

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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Chair
Commissioner
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In the Matter of the Petition of Northern States
Power Company d/b/a Xcel Energy for
Approval of Competitive Resource Acquisition
Proposal and Certificate of Need

ISSUE DATE: May 23, 2014

DOCKET NO. E-002/CN-12-1240

ORDER DIRECTING XCEL TO
NEGOTIATE DRAFT AGREEMENTS
WITH SELECTED PARTIES

PROCEDURAL HISTORY

On March 15, 2011, Northern States Power Company d/b/a Xcel Energy (Xcel) filed a proposal to renovate and increase the capacity of its Black Dog Generating Plant, and requested that the Commission grant a Certificate of Need for the project under Minn. Stat. § 216B.243.¹ Xcel later petitioned to withdraw its application, arguing that subsequent events and new data demonstrated that Xcel would not need additional capacity until after 2014.²

On November 21, 2012, the Commission issued an order granting Xcel's petition to terminate its Certificate of Need docket -- but also initiating the current docket to solicit proposals from project developers, and to determine which would best meet Xcel's needs and fulfill the requirements for a Certificate of Need.³ The Commission took administrative notice of the record in the prior Certificate of Need docket.⁴

On March 5, 2013, in the context of reviewing Xcel's 2011 resource plan under Minn. Stat. § 216B.2422, the Commission issued an order declaring that Xcel had demonstrated the need for an

¹ *In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for a Certificate of Need for Approximately 450MW of Incremental Capacity for the Black Dog Generating Plant Repowering Project*, Docket No. E-002/CN-11-184, Xcel Petition (March 15, 2011).

² *Id.*, Xcel Motion to Withdraw Application (December 7, 2011).

³ This docket, Order Closing Docket, Establishing New Docket, and Schedule for Competitive Resource Acquisition Process (November 21, 2012).

⁴ *Id.*

additional capacity of 150 megawatts (MW) by 2017, increasing up to 500 MW by 2019.⁵

On April 15, 2013, the Commission received proposals from the following parties (bidders):

- Calpine Corporation (Calpine) proposed adding to its Mankato Energy Center a natural gas combustion turbine and a heat recovery steam generator to provide an additional 290 MW of intermediate capacity and 55 MW of peaking capacity.
- Geronimo Wind Energy, LLC, d/b/a Geronimo Energy, LLC (Geronimo), proposed erecting photovoltaic panels at approximately 20 sites adjoining substations along Xcel's transmission or distribution lines, each site with a capacity of 2 to 10 MW, for an aggregate capacity of up to 100 MW (or 72 MW of accredited capacity) fueled by solar power.
- Great River Energy (GRE) proposed two alternative packages of resource credits for capacity within the wholesale transmission grid operated by the Midcontinent Independent System Operator, Inc. (MISO), Zone 1 – that is, rights to transmit electricity throughout most of Minnesota as well as areas further east and west.
- Invenergy Thermal Development, LLC, (Invenergy) proposed three 178.5 MW natural gas combustion turbines, one in Cannon Falls and two in Dakota County or Scott County.
- Finally, Xcel's proposed three 215 MW combustion turbine gas generators. One turbine (Black Dog Unit 6) would be installed at Xcel's existing Black Dog Generating Station in Burnsville, and the other two would be built near Hankinson, North Dakota (Red River Units 1 and 2).⁶

On June 21, 2013, the Commission issued an order referring the matter to the Office of Administrative Hearings to conduct a contested case proceeding to develop the record, and to prepare a report and recommendation.⁷ The order also asked the Minnesota Department of Commerce (the Department) to prepare an environmental report considering each of the proposals, as well as the alternative of delaying or cancelling all the proposals, but varied some regulatory details governing the preparation of environmental reports.⁸

Administrative Law Judge (ALJ) Eric L. Lipman conducted contested case proceedings, receiving testimony, briefings, or both, from the following participating entities:

- Calpine, represented by Brian M. Meloy and Andrew J. Gibbons from the firm of Leonard, Street and Deinard.

⁵ See *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket (March 5, 2013).

⁶ If Xcel planned to have Black Dog Unit 6 operational by 2017, it would build it in 2016 and 2017. See Ex. 1 at 1-11 (Xcel Energy Proposal), Ex. 46 at 12 (Wishart Direct).

⁷ This docket, Notice and Order for Hearing (June 21, 2013).

⁸ *Id.*

- The Department, represented by Julia E. Anderson, Assistant Attorney General.
- Flint Hills Resources, LP; Gerdau Ameristeel Corporation; and USG Interiors, Inc.; (collectively, Xcel Large Industrials) represented by Andrew P. Moratzka from the firm of Stoel Rives LLP.
- Geronimo, represented by Christina K. Brusven from the firm of Fredrikson & Byron.
- Great River Energy, represented by Donna Stephenson, Associate Counsel, and Michael J. Bradley from the firm of Moss & Barnett.
- Invenergy, represented by Eric F. Swanson from the firm of Winthrop & Weinstine.
- Minnesota Center for Environmental Advocacy (MCEA), appeared on behalf of MCEA, Fresh Energy, Sierra Club, and Izaak Walton League - Midwest Office (collectively, the Environmental Intervenors), represented by Kevin Reuther, MCEA Legal Director.
- The North Dakota Public Service Commission Advocacy Staff (NDPSC Advocacy Staff), represented by Ryan M. Norrell, Special Assistant Attorney General for North Dakota.
- Xcel, represented by James R. Denniston, Assistant General Counsel, and Michael C. Krikava, Thomas Erik Bailey, and Kodi J. Church from the firm of Briggs and Morgan.

On July 18, 2013, the Department issued a decision identifying the scope of the environmental report it planned to prepare in this matter (Scoping Decision). The Department proposed to evaluate the option of building no new facility and pursuing any of the alternatives proposed by the bidders to assess each option's consequences for humans and the environment.

On October 14, 2013, the Department issued its environmental report to address the issues identified in the Scoping Decision.

On October 15, 2013, the ALJ convened a public hearing on this matter. And by November 22, the ALJ had received approximately 60 public comments.

On December 31, 2013, the ALJ filed his Findings of Fact, Conclusions of Law, and Recommendation. In response, the Commission received exceptions to the ALJ's report, replies to exceptions, or both, from all the participants other than the NDPSC Advocacy Staff.

On March 25 and 27, 2014, the Commission met to consider the matter. The Commission received comments from all participants other than the NDPSC Advocacy Staff.

FINDINGS AND CONCLUSIONS

I. Summary

Assuming Xcel and the selected bidders can agree to terms that are consistent with the public

interest, the Commission finds as follows:

- Geronimo’s proposal provides an appropriate choice for meeting a portion of Xcel’s reliability and adequacy needs, and to fulfill the state’s energy policies.
- Calpine’s proposal, Invenenergy’s Cannon Falls proposal, and Xcel’s Black Dog proposal may also provide appropriate choices for Xcel to meet a portion of its reliability and adequacy needs and to fulfill the state’s policies.

Consequently the Commission directs Xcel to finalize draft power purchase agreements with Geronimo, Calpine and Invenenergy, and to draft finalized cost estimates for Xcel’s Black Dog Unit 6 proposal that would be binding on Xcel, and to submit these finalized terms for Commission review.

The Commission also makes a number of findings in support of these conclusions.

Finally, as a procedural matter, the Commission directs Xcel to file annual progress reports and extends the filing date for Xcel’s next resource plan to January 2, 2015.

II. Background

A. Resource Planning

Minn. Stat. § 216B.2422 directs larger electric utilities to disclose both their plans, and the analysis underlying the plans, for selecting the resources necessary to meet customer demand throughout the next 15 years.

Planning begins with a forecast of the demand for electricity within the utility’s service area. In particular, a utility must forecast the maximum amount of electricity it must provide at any one time – that is, its peak demand. The utility must then design its system to ensure that it has enough resources to meet this maximum peak, plus some extra resources to address unanticipated circumstances – such as unexpectedly high demand, or unexpected resource outages.

The utility then evaluates resources it might use to meet its needs. The utility can supply electricity through a combination of generation and power purchases. The utility can also manage its customers’ demand by encouraging customers to conserve electricity or to shift activities requiring electricity to periods when there is less demand on the electric system. A resource plan contains a set of supply-side and demand-side resource options that the utility could use to meet the needs of retail customers. A utility considers the supply-side and demand-side resources together on an integrated basis. Through the process of creating an integrated resource plan, a utility can identify the least-expensive reliable combination of resources that will meet the utility’s requirements, consistent with state and federal law and public policy.

When identifying the optimal mix of supply-side resources, a utility considers the different benefits offered by the different types of generators. Baseload generators are designed to operate

almost continuously; they tend to have low operating costs but may be relatively expensive to build. Peaking generators are designed to operate only under rare periods of peak demand for electricity; these generators tend to be less expensive to build, but may have higher operating costs. And intermediate generators are designed to run more frequently than peaking generators but less frequently than baseload generators; intermediate generators tend to have lower construction costs than baseload generators and lower operating costs than peaking generators.⁹

B. Laws and Policies Influencing Resource Planning

Among the legal requirements and policies influencing Xcel's resource plan are the following:

- **Renewable Energy Standard:** Minn. Stat. § 216B.1691 directs Xcel to acquire electricity from renewable sources sufficient to meet 30 percent of the needs of its retail customers by 2020.¹⁰
- **Solar Energy Standard:** In 2013 the Legislature added the Solar Energy Standard, directing investor-owned utilities such as Xcel to acquire sufficient electricity from solar energy to supply 1.5 percent of the utility's total retail electric sales (excluding sales to certain industrial customers) by 2020.¹¹ Xcel estimates that by 2020 compliance would require 455,919 megawatt-hours (MWh) of solar energy,¹² or up to 200 MW of accredited capacity.¹³
- **Greenhouse Gas Regulation:** Minn. Stat. § 216H.06 directs the Commission to estimate the cost of complying with future regulation of carbon dioxide (CO₂), a greenhouse gas, and to use this cost for purposes of evaluating resource alternatives.¹⁴ And Minn. Stat. § 216H.02, subd. 1, declares the state's goal to reduce statewide greenhouse gas emissions relative to 2005 levels by at least 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050. And Minn. Stat. § 3.8852 commissions a framework for making Minnesota the first state in the nation to use only renewable energy.
- **Environmental Externalities:** In addition to the CO₂ regulatory costs noted above, Minn. Stat. § 216B.2422, subd. 3, directs the Commission, "to the extent practicable, [to] quantify and establish a range of environmental costs associated with each method of electricity generation," and to use those costs for purposes of comparing resource alternatives.

⁹ See, for example, Public Hearing Transcript, Vol. 1 at 11-12 (testimony of Xcel witness Alders).

¹⁰ Minn. Stat. § 216B.1691, subd. 2a(b)(4).

¹¹ Minn. Stat. § 216B.1691, subd. 2f; see 2013 Laws of Minnesota, Ch. 85, Art. 10, § 3.

¹² ALJ's Report, Finding 14, citing Ex. 57 at 8 (Engelking Direct), citing Xcel Comments, *In the Matter of the Request for Filings From Electric Utilities on Customers Excluded From the Solar Energy Standard*, Docket No. E-999/CI-13-542 at 4 (August 15, 2013).

¹³ Ex. 83 at 19 (Rakow Direct).

¹⁴ See *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minnesota Statutes § 216H.06*, Docket No. E-999/CI-07-1199.

