January 11, 2017).

[5] Commission order, at 10 (January 11, 2017).

III. Xcel's IRP Extension Request

A. Summary of Extension Request

Xcel Energy has requested the Commission extend the due date for the Company to file its 2020-2034 Upper Midwest Integrated Resource Plan (IRP) from February 1, 2019 to July 1, 2019. According to Xcel:

> This five-month extension will provide time to continue our work with stakeholders, allow for the production of additional studies and information relevant to the IRP, and will not adversely impact the plan we ultimately file since we do not have any actions necessary in our five-year action plan.[6]

Primarily, Xcel points to the "very broad scope" and "concerted effort to work with stakeholders" as reasons why the extension is justified. As one example, Xcel engaged a consultant, E3, to perform independent analysis of Xcel's system using three types of models:

- the RESOLVE model, which evaluates and optimizes the least-cost portfolios of resources to meet system demand considering carbon and other constraints,
- the RECAP model, which evaluates the reliability of electric energy and system capacity of the optimized resource portfolios over thousands of simulated weather years, and
- the PATHWAYS model, which evaluates economy-wide scenarios for meeting Minnesota's statutory goal of 80% reduction in greenhouse gases below 2005 levels by 2050.

Xcel noted that its stakeholders are interested in determining how they could use E3's tools to inform their participation both in resource planning and in other forums. According to Xcel, stakeholders are particularly interested in the PATHWAYS model, since it provides broader context for statewide actions that would be necessary in order to achieve the state's greenhouse gas goals.

In addition, Xcel is participating along with Minnesota Power in a study that the Center for Energy and Environment (CEE) is just getting underway on the value of hosting a power plant for host communities, and the potential impact of power plant retirement on selected communities. Xcel noted the study may not be entirely finalized by July 2019, but "even the preliminary findings will be of interest to stakeholders and could have an impact on [Xcel's] IRP and likely parties' recommendations."[7] Xcel believes "[a] February filing without the benefit of even the initial findings of this third-party study could position decisions without a full record or helpful supporting information and reference points."[8]

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[6] Xcel Extension Request, at 1.

[7] Xcel Extension Request, at 3.

[8] Xcel Extension Request, at 3.

Xcel discusses an additional demand-side potential study, under the supervision of the Department of Commerce (Department) that is currently underway:

> CEE, Optimal Energy, and Seventhwave also are completing a Minnesota statewide Demand-Side Potential study. The Department of Commerce is supervising this project and we have been participating in the stakeholder work. The study is intended to inform the decision makers for Minnesota's Conservation Improvement Program (CIP) regarding which market sectors, geographic areas, utility service territories, end uses, measures, and programs can be targeted and reach consensus policy recommendations that will help maximize cost-effective energy efficiency potential statewide. Advisory committee members are reviewing a near-final draft of the report that was circulated this week. We are reviewing that document and will then need a report with Xcel Energy specific data and may need additional scenarios to be modeled for factors that are unique to our program portfolio to supplement the state-wide study with information to support the DSM portion of our IRP filing. This additional modeling would take about 2-3 months which is an incredibly tight timeframe for the DSM inputs to be used for a February filing.[9]

Finally, Xcel noted that it has the necessary resources to meet forecasted energy and capacity needs through 2024 and does not have any actions necessary in its five-year action plan. Thus, Xcel does not believe there is any harm in delaying its filing "to gather more information and work with stakeholders to further a mutual understanding, reach additional areas of consensus, and provide a platform for stakeholders to explore broader carbon reduction strategies."[10]

B. Additional Information from Xcel IRP Workshops

As Xcel noted in its extension request, the Company has made a concerted effort to work with stakeholders through workshops and one-on-one meetings. In this section, staff will provide some additional detail on Xcel's communication with stakeholders regarding its proposed IRP timeline and E3 modeling.

In Xcel's October 22, 2018 workshop—the sixth in a series leading-up to its 2019 IRP filing—the Company outlined its expected IRP timeline with its proposed extension:

[9] Xcel Extension Request, at 3.

[10] Xcel Extension Request, at 4.

Preliminary Extended Timeline

Timeline	Activity
November/December	Workshop and individual stakeholder meetings Possible Topic: Panel Discussion of Stakeholder Questions
January	Workshop and individual stakeholder meetings Possible Workshop hosted by CEE on Host Community Study
February	Workshop and individual stakeholder meetings Possible Topic: Near-Final Results from E3
March	Workshop and individual stakeholder meetings Possible Topic: Near-Final Strategist Results – Updated results for all scenarios
April	Prepare Filing Individual Stakeholder meetings
May	Prepare Filing Individual Stakeholder meetings
June	Prepare Filing Individual Stakeholder meetings
July	FILE

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In the same presentation, Xcel gave an overview of the E3 modeling, particularly its scope of work; an overview of the three models E3 would employ; and how RESOLVE (a capacity expansion model) differed from Strategist.

The slide below provides an overview of the E3 modeling:

E3 Modeling

- Xcel Energy engaged E3 to provide analysis to inform the Company's IRP.
- E3 is undertaking three distinct workstreams:
  - Decarbonization (Pathways) Study,
  - Portfolio (Resolve) Analysis,
  - Resource Adequacy (Recap) Analysis.
- The analysis underway by E3 will:
  - Provide context for the role of the electricity sector in reducing statewide carbon emissions (Pathways),
  - Analyze the impact of deep decarbonization scenarios on Xcel Energy's Upper Midwest System (Resolve and Recap),
  - Provide independent modeling and analysis to inform Xcel Energy's modeling efforts.

