LORI SWANSON
ATTORNEY GENERAL

STATE OF MINNESOTA

OFFICE OF THE ATTORNEY GENERAL

SUITE 1800
445 MINNESOTA STREET
ST. PAUL, MN 55101-2134
TELEPHONE: (651) 297-2040

January 21, 2014

Burl Haar, Executive Secretary
Minnesota Public Utilities Commission
Suite 350
121 Seventh Place East
St. Paul, MN 55101-2147

RE: **Exceptions of the Minnesota Department of Commerce, Division of Energy Resources**
OAH Docket No. 08-2500-30760
MPUC Docket No. E002/CN-12-1240

Dear Dr. Haar:

The Exceptions of the Minnesota Department of Commerce, Division of Energy Resources are hereby e-filed and served in the above matter.

Sincerely,

/s/ **Julia E. Anderson**

Julia E. Anderson
Assistant Attorney General
Atty. Reg. No. 0138721

445 Minnesota Street, Suite 1800
St. Paul, MN 55101-2134
Telephone: (651) 757-1202
Fax: (651) 297-1235
julia.anderson@ag.state.mn.us

Attorney for Minnesota
Department of Commerce
Division of Energy Resources

cc: Service List
Enclosure

BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION
SUITE 350
121 SEVENTH PLACE EAST
ST. PAUL, MINNESOTA 55101-2147

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
J. Dennis O'Brien	Commissioner
Betsy Wergin	Commissioner

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	MPUC Docket No. E-002/CN-12-1240 OAH Docket No. 09-2500-30760

EXCEPTIONS TO THE ALJ RECOMMENDATIONS OF THE MINNESOTA DEPARTMENT OF COMMERCE, DIVISION OF ENERGY RESOURCES

JANUARY 21, 2014

EXCEPTIONS TO THE ALJ RECOMMENDATIONS
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

DOCKET NO. E002/CN-12-1240

TABLE OF CONTENTS

Section Page

I. INTRODUCTION

On December 31, 2013, the Administrative Law Judge ("ALJ") filed *Findings of Fact, Conclusions of Law and Recommendation* ("ALJ's Recommendations") to the Minnesota Public Utilities Commission ("Commission") in the *Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process*. The Minnesota Department of Commerce, Division of Energy Resources, ("Department" or "DOC") respectfully submits these Exceptions. The Department appreciates the opportunity to ensure that the record before the Commission is clear and accurate.

The Department's overall goal in all proceedings before the Commission is to ensure on behalf of the public interest that energy resources are reasonably priced and reliable, with minimal effects on the environment and in compliance with Minnesota Statutes. Further, the Department strongly supports addition of renewable resources to meet Minnesota's energy and capacity needs as consistent with Minnesota's energy and environmental statutes and policies.

In this proceeding, given the Commission's finding that Xcel needs to build 150 MW by 2017 and 500 MW by 2019, the ALJ's Recommendations fall short, risking the State's energy reliability and ratepayer impacts. As such, the ALJ's Recommendations are inconsistent with the Commission's Order. Still, the Department concludes that it is important to ensure that solar resources are added to Xcel's system in a competitive and timely manner through a special All-Solar competitive bidding process.

As an example of the Department's support for renewable resources, concurrent with this competitive resource acquisition process ("CRP"), the Department recommended approval of the acquisition by Northern States Power Company, d/b/a Xcel Energy ("Xcel") of 750 MW of wind resources based on a separate competitive wind bid, including 2 200-MW wind energy projects (a total of 400 MW) from Geronimo Energy, the same firm that submitted a solar bid in this CRP.[1] The Department's analysis indicated that, not only was the acquisition of all of these wind resources consistent with Minnesota's policies regarding renewable energy, these resources were also least-cost additions to Xcel's system under more than 1,850 different sets of assumptions, including an assumption of no increase in sales on Xcel's system.[2]

In this proceeding, the Department welcomed the bid by Geronimo Wind Energy, LLC d/b/a Geronimo Energy ("Geronimo") to provide solar resources for Xcel Energy's system ("Solar Bid"). While the Solar Bid was made prior to Minnesota establishing a Solar Energy Standard (discussed further below), the Department appreciated the opportunity to examine a solar bid on equal footing with bids to produce electricity generated by other means, such as natural gas.