- Certificate of Need: To build a new large energy facility powered by nonrenewable fuels in Minnesota, generally a developer must demonstrate that the generator is needed, and that relying on a generator powered by renewable energy sources would result in higher cost – including environmental costs – and would not otherwise be in the public interest.¹⁵ In evaluating need, the Commission considers whether --

A. the probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states...;

B. a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record...;

C. by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health...; and

D. the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.¹⁶

C. The Midcontinent Independent System Operator, Inc. (MISO)

The Midcontinent Independent System Operator, Inc. (MISO), administers the wholesale electric transmission grid in 15 states plus Manitoba. It divides its operations into regional zones. Zone 1 includes nearly all of Minnesota, as well as parts of the states to the east and west.

MISO ensures the reliability of the electric system within its boundaries by guarding against the possibility of load-serving entities – generally, utilities -- having insufficient resources to meet the needs of their customers. As part of this effort, MISO considers both supply and demand.

MISO considers supply when it credits a generator's capacity. First, generators have *installed capacity* stating how much power the generator is designed to produce under optimal conditions. But conditions are not always optimal. For example, Xcel concedes that its proposed 215 MW combustion turbines would achieve a maximum output of only 208 MW during summer heat and humidity.

Further, MISO calculates the actual expected capacity of generators within its region – that is, the unforced accredited capacity. Under MISO's accreditation formula, neither intermittent, renewable generators nor dispatchable gas-powered generators would receive 100 percent accreditation of its installed capacity when determining resource adequacy. Using MISO's formula, Geronimo determined that the expected MISO accredited capacity of its solar resource would be 72 percent.

¹⁵ Minn. Stat. §§ 216B.2422, subd. 4; 216B.243, subd. 3a.

¹⁶ Minn. R. 7849.0120.

MISO considers demand in setting reserve requirements – that is, access to generation capacity that is in excess of that utility’s forecasted peak energy demand.¹⁷ Reserve requirements serve as insurance against the possibility of unanticipated customer demand (due to hot weather, for example) or unanticipated outages (due to a generator’s mechanical failure, for example).

In 2012 MISO set a utility’s reserve requirement equal to 3.79 percent – the planning reserve margin -- of the greatest level of demand that the utility’s customers put on its system.¹⁸ But starting in 2013 MISO changed this formula in two ways. First, the new formula no longer reflected a *utility’s* peak demand, but rather the level of demand on the utility’s system during the hour of *MISO’s* peak demand. Second, the new formula changed the planning reserve margin from 3.79 percent to 6.2 percent for 2013, and to 7.3 percent for 2014.¹⁹

In lieu of holding its own generator out of service to meet its reserve requirement, a utility may acquire Zone Resource Credits. These credits, such as the ones offered by GRE, count towards MISO reserve requirement but cannot be used to meet a utility’s energy demand.²⁰

D. Xcel’s competitive resource acquisition process

To help Xcel acquire the best resources at least cost, the Commission established a competitive resource acquisition process under Minn. Stat. § 216B.2422, subd. 5.²¹ The Department has summarized the operational details.²² But in general, when Xcel proposes to submit its own bid as part of the competition, the process includes the following steps:

- Under Commission direction, Xcel publicizes the amount of capacity it needs and the timeframe in which Xcel needs it, and solicits proposals for meeting that need.
- Project developers, including Xcel, file proposals for meeting some or all of Xcel’s need.
- The Commission determines which proposals to accept as substantially complete and suitable for evaluation.

¹⁷ See, for example, Ex. 46 at 5 (Wishart direct) (defining “reserve margin”).

¹⁸ ALJ’s Report, Finding 174, mistakenly attributes the source of this formula to Xcel rather than MISO.

¹⁹ Ex. 83 at 22 – 25, 39 (Rakow Direct); Ex. 44 at 7-11 (Wishart Direct); Environmental Intervenors’ Reply to Exceptions at 10 (noting results of MISO’s 2014 Loss of Load Expectations Study establishing 7.3 percent unforced capacity planning reserve margin).

²⁰ Environmental Report at § 3.5.

²¹ See *In the Matter of Northern States Power Company d/b/a/ Xcel Energy’s Application for Approval of its 2004 Resource Plan, Order Establishing Resource Acquisition Process, Establishing Bidding Process Under Minn. Stat. § 216B.2422, subd. 5, and Requiring Compliance Filing*, Docket No. E-002/RP-04-1752, Order Establishing Resource Acquisition Process, Establishing Bidding Process Under Minn. Stat. § 216B.2422, Subd. 5 and Requiring Compliance Filing (May 31, 2006).

²² *Id.*, Docket No. E-002/RP-04-1752, Department reply comments (January 30, 2006); see also this docket, Order Approving Notice Plan (January 30, 2013).

- If there are material facts in dispute, the Commission refers the matter to the Office of Administrative Hearings for a contested case before an ALJ. The ALJ conducts evidentiary hearings and prepares a report recommending a course of action.
- The Commission reviews the record of the case, including the ALJ's report. The Commission then identifies the resources that are best supported by the record.
- If the Commission selects an option not proposed by Xcel, then within four months Xcel must negotiate a power purchase agreement and submit it for Commission approval, or provide an explanation for its failure to do so and a recommendation for how to proceed.²³

The developer of a project chosen through a Commission-approved competitive resource acquisition process is exempt from the requirement to secure a Certificate of Need.²⁴ Nevertheless, when Xcel offers a proposal as part of its competitive resource acquisition process, the Commission subjects the proposals to the scrutiny of a Certificate-of-Need-like proceeding.²⁵

III. Environmental Report

When a party proposes to build a large energy generating facility requiring a Certificate of Need, Minn. R. 7849.1200 directs the Department to prepare an environmental report examining the project's potential consequences for humans and the environment, alternatives to the project, and potential measures for mitigating any anticipated harms. This rule was adopted to implement Minn. Stat. § 116D.04.

In preparing an environmental report, the Department proposes a scope of matters to address in the report, receives comments on this scope, and issues a final order establishing the report's scope. Then the Department drafts and issues a report consistent with its proposed scope.

On July 18, 2013, the Department issued a decision identifying the scope of the environmental report it planned to conduct in this matter. The Department proposed to evaluate the option of pursuing each of the alternatives proposed by the bidders, and the option of building no new facility at all, to assess each option's consequences for humans and the environment. And the Department identified 18 categories of consequences it would explore – for example, traffic, noise, and economic impacts.

On October 14, 2013, the Department issued its four-volume environmental report, comparing the alternatives to each other with respect to 18 types of environmental consequences.

²³ *Id.*, Docket No. E-002/RP-04-1752, Xcel compliance filing (August 28, 2006) at 5 – 6.

²⁴ Minn. Stat. § 216B.2422 subd. 5(b).

²⁵ Docket No. E-002/RP-04-1752, May 31, 2006 Order at 7; Xcel Compliance Filing at 5 (August 28, 2006).

IV. Analysis of Proposals

A. Establishing a “Level Playing Field”

Each bidding party completed a form identifying the relevant costs and benefits of its proposal. Next, the Department reviewed these forms to determine if the parties were making disclosures and estimates on a comparable basis. For example, the Department analyzed the transmission-related issues attributable to each proposal and ensured that all transmission costs were included in each bid.²⁶ At the Department’s request, Calpine disclosed that its proposal would require upgrades to the transmission system at a cost MISO estimated to be between \$650,000 and \$1.5 million. The Department calculated that this additional cost would translate into a present value of revenue requirement of \$1.55 million and adjusted the results of its analysis accordingly.

In this manner, the Department sought to ensure that the proposals would be compared on the merits of their proposals rather than on disagreements about the meaning of the data.

B. Analytical Models

1. Levelized Cost of Electricity Model

The Levelized Cost of Electricity represents the net present value of the expected annual costs – including variable and fixed operations and maintenance costs, capital costs and the return on investment – divided by annual generation over the term of the proposal.²⁷ Calpine relied on the Levelized Cost of Energy model in developing its case.

Calpine’s analysis found its proposal to be the least-cost gas-powered proposal. However, Calpine acknowledged the limitations of the Levelized Cost of Electricity model in choosing not to compare gas-powered generators to Geronimo’s or GRE’s proposals.

2. Strategist Capacity Expansion Model

The Strategist capacity expansion model identifies the set of resources for a given system that would provide the least cost method to meet increases in demand.²⁸ The Department, Invenenergy, and Xcel argue that a capacity expansion model is the appropriate tool for comparing the proposals in this docket. Calpine cautions, however, that the mechanisms of this model are proprietary and thus not subject to scrutiny.²⁹

Employing the Strategist model, the Department conducted three rounds of analyses. In the first round the Department used data supplied by the bidders themselves to identify every possible combination of proposals that would provide less than 700 MW. This resulted in a total of 153

²⁶ Ex. 81 at CJS-5 at 8 (Shaw Direct Attachments); Ex. 79 at 5 (Shaw Direct).

²⁷ ALJ’s Report, Finding 254, citing Ex. 52 at 6 (Hibbard Direct).

²⁸ Ex. 52 at 5 and 14, n.4 (Hibbard Direct).

²⁹ *Id.* at 7.

packages of proposals, including the base case as a “no build” alternative.³⁰

The Department analyzed how each package would perform under a variety of circumstances.³¹ Through this analysis the Department identified the seven least-cost packages of proposals, with the lowest cost attributed to a combination of Calpine’s Mankato proposal with Xcel’s Black Dog Unit 6 proposal. Given the size of this package of generators, however, the Department also analyzed the effects of deploying smaller energy solutions and of changing the dates on which the generators would begin operations.³²

To compare proposals of very different sizes, the Department allowed Strategist to add generic generators to its modeling of particular bid packages; this technique permits the model to illuminate how the cost to Xcel’s system of any given package would compare to the cost of any other package over the generators’ useful lives. Xcel estimated the cost of a generic gas-powered or solar-powered generator based on the estimated current cost to build a particular type of generator, escalated over time for inflation.³³

The Department then performed a second round of analysis on the seven least-cost packages of proposals from the first round -- plus a Base Case package that involved adding no new capacity -- to evaluate these alternatives under a greater variety of scenarios.³⁴ This round again identified a least-cost package that included Calpine’s proposal with Xcel’s Black Dog Unit 6 proposal. Even when considering the high demand forecasts from Xcel’s resource plan, the Department estimated that these projects would meet Xcel’s power needs until 2023 – and even longer if the more recent demand forecasts prove more accurate.³⁵

In its third round of analysis, the Department considered how the various packages would perform under differing types of gas supply contracts, or if implementation dates were shifted. This final round of analysis also identified a package including Calpine’s Mankato proposal and Xcel’s Black Dog Unit 6 proposal as having least cost. But this analysis also identified Invenergy’s Cannon Falls proposal as a component of many of the top packages, depending on whether the model assumed this proposal would include the cost of a firm or interruptible gas supply.

Based on this analysis, the Department recommended that the Commission authorize Xcel to

³⁰ Ex. 83 at 17 (Rakow Direct).

³¹ ALJ’s Report, Finding 171, citing Ex. 83 at 22 – 25 (Rakow Direct). This analysis did not consider new planning reserve margin of 7.3 percent.

³² Ex. 83 at 36-37 (Rakow Direct). Contrary to the ALJ’s Report, Finding 219, the Department’s analysis was prompted by the combined size of both generators, not just of Black Dog Unit 6. See Department Exceptions.