The RESOLVE model, like Strategist, optimizes capacity expansion with constraints for reliability, greenhouse gas emissions, or renewable energy requirements. Further comparisons to the Strategist model are shown in the slide below:

RESOLVE vs. Strategist – Model Comparison

RESOLVE	Strategist
• Performs optimal dispatch over a representative set of operating days in each year.	• Performs optimal dispatch based on a representative week for each month.
• Uses a chronological hourly dispatch	• Uses a load duration curve.
• Investment decisions are made in five year intervals between 2020 and 2040.	• Simulates dispatch and allows for resource investments in each year of planning period and beyond.

The RESOLVE model can verify the Strategist modeling and provide additional insights into the impacts of deep carbonization on Xcel's system. A methodological comparison between the two capacity expansion models is shown below:

Methodology Comparison

RESOLVE	Strategist
• RECAP informs capacity credit for renewables.	• Relies on current MISO construct for capacity credit for new renewables (wind ~15%, solar 50%, DR & 4-Hour storage 100%)
• Optimized to meet GHG or Clean Energy Standard targets.	• Cost optimized by including the cost of emissions.
• Chronological Hourly Dispatch captures ramping impacts.	• Integration costs are developed outside of Strategist.
• Market Interaction modeled through dispatch of MISO Zones 1, 2, and 3.	• Market Interaction modeled based on forecasted market prices.

RECAP evaluates the resource adequacy of a high renewable system, which can be used to assess the reliability of a RESOLVE portfolio. Some capabilities of RECAP are shown below:

RECAP Model

- The RECAP model evaluates the resource adequacy of a high renewable system.
- Used to check the reliability of a RESOLVE portfolio.
- Can be used to calculate the Effective Load Carrying Capability (ELCC) of wind, solar, storage and DR.

As stated above, Xcel noted that PATHWAYS has been of particular interest to stakeholders because it can develop economy-wide energy and greenhouse gas emissions scenarios statewide through 2050. Additional details on PATHWAYS are shown by the slide below:

Pathways Impact on IRP

- The Pathways study develops economy-wide energy and GHG scenarios statewide through 2050.
- Not a least-cost optimization model; allows for exploration of scenarios to achieve 80% reduction in GHGs by 2050.
- Pathways provides context for the role of the electricity sector in reducing statewide carbon emissions.
  - Includes assumptions on the decarbonization of the electricity sector and the impact of electrification
  - Provides high-level sector by sector analysis to achieve the statewide goal of 80% reduction in GHGs by 2050
  - The high electrification scenario can by used to inform a high load scenario in the Company's Strategist modeling

E3's preliminary results were discussed at the October 22, 2018 stakeholder workshop. E3 emphasized that its presented results were a draft, as assumptions have not yet been fully aligned with Xcel's current IRP assumptions. However, based on E3's preliminary results (shown below), early coal plant retirement is likely the most cost-effective strategy to achieve significant additional emissions reductions:

Summary of Observations

1. **The lowest cost way to reduce carbon in the Xcel system is to replace coal with a combination of renewables and natural gas**
   - Coal generation produces approximately 85% of Xcel's GHG emissions in the 2020 Reference case
   - In absence of a state-wide carbon price or changes in MISO rules, early coal retirement is likely the most cost-effective strategy to achieve significant additional emissions reductions
2. **A Clean Energy Standard (CES) will also drive down emissions, but at a higher cost and with diminishing effectiveness**
   - At very high CES levels, large amounts of generation will be exported and/or curtailed since the incentive is on delivering energy anywhere, rather than displacing fossil fuels in Xcel's territory
3. **Maintaining a large amount of firm generation capacity to meet reliability needs can help Xcel decarbonize its portfolio at reasonable cost**
   - Natural gas generators can fulfill this reliability need without producing significant amounts of greenhouse gases if operated as peakers
   - Meeting all reliability needs with a combination of wind, solar, and storage will require prohibitively large investments

In its next steps, E3 will align its modeling with Xcel's IRP assumptions and explore alternative portfolio decisions, such as early nuclear retirement and nuclear relicensing.

IV. Requirements for Xcel's Next IRP / Xcel Response to PUC IR No. 36

As the Commission well-knows, due to the iterative nature of resource planning, the Commission often enumerates in its orders specific issues to be examined in the next IRP. In

the Commission's January 11, 2017 Order, the Commission directed Xcel to investigate, evaluate, and discuss an array of resource planning issues that arose during the course of 2015 IRP proceeding.

The Commission's order recognized that there are major decisions coming in the next resource plan—as well as ones after—and forward-looking planning should be conducted by taking a systems perspective. This is most apparent by Commission ordering paragraphs 14.a. and 14.b. below, which staff views as connected requirements. In its entirety, Order Point 14 of the Commission's January 11, 2017 order required that the Company conduct the following for the next resource plan:

> 14. In its next resource plan filing, Xcel shall:
>
> a. describe its plans and possible scenarios for cost-effective and orderly retirement of its aging baseload fleet, including Sherco, King, Monticello, and Prairie Island.
>
> b. evaluate combinations of supply-side (distributed and centralized), demand-side, and transmission solutions that could in the aggregate meet post-retirement energy and capacity needs as well as contribute to grid support.
>
> c. explore the role of cost-effective combined heat and power solutions.
>
> d. report on its solar acquisition progress.
>
> e. provide a full and thorough cost-effectiveness study that takes into account the technical and economic achievability of 1,000 MW of additional demand response, or approximately 20% of Xcel's system peak in total by 2025.
>
> f. summarize its investigation and findings concerning the potential for an energy-efficiency competitive bidding process for customers that have opted out of CIP.