In addition to examining the Solar Bid on equal footing with other resources, the Department examined the Solar Bid as if it had been filed under Minnesota's Solar Energy

[1] Docket Nos. E002/M-13-603 and E002/M-13-716.

[2] The Department's analysis includes protections for Xcel's ratepayers if transmission interconnection costs exceed estimated levels.

Standard ("SES"), even though Xcel is not required to obtain solar resources until 2020.[3] The Department examined the Solar Bid with great care, considering that proposed resource as a possible option in every step of our analysis, even after the Solar Bid did not pass prior least-cost tests in the Department's analysis, which included effects on the environment. The Solar Bid was significantly more expensive than the bids of Xcel, Invenergy or Calpine, as discussed in greater detail below.

The Department's analyses of the bids in this proceeding included all of the applicable environmental costs ("externalities") that have been approved by the Commission. The Department also examined the proposed bids under numerous sets of assumptions about factors such as different costs of natural gas, different capital costs, different forecasts of demand for electricity, including sales forecasts even lower than Xcel's low sales forecast in spring 2013, and other possible changes in circumstances. In all, the Department compared the performance of the bids under more than 3,600 different sets of assumptions. The Department's analysis included examination of adding the specific wind resources noted above to Xcel's system.

Given the PUC's Order finding need for energy and capacity starting with 150 MW by 2017 and growing to 500 MW by 2019, and the consideration of over 3,600 scenarios, the Department has determined that the ALJ could only conclude as he did through error. The ALJ's Recommendations, if adopted, would put at risk Minnesota's energy reliability and reasonable rates. Accordingly, the Department recommends that: 1) Calculations be based on the Commission's March 5, 2013 Order finding 150 MW by 2017 and 500 MW by 2019; 2) the Commission adopt the Department's exceptions; and 3) the Commission promptly order Xcel to issue an All-Solar competitive bid.

Requirements of Minnesota Statutes

There are several requirements of Minnesota Statutes that affect this proceeding in addition to the certificate of need criteria that guides analysis in this matter. The most important aspects of Minnesota Statutes are: 1) Minnesota Statute §216B.04, pertaining to reliability of electric service and 2) Minnesota Statute §216B.1691, subd. 2f, pertaining to Minnesota's SES.

1. Reliability of Electric Service

Minnesota Statute §216B.04 requires that "Every utility shall furnish safe, adequate, efficient, and reasonable service." That is, there needs to be sufficient energy infrastructure to provide reliable service to ratepayers not only on an instantaneous basis but also over time, including the time it takes to plan, permit and construct new facilities.

The focus of the ALJ's Recommendations was on a short-term energy forecast rather than on long-term energy and capacity needs and is not appropriate to ensure that Xcel has sufficient capacity to provide reliable electric service. In 2009, the Commission recognized the importance

[3] Xcel is not prohibited from obtaining solar resources prior to that date. Moreover, the Commission may decide that utilities like Xcel can rely on solar resources obtained prior to 2020 and "bank" that energy toward meeting the SES prior to 2020.

of looking at the need for electricity over time in a similar circumstance where there was a decrease in sales indicated during that proceeding:[4]

> The fact that demand is less than forecast reflects a variety of factors, including both the current recession and abnormally cold weather. In evaluating the demand for facilities that are expected to last decades, however, the Commission must focus not on current levels of demand – reflecting fluctuations in the economy and weather - but rather on long-term trends. [Footnotes omitted]

Similarly, it is important in this proceeding to ensure that Xcel will have sufficient resources to meet the needs of its ratepayers reliably and cost-effectively over the long term. As the Department noted in this proceeding:[5]