³³ See, e.g., Hearing Transcript, Vol. 1 at 109-110.

³⁴ Ex. 83 at 36-40 (Rakow Direct). While the second round did not model the consequences of raising MISO’s reserve requirement to 7.3 percent, Dr. Rakow states that he considered this factor in reviewing the Strategist model outputs.

³⁵ ALJ’s Report, Finding 223, citing Ex. 83 at 40 and 43 (Rakow Direct); Ex. 84 SR-5A (Rakow Direct Attachments).

negotiate with Calpine, Invenergy, and Xcel to finalize terms, including terms regarding the type of gas supply contracts and in-service dates, and to approve contracts with two of the three. The Department did not find Geronimo's proposal to be cost competitive with these other three.

Xcel's Strategist modeling differed in certain respects from the Department's analysis, and identified its Black Dog Unit 6 as the least-cost resource.³⁶

V. ALJ's Report

After convening hearings and receiving briefs and reply briefs, the Administrative Law Judge issued his report on December 31, 2013.

A. Demand

In evaluating which source of electric capacity would best meet Xcel's needs, the ALJ started by examining the extent of that need. The Commission found that Xcel had demonstrated need for 150 MW by 2017, and potentially up to 500 MW by 2019 – but the Commission had reached this conclusion in 2013 based on Xcel's 2011 resource plan filing. The ALJ was prompted to reassess the Commission's conclusion based on more recent developments – including the following:

First, the Legislature adopted the new Solar Energy Standard.³⁷ While this statutory change does not alter Xcel's demand, it arguably reduces the portion of the demand that Xcel should seek to meet through sources other than solar power.

Second, in September 2013 Xcel issued a lower demand forecast based on new data. Rather than finding a need for an additional 150 MW in 2017, increasing up to 500 MW by 2019, Xcel found a need for only 93 MW by in 2017, increasing to 307 MW in 2019.

Third, MISO changed the manner in which it calculates reserve requirements. In 2012 MISO required Xcel to maintain a reserve margin calculated on the basis of Xcel's peak demand. But MISO recently changed its formula to require Xcel to calculate its reserve requirement on the basis of Xcel's demand *during the hour of MISO's system peak demand* rather than at the time of Xcel's peak demand.³⁸

Demand on the MISO system typically peaks at a different time than on Xcel's system; in other words, demand on Xcel's system during MISO's peak is typically lower than during Xcel's peak. The ALJ found that between 2006 and 2012, customer demand on Xcel's system was 5 percent lower than during MISO's peak times.³⁹ And the ALJ cited Xcel witness Steven Wishart for the proposition that MISO's formula reduced Xcel's reserve requirements by approximately 200 MW.

³⁶ ALJ's Report, Finding 218.

³⁷ Minn. Stat. § 216B.1691, subd. 2f.

³⁸ Ex. 83 at 22-24 (Rakow Direct).

³⁹ Ex. 46 at 8-9 and Table 3 (Wishart Direct).

The ALJ further found that the combined effects of various changes show that Xcel will not need additional capacity until 2019, when Xcel will need to add a mere 26 MW.⁴⁰

Given this degree of uncertainty, the ALJ found it prudent to pursue a flexible strategy of selecting one or more projects susceptible to delay and size changes. And rather than make irreversible investments to meet an uncertain demand, the ALJ recommended erring on the side of acquiring fewer or smaller resources now, and preparing to solicit bids for additional resources in the future.

B. Supply

Considering a variety of criteria, the ALJ ultimately recommended that the Commission direct Xcel to contract for Geronimo's proposed solar-powered generators and to prepare to solicit bids for generators needed in 2019 and later, pending the outcome of Xcel's next resource plan.

The ALJ found that Geronimo's proposal had a variety of advantages, including the following:

- The Geronimo project is relatively small, making it a good match for the modest demand needs revealed by Xcel's latest demand forecast.
- Applying two analytical models – Levelized Cost of Electricity and the Strategist capacity expansion model – and adjusting for relevant factors, the ALJ concluded that Geronimo's project provided electricity at the least societal cost.
- The Legislature has determined that Xcel must acquire more solar-powered electricity in any event.
- Future environmental regulations are unlikely to cause Geronimo's proposal to incur unforeseen costs or face unforeseen delays.
- The Certificate of Need statute directs the Commission to select generators fueled from renewable sources unless the Commission can find that doing so would be contrary to the public interest. Geronimo proposed the sole generator to be fueled from a renewable source. Given the factors listed above, the ALJ could not determine that selecting the Geronimo project would be contrary to the public interest.

The ALJ faulted the Department's analysis of Geronimo's proposal. According to the ALJ, the Department's analysis failed to acknowledge that the proposal would permit Xcel to avoid the cost of securing at least 72 of the megawatts required to fulfill the Solar Energy Standard.⁴¹ Alternatively, the Department failed to recognize that the proposal would supply Xcel with valuable solar renewable energy credits (S-RECs):

At a price of \$5 for each marketable S-REC, the Geronimo proposal will result in a PVSC [present value of societal costs] reduction of \$10 million annually. At a price

⁴⁰ ALJ's Report, Findings 24 - 25, citing Ex. 46 at 2, 10 (Wishart Direct).

⁴¹ *Id.*, Finding 153.

of \$20 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of \$38 million annually.⁴²

The ALJ also concluded that the manner in which the Department and Xcel conducted their Strategist modeling biased the results they obtained. According to the ALJ, the Department and Xcel instructed the Strategist model to evaluate combinations of generators that could produce 300 MW by 2019, or 11 times the forecast demand of 26 MW.⁴³ This arbitrary choice had the effect of obscuring the benefits of smaller proposals that are well-designed to meet the lower demand level, the ALJ concluded. He further found that this threshold obscured the merits of Calpine's proposal. Calpine proposed a 278 MW generator. Because it failed to meet the 300 MW threshold, the Department and Xcel would only consider its performance when it was combined with another generator. This is because, as configured by the Department and Xcel, whenever the Strategist model identified a shortfall in generation, even as small as 1 or 2 MW, the model would select the next full plant to meet the added need.⁴⁴

The ALJ also found that GRE's proposed transmission capacity credits provided a reasonably-priced, flexible source of capacity. If the Commission were to find that Xcel would need more than 72 MW before the next round of generators could be selected and built, the ALJ would recommend authorizing Xcel to acquire GRE's credits.

C. Certificate of Need Criteria

Because the Commission had stated that this competitive resource acquisition process would use the analytical framework of the Certificate of Need process, the ALJ analyzed the proposals to identify the ones that best fulfill the criteria to receive a Certificate of Need.

1. Effect on Electric Supply's Future Adequacy, Reliability, or Efficiency

Minn. R. 7849.0120.A. addresses how the choice of resource might affect the future adequacy, reliability, or efficiency of energy supplied to the utility, its customers, and the people of Minnesota and neighboring states. While the Commission had identified Xcel's need for 150 MW by 2017 and up to 500 MW by 2019, the ALJ found that the record demonstrated the need for no new capacity in 2017 and 2018, and only 26 MW by 2019.⁴⁵

The ALJ then evaluated each party's proposals based on how efficiently the proposal would meet this limited need. The ALJ concluded that all of the proposed gas-powered proposals were too large for the identified need.⁴⁶

In contrast, the ALJ found that Geronimo's proposal has many advantages. Solar-powered generators tend to produce their maximum output during sunny daylight hours of summer – which

⁴² *Id.*, Finding 156, citing Ex. 59 at 18-19 and Table 2 (Engelking Rebuttal).

⁴³ *Id.*, Finding 181–183.

⁴⁴ *Id.*, Finding 184, citing Hearing Transcript, Vol. 1 at 105; *see also*, Ex. 83 at 16 (Rakow Direct).

⁴⁵ *Id.*, Finding 239, citing Ex. 46 at 8-10 and Table 4 (Wishart Direct).

⁴⁶ *Id.*

coincides with the period of peak demand for electricity.⁴⁷ Geronimo's proposal contains a variety of features designed to promote its reliability.⁴⁸ Moreover, 72 MW of distributed generation – that is, a fleet of generators disbursed throughout a service area – has advantages over a comparably-sized generator at a single, remote location: Reliability is enhanced, the ALJ found, because a technical failure is unlikely to affect more than a single generator at a time.⁴⁹ And because the generators would tend to be located in proximity to customers, Xcel would lose less electricity in transmission, and require less transmission and distribution capacity.⁵⁰

Additionally, the ALJ found that GRE's proposal – the sale of MISO capacity credits – has the advantage of making off-the-shelf capacity available on very flexible terms.⁵¹

2. Reasonableness and Prudence

Minn. R. 7849.0120.B. seeks to identify the most reasonable and prudent alternative demonstrated on the record. The ALJ concluded that the appropriate tool for identifying this alternative is a Levelized Cost of Electricity analysis.⁵²

Partially on this basis, the ALJ identified the Geronimo proposal – potentially supplemented with the GRE proposal -- as the most reasonable and prudent alternative.⁵³ The ALJ found that on a per MWh basis, Geronimo's proposed solar-powered generator is the lowest cost stand-alone resource.⁵⁴ And unlike other types of capacity, Geronimo's proposal helps Xcel meet its Solar Energy Standard obligation, reduces transmission capacity costs and transmission line-loss costs, and creates no cost for fuel or emission controls -- nor the risk of these costs increasing over time.⁵⁵

The ALJ rejected the analyses of other parties on the theory that they had 1) placed undue reliance on the demand forecast from Xcel's resource plan, 2) overlooked many of the benefits of the Geronimo proposal, and 3) failed to consider optimal strategies for meeting needs less than 300 MW. In addition, the ALJ concluded that other analyses failed to give sufficient value to the flexible scope of the Geronimo and GRE proposals. If Xcel were to commit to a project with a fixed generating capacity, and the anticipated level of demand did not materialize to justify a project of that size, Xcel would lack the option of scaling back the project – and would be stuck bearing cancellation costs instead.

⁴⁷ *Id.*, citing Ex. 60 at 12-13 and 15-16 (Beach Direct).

⁴⁸ *Id.*, Finding 241, citing Ex. 60 at 3-5 and 18-19 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).

⁴⁹ *Id.*, Finding 243, citing Ex. 62 at 3-4 (Skarbakka Direct).

⁵⁰ *Id.*, Finding 244, citing Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).

⁵¹ ALJ's Report, Findings 246-248, citing Ex. 63 at 2-3 (Selander Direct), Ex. 64 at 3 (Selander Rebuttal).

⁵² *Id.*, Findings 253-254, citing Ex. 52 at 6-7 (Hibbard Direct).

⁵³ *Id.*, Finding 259.

⁵⁴ *Id.*, Finding 257, citing Ex. 74 at 7 (Norman Rebuttal).

⁵⁵ *Id.*, Finding 256, citing Ex. 13 at 19 (Distributed Solar Energy Proposal).

3. Benefits Compatible with Nature, Society, and Health

Minn. R. 7849.0120.C. seeks to identify projects that would provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.