Since the Company is requesting several months to delay the consideration of these issues, staff asked Xcel in PUC Information Request No. 36 to provide a discussion of its progress to-date in addressing the Commission's requirements. But rather than requesting a detailed, IRP-level analysis, staff requested that Xcel discuss the following issues qualitatively, which to some extent will still provide insight into how the Company might satisfy the Commission's requirements. In its request for information, staff asked Xcel:

- how much of the Commission's required 650 MW of solar in 2016-2021 is expected to come from CSG/small-solar versus utility-scale solar, and whether Xcel plans to issue an all-source, renewable energy, or solar resource solicitation of bids (similar to its November 28, 2017 all-source bid in Colorado) in the near-term;

- provide a discussion of the baseload retirement scenarios the Company was required to evaluate and whether Xcel is considering relicensing its nuclear facilities;

- how Xcel may propose to meet the 400 MW by 2023 demand response requirement;
- whether the Company has initiated any technical studies to examine the transmission reliability impacts of retiring any of the baseload units (similar to Xcel's reliability analysis in its 2015 IRP, which examined the grid impacts of retiring Sherco 1 and/or 2); and
- a discussion of electrification scenarios and how Xcel might assess the impact on electric loads from, for example, new electric vehicles.

Xcel filed its response on November 19, 2018. Staff will address a few of Xcel's responses in the sections below.

Solar

Xcel projects that its CSG program will provide more solar capacity than the Commission's required 650 MW of solar by 2021. In its Integrated Distribution Plan (IDP), Xcel forecasted CSG additions of 673 MW through 2020. In its response to PUC IR 36, Xcel provided Table 21 below, which is from the Company's IDP filing.[11]

Table 21: Reference Case – Per-Year Distributed Solar Additions (MW/AC)

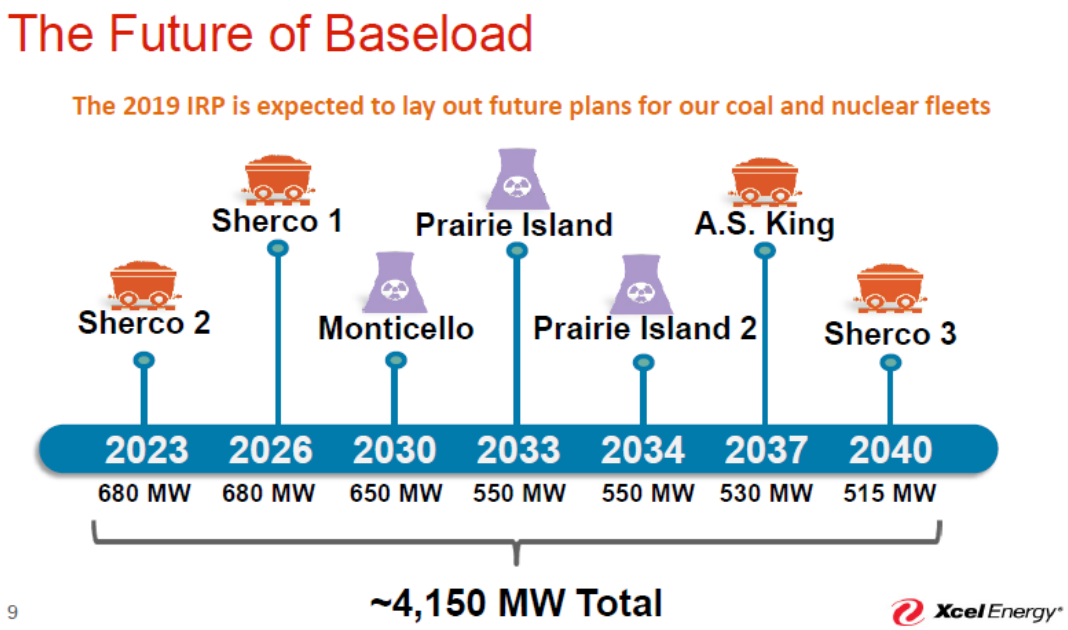
Year	Solar* Rewards	Made in MN	Made in MN Bonus	Net-metering	S*R Community
<=2017	10.2	11.5	4.9	11.1	246.0
2018	9.4	2.1	0.0	5.8	259.1
2019	8.1	0.0	0.0	8.1	124.5
2020	4.5	0.0	0.0	9.3	43.7
2021	3.1	0.0	0.0	9.3	54.1
2022	1.2	0.0	0.0	10.4	6.2
2023	0.2	0.0	0.0	11.7	6.2
2024	0.0	0.0	0.0	12.4	6.2
2025	0.0	0.0	0.0	12.4	6.2
2026	0.0	0.0	0.0	12.4	6.2
2027	0.0	0.0	0.0	12.4	6.2
2028	0.0	0.0	0.0	12.4	6.2
Total	**36.7**	**13.6**	**4.9**	**127.7**	**770.8**

At this time, Xcel does not have any plans to issue a request for proposals (RFP) for renewable energy or solar resources.