> It is important to ensure that, when businesses and consumers who depend on Xcel are ready to expand, flip on switches and plug in new demand, Xcel's system is able to meet these demands. Failure to meet these demands in a reasonable manner would result in higher energy prices, thus dampening the recovery. Significant failure to meet demand could result in problems with reliability, such as rolling brownouts that have been experienced in other parts of the United States.
> …
>
> [I]n resource planning the important factor to keep in mind is that forecasts of energy and demand requirements are expected to change substantially over the next 15 years as the economy continues to recover and use of energy by industry and residential consumers increases. It would not be appropriate to assume that the lower demand due to the economic downturn will continue in the long term, nor to plan for an electrical system that is based on energy forecasts occurring during economic downturns since reliability of the electric system as a whole is critical to the health of the economy.
> …
> Use of a reasonably wide forecast band helps to encompass the range of future demand and ensure reasonable planning for the future. The goal is for the preferred plan to be stable [meaning the recommended plan does not change radically under different sets of assumptions, including high and low sales forecasts] across the expected range of future demand encompassed by the forecast band.

[4] Commission's May 22, 2009 *Order Granting Certificate of Need with Conditions*, Docket No. ET-2, E-002, *et. al.*/CN-06-1115 ("CAPX Order").
[5] DOC Ex. 76 at 4-5 (Shah Direct).

These issues are discussed in more detail below.

2. Minnesota's Solar Energy Standard

As noted above, the Solar Bid was submitted prior to enactment of Minnesota's SES, which states in part that:

> … each public utility shall generate or procure sufficient electricity generated by solar energy to serve its retail electricity customers in Minnesota so that by the end of 2020, at least 1.5 percent of the utility's total retail electric sales to retail customers in Minnesota is generated by solar energy.[6]

Implementation of this standard, along with other recent changes to Minnesota Statutes, is expected to increase the amount of solar energy in Minnesota. To help implement the SES in a way that is fair to all available solar resources, and to ensure that Xcel adds the best solar resources, the Department recommended in this proceeding that the Commission require Xcel to initiate a second bidding process that is specific to solar resources, as soon as possible. The design of the first All-Solar competitive resource process would be decided by the Commission.

In its analysis, the Department examined not only the sales forecast of fall 2011 that had already been approved by the Commission, but also the best plan to meet the needs of Xcel's customers given the Company's addition to this record of a new, untested forecast in the spring of 2013. The Department's analysis indicated that the best way to meet the needs of Xcel's ratepayers in a cost-effective manner remained the same under all of the assumptions regarding Xcel's sales forecasts, including the forecast recommended by the ALJ. In other words, the results of the analysis were stable since the recommended plan did not change under different sets of assumptions, including high and low sales forecasts.

3. Fairness and Notice

As discussed in detail below, the Commission has taken several important steps to ensure that the bidding process is fair and transparent to all potential bidders. To this end, it is important to note that, at the time bids were due in this proceeding (April 15, 2013), Minnesota had not yet passed the SES discussed above. In fact, the Commission's March 5, 2013 *Order Approving Plan, Finding Need, Establishing Filing Requirements and Closing Docket* in Xcel's Integrated Resource Plan required only the following regarding solar energy:

> Solar Energy: Xcel shall report on the expected amount of solar energy on its system, barriers it sees to further solar deployment, and how solar development could contribute to peak demand management, economic development in Minnesota, and meeting

[6] Minnesota Statute §216B.1691 subd. 2(b) also states in part: "The commission shall modify or delay the implementation of a standard obligation, in whole or in part, if the commission determines it is in the public interest to do so."

> Minnesota's renewable energy and environmental mandates and goals.[7]

From this information and the specific timing issues discussed below, it would be unreasonable to conclude that all potential solar bidders would have known that Minnesota would pass the SES or that they had notice that solar resources would have been considered in this proceeding. Further, given that only one solar firm submitted a bid, it is not possible to conclude that Xcel's ratepayers would be getting the best solar resources if the Solar Bid were approved in this proceeding.