The ALJ found that the construction and operation of Geronimo's proposal, unlike the gas-powered proposals, would avoid generating a variety of pollutants, or even using much ground water.⁵⁶ The ALJ also found that Geronimo's proposal would generate a variety of temporary and permanent jobs, and other economic activity.⁵⁷

4. Compliance with Laws of Other Jurisdictions

Minn. R. 7849.0120.D. asks whether the record demonstrates that the design, construction, or operation of a proposed facility, even if suitably modified for the purpose of complying with all relevant policies, rules, and regulations of other state and federal agencies and local governments, would nevertheless fail to comply. Citing examples of federal and state policies seeking to reduce emissions of greenhouse gases such as carbon dioxide (CO₂), the ALJ reasoned that Geronimo's proposal – the only proposal that would generate electricity without generating greenhouse gases – would pose the least risk of violating these policies, or of incurring additional compliance costs.⁵⁸

D. Conclusions

Based on his findings, the ALJ concluded as follows: First, the record does not support the need for Xcel to acquire more than 26 MW by 2019 via this docket. Consequently the ALJ recommended selecting scalable projects to meet this near-term need, and addressing later resource needs via a later resource acquisition process.⁵⁹ Even a finding of much greater need in 2019 would not justify making those decisions in the current docket.

Second, as between the two scalable proposals – Geronimo's and GRE's – the ALJ concluded that Geronimo's proposal is cheaper, as reflected in both the Strategist and Levelized Cost of Electricity models when adjusted to incorporate all the desirable features of Geronimo's proposal (S-RECs, reliability, reduced transmission and distribution costs, etc.). Consequently the ALJ recommended selecting Geronimo's project to fulfill up to the first 72 MW of need, and initiating negotiations to finalize a power purchase agreement. If the Commission were to find additional need, the ALJ would recommend selecting GRE's proposal.

VI. Positions of the Parties and Participants

⁵⁶ Ex. 13 at 24, 34 (Distributed Solar Energy Proposal); Ex. 38 at 38 (Environmental Report).

⁵⁷ ALJ's Report, Finding 276, citing Ex. 38 at 31-33 (Environmental Report).

⁵⁸ *Id.*, Findings 283-289, citing, for example, Minn. Stat. § 216H.02, subd. 1; Ex. 13 at 24 (Distributed Solar Energy Proposal).

⁵⁹ *Id.*, Finding 249, citing generally Ex. 46 at 8-10 and Table 4 (Wishart Direct).

A. The Department

The Department took exception to various aspects of the ALJ's Report, and to its conclusion.

Demand forecast: While the ALJ developed his analysis on the basis of Xcel's 2013 demand forecast, the Department developed its analysis based on Xcel's 2011 forecast. Justifying this choice, the Department states that it has not verified the accuracy of Xcel's spring 2013 forecast and had significant concerns about how to interpret the results. Moreover, the Department argues that the Commission relied on the 2011 forecast as the basis for soliciting proposals from the parties, and the parties relied on this forecast in fashioning their proposals.⁶⁰ In any event, the Department notes that its analysis explored how the proposed resources would perform under a variety of demand levels – including the level of demand indicated by Xcel's 2013 forecast. Consequently the Department argues that the scope of its analysis encompassed the new data, even if it was not specifically designed around that data.

Level playing field: As previously discussed, the Department strove to ensure that the proposals would be compared on an equivalent basis. This task is complicated by the fact that much of the information about a proposal comes from the party proposing it. One way to promote a fair outcome, the Department argues, is to ask parties to bear the consequences of their statements. If a bidder stated that its proposal would provide certain benefits or avoid specified costs, and the Commission selects that proposal, the Department reasons that the bidder should bear any economic consequence of failing to conform to the terms of its bid. Consequently the Department plans to oppose a power purchase agreement for any project that would shift more costs to ratepayers than were reflected in the Department's analysis of the project.⁶¹

While Geronimo claims that its proposal would produce valuable S-RECs, or would help offset transmission congestion, Geronimo did not put those claims into its initial bid. Consequently the Department has not included those considerations in its modeling. Moreover, the Department and Xcel elected to exclude transmission interconnection-related factors from the analysis of each of the proposals, so the Department declined to consider Geronimo's claims related to transmission costs.

Capacity expansion model vs. Levelized Cost of Electricity model: While the ALJ relied primarily on a Levelized Cost of Electricity analysis, the Department favors reliance on the Strategist capacity expansion model.

Modeling details: Many of the Department's exceptions pertained to the ALJ's review of the Department's Strategist model.

For example, the ALJ's Report criticizes the Department for excluding consideration of generators, and combinations of generators, that produced less than 300 MW in 2019, an amount more than 11 times as large as the forecasted need of 26 MW, thus adding an additional generator to any package of generators that produced less than 300 MW – even if the package produced 299 MW. The Department identifies a variety of flaws in this analysis.

⁶⁰ Ex. 76 at 8 - 14 (Shah Direct).

⁶¹ Ex. 82 at 4 -5 (Shaw Rebuttal).

As an initial matter, the Department rejects the forecast suggesting that Xcel will not need more than 26 MW by 2019, and thus rejects the conclusions that flow from it.

Moreover, while this part of the ALJ's Report may accurately characterize aspects of Xcel's modeling, it fails to reflect the complexities of the Department's. In its first round of Strategist analysis the Department considered 24 different combinations of forecasts, solar accreditation, reserve margins, and wind additions, resulting in varying levels of need. In its second round, the Department's *base case* conditions resulted in an analysis of a 300 MW need by 2019. However, this round also analyzed various contingencies, again resulting in the consideration of a variety of levels of need.⁶² Thus it is not accurate to say that the Department's modeling failed to consider combinations of generators producing less than 300 MW.

However, the Department acknowledges that it directed Strategist to develop packages of generators that are sufficient to meet the need demanded within any given scenario, and not a MW less. This practice is consistent with long-standing Commission decisions regarding how to use the wholesale market to ensure that utilities are able to provide reliable service.⁶³

According to the Department, the ALJ's Report erred in adopting Geronimo's claim that Xcel and the Department used the same base assumptions regarding the cost of generic generators. The Department clarified that it and Xcel employed different assumptions regarding the modeling of solar generators, and how they induced the Strategist model to reflect the requirements of the Solar Energy Standard.⁶⁴

The ALJ found that the Department's practice of comparing generators by packaging them with generic generators entails some risk of biasing the results of the analysis, especially if the estimated costs of the generic generators are too high or low.⁶⁵ The Department acknowledges this risk, but explains that the risk is managed through analyzing packages under a variety of assumptions about capital costs.⁶⁶

Because the cost of the bidders' gas-powered proposals were lower than the estimated costs of comparable generic generators, whereas the cost of Geronimo's solar-powered proposal was higher than the estimated cost of generic solar-powered generators, the ALJ found that the Department's analysis advantaged gas-powered proposals and disadvantaged Geronimo's proposal.⁶⁷ The Department argues that this finding reflects a misunderstanding of its model.

⁶² Ex. 46 at 10-11 (Wishart Direct); Ex. 84 SR-3 and SR-4A (Rakow Direct Attachments).

⁶³ Hearing Transcript, Vol. 1 at 105; *see also*, Ex. 83 at 19 (Rakow Direct). While MISO is in the process of establishing a wholesale capacity market, the Department and Xcel excluded this option from their modeling.

⁶⁴ Ex. 59 (Engelking Rebuttal, Schedule EME-3); Hearing Transcript, Vol. 1 at 110; Ex. 83 at 19 (Rakow Direct).

⁶⁵ ALJ's Report, Findings 190 and 191.

⁶⁶ Ex. 83 at 36-37 (Rakow Direct).

⁶⁷ ALJ's Report, Findings 192 and 193.

Rather, the Department emphasizes that the Strategist model ranked *packages* of generators. Smaller proposals – such as Geronimo’s proposal – would be packaged with relatively more generic generators. If these generic generators had lower costs than the proposal, they would tend to bring *down* the average cost of the package, and thus *boost* the package’s ranking in the Strategist model.⁶⁸

The ALJ’s Report faults the Department’s analysis for ignoring the value of the solar renewable energy credits that Geronimo’s proposal would generate. These credits would permit Xcel to fulfill part of its obligations under the Solar Energy Standard – or simply provide a valuable asset to sell, according to the ALJ:

At a price of \$5 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of \$10 million annually. At a price of \$20 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of \$38 million annually.⁶⁹

The Department denies that it simply overlooked the option of incorporating into its model the idea that Geronimo’s proposal would permit Xcel to avoid certain capacity, energy, or costs needed to comply with the Solar Energy Standard. Rather, the testimony of Dr. Steve Rakow sets forth the Department’s reasons for declining to include these factors in its modeling. Dr. Rakow also described how to interpret the Department’s modeling results to impute to Geronimo’s proposal the benefits of reducing the capacity and energy costs of complying with the Solar Energy Standard. In any event, the Department built its analysis around the assumption that Xcel would comply with the Solar Energy Standard by 2020; because Xcel cannot sell a given S-REC and also use it to comply with the Solar Energy Standard, the Department’s analysis fully accounts for the value of these credits.⁷⁰

Regarding the value of the S-RECs to be generated by Geronimo, the Department clarified that the figure cited by the ALJ reflected estimates of the *total* value of credits generated by the project over its lifetime, not the *annual* amounts. Moreover, the Department noted that these estimates were generated assuming that the generating capacity of solar cells remain constant throughout their service lives. In contrast, the record shows that their generating potential degrades over time.⁷¹

The ALJ’s Report accepted Geronimo’s claim that, when the Department and Xcel calculated the present value of the societal cost of Geronimo’s proposal, they should have reduced this figure by approximately \$9 million to reflect the fact that Geronimo proposes to generate electricity near to

⁶⁸ Ex. 59 (Engelking Rebuttal, Sch. EME-3); Ex. 83 at 30 (Rakow Direct); Hearing Transcript, Vol. 1 at 110. This dynamic did not apply to the manner in which Xcel conducted its Strategist analysis. Ex. 46 at 36 (Wishart Direct).

⁶⁹ ALJ’s Report, Finding 156, citing Ex. 59 at 18-19 and Table 2 (Engelking Rebuttal).

⁷⁰ Ex. 83 at 9-13 (Rakow Direct).

⁷¹ Ex. 59 at 18-19 and Table 2 (Engelking Rebuttal).

customers' locations, thereby reducing the amount of energy lost in transmission.⁷² But the Department explains that Xcel could not verify Geronimo's calculation due to Geronimo's failure to identify the proposed locations of its generators.⁷³ Consequently the Department declined to make this type of adjustment for any of the proposals. In any event, the Department noted that Geronimo's proposal exceeded the cost of rival proposals by substantially more than \$9 million, and thus this adjustment would not have altered the Department's assessment.

The ALJ's Report found that some of Geronimo's proposed generators would connect directly to Xcel's distribution system, thereby freeing up some of Xcel's existing transmission capacity to meet future needs and permit Xcel to avoid costs to expand its system.⁷⁴ By Geronimo's calculation, this feature would save Xcel \$3.24 million in transmission costs per year, or \$33 million in present value of societal cost.⁷⁵ But the Department explains that, because the record demonstrated no need to expand Xcel's transmission system in the areas Geronimo proposed to interconnect, the Department declined to incorporate these alleged savings into its analysis.⁷⁶

Some of the ALJ's concerns with the Department's analysis may reflect a misunderstanding of how the Department conducted its analysis. For example, in its first round of Strategist analysis the Department tested two demand forecasts – one included in Xcel's 2011 resource plan, the other reflecting Xcel's 2013 forecast which generated a lower estimate of need.⁷⁷ But the Department notes that neither analysis incorporated Xcel's new 7.3 percent planning reserve margin.⁷⁸ This larger margin would offset some of the anticipated reduction in Xcel's forecasted demand. Due to the magnitude, and frequency, of MISO's formula changes, the Department concludes that it is no longer clear how to calculate Xcel's reserve requirements.