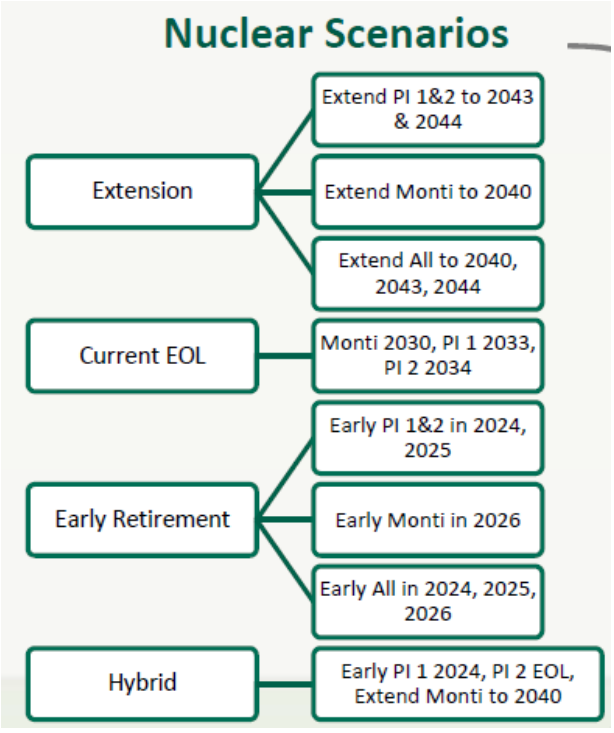
Baseload Retirement Analysis

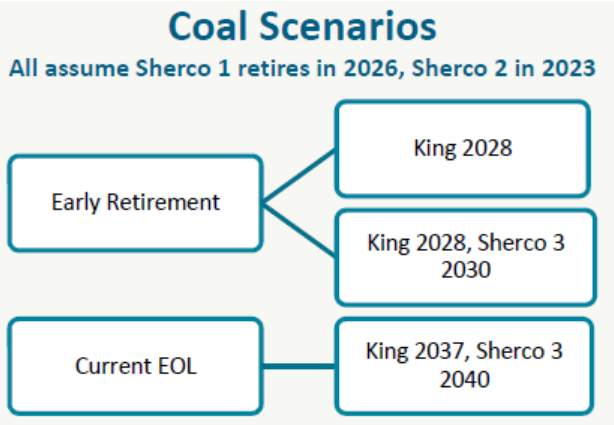
The slide below, from Xcel's June 26, 2018 IRP stakeholder presentation (e-filed on June 29), shows the current economic life for Xcel's baseload generating plants.

[11] Docket No. E002/CI-18-251, Xcel Energy, at 192 (November 1, 2018).



In its IR response, Xcel outlined the baseload retirement scenarios it intends to run in the 2020-2034 IRP. These are included as Attachment B of Xcel's IR response. Staff separated the slide into the nuclear unit scenarios, which include different versions of retirement and relicensing, and coal plant retirements, which will evaluate (1) retiring the King Plant by 2028 and (2) retiring the King Plant by 2028 and Sherco 3 by 2030.





MISO Y-2 Studies

Attachment Y to the MISO Tariff requires that if a market participant plans to retire or suspend a unit, it must notify MISO 26 weeks in advance. MISO will conduct a reliability study, and based on those results, MISO may designate a generating resource as a System Support Resource (SSR). An SSR cannot be retired until a reliability solution is implemented.

A market participant may also request MISO conduct a non-binding Attachment Y-2, which, for a cost, will study the "reliability impacts related to a potential change of status of a portion or all" of a generation resource.[12] In the 2015 IRP, for instance, Xcel requested MISO conduct a Y-2 study for the Sherco retirement.

The Y-2 Study for Sherco concluded that "retirement of Sherco Unit 1 and Sherco Unit 2 would result in violations of applicable planning criteria that would require transmission upgrades and the need for Units to be designated as System Support Resources."[13] In part for this reason, Xcel argued, locating a CC at Sherco was a least-cost solution to eliminate the need to address the issues identified in the MISO Y-2 Study.

Undoubtedly, similar issues will arise in Xcel's next resource plan. Xcel asked MISO conduct a number of Y-2 studies in preparation for its 2020-2034 IRP. The MISO Y-2 studies are:

1. Baseload Retirement Analysis – Coal
    a. Retirement of Sherburne County (Sherco) Unit 3
    b. Retirement of Allen S King
    c. Retirement of both Sherco Unit 3 and Allen S King

2. Baseload Retirement Analysis – Nuclear
    a. Retirement of Prairie Island Unit 1
    b. Retirement of Prairie Island Unit 2
    c. Retirement of Monticello
    d. Retirement of Prairie Island Units 1 & 2, and Monticello

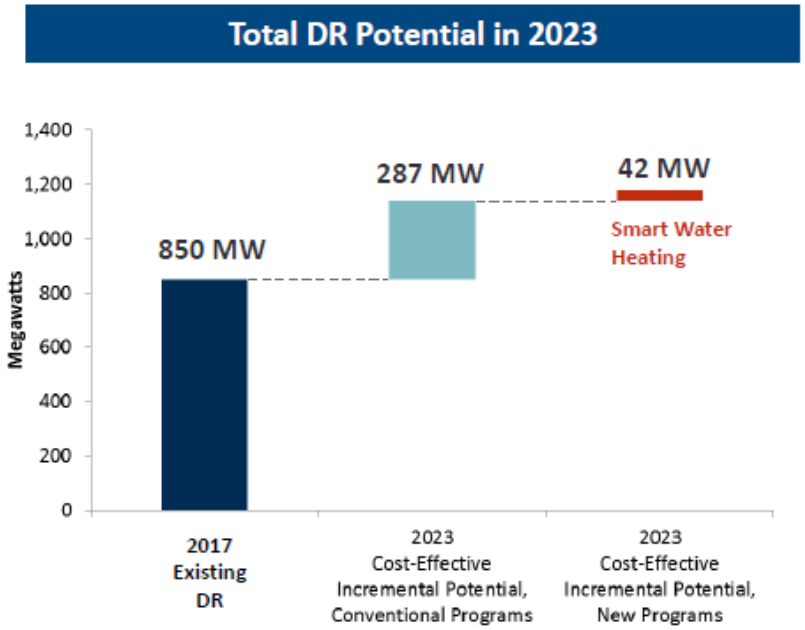
[12] https://cdn.misoenergy.org/Attachment%20Y-2109860.pdf

[13] Xcel Energy, 2015 Resource Plan Supplement, at 22 (January 29, 2016).