The Department recommends the All-Solar competitive bidding process even though Xcel is not required to add solar resources to its system until 2020. In addition to helping ensure that all available solar providers could bid under the Minnesota SES while providing assurance that Xcel is adding the best solar resources, this approach would help Xcel gain experience with solar resources on its system, to learn more and provide data about issues such as the ability of solar resources to meet the need for electricity on Xcel's system.

For example, there should be better information about how well solar resources match Xcel's load not only in the summer but also in the winter, such as during the recent "polar freeze" in Minnesota, when the sun was shining during the daytime in the midst of frigid weather and could have provided energy at a crucial time period. That experience may also provide information on the availability of solar resources during various times of the year, such as how quickly snow is removed from solar panels after snowstorms. Overall, since solar resources are designed to produce energy when the sun is shining, when the demand for power tends to be larger, it would be helpful to have better information about how well solar resources match the demand for electricity (both energy and capacity components) over a given year.

Xcel's ratepayers may also benefit if the cost of solar resources decreases over time, similar to the decline in the cost of wind resources, which have been shown to be competitive with traditional generation resources as reflected in the Department's analysis of Xcel's addition of wind resources discussed above.

4. Unintended Consequences of ALJ Recommendations

The ALJ Recommendations contain a number of errors; this process was complex, time-intensive and likely unfamiliar. In addition, the ALJ Recommendations made a number of assumptions that were not supported by the record, which could lead to negative consequences for Xcel's ratepayers. For example, the ALJ Recommendations assumed that the gas turbines

[7] Docket E002/RP-10-825

that were bid into this process would continue to be available to Xcel in the future (paragraph 261):

> If gas turbines are needed to meet larger, forecasted needs after 2019, these turbines can be constructed and placed into service within 21 months of a need determination by the Commission.

However, given the regional nature of the electric system, and the record in this matter, there is no basis to conclude that the gas turbines bid into this proceeding would be available to any Minnesota utility, or that the non-utility bidders would be willing to construct the projects at that time or at the prices bid. Moreover, as discussed further below, it is not reasonable to make such an assumption given changes expected in the electric industry in the near future.

In sum, as discussed below in more detail, the Department recommends that:

1) Calculations be based on the Commission's March 5, 2013 Order finding 150 MW of need by 2017 and 500 MW by 2019;
2) the Commission adopt the Department's Exceptions; and
3) the Commission promptly order Xcel to issue an All-Solar Competitive bid.

II. EXCEPTIONS

A. Introduction

On January 3, 2014, in response to the ALJ Recommendations, the Commission issued its *Notice of Schedule for Filing Exceptions to the Administrative Law Judge Report* ("Notice"). The Notice established January 21, 2014 as the due date for initial exceptions to the ALJ Recommendations and January 31, 2014 as the due date for reply exceptions.

In response to the Notice, below are the Department's exceptions to the ALJ Recommendations. Along with this document, the Department is filing its proposed Findings of Fact that were originally filed in this proceeding on December 6, 2013. As discussed further below, this document is intended as a placeholder; the Department expects to file specific revisions to the ALJ Recommendations by January 31, 2014.

B. Purpose of Competitive Resource Acquisition Process

The purpose of this CRP is to fulfill the need that the Commission found in its March 5, 2013 *Order Approving Plan, Finding Need, Establishing Filing Requirements and Closing Docket* in Xcel's 2011-2025 Integrated Resource Plan ("2013 Resource Order"), which stated: "The Commission *finds* that the current resource plan demonstrates Xcel's need for an additional 150 MW in 2017, increasing up to 500 MW in 2019." (Emphasis added)

C. Timing and Notice

The Department refers to the Commission's June 21, 2013, *Notice and Order for Hearing* in this matter for a complete procedural history, but notes the following as important to understand the development of facts in this proceeding.