Conclusion. In summary, the Department states that it continues to evaluate how MISO's changing methods may affect Minnesota's resource planning – including how it may influence the measurement of Xcel's demand-side management programs.⁷⁹ Given the uncertainty engendered by all the changed circumstances, the Department recommends that the Commission accept Xcel's offer to file status assessments in 2014 and 2015.⁸⁰ The Department supports Xcel's efforts to

⁷² ALJ's Report, Findings 205-206, citing Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 46 at 35 (Wishart Direct); Ex. 61 at 7 (Beach Rebuttal).

⁷³ Ex. 81 at CJS-5 at 4 (Shaw Direct Attachments). Xcel would incur any costs associated with a proposal's transmission losses through the differential in locational marginal prices (LMP) between a generator and the retail customers receiving the electricity. Xcel analyzed the LMP differential for all bids except for the Geronimo proposal.

⁷⁴ ALJ's Report, Finding 207, citing Ex. 13 at 9-12 (Geronimo Proposal).

⁷⁵ *Id.*, Finding 208, 210, citing Ex. 13 at 9-12 (Geronimo Proposal); Ex. 59 at 20 (Engelking Rebuttal).

⁷⁶ Ex. 59 at 20 (Engelking Rebuttal); Ex. 61 at 9-10 (Beach Rebuttal). The Department also disputed Geronimo's calculation of benefits, noting that the benefits would decline over time as the solar panels' generating capacity deteriorated. *Id.*

⁷⁷ Ex. 83 at 22-25 (Rakow Direct).

⁷⁸ *Id.* at 39.

⁷⁹ *Id.* at 23 n.11.

⁸⁰ Ex. 85 at 7 (Rakow Rebuttal).

economize by negotiating with the project proposers for the discretion to postpone implementation of any selected project.⁸¹ Finally, the Department recommends that the Commission require the selected bidders to bear the consequences of their statements, and to refrain from shifting more costs to ratepayers than were reflected in the Department's analysis of the project.⁸²

B. Calpine

Calpine championed the use of the Levelized Cost of Electricity model for evaluating competing proposals – although Calpine restricted its analysis solely to the gas-powered proposals. Employing this model, Calpine argues that it has demonstrated that its Mankato proposal is the least-cost option among the gas-powered resources.

Nevertheless, Calpine also notes that the Strategist model also identified Calpine as a least-cost option under some circumstances, and as a competitive option under most circumstances.

As environmental regulations prompt the closure of ever more base load coal plants, Calpine argues that Xcel will need more than just the peaking capacity offered by Invenergy's and Xcel's proposals.

C. Environmental Intervenor

The Environmental Intervenor support Geronimo's proposal, citing many of the same arguments made by the ALJ.

First, the Environmental Intervenor argue that the Commission's order finding need for new resources should be reconsidered in light of current circumstances, that Xcel bears the burden of demonstrating need, and that the record shows that Xcel's needs through 2019 are modest at best. The Intervenor reject the idea that the Commission should ignore changes in demand or MISO's reserve requirements or Minnesota's Solar Energy Standard; indeed, statute directs the Commission to consider legal changes when evaluating a Certificate of Need docket.⁸³ And, according to the Environmental Intervenor, the Department's analysis of scenarios including demand levels at or below the level reflected in Xcel's Spring 2013 forecast is not a substitute for conducting a thorough analysis focused on the lower level of need forecast by Xcel.

Second, the Environmental Intervenor argue that statute directs the Commission to select a generator using renewable sources of energy unless the Commission finds that Xcel has proven that doing so would not be in the public interest.⁸⁴ The Intervenor then argue that the Commission should evaluate the public interest with due consideration for complying with the state's greenhouse gas reduction goals, the renewable energy standard, or the solar energy

⁸¹ Ex. 86 at 11-12 (Rakow Rebuttal); *See*, Hearing Transcript, Vol. 2 at 55. The Department did not express an opinion on Xcel's desire to negotiate for the right to cancel implementation of a selected project.

⁸² Ex. 82 at 4 -5 (Shaw Rebuttal).

⁸³ Minn. Stat. § 216B.243, subd. 3(2).

⁸⁴ Minn. Stat. § 216B.2422, subd. 4.

standard.⁸⁵ In addition, they cite the state's environmental policy, Minn. Stat. Chap. 116D, for the proposition that the state may not grant a permit for actions that would cause pollution if there are feasible and prudent alternatives – and an alternative cannot be dismissed as infeasible or imprudent merely because it costs more. Minn. Stat. § 116D.04, subd. 6, states:

No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. *Economic considerations alone shall not justify such conduct.* (Emphasis added.)

Third, the Environmental Intervenors argue that the Commission's analysis should acknowledge the particular value of Geronimo's proposal, including the federal tax credit for solar power and the value of the resulting S-RECs – whether those S-RECs are sold or used to help Xcel comply with the Solar Energy Standard. While the Department questions Geronimo's estimate of the value of an S-REC, the Environmental Intervenors note that no party offered a different estimate.

According to the Environmental Intervenors, Xcel's plan to solicit proposals for meeting its obligations under the Solar Energy Standard in no way diminishes the merits of Geronimo's proposal for purposes of the current docket, or justifies deferring consideration of the proposal until this later proceeding. And given the competitive nature of the current proceeding – in which Geronimo knew that its proposal would be competing with gas-powered generators – the Environmental Intervenors found no support for the suggestion that a future proceeding would generate cheaper sources of solar power.

D. Geronimo

Geronimo submitted two different pricing proposals for the parties' consideration; each proposal would have the effect of providing Xcel with all the renewable energy credits (RECs) or solar renewable energy credits arising from Geronimo's proposal.⁸⁶

Geronimo supports the ALJ's analysis and recommendation, and shares many of the ALJ's criticisms of the analysis performed by other parties. In particular, Geronimo faults the Department's analysis for failing to give sufficient (or any) weight to the value of Geronimo's low-emissions, S-RECs, or transmission cost savings. Xcel could use the S-RECs to help meet its Solar Energy Standard mandate, Geronimo argues, or could sell them.⁸⁷

In addition, Geronimo notes that both the Department and Xcel conducted their modeling while relying on imputed cost and performance data from generic generators. In the case of generic

⁸⁵ *Id.*

⁸⁶ Ex. 13 at 1, 19 (Geronimo Proposal); Ex. 57 at 5 (Engelking Direct).

⁸⁷ Ex. 13 at 1 (Geronimo Proposal).

gas-powered generators, Xcel generated the relevant data based on its own experiences with such generators – and in fact, the cost of these generic generators proved to be higher than the cost of any of the gas-powered proposals. In contrast, Xcel has had little or no experience with solar-powered generators, and the costs Xcel imputed to a generic solar-powered generator proved to be cheaper than the cost of Geronimo’s proposal. Geronimo argues that this modeling artifact skewed the results against its proposal.

E. GRE

GRE has submitted a proposal to sell Xcel MISO Zone 1 Resource Credits. GRE’s proposal identified two different amounts of credits, with the precise quantity regarded as a trade secret.

Under GRE’s proposal no new facilities would be constructed and no rights to energy production would be transferred to Xcel. If either of GRE’s proposals is selected, GRE would maintain its current energy production rights and MISO would continue to dispatch GRE’s existing generation resources. Xcel could use the credits to meet its reliability goals, but would need some other source of energy – its own generators, or purchases from a third party – to meet the needs of its customers.

GRE argues that its proposal has no adverse environmental consequences. If GRE’s proposal is not selected, GRE would continue to operate its resource portfolio in the same way as it does today. GRE would likely offer to sell its capacity credits to others in the market, or through MISO’s annual capacity auction. In other words, the environmental consequences will likely be the same whether or not Xcel buys GRE’s credits.

GRE initially proposed to sell to Xcel credits for a period of three years, but later agreed to offer Xcel the option of buying credits for only two years. The Department declined to consider this second proposal in its Strategist modeling on the grounds that GRE had made the offer too late in the proceedings. The first round of the Department’s analysis found that the flexibility provided by GRE’s three-year proposal was not worth the cost, and the Department excluded further consideration of GRE’s proposal from the second and third rounds of the Department’s Strategist analysis. GRE argues that the Department’s analysis needlessly precluded GRE’s proposals from consideration.

F. Invenergy

Invenergy supports its Cannon Falls and Hampton combustion turbine proposals. Noting that Xcel’s forecasted need for power had declined for various reasons, Invenergy argues that the most economic way to serve Xcel’s remaining demand is through the use of peaking generators such as combustion turbines. Indeed, while Xcel’s analysis favors gas-powered generators, Invenergy argues that this analysis understated the benefits of combustion turbines and overstated the benefits of intermediate generators such as Calpine’s combined cycle plant.

Invenergy challenges the merits of Calpine’s Levelized Cost of Electricity analysis of the various proposals, arguing that the analysis is skewed to favor intermediate generators over peaking generators. Invenergy argues that Xcel’s forecast demonstrates a need for peaking generators, whereas Xcel already has excess intermediate capacity.

If the Commission elects to authorize construction of a combustion turbine, Invenergy favors its

proposed turbine over Xcel's. Given Xcel's modest forecasts of demand, Invenergy argues that its 179 MW proposals would be a better fit for Xcel's modest demand forecasts than would be Xcel's 215 MW Black Dog Unit 6 proposal.

Finally, Invenergy argues that a power purchase agreement with a party such as itself would better shield ratepayers from bearing hidden costs than an arrangement with Xcel's own generator. But Invenergy argues that Xcel's analysis discriminates against power purchase proposals. In conducting an analysis comparing Invenergy's and Xcel's proposals, Xcel assumed that it would not need to replace its own generator throughout the 35-year period of its analysis – but assumed that it would need to build a substitute generator to replace the Invenergy generator at the end of Invenergy's proposed 20-year power purchase agreement. Invenergy argues that it would have made more sense to assume extending the term of the contract – an option Invenergy is willing to offer.

G. NDPSC Advocacy Staff

The NDPSC Advocacy Staff express concern about geographical equity. According to the NDPSC Advocacy Staff, Xcel serves four of North Dakota's five largest cities yet has built no adjacent generators. This places North Dakota cities at risk for power outages in the event of a transmission line failure, they argue. Consequently the NDPSC Advocacy Staff favors Xcel's proposal to build two gas-powered generators at Hankinson, North Dakota; they ask the Commission to place a premium on the reliability the Hankinson project would contribute to the local grid, even if the plant proved to be more expensive than some others.

But given the degree of uncertainty and changed circumstances in this docket, if the Commission declined to authorize the Hankinson proposals, the NDPSC Advocacy Staff would recommend deferring action until after Xcel's next resource plan.

H. Xcel

Xcel disputes the ALJ's Findings and his conclusion. In particular, while changed circumstances may justify reducing the amount of capacity to acquire in this docket, Xcel denies that they justify the forecast adopted by the ALJ.

In addition, Xcel joins the Department and Invenergy in favoring the reliance on the Strategist model rather than the Levelized Cost of Electricity model.

Xcel disagrees with the ALJ's preference for deferring necessary resource decisions. Xcel warns against delay. Xcel finds the current round of proposals attractive and the record well developed; it is unclear that future proceedings will provide proposals with such attractive terms.