3. Baseload Retirement Analysis – Combined
    a. Sensitivities performed analyzing the impacts of other fuel types retired in addition to above scenarios
        i. Coal retirement scenarios analyzed sensitivities including the retirement of nuclear units
        ii. Nuclear retirement scenarios analyzed sensitivities including the retirement of coal units

Demand Response

To assist the Company in meeting its 400 MW of demand response (DR) by 2023 requirement, Xcel initiated, and is in the final stages of completing, an updated DR Potential Study with the Brattle Group. Based on the preliminary results of the Brattle Study, cost-effective DR in Xcel's service territory falls short of the Commission's 400 MW requirement:



However, Brattle noted in a later slide that "AMI is assumed not to be fully deployed by 2023 in this analysis, limiting the types programs that can be offered on a large scale." One issue for the resource plan is likely to be the assumptions for AMI in the examination of how new DR is determined to be cost-effective. (For example, should Xcel assume AMI *is* fully deployed? Since Xcel is evaluating AMI and TOU rates in separate dockets, should DR programs in the IRP include any incremental AMI costs?)

According to Xcel's IR response, new DR programs are in various stages of development, and include MISO-accredited DR resources (conventional DR resources), customer load shifting options, and AMI-enabled pricing programs:

> [A]dding an incremental 400 MW of DR, including nonconventional resources, requires both initiating pricing programs and bringing them fully to market, which

> takes time. Doing so by 2023 is a limited timeframe – particularly for programs that require AMI installations. Therefore, we believe the majority of incremental DR toward the 400 MW by 2023 requirement will be within the conventional DR resources framework, or may require customers to utilize energy differently by shifting their overall peak.[14]

V. Parties' Comments

The Department of Commerce (Department), the Center for Energy and Environment (CEE), and Community Power filed comments on Xcel's extension request. CEE supports the extension, Community Power conditionally supports the extension, and the Department might need further information or clarity before recommending approval.

A. Department of Commerce

The Department explained that, when considering Xcel's request, the Commission should consider:

- Whether delaying the filing would impact the Company's ability to respond to already identified or newly identified resource needs in a timely, cost-effective manner; and

- The expected schedule for other utilities' filing IRPs.

Based on the information available at this time, the Department believes it is unclear whether Xcel has no action necessary in its five-year action plan. To help resolve this issue, the Department recommends that, if the Commission grants a time extension to Xcel, the Commission should also require the Company to establish a 2019 IRP docket in the near future and submit the Strategist files needed to recreate and test Xcel's preliminary Strategist reference case as presented in Xcel's October 23, 2018 IRP Workshop Power Point.

In addition, to be consistent with the Commission's typical approach for IRPs, the Department recommends that the Commission also require Xcel to provide the Strategist files with the same assumptions and using the mid-point of the Commission's most recently approved externalities and regulatory costs of carbon. Such information would provide a helpful start to the analysis to be conducted in 2019.

Regarding the expected schedules for other utilities' resource plans, the Department provided an IRP filing schedule in Table 1 of its comments, which assumed the Commission approves Otter Tail Power's extension request:

[14] Xcel response to PUC Information Request No. 36, at 4 (November 19, 2018).

Table 1: Minnesota Electric IOU IRP Filing Schedule

Code	Utility	Most Recent Filing Date	Docket No.	Potential IRP Due Dates
E001	Interstate	01-Feb-18	17-374	
ET6133	MMPA	01-Aug-18	18-524	
E002	Xcel	29-Jan-16	15-21	01-Jul-19
ET6125	Minnkota	26-Jun-14	14-526	01-Jul-19
E017	Otter Tail	01-Jun-16	16-386	01-Jun-20
E015	Minn. Power	01-Sep-15	15-690	01-Oct-20
ET2	Great River	01-May-17	17-286	01-Apr-21
ET10	MRES	01-Jul-16	16-509	01-Jul-21
ET9	SMMPA	27-Nov-17	17-753	01-Dec-21

A review of Table 1 indicates that Xcel's proposal to submit its next IRP on July 1, 2019 coincides with the due date for Minnkota Power Cooperative (Minnkota). However, the Department will not be conducting capacity expansion modeling during its review of Minnkota's IRP filing, so that IRP should not create an unreasonable burden on the regulatory process.

Overall, once the Department has sufficient clarity to determine whether or not there would be any action for Xcel to take in the five-year period, it will make a final recommendation.

B. Center for Energy and the Environment

CEE supports Xcel's request for a five-month extension to file its IRP. Given that Xcel needs no additional resource approvals in the near term and remains committed to filing a plan that is 85% carbon-free by 2030, CEE encourages the Commission to grant Xcel's request.

In addition, CEE believes that continued engagement with stakeholders around priorities and modeling assumptions, the findings of CEE's study to assess the impact of plant closures on host communities, and results of additional modeling of DSM potential are critically important to the company's IRP and warrant a five-month delay in the Company's filing.

C. Community Power

Community Power believes that this particular plan is pivotal in the future of Minnesota's electric services. This is due to the importance of evaluating the retirement of Xcel's remaining baseload fleet and the opportunity to integrate more non-power plant resources, including distributed generation, demand-side alternatives, and transmission solutions.