On November 21, 2012, the Commission issued its *Order Closing Docket, Establishing New Docket, and Schedule for Competitive Resource Acquisition Process*, in which the Commission stated: "No later than March 18, 2013, resource proposals from interested parties shall be filed in Docket No. E-002/CN-12-1240."

On November 30, 2012, the Commission issued an Order in Xcel's Integrate Resource Plan (2013 Resource Order),[8] requiring Xcel to provide notice to potential bidders that a competitive resource process would soon begin:

> By January 16, 2013, Xcel shall file a notice plan for soliciting bids as part of Xcel's competitive resource acquisition process, as provided in *In the Matter of the Petition by Northern States Power Company d/b/a Xcel Energy to Initiate a Competitive Resource Acquisition Process*, Docket No. E-002/CN-12-1240, Order Closing Docket, Establishing New Docket, and Schedule for Competitive Resource Acquisition Process (November 21, 2012).

On January 30, 2013, the Commission issued its *Order Approving Notice Plan* in which the Commission required Xcel to publish, by February 1, 2013, Xcel's notification to potential bidders of the CRP; the notice was approved by the Commission.

On March 5, 2013, the Commission issued its *Order Extending Bidding Deadline and Refining Procedural Framework* in the CRP proceeding, in which the Commission extended the deadline for bids as follows: "The March 18, 2013 bidding deadline set in the Commission's November 21, 2012 order in this docket is hereby extended to April 15, 2013."

The Commission also issued its 2013 Resource Order on the same day. Regarding solar resources, the Commission's 2013 Resource Order required only the following:

> In its next resource plan Xcel shall address, in addition to the issues set forth in the Commission's Order Establishing Procedural Schedules and Filing Requirements (November 30, 2012), the following issues:

[8] Docket No. E002/RP-10-825.

a. Solar Energy: Xcel shall report on the expected amount of solar energy on its system, barriers it sees to further solar deployment, and how solar development could contribute to peak demand management, economic development in Minnesota, and meeting Minnesota's renewable energy and environmental mandates and goals.

On April 15, 2013, the following bidders filed their proposals in the CRP:

- Calpine Corporation and its affiliate, Mankato Energy Center, LLC ("Calpine"),
- Geronimo Wind Energy, LLC, d/b/a Geronimo Energy, LLC ("Geronimo"),
- Great River Energy ("GRE"),
- Invenergy Thermal Development, LLC ("Invenergy"), and
- Xcel.

On May 24, 2013, Minnesota Governor Mark Dayton signed into law Minnesota's Solar Energy Standard.

The ALJ Recommendations that were filed on December 31, 2013 recommended that the Commission:

- select the Solar Bid for 100 MW of solar power, which the ALJ Recommendations conclude would provide Xcel with 71 MW of accredited capacity;
- determine whether added capacity beyond 71 MW is needed before the end of 2019;
- if additional capacity is needed, select GRE's capacity-only proposal; and
- direct Xcel to undertake Purchase Power Agreement ("PPA") negotiations with the selected offerors.

One important point about the sequence of events in this proceeding is that bidders for solar energy in this proceeding could not have been reasonably certain that Minnesota's SES would have passed, nor that this CRP was where solar bids on Xcel's system should be submitted, particularly since the request for proposals ("RFP") did not mention solar resources. That omission certainly did not preclude solar bids in this process, but it is understandable that other solar bids were not submitted in response to the RFP.

D. Obtaining Renewable Resources under Minnesota Statutes

As noted above, the Solar Bid in this proceeding was not submitted under the Minnesota SES since the due date for bids preceded enactment of this statute. However, to give solar resources every benefit of doubt, the Department analyzed the single Solar Bid in this proceeding both in the way it was submitted, on a level playing field with other resources, and as if it had been submitted under the Minnesota SES.

Under both approaches, the Solar Bid was more expensive than the other resources bid into this process. However, to help ensure that Xcel adds competitive solar resources to its

system in a timely manner under the Minnesota SES, the Department recommends that the Commission require Xcel to begin an All-Solar competitive bidding process as soon as possible.