Moreover, while Xcel did estimate that it could erect a combustion turbine in 21 months, Xcel suspects that the ALJ has mistaken an estimate for a planning criterion. To have a new generator ready by 2017, Xcel would propose to build Black Dog Unit 6 in 2016 and 2017. Under its proposal, decommissioning, demolition and removal of the existing Unit 4 turbine, generator, boiler and related equipment would need to begin in the fall of 2014.⁸⁸ Delaying the start of this

⁸⁸ Ex. 1 at 1-11 (Xcel Energy Proposal).

process could delay the end date.

Much like the Department, Xcel argues that Geronimo's claim to be able to avoid approximately \$9 million in transmission losses is insignificant, given that the Strategist model indicated that Geronimo's proposal would exceed the cost of other proposals by \$34 million (measured in terms of the present value of societal costs). Moreover, Xcel argues that Geronimo made it impossible to calculate this alleged savings because Geronimo could not state precisely the size and location of its proposed generators.⁸⁹

Xcel disputes the Environmental Intervenor's claim that Minn. Stat. § 116D.04, subd. 6, bars the Commission from authorizing the construction of a generator that might cause "pollution, impairment, or destruction of ... natural resources" whenever there is the option to authorize construction of a plant that does not emit pollution. According to Xcel, the statutory proscription arises only after a party shows that the state action would result in the violation of an environmental quality standard, limitation, rule, order, license, stipulation agreement, or permit, or would materially adversely affect the environment.⁹⁰

Xcel takes exception to how the ALJ applied the Certificate of Need criteria to the record. In particular, Xcel argues that nothing in the record of this case demonstrates that any of the parties' proposals would fail to comply with the legal requirements of any jurisdiction.

Finally, Xcel addresses procedural matters. When the Commission selects the proposal or proposals that best fulfill Xcel's needs in this docket, Xcel recommends that the Commission direct Xcel and the winning bidders to negotiate terms anticipating the possibility of project delay and/or cancellation. Second, given changes in MISO's reserve requirement formula and other factors, Xcel states its willingness to provide reports in the fall of 2014 and 2015 regarding its assessment of its resource needs.⁹¹

I. Xcel Large Industrials

The Xcel Large Industrials largely share the view of the ALJ, but go further. They argue that the degree of changed circumstances in this docket render Xcel's demand forecast unreliable, and consequently ask the Commission to postpone any decisions until after Xcel's next resource plan.

If the Commission concludes that it must select one or more proposals, the Xcel Large Industrials would urge the Commission to proceed cautiously – that is, erring on the side of making fewer, and

⁸⁹ Ex. 81 at CJS-5 at 4 (Shaw Direct Attachments). Xcel would incur any costs associated with a proposal's transmission losses through the differential in locational marginal prices (LMP) between a generator and the retail customers receiving the electricity. Xcel analyzed the LMP differential for all bids except for the Geronimo proposal.

⁹⁰ Xcel Reply Brief at n. 88; Xcel Exceptions at n.66, citing *Iron Rangers for Responsible Ridge Action v. Iron Range Resources*, 531 N.W.2d 874, 882 (Minn. Ct. App. 1995) *rev. denied* (Minn. July 28, 1995), and *In re Application for Air Emission Facility Permit*, 566 N.W.2d 98, 105 (Minn. Ct. App. 1997) (no finding of material adverse environmental effects where a facility will comply with all applicable state and federal permitting standards).

⁹¹ Ex. 46 at 11 (Wishard Direct); Ex. 48 at 27 (Wishard Rebuttal).

later, capital investments. Because the Solar Energy Standard requires Xcel to acquire more solar power in any event, the Xcel Large Industrials recommend that the Commission make Geronimo's proposal their first choice. Beyond this, the Xcel Large Industrials would favor purchasing GRE's offer of MISO capacity credits over a two- or three-year period, thereby delaying the need to make a longer-term capital investment until after Xcel's next resource plan. But the Xcel Large Industrials recommend making any decision contingent upon decisions rendered in Xcel's next resource plan.

VII. Commission Action

A. Environmental Report

The Commission finds that the Department's environmental report addresses the issues raised in the Department's scoping decision, including the consequences identified in Minn. R. 7849.1500, subpart 2 (air emissions, visibility impacts, ozone, fuel availability and fuel transportation, electric transmission facilities associated with each proposal, water appropriations, amount and types of wastewater discharges, solid and hazardous wastes, anticipated noise). Consequently the Commission finds that the environmental report, supported by the record of this proceeding, addresses the issues outlined in the Department's Scoping Decision.

B. Changed Circumstances and the Resource Plan Order

Citing circumstances that have changed since the Commission approved Xcel's last resource plan, the ALJ sought to reevaluate the amount of capacity that Xcel should seek to acquire via the current proceedings. Other parties argued that efforts to reevaluate this need exceeded the scope of the current proceedings, and argued for evaluating the proposals based on the level of need established in the resource plan.

The Commission did not specify the precise amount of capacity to be obtained via the current docket. Rather, the Commission stated in its March 5, 2013 Order:

[P]arties disagree about the magnitude of Xcel's needs. For example, the Environmental Intervenors and the [Xcel Large Industrials] argue that the 500 MW figure may exceed customer demand. In contrast, Calpine and the Department argue that the 500 MW figure is justified, and may even be too low.

The idea that Xcel will need an additional 500 MW by 2019 is well-supported in the record. Indeed, Xcel has previously argued that it would need up to 600 MW of additional capacity – and Xcel generated this estimate before it cancelled plans to add 118 MW of new capacity to its Prairie Island plant.

For purposes of Xcel's competitive bidding docket, the Commission finds it appropriate to solicit proposals for *an additional* 150 MW in 2017, increasing *up to* 500 MW by 2019. This statement does not preclude Xcel

from acquiring more than 150 MW of new resources by 2017.⁹²

Moreover, the Commission concluded that this description sufficed “to inform potential bidders of the scope of projects that the Commission will be considering.”⁹³ The description has fulfilled this role, attracting proposals of appropriate size.

Nothing in the order indicated that the Commission would refrain from considering all relevant factors in determining the amount of capacity to select via this competitive resource acquisition process. Consequently the Commission will evaluate the bidders’ proposals to determine which would best meet the needs identified in this record and the Commission’s March 5, 2013 Order.

C. Changed Circumstances Generally

1. Introduction

The Commission’s March 2013 resource plan order found that Xcel had demonstrated the need for at least 150 MW by 2017, potentially increasing to 500 MW by 2019.⁹⁴ Since then, a variety of circumstances have changed pertaining to energy resources on Xcel’s system and potential changes in need estimated by Xcel.⁹⁵ Because uncertainty makes errors more likely, the ALJ opted to err on the side of making fewer and smaller commitments, rather than more and larger ones.⁹⁶

The Commission agrees with the ALJ that uncertainty in the record is an important fact to weigh in making a commitment of resources. But the Commission concludes that the strategy recommended in the ALJ’s Report gives insufficient attention to uncertainty – specifically, the uncertainty in the data suggesting that Xcel will need no more than 26 MW by 2019. Instead, the Commission will err on the side of ensuring that Xcel has enough capacity to meet the needs of its customers. The future will always be uncertain, but the Commission must proceed to make the necessary choices on the basis of a rigorous analysis of the data that *is* in the record.⁹⁷

Among the arguments that Xcel should curtail the amount of capacity it acquires in this docket,

⁹² *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket (March 5, 2013) at 2 and 6 (emphasis in original).

⁹³ *Id.* (emphasis added).

⁹⁴ See *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket (March 5, 2013).

⁹⁵ ALJ’s Report, Finding 12.

⁹⁶ *Id.*, citing Ex. 49 at 2 (Alder’s Direct).

⁹⁷ Ex. 49 at 7 (Alders Direct) (“[T]here are factors that create uncertainty and could materially affect our resource need assessment. The new need assessment is another data point that should be considered in analyzing which resource proposals should be selected to address the range of [Xcel]’s potential need in the 2017-2019 timeframe.”).

parties cite the following:

- The Legislature adopted the Solar Energy Standard, effectively requiring Xcel to acquire between 72 and 200 MW of accredited capacity from solar-powered generators by 2020.
- Xcel entered into arrangements with the operators of wind turbines having a combined nameplate capacity of 750 MW – that is, 550 MW more than contemplated in Xcel’s resource plan.
- Xcel’s Spring 2013 forecast predicted lower growth than anticipated in Xcel’s resource plan.
- MISO changed the formula for calculating short-term reserve margins.⁹⁸
- Xcel rates the capacity of its demand-side management programs based on how well they perform during Xcel’s peak – not during MISO’s peak.
- Xcel revised its estimates of the generating capacity of its existing generators.

All these factors were analyzed in this proceeding. The Commission finds that some of these changes may appropriately reduce the amount of capacity to be acquired in this proceeding, but other changes will have no effect, or ambiguous effects, on Xcel’s capacity needs.

2. Solar Energy Standard

Because the Legislature has directed Xcel to acquire more energy from solar power, Xcel will have less need for power from other sources – potentially including from resources acquired through the current docket. Consequently, the Commission concurs with the parties arguing that this new development justifies reducing the amount of capacity Xcel would acquire through this proceeding. That said, quantifying how much this mandate should reduce Xcel’s acquisitions is complicated by the fact that Geronimo’s proposal could be used to fulfill part of the Solar Energy Standard mandate, or could be sold. Conceptually, Xcel’s demand for Geronimo’s proposal is 72 MW larger than its demand for the other proposals.

3. 750 MW Wind “Power” Acquisition

Xcel has purchased and contracted for wind turbines having a total nominal capacity of 750 MW – but as a source of *energy*, not *capacity*. That is, the turbines are intended to permit Xcel to reduce the amount of fuel it burns at its other generators during periods of low and moderate demand. But the turbines are unlikely to help Xcel meet demand on peak days because, on peak days, the transmission grid will have no spare capacity to permit Xcel to receive this power. These transmission constraints are expected to continue until 2021 at the earliest; consequently these new wind resources have no bearing on Xcel’s capacity needs in the 2017 – 2019 timeframe.

⁹⁸ Ex. 46 at 37 (Wishart Direct). See generally *In the Matter of the Petition of Xcel Energy for Approval of the Acquisition of 600 MW of Wind Generation*, Docket No. E-002/M-13-603; *In the Matter of the Petition of Xcel Energy for Approval of the Acquisition of 150 MW of Wind Generation*, Docket No. E-002/M-13-716.

4. New Demand Forecast

Xcel regularly revises its forecasts of customer demand within its service area. And the demand levels indicated by Xcel's Spring 2013 forecast were less than the levels reflected in Xcel's last resource plan.

However, the Department notes that Xcel's resource plan forecast, unlike Xcel's Spring 2013 forecast, received the benefit of Department review and Commission approval. Consequently the Department did not rely on Xcel's revised forecast for purposes of analyzing the parties' proposals.⁹⁹

That said, the Department analyzed the parties' proposals under a variety of circumstances -- including circumstances that would reflect levels of demand indicated by Xcel's spring 2013 sales forecast.¹⁰⁰ On this basis the Commission concludes that the record adequately incorporates and reflects the contingency that demand in Xcel's service area has declined since the time of Xcel's last resource plan.