Community Power supports granting the extension on the condition that Xcel uses the extra time to conduct analysis and modeling that fairly compares demand-side and supply-side alternatives; facilitates meaningful public engagement; and commits to the Commission-centered resource planning process as the appropriate venue, and not propose or support legislation that preempts Commission oversight.

Community Power identified a number of shortcomings in Xcel's presentations to date that should be addressed in the time granted for this extension. Below, staff will discuss a few of Community Power's objections to Xcel's preliminary results and analysis.

First, Community Power does not believe Xcel's proposed reference case has any merit. For example, it does not reflect Xcel's public commitment to reach 60% renewable by 2030, nor does it model any additional cost reductions for wind and solar. It also omits the aggressive commitments to clean energy that many municipalities and communities in Xcel Energy territory have already made, such as the 100% renewable electricity commitment of the Minneapolis Clean Energy Partnership, of which Xcel Energy is a member.

Second, Community Power believes Xcel's analysis fails to capture distribution-level impacts. Community Power stated, "[t]he extension should not be granted if it will not result in Xcel completing the promised assessment of likely customer-driven distribution-level impacts."[15]

Third, Community Power criticized several elements of Xcel's stakeholder process. It cited over-use of "utility-speak," a lack of innovation, a poor meeting format (all were held during business hours), and rudimentary group facilitation tools; Community Power also believes the meetings have been inaccessible to a broad range of energy users.

Finally, Community Power observed that approving the extension request would place the 2019 IRP filing after the 2019 legislative session. Community Power emphasized that it is important Xcel "refrain from attempts to secure legislative predetermination of the efforts this IRP is intended to evaluate."[16]

VI. Staff Discussion

A. Staff's Concerns with Further Delay

As noted above, it has been approximately four years since Xcel last filed a resource plan. Xcel stated in its extension request that an additional five months would allow for more stakeholder engagement; it could incorporate the findings of a host community study, which is being conducted by CEE; and it could provide time to incorporate the results of a statewide DSM Potential Study, which is being conducted by CEE, Optimal Energy, and Seventhwave under the Department's supervision. While staff does not disagree these will be valuable contributions to the record, staff believes there are important trade-offs to consider.

First, as staff noted in the Background section of the briefing paper, staff believes it is worth considering why the February 2019 deadline exists in the first place. The reason Xcel's deadline for this IRP was set at February 2019 was because the Company argued during the last IRP hearing that it needed time to go through the certificate of need process for the Sherco 1 and 2 replacement. As mentioned, the Department, CEO, and Commission recognized the major decisions that Xcel's next IRP will address. Thus, one tradeoff is that a five-month delay will mean the Commission must hold off its consideration of these issues.

[15] Community Power comments, at 4.

[16] Community Power comments, at 11.

A second, related tradeoff concerns the time it could take to complete the IRP, and the effect any delay could have on long-term planning efforts. Optimistically, if the February 2019 date is maintained (i.e. Xcel's request is denied), it is *possible* the Commission could hear the resource plan by the end 2019, but an early-2020 date is probably more realistic. But it is worth noting that Xcel's last two IRPs took about 2-3 years, due to extension requests, Xcel's revisions to its plans,[17] and staff workload. Assuming an 18-month filing-to-hearing timeframe—the length of time in Xcel's last IRP—would mean that the Commission may not hear the resource plan until August ~~2021~~ 2020. Adding five months to that would place it at January ~~2022~~ 2021.

If one outcome of the IRP is early unit retirement, there could be more urgency than Xcel implies, and one of staff's hopes for the next IRP is that Xcel will not bypass the Commission's resource acquisition process. Given the early retirement scenarios Xcel is currently evaluating—Prairie Island and/or Monticello by 2024-2026 and King and Sherco 3 by 2028—it is possible that an IRP → resource acquisition process → permitting, development, and construction timeframe could be extremely tight already under any one of these scenarios. (The Sherco CC in Xcel's last IRP has an expected in-service date of 2027, which is eleven years after the Commission and Xcel informally agreed to a certificate of need process.)

A fundamental question underlying the decision to approve or deny Xcel's request is: When does the Commission want to hear the next IRP? Xcel has already received several reliability studies conducted by MISO, which examine and identify the grid reliability issues that could be encountered under a number of retirement scenarios. Additionally, the Brattle Group has already prepared a new demand response study exploring the Commission's requirement to add 400-1,000 MW of additional DR, and it appears that report is being finalized. It is of course up to the Commission to decide whether more stakeholder meetings and additional studies prior to a filing date has a net benefit. However, staff believes denying the extension would be beneficial if there is greater concern over long-term planning issues, not the five-year action plan, which is Xcel's focus. (And, as will be discussed later, staff disagrees with Xcel that it does not have important, unresolved issues to be addressed in its next five-year action plan).

To be clear, staff is not implying that DSM potential will not be critical to the ultimate approval of a least-cost resource plan, and clearly, impacts to host communities will be an important factor to consider in a retirement analysis. Rather, what staff is suggesting is that since CEE will be a party to the proceeding, perhaps it is best for CEE to incorporate the DSM study and host community studies as part of their comments and final recommendations. That way, CEE's studies will be part of the record, but the Commission will not have to wait an additional five months to consider whether the early retirement of its nuclear and coal-fired facilities, accompanied by a number of already-completed MISO Y-2 studies, is in the public interest.

[17] Xcel's 2011 IRP (Docket No. 10-825) was filed on August 2, 2010. On December 1, 2011, Xcel filed a Resource Plan Update, which "delayed the timing of and likely size and type of [Xcel's] next resource." Xcel's 2015 IRP was filed on January 2, 2015. Xcel announced a new resource plan in its October 5, 2015 comments, and filed it on January 29, 2016.