E. Detailed Discussion of Analysis

As noted above, in its March 5 2013 Resource Plan Order, the Commission identified the size, type, and timing of Xcel's need as 150 MW in 2017 increasing up to 500 MW in 2019 of accredited capacity from peaking and/or intermediate resources.[9] Bidders[10] relied on the Commission's determination of need, offered detailed bids of diverse resources (combined cycle turbines, combustion turbines, solar generation, and capacity credits). The Department analyzed the proposals, as bid, through its Strategist capacity expansion modeling software[11] after ensuring with each Bidder that the Strategist inputs and outputs for each proposal were correct.

1. Errors in ALJ Recommendations

Despite the fact that the Commission found a need for 150 MW of capacity in 2017, increasing to 500 MW by 2019, the ALJ Recommendations issued on December 31, 2013 concluded that Xcel might have no capacity need until 2019, when that need might be only 26 MW.[12] Based on this significant difference in need, the ALJ Recommendations concluded in part:[13]

> The most reasonable and prudent solution in this circumstance is to select scalable projects that meet Xcel's near-term shortfalls (as described in Table 4 of Mr. Wishart's Direct Testimony) and for the Commission to conduct a second procurement for needs which may occur after 2019.

The most important factors underlying the significant discrepancy between the 500 MW need in 2019 determined by the Commission and the 26 MW need stated in the ALJ Recommendations appear to be three errors:

a. *The ALJ Recommendations erroneously relied on Xcel's forecasted reductions in short-term energy sales in the Company's rate case for Minnesota, rather than the Commission's determination of long-term energy and capacity needs in Xcel's resource plan for Xcel's system;*

b. *The ALJ Recommendations relied more than is reasonable on the proposed changes in capacity reserve requirements of the Midcontinent Independent System Operator, Inc. (MISO); and*

---

[9] 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); Department Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 49 (Rakow).

[10] In addition to Geronimo, GRE, and Xcel, proposals were offered by Calpine and Invenergy (collectively, Bidders).

[11] Department Ex. 83 at 4 (Rakow Direct).

[12] Finding of Fact No. 239.

[13] Conclusion of Law No. 8.

c. The ALJ Recommendations assume that the new Minnesota solar mandate[14] was passed prior to the due date for bids in this proceeding.

The rest of this section explains these errors further; the next section identifies corrections.

a. The ALJ Recommendations erroneously relied on Xcel's forecasted reductions in short-term energy sales in the Company's rate case for Minnesota, rather than the Commission's determination of long-term energy and capacity needs in Xcel's resource plan for Xcel's system.

The ALJ Recommendations appear to have focused on adding as few resources to Xcel's system as possible, rather than meeting the need determination reached by the Commission in its 2013 Resource Planning Order that was set to ensure that Xcel is able to provide reliable service over the planning period. For example, paragraph 26 of the ALJ Recommendations cites to testimony in Xcel's recent general rate case (Docket No. E002/GR-13-868) as evidence that Xcel's need for resources during its resource planning period has decreased. However, this reliance on Xcel's proposed sales forecast in Xcel's rate case suggests confusion about the differences between: 1) short-term and long-term needs, and 2) energy and capacity needs.

In general rate cases, utilities provide forecasts of their energy sales in the test year used in general rate cases to set rates. Reliance on the utility's rate case sales forecast for resource planning is not appropriate, for four reasons.

First, since a sales forecast in a rate case is short-term, relying on such a forecast would be inadequate to ensure that a utility can obtain resources necessary to provide reliable service given the time needed to build or obtain the resources.

Second, even if a short-term approach were reasonable, Xcel's proposed sales forecast in its rate case has not been examined and there is no basis in this proceeding to conclude that Xcel's proposed sales forecast in its rate case is reasonable. Even if the Commission were to adopt the ALJ's recommended forecast, the Department's analysis included similarly low forecast levels and the findings of need for natural gas resources remained robust. Thus, even if the Commission ultimately concludes that adopting the ALJ's recommendations would be in the public interest, there are better ways to acquire solar resources through a head-to-head, all-solar competitive bidding process as the Department recommends.