5. MISO's Reserve Requirement Formula

It is unclear how changes in MISO's new reserve requirement formula should influence the amount of power Xcel will acquire via this docket. As previously discussed, the new formula is calculated on the basis of the planning reserve margin multiplied by the level of demand on Xcel's system during the hour of MISO's peak demand.

The time of Xcel's system peak differs from the MISO system peak; between 2006 and 2012, demand on Xcel's system was on average 5 percent lower during MISO's peak than during Xcel's peak.¹⁰¹ Consequently the ALJ observed that this aspect of MISO's new formula should tend to reduce the amount of capacity Xcel is required to maintain. However, this capacity "savings" has proven unreliable, varying from zero percent (in 2006) to 14 percent (in 2007).¹⁰²

Moreover, this change in MISO's reserve margin formula was implemented at the same time as a countervailing change in the formula: the size of the planning reserve margin. MISO increased this margin from 3.79 percent to 6.2 percent. MISO acknowledges that utilities need stable standards upon which to base their plans -- while also acknowledging that MISO was again changing the planning reserve margin to 7.3 percent.¹⁰³

The forecasted amount of Xcel's need varies substantially depending upon which reserve requirement formula is used. MISO's new method of calculating reserves effectively reduces Xcel's peak demand by 275 MW to 290 MW, even without adjusting for changes in the calculation

⁹⁹ Hearing Transcript - Vol. 2 at 29-30.

¹⁰⁰ Ex. 76 at 13 (Shah Direct).

¹⁰¹ ALJ's Report, Finding 21.

¹⁰² Ex. 46 at 8-9 and Table 3 (Wishart Direct); Ex. 83 at 23-24 (Rakow Direct).

¹⁰³ Ex. 46 at 7-11 (Wishart Direct).

of Xcel's demand-side management capability or changes in MISO's short-term planning reserve margin.¹⁰⁴

Clearly Xcel must, at a minimum, plan to have sufficient capacity to meet its reserve requirements. But given the level of uncertainty created by the new formula, it is far from clear that Xcel's new reserve requirement, even if lower than Xcel's previous reserve requirement, should serve as a guide for purposes of Xcel's longer-range plan.

6. Demand-Side Management

Xcel has historically measured its demand-side management programs on their ability to help Xcel shed load during times of *Xcel's* peak demand; Xcel has not calibrated the performance of these programs during *MISO's* peak demand. For example, subscribers to Xcel's Saver's Switch program authorize Xcel to cycle their air conditioners on and off. While this program helps Xcel reduce the demand that air conditioners place on Xcel's system at any one time, estimates of the amount of demand savings this program can produce during MISO's peak period vary by more than 100 MW.¹⁰⁵ Any decrease in the rated capacity of Xcel's demand-side management programs must be offset by an increase in Xcel's reserve requirement.

In short, MISO's new reserve margin formula adds an additional level of uncertainty regarding the performance of demand-side programs.

7. Capacity of Existing Generators

Each generator has a rated nameplate capacity, identifying the maximum power the generator can produce without shortening its operational life. Typically a generator's capacity will decline over time, and due to circumstances such as hot, humid weather. The rated capacities of Xcel's generators have recently been revised, contributing one more degree of uncertainty about the relationship of power supply and demand.

8. Effect of Changed Circumstances

The ALJ cites Xcel witness Wishart for the proposition that MISO's new reserve margin formula reduced Xcel's reserve requirements by approximately 200 MW, and that various changes can be combined to produce a forecast purporting to show that Xcel will not need additional capacity until 2019, when Xcel will need to add a mere 26 MW.¹⁰⁶ But Wishart made this forecast based on Xcel's untested 2013 demand forecast, MISO's 2013 reserve requirement formula – a formula MISO has already stated that it plans to increase – and on the untested assumption that Xcel's demand-side resource capacity will remain unchanged even as applied to MISO's peak demand rather than Xcel's peak.

Overall, these changes might reduce Xcel's expected capacity needs in general – but they also introduce greater uncertainty into the analysis. Utilities cannot know which reserve margin

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* at 24-25.

¹⁰⁶ ALJ's Report, Findings 24 - 25, citing Ex. 46 at 2, 10 (Wishart Direct).

formula MISO will use in the long run; Xcel has less confidence in the performance of its demand-side management programs during MISO's peak than during its own.¹⁰⁷

Taking into account the consequence of Xcel's new demand forecast, the new Solar Energy Standard, and changes in the forecasted capacity of Xcel's existing generators and demand-side management programs, Xcel reduced its anticipated need for new capacity to 93 MW in 2017, potentially growing to 307 MW by 2019.¹⁰⁸ This represents a substantial decline from the Commission-approved level of demand. Nevertheless it remains within the range of demand analyzed by the Department.¹⁰⁹

The Commission finds that the Strategist modeling performed by the Department and Xcel, using a wide range of assumptions, inputs, and considerations, provides sufficient information to form the foundation of the Commission's choices in this docket.

D. Certificate of Need Criteria

Parties dispute the manner in which the ALJ interpreted the criteria of Minn. R. 7849.0120 to evaluate the various proposals. The Commission both concurs in, and dissents from, the ALJ's findings.

1. Effect on Electric Supply's Future Adequacy, Reliability, or Efficiency

Minn. R. 7849.0120.A. addresses how the choice of resource might affect the future adequacy, reliability, or efficiency of energy supplied to the utility, its customers, and the people of Minnesota and neighboring states.

This docket was initially driven by the Commission's March 2013 order finding that Xcel had demonstrated the need for at least 150 MW by 2017, potentially increasing to 500 MW by 2019.¹¹⁰ But given a broad range of changed circumstances, the ALJ concluded that Xcel would not need to acquire any new capacity for 2017 or 2018, and would need only 26 MW by 2019. And the ALJ found that it would not be efficient to procure large generators, such as gas turbines, to meet this modest need.¹¹¹

As previously discussed, the Commission concurs with the view that changed circumstances may justify Xcel reducing or delaying its acquisition of new capacity. But the Commission rejects the view that changed circumstances justify reducing Xcel's acquisitions to no more than 26 MW by 2019. The analysis that led to this conclusion reflected the combined effects of all dynamics that might reduce an estimate of need – while omitting consideration of the corresponding dynamics

¹⁰⁷ Ex. 46 at 9 (Wishart Direct) and Ex. 83 at 24-25, 39 (Rakow Direct).

¹⁰⁸ Ex. 46 at 7-8 and Table 2 (Wishart Direct).

¹⁰⁹ Ex. 76 at 13 (Shah Direct).

¹¹⁰ See *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket (March 5, 2013).

¹¹¹ ALJ's Report, Finding 250.

that might reasonably offset those reductions.

The future adequacy, reliability, and efficiency of power available to Xcel, its customers, and the people of Minnesota and neighboring states, depend upon a prudent assessment of need. Even Xcel's revised 2013 forecast, with further adjustments for the Solar Energy Standard and revised capacity ratings for Xcel's generators and demand-side management programs, demonstrates a need for more than 300 MW by 2019.

Thus, the Commission concurs with the ALJ that the record demonstrates sufficient demand to justify selecting the Geronimo proposal. But contrary to the ALJ's finding, this level of demand is also more than sufficient to justify selecting a new combustion turbine or combined cycle generator.

2. Reasonableness and Prudence

Minn. R. 7849.0120.B. addresses whether the record demonstrates by a preponderance of the evidence that some other facility is more reasonable and prudent. Addressing this question requires consideration of both process and substance.

Procedurally, the Commission must evaluate the tools the parties offer to help the Commission gauge reasonableness and prudence. The ALJ concludes, and Calpine and Geronimo agree, that a Levelized Cost of Electricity analysis provides better guidance than the Strategist capacity expansion model, and that the manner in which the Department and Xcel conducted their analysis led to biased results.

The Department, Invenenergy, and Xcel argue the contrary, supporting both the Strategist model in general and their implementation of it. And under the current circumstances, the Commission agrees.

As previously discussed, a Levelized Cost of Electricity analysis calculates the net present value of the expected annual costs – including variable and fixed operations and maintenance costs, capital costs and the return on investment – divided by annual generation over the term of the proposal. However, it does not consider how a new resource would affect the utility's existing resources – for example, by helping to avoid additional capacity costs and variable costs, including fuel.

Because this model takes little or no account of the context within which a resource would be used, the analysis may be appropriate where competing resources will be used in identical contexts, and thus all other factors can be regarded as equal. But the U.S. Energy Information Administration concludes that “the direct comparison of the levelized cost of electricity across technologies is often problematic and can be misleading as a method to assess the economic competitiveness of various generation alternatives.”¹¹²

In the current docket, the Commission confronts a choice among vastly dissimilar proposals – proposals for peaking and intermediate capacity, for dispatchable and non-dispatchable generation, for solar-powered and gas-powered generators, for proposals that would be governed by a power purchase agreement and proposals that would be owned by Xcel outright, and between

¹¹² Ex. 47 at 16 (Wishart Rebuttal).

generators and transmission capacity credits.¹¹³ This range of variables simply exceeds what a Levelized Cost of Electricity analysis is designed to consider.

In addition, the Strategist model permits the parties to compare the amount of pollution each proposal would generate, and to weigh this pollution on the basis of Commission-approved externality and regulatory values; a levelized analysis does not. In this circumstance, the evidence and long-standing Commission practice support the conclusion that capacity expansion modeling provides better predictions of costs and ratepayer effects than does a Levelized Cost of Electricity analysis.¹¹⁴

More substantively, the ALJ, Geronimo, and Calpine object to the manner in which the Department and Xcel conducted their Strategist modeling, and the conclusions they drew from it. The ALJ concluded a reasonable and prudent purchaser could not select any of the gas-powered proposals when Geronimo's proposal is the lowest-cost stand-alone resource when judged on the basis of the amount of energy it is expected to generate.¹¹⁵ And the ALJ rejected the analyses of other parties on the theory that they had placed undue reliance on the demand forecast from Xcel's resource plan.

The record supports the conclusion that, on a stand-alone basis, Geronimo's proposal has the lowest ratio of cost to anticipated energy generated. But the record also shows that when analyzed as part of a system, Geronimo's proposal incurs the highest costs.¹¹⁶ And, while parties disagree about the relative merits of relying on the forecast from Xcel's resource plan or Xcel's 2013 update, the Department analyzed all the proposals under a variety of scenarios – including levels of demand that were less than Xcel's 2013 forecast. Consequently, the Department's analysis cannot be dismissed on this basis. When combined, Xcel and the Department used a wide range of assumptions, inputs, and considerations in each of the Strategist models and the results provide a reasonable range of uncertainties, futures, and reasonable outputs to consider.

In sum, while the record clearly demonstrates the merits of Geronimo's proposal, the Commission rejects the ALJ's finding that reason and prudence precludes the selection of the gas-powered proposals as well.

3. Benefits Compatible with Nature, Society, and Health

Minn. R. 7849.0120.C. asks whether the proposed resource will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.

The ALJ found that this criterion favors Geronimo's proposal, noting both its environmental benefits and its propensity to generate economic activity. Here, the Commission concurs. While

¹¹³ Ex. 74 at 5–6 (Norman Rebuttal); Ex. 47 at 15–16 (Wishart Rebuttal); Department Reply Brief at 35.

¹¹⁴ Ex. 47 at 2-3 (Wishart Rebuttal). Consequently the Commission declined to adopt findings or conclusions from the ALJ's Report grounded in the quantification of costs and benefits derived from the Levelized Cost of Electricity analysis, including Finding 255.