B. Five-Year Action Plan

According to Xcel's extension request, the Company claims a delay is justified in part because it will not need any resources in the near-term:

> We do not have any actions necessary in our five-year action plan. In other words, we have the necessary resources to meet forecasted energy and capacity needs through 2024. We, therefore, do not believe there is any harm in delaying our filing to provide for the developments discussed above.[18]

According to Minn. R. 7843.0400, Subp. 3.C. (Resource Planning), an "action plan" is defined as follows:

> The supporting information must include an action plan, **a description of the activities the utility intends to undertake to develop or obtain noncurrent resources identified in its proposed plan**. The action plan must cover a five-year period beginning with the filing date. The action plan must include a schedule of key activities, including construction and regulatory filings. (Emphasis added by staff.)

Xcel's next five-year action plan will cover the 2020-2024 timeframe. During this time, Xcel will be undertaking a number of actions to comply with the Commission's order in Xcel's 2015 IRP, some of which include resource acquisition: As some examples, the Commission required that "Xcel shall acquire no less than 400 MW of additional demand response by 2023."[19] In addition, the Commission required that "Xcel shall acquire approximately 650 MW of solar in 2016–2021 through a combination of the Company's community solar gardens program or other acquisitions."[20] The Company is also required to "report on its solar acquisition progress"[21] in its next IRP.

The definition of an action plan refers to "noncurrent" resources, which is probably why Xcel states, "we do not have any actions necessary in our five-year action plan." However, solar and demand response are two resources Xcel will be integrating in substantial amounts over the next five years, but some of the specifics were left to be addressed in Xcel's next IRP. For instance, it is unknown at this time exactly how much demand response Xcel will propose, in what form, when, and in which docket(s). Similarly, the Commission's last IRP order intentionally left unresolved how much of the 650 MW of required solar needed to be small-scale versus utility-scale.

Also, as Xcel has claimed numerous times in the past, its *ability* to meet forecasted capacity and energy needs does not and should not prevent the Company from seeking additional resources

[18] Xcel extension request, at 3.

[19] Commission order, ordering paragraph 10 (January 11, 2017).

[20] Commission order, ordering paragraph 4.a. (January 11, 2017).

[21] Commission order, ordering paragraph 14.d. (January 11, 2017).

if it is cost-effective to do so. For instance, in its Dakota Range Wind Project petition—which was filed on the heels of its petition for approval of 1,550 MW of new wind—the Company explained why an additional 300 MW of new wind would benefit ratepayers even though doing so at times would exceed its native load requirements:

> [A]s more wind generation is integrated into the system, coal and gas-fired thermal generation is dispatched less often. When the energy from the proposed project is produced, it displaces energy production from other Company resources or purchased energy from the MISO market. This displacement of other generation or market purchases largely drives the portfolio benefits shown in our modeling results … As we continue to transition our fleet to include more renewables and less coal generation, there will be periods of time where the generation on our system exceeds our native load serving requirement.[22]

In other words, with regard to the Company's ability to meet its forecasted needs in the first five years of its planning period, Xcel is in the same position as it was in the last IRP; nevertheless, the Commission determined that at least 1,000 MW of new wind and 650 MW of new solar was still in the public interest. Here, it appears Xcel is claiming it will not propose any new resources in the five-year action plan. But modeling "noncurrent" renewable energy and demand-side resources will, as always, be a focal point of Xcel's next planning phase, so Xcel's five-year action plan is very much subject to change if it is cost-effective to pursue incremental DSM and renewable energy.

Also, Xcel is taking a number of steps in the near-term with regard to demand response, which will include a number of regulatory filings of which there is currently no specific description. Xcel mentioned in its response to PUC IR No. 36:

> [W]e have identified more than 15 products in our DR product development process. These potential new programs are in various stages of development, and include MISO-accredited DR resources (conventional DR resources), customer load shifting options, and AMI-enabled pricing programs. We have also continued to expand our existing programs, and have added an additional residential offering for smart thermostats.[23]

Xcel further stated, "We anticipate outlining the actions we expect to take toward meeting this requirement as part of our five-year action plan in the IRP."[24] This means that Xcel will have an updated five-year action plan that will add specificity to the 400 MW of demand response required in the Commission's order.

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[22] Docket No. 17-694, Xcel Energy, *Petition for Acquisition of 302.4 MW of Wind Generation*, at 14 (September 26, 2017).

[23] Xcel response to PUC Information Request No. 36, Question 3, at 4 (November 19, 2018).

[24] Xcel response to PUC Information Request No. 36, Question 3, at 4 (November 19, 2018).

In addition to the 15 new DR products, Xcel also mentions its IDP,[25] which will incorporate the Company's plans for investments in, for example, AMI. As noted earlier, Xcel's AMI rollout will be critical to its analysis of cost-effective demand response in the IRP, and a lack of current AMI is one reason the preliminary results of the Brattle Group DR study found that less than 400 MW of new DR is cost-effective. The examination of demand response cost assumptions, the treatment of AMI in the cost-benefit analysis, and so forth could factor into the Commission's ultimate decision in the next IRP. These components of Xcel's IDP are related to Xcel's five-year action plan and will be pertinent to the amount of DR discussed in the resource plan.