Third, utilities have an incentive to understate sales forecasts in rate cases since lower sales generally result in higher rates. In fact, in Xcel's most recent rate case (Docket No. E002/GR-12-961), the sales forecast approved by the Commission for ratemaking purposes was higher than the sales level proposed by Xcel. Given this incentive, even if it were appropriate to focus only on the short-term to determine a utility's resource needs, reliance on a utility's short-term sales forecast in a rate case is likely to understate the need for additional resources.

[14] ALJ Report Finding of Fact No. 237.

Fourth, a utility's sales forecast in a general rate case estimates the amount of energy sales in the test year; these sales are shown in megawatt hours (MWh) of energy that ratepayers use in total over a year. The sales forecast does not estimate the amount of capacity that the utility will need to add to its system. Capacity is measured in megawatts (MW) of capacity to stand ready to serve ratepayers' needs when required; the Commission's 2013 Resource Planning Order stated Xcel's need in terms of MW, not MWh.

Resource planning focuses on ensuring that utilities have adequate resources, at reasonable costs, in compliance with Minnesota Statutes. The Commission already set the level of Xcel's needs in its March 5, 2013 resource planning Order; the Commission's determination was based on a range of forecasted demands for energy and capacity that was higher *and lower* than Xcel's Spring 2013 forecast; see Figures 2 and 3 from Mr. Shah's direct testimony, reproduced below in Attachment A.

Since the Commission already determined Xcel's resource planning needs in its March 5, 2013 Resource Plan Order, it is not appropriate for the ALJ Recommendations to reach a different conclusion about Xcel's capacity needs. Moreover, there were many participants in Xcel's resource planning docket and while there was discussion about declining forecasts,[15] there were no requests for reconsideration of the Commission's March 5, 2013 Order that set the level of need for Xcel's system. Thus, there is no basis in this proceeding to conclude that the Commission's determination in its 2013 Resource Planning Order was inaccurate. In any event, the Department's analysis in this proceeding encompassed a range of forecasts that is above and below all known forecasts for Xcel's system. Further, proper planning acknowledges that resources must be acquired that cover a range of potential forecasts rather than just the most recent forecast.

Since the ALJ Recommendations contradict the Commission's 2013 Resource Order finding that Xcel had a need for 150 MW of capacity in 2017, growing to 500 MW by 2019, the Commission should base its decisions in this proceeding on the need set out in the Commission's 2013 Resource Order and ensure that Xcel's resource mix will be adequate to provide reliable service.

b. The ALJ Recommendations relied more than is reasonable on the proposed changes in capacity reserve requirements of the Midcontinent Independent System Operator, Inc. (MISO)

The ALJ Recommendations states that, if MISO changes its estimates of the amount of capacity a utility must have on reserve in case of an outage on the electric system, then Xcel will need less capacity.[16] However, the Commission's decisions in resource planning are not dictated by MISO's policies; MISO's policies pertain only to the reliability of the transmission system since MISO has no authority over generation resources and defers to states' resource planning

[15] See, for example, Minnesota Center for Environmental Advocacy's February 13, 2013 comments, Docket No. E002/RP-10-825.
[16] Finding of Fact 239.

authority for such matters. Further, the ALJ Recommendation did not consider the impact of MISO's policies upon accreditation of demand-side resources.[17]

While the Commission certainly can take note of MISO's policies regarding transmission capacity, the Commission is responsible for determining the amount of supply-side and demand-side resources that each utility must have to meet the needs of their ratepayers reliably. In fact, that is what the Commission did in finding that Xcel had a need of 150 MW in 2017, growing to 500 MW by 2019.