¹¹⁵ ALJ's Report, Finding 257, citing Ex. 74 at 7 (Norman Rebuttal).

¹¹⁶ See, Ex. 74 at 7 (Norman Rebuttal), referencing Dr. Rakow and Mr. Wishart's direct testimonies.

other parties argue that the cost of Geronimo's proposal outweighs its natural and socioeconomic advantages, no party has challenged the merits of Geronimo's proposal in terms of protecting the natural environment or human health.

The record shows that construction and operation of Geronimo's proposal, unlike the gas-powered proposals, would avoid generating a variety of pollutants. Relying on Geronimo's generators, each year Xcel could expect to avoid emitting 94,133 tons of carbon dioxide (CO₂), 115.98 tons of carbon monoxide (CO), 63.26 tons of nitrogen dioxides (NO_x), 27.08 tons of particulate matter (PM₁₀), 10.48 tons of sulfur dioxide (SO₂), 3.44 tons of volatile organic compounds (VOCs), and unspecified amounts of lead (Pb) and hazardous air pollutants (HAPs).¹¹⁷ In addition, Geronimo's generators do not require water to generate power, thereby avoiding the need to tax aquifers or to discharge heated, chemical-laden wastewater into the environment.

The record also indicates that construction and operation of Geronimo's proposal would promote more employment, and more dispersed employment, than would the other projects. Geronimo's construction phase would generate approximately 500 jobs, dispersed in work crews of between 13 and 40 members each, plus generate roughly 10 permanent operations and maintenance positions.¹¹⁸ In contrast, construction of Xcel's Black Dog Unit 6 proposal is not anticipated to require more than 60 workers at any one time. Calpine anticipates that approximately 250 construction workers would be employed during the peak of its construction activity. Invenergy estimates needing approximately 100 construction workers during the peak of construction activity.¹¹⁹ Finally, no new operations jobs are expected to be created with the Black Dog, Calpine, or Invenergy proposals.¹²⁰

4. Compliance with Laws of Other Jurisdictions

Minn. R. 7849.0120.D. asks whether a proposed facility "will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments."

Noting that the regulation of emissions has grown more restrictive, and may grow more restrictive yet, the ALJ reasoned that Geronimo poses the fewest risks of violating laws and policies beyond the Commission's jurisdiction because Geronimo's proposal produces the fewest emissions.¹²¹

Whatever the merits of the ALJ's conclusion in general, this fourth criterion merely asks whether the record proves that any given facility will fail to comply with laws and policies outside the Commission's jurisdiction. As the Department, Invenergy, and Xcel note, the record does not demonstrate that any of the proposed projects would fail this test. Consequently the Commission concludes that this fourth Certificate of Need criterion provides no advantage to any of the proposed projects.

¹¹⁷ Ex. 13 at 24, 34 (Distributed Solar Energy Proposal); Ex. 38 at 38 (Environmental Report).

¹¹⁸ Ex. 38 at 31-33 (Environmental Report).

¹¹⁹ *Id.* at 30-31 (Environmental Report).

¹²⁰ *Id.* at 29.

¹²¹ ALJ's Report, Findings 282-289.

E. Conclusion

1. Geronimo's Proposal

In sum, the ALJ's Report demonstrates the merits of Geronimo's proposal, both for supporting the reliability and adequacy of Xcel's power supply, but also for promoting beneficial environmental and socioeconomic outcomes. In particular, the Commission notes the state policy favoring energy from renewable sources,¹²² and the goal of reducing greenhouse gases relative to 2005 levels by 30 percent by 2025 and 80 percent by 2050.¹²³ Geronimo's proposal best advances these policies.

The principal objection to Geronimo's proposal has been cost. But whether an analysis shows Geronimo's proposal to be more expensive than the other proposals, or less expensive, or similar in cost, depends on the value given to solar energy, S-RECs, externality values, and other factors. While the Department's analysis found other proposals to be more cost-effective, the difference in the cost of Geronimo's proposal and other proposals was less than half a percent.¹²⁴

Weighing all factors explored in this record, the Commission affirms the ALJ's recommendation and will select Geronimo's proposal.

2. GRE's Proposal

However, while the Commission is persuaded of the need to plan for more than 72 MW of accredited capacity, it will decline the ALJ's recommendation to also select GRE's proposal. Given the ALJ's conclusions about the limited demand growth in Xcel's service area, the ALJ's recommendation was driven by the flexibility and scalability offered by GRE.

The unique nature of GRE's proposal gives it this unusual degree of flexibility. GRE offers to sell capacity credits for two or three years. As such, GRE does not offer to add any new capacity or energy to the MISO system, or any longer-term solution to fill Xcel's need. And while GRE's proposal generates no environmental costs, it also generates no environmental benefits. That is, unlike Geronimo's proposal, GRE's proposal would not provide any substitute means for Xcel to acquire energy in a manner that imposes fewer costs on the environment.

Ultimately the Commission remains convinced that Xcel must plan for the possibility of demand levels consistent with the findings in its last resource plan. Both Xcel and the Department included some version of GRE's proposal in their Strategist modeling to determine if this capacity credit offer had sufficient value -- for example, by delaying the need to actually add resources to the system -- to warrant consideration. Their analyses showed that the costs of GRE's proposal

¹²² Minn. Stat. 216B.2422, subd. 4.

¹²³ Minn. Stat. 216H.02.

¹²⁴ Ex. 84 SRR-4A (Rakow Direct Attachments) (no package including Geronimo's proposal increases Xcel's present value of societal cost by more than 0.47 percent); Environmental Intervenors' Brief at 7–8 (adding Geronimo's proposal to the package of Cannon Falls and Black Dog Unit 6 increases the annual societal cost by 0.08 percent); Public Hearing Transcript, Vol. 1 at 145-46 (testimony of Geronimo witness Engelking) (cost differences between packages are "in the hundredths of a percent" of Xcel's system costs).

exceeded the value of delaying investment in a long-term solution.¹²⁵

In an environment in which Xcel's need for new capacity is speculative and remote, GRE's proposal may have been an appropriate strategic choice. In an environment in which Xcel has demonstrated need for substantial capacity in the near term, GRE's short-term proposal serves no purpose. Based on this record, the Commission concludes that it is neither reasonable nor prudent for Xcel to pursue a capacity credit purchase from GRE to meet Xcel's level of need.

3. Gas-powered Proposals

Among the remaining options, the record demonstrates that Calpine's proposal, Invenergy's proposal, and Xcel's Black Dog Unit 6 proposal have comparable merits. Indeed, the deciding factor as between these proposals may rest in the specific terms of their agreements.

4. Draft Power Agreements

Consequently the Commission will direct Xcel to negotiate agreement terms with Calpine, Geronimo, and Invenergy for securing power from their proposals, and to draft equivalent terms under which Xcel would recover from ratepayers the cost of its Black Dog Unit 6 proposal. In accordance with Xcel's competitive resource acquisition process, Xcel will have four months in which to develop these terms and submit them for Commission approval – or, alternatively, to explain why it had not been able to develop these terms, and to propose how to proceed.

These terms should acknowledge that, for purposes of cost recovery, each bidder will be held to the prices and terms used to evaluate its bid. The terms should not put ratepayers at risk for costs that are higher than bid, or for promised levels of accredited capacity, energy, or other benefits that do not fully materialize. The Commission is not likely to regard as reasonable any terms that shift risk or unknown costs to ratepayers. If a bidder's actual costs prove to be lower than bid, however, the bidders should retain those savings.

In particular, the Commission notes that proposals offering flexible installation dates would provide opportunities for substantial savings to Xcel and its ratepayers. Consequently, while the parties are not required to incorporate such terms into their proposals, the Commission concurs with the ALJ, the Department, and Xcel that it would be appropriate for the Commission and the Department, in reviewing draft terms, to look for terms governing the possibility that a project might be delayed or cancelled.

5. Housekeeping Matters

In support of these decisions, the Commission adopts the ALJ's Report to the extent it is consistent with this order. The decisions set forth here are compatible with socioeconomic and environmental requirements, and compliant with other applicable state law.

To facilitate Commission oversight of the rest of this resource acquisition process, the Commission will accept Xcel's offer to file status reports regarding changes in Xcel's resource needs, including needs resulting from changes in MISO's reserve requirements. The Commission

¹²⁵ Ex. 46 at 24 (Wishart Direct).

will direct Xcel to file its first report by October 2014, and the second report a year later.

Finally, the Commission observes that Xcel's next resource plan is due July 1, 2014. However, the current docket has amply documented a list of changed circumstances that would complicate Xcel's resource planning. Xcel may add to that list the unresolved state of the current docket. In light of these developments, the Commission finds it appropriate to extend the date of Xcel's next resource plan to January 2, 2015.

ORDER

1. Northern States Power Company d/b/a Xcel Energy shall negotiate terms for acquiring new supply resources with the following parties:
 - A. Xcel shall negotiate a draft power purchase agreement with Geronimo Wind Energy, LLC, d/b/a Geronimo Energy, LLC, and submit the agreement for Commission review to ensure that the negotiated terms are consistent with the public interest.
 - B. Xcel shall negotiate draft power purchase agreements with Calpine Corporation and Invenergy Thermal Development, LLC, and shall develop price terms for Black Dog Unit 6. Xcel shall then submit the agreements and terms for Commission review to determine which of these project(s), if any, best addresses Xcel's overall system needs identified in this record and in the Commission's Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket (March 5, 2013) issued in Docket No. E-002/RP-10-825, *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*.

Within four months, Xcel shall file these terms for Commission approval, or shall explain its failure to do so and recommend how to proceed.

2. Regarding these terms:
 - A. Calpine, Geronimo, Invenergy, and Xcel shall be held to the prices and terms used to evaluate each bid for the purpose of cost recovery from Xcel ratepayers. Ratepayers must not be put at risk for costs that are higher than bid or for benefits assumed in bids that do not materialize. If actual costs are lower than bid, the bidders should be allowed to keep those savings.
 - B. The agreements must provide terms that sufficiently protect ratepayers from risks associated with the non-deliverability of accredited capacity and/or energy from the project(s) as proposed.
 - C. The Commission is unlikely to find it reasonable for Xcel to enter into an agreement in which negotiated terms shift risk or unknown costs to ratepayers.

- D. Delay and cancellation provisions are appropriate considerations for power purchase agreement negotiations.
3. The Commission adopts the ALJ's Findings of Fact, Conclusions of Law, and Recommendation (December 31, 2013) to the extent that it is consistent with this order.
 4. Xcel shall file status updates in October 2014 and October 2015 on any changes in Xcel's resource needs, including needs resulting from changes in MISO's reserve requirements.
 5. The Commission extends the deadline for Xcel's next resource plan to January 2, 2015.
 6. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION



Burl W. Haar
Executive Secretary



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CERTIFICATE OF SERVICE

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

Minnesota Public Utilities Commission

**ORDER DIRECTING XCEL TO NEGOTIATE DRAFT AGREEMENTS WITH
SELECTED PARTIES**

Docket Number E-002/CN-1240

Dated this 23rd day of May, 2014

/s/ Robin Rice

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Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, Minnesota 55120	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
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Ryan	Norrell	rmnorrell@nd.gov	North Dakota Public Service Commission	600 E. Boulevard Avenue State Capital, 12 th Floor Dept 408 Bismarck, ND 58505-0480	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
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