Finally, Xcel has not included any further details or listed regulatory filings regarding its natural gas pipeline expansion at the Sherco site. As discussed on page 22 of Xcel's January 29, 2016 Supplement to the Resource Plan, significant investments will be required to deliver natural gas to the Sherco site. In its Supplement, Xcel discussed "a high-level cost analysis of bringing new natural gas infrastructure to serve the proposed CC unit at Sherco," but little else. While natural gas pipelines are not a planning resource, natural gas pipeline infrastructure expansion is at least relevant to Xcel's electric system planning, and staff believes it would be helpful to receive revised cost estimates and future regulatory filings concerning the pipeline.

C. Solar Energy

As noted above, Xcel currently has no plans to initiate an all-source, renewable energy, or solar energy competitive bidding process similar to its undertaking in Colorado, which was required as part of its 2016 IRP filing to the Colorado Public Utilities Commission.

Staff asked Xcel this question because it has been about five years since Xcel went through a transparent, formal competitive bidding process for solar resources in Minnesota. Xcel last issued a solar request for proposals (RFP) on April 22, 2014, and in that process, Xcel selected three projects for Commission approval, which had an average price of $73.20/MWh.[26]

However, as it has been revealed in the now well-publicized results of Xcel's all-source RFP in Colorado, the solar market has changed significantly, with the median bid price among 152 solar bids coming in at $29.50/MWh.[27] In Xcel's 2015 resource plan, Xcel's solar price assumptions were significantly higher; as shown in the table below (which, for space, staff edited to show only through 2025), the solar price was never below $67/MWh[28]:

[25] Docket No. 18-251.

[26] Docket No. E002/M-14-162, Xcel Energy's Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard Compliance, at 22 (October 24, 2014).

[27] https://www.documentcloud.org/documents/4340162-Xcel-Solicitation-Report.html

[28] Xcel Energy, Supplement to Resource Plan, Attachment B, at Page 3 of 17 (January 29, 2016).

Tech Type:	Solar	Solar	Solar	Solar	Solar	Solar
Construction Start:	2016	2018	2019	2020	2021	2022+
First Full Year of Ops:	2019	2021	2022	2023	2024	2025+
Tax Benefit:	30% ITC	30% ITC	30% ITC	26% ITC	22% ITC	10% ITC
2019	67.30					
2020	68.80					
2021	70.35	69.54				
2022	71.92	71.09	69.73			
2023	73.53	72.69	71.29	70.96		
2024	75.18	74.31	72.89	72.55	72.20	
2025	76.86	75.98	74.52	74.18	73.82	95.00

It is worth noting that even with these assumptions, which are likely now unrepresentative of the current solar market, the Commission determined that 650 MW of new solar could be cost-effective. Xcel did not reveal in its stakeholder presentations what the Reference Case solar price assumption will be in the next resource plan, but presumably it will be much lower than the last IRP since Xcel discussed that the updated assumptions will be based on "recent market intelligence to inform near-term pricing (CO solicitation, NSP unsolicited proposals, etc.)."[29]

Xcel has a Commission requirement to procure additional solar; it is an energy goal of the state of Minnesota that, by 2030, 10% of the retail electric sales be generated by solar energy; Xcel's next IRP will likely include much lower solar price assumptions than the last IRP; soon, the solar federal Investment Tax Credit (ITC) will begin to step down; and it has been almost five years since Xcel has formally sought bids for solar projects. For these reasons, staff believes that it is premature to conclude that Xcel will not have any actions necessary in the next five years. It's quite possible that additional procurement of solar resources is something the Commission might wish to pursue, and therefore delaying the next IRP on the basis that there will be no action plan might presume too much about the IRP outcome.

D. Department Recommendation on Strategist Files

As discussed previously, the Department recommends the Commission require Xcel to submit the files necessary to recreate the Company's 2020-2034 Reference Case. Staff agrees with this recommendation regardless of whether or not the extension request is approved. In fact, the Commission has taken similar actions before: In Minnesota Power's 2013 IRP, for instance, the Commission required:

> Thirty days prior to its next resource plan filing date, Minnesota Power shall file its energy and demand forecast and Strategist commands.[30]

[29] Xcel Energy, September 10, 2018 workshop, Economic and Technical Considerations – Part 1, Modeling Assumptions Overview: Slide 14.

[30] Docket No. 13-53, In the Matter of Minnesota Power's 2013 – 2027 Integrated Resource Plan, Commission ordering paragraph 10 (November 12, 2013).

In Decision Option 4, staff simply proposed the same language as in the Minnesota Power case, but applied it to Xcel. Staff suggests taking comments from the Company and parties on possible revisions to the language of this option.

VII. Decision Options

1. Approve Xcel Energy's request to delay filing its next resource plan from February 3, 2019 to July 1, 2019. *(Xcel, CEE)*

2. Approve Xcel Energy's request for an extension for filing on the condition that Xcel use this extra time to:

   a) Conduct thorough analysis and modeling that fairly compares all options;

   b) Create a public stakeholder process designed for meaningful input and participation; and

   c) Commit to the regulatory process by avoiding side-steps. *(Community Power)*

3. Deny Xcel Energy's request to delay filing its next resource plan.

4. Require Xcel to submit the files necessary to recreate the Company's 2020-2034 Reference Case, as summarized at Xcel's October 23, 2018 IRP Workshop. Further, consistent with the Commission's typical approach for IRPs, require Xcel to provide the Strategist files with the same assumptions as in the Company's 2020-2034 Reference Case but using the mid-point of the Commission's most recently approved externalities and regulatory costs of carbon. *(Department)*

5. Thirty days prior to its next resource plan filing date, Xcel Energy shall file its energy and demand forecast and Strategist commands. *(Staff option; Note: Staff suggests the Commission ask Xcel whether this option is feasible if the Commission denies the Company's extension request.)*