Moreover, in assessing GRE's capacity-only bid, the Commission may wish to take administrative notice of MISO's recent forecast of a capacity deficit within MISO's footprint of 3,000 to 7,000 MW in 2016.[18] If such deficits materialize, the market-based energy that would be needed with the capacity-only proposal of GRE, as in the ALJ Recommendations, could be prohibitively expensive under such a shortage.

c. The ALJ Recommendations assume that the new Minnesota solar mandate[19] was passed prior to the due date for bids in this proceeding

As discussed in the Timing and Notice section above, the Minnesota SES was not enacted at the time Xcel issued the required notice to bidders (February 1, 2013) nor even when bids were due in this proceeding (April 15, 2013). Nonetheless, the Department analyzed the Solar Bid as if the Minnesota SES had been in place since the beginning of this docket (November 21, 2012). The result of all of the Department's analysis using the externality costs approved by the Commission for such analyses is that the Solar Bid was not successful in competing with the resources bid into this proceeding.

---

[17] Ex. 83 at 24-25 (Rakow Direct).

[18] There are several examples of this analysis; for one recent presentation see: https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/BOD/Markets%20Committee/2013/20131023/20131023%20Markets%20Committee%20of%20the%20BOD%20Item%2006%20Framework%20Resource%20Adequacy.pdf

Because this latest MISO analysis is not part of the record, it may not be considered by the Commission absent taking administrative notice under Minn. Rules 1400.8100, subp. 2. Moreover, this MISO analysis was not available for consideration in preparing the ALJ Recommendations and has not been subject to analysis by parties.

The Department observes, however, that Calpine Witness Mr. Hibbard discussed related issues in his brief introductory remarks during the evidentiary hearings regarding two factors affecting Xcel's system needs:

> The first is the possible retirement of a significant quantity of baseload coal fired resources in Xcel's service territory and, more importantly, across all of MISO. While the extent of such system changes remains uncertain at this time, significant retirements have a real possibility and, in my view, likely, and are a major source of concern for MISO.

Tr.V.1 at 37-38, and 68 (Hibbard).

Moreover, even without this latest MISO analysis, the Commission determined that Xcel's need was for 150 MW of capacity by 2017, growing to 500 MW by 2019.

[19] ALJ Report Finding of Fact No. 237.

Moreover, if the Solar Bid were selected in this proceeding as a resource that meets the Minnesota SES, there may be several drawbacks for the solar power industry. First, Xcel's ratepayers would be required to pay for a renewable resource that has been shown not to be cost-effective compared to other available resources. It would be better for solar resources to be added to Xcel's system after passing a minimum requirement of being the best available solar resources. Second, adding the Solar Bid due to the passage of the Minnesota SES after the due date for bids in this proceeding may raise questions about the propriety of this bidding process, including lack of notice to potential solar bidders in meeting a significant portion of the Minnesota SES. Third, there may be less room for other, potentially more cost-effective or otherwise preferred solar resources to be added to Xcel's system under the Minnesota SES.

2. Correct Consideration of Analysis

This proceeding is complex, involves consideration of factors that may not have been familiar, and required expedited consideration of facts. As such, the errors above likely stemmed from an inaccurate understanding of the facts in this proceeding. The following is intended to help reconcile the ALJ Recommendations to the Commission's 2013 Resource Order.

While the Commission considers a number of factors in resource planning, the most important factor is to ensure that a utility can provide reliable electric service. This requirement is articulated in Minnesota Statute §216B.04, which states: "Every utility shall furnish safe, adequate, efficient, and reasonable service." That is, there needs to be sufficient energy infrastructure – which the Commission has already determined to be 150 MW of capacity in 2017, growing to 500 MW of capacity by 2019 – to provide reliable service to ratepayers. Having sufficient capacity ensures that a utility can provide electricity not only on an instantaneous basis but also over time, including the time it takes to plan, permit and construct new facilities.

The focus of the ALJ's Recommendations on the basis of a short-term energy forecast is not appropriate to ensure that Xcel has sufficient capacity to serve its ratepayers. In 2009, the Commission recognized the importance of looking at the need for electricity over time in a similar circumstance where there was a decrease in sales indicated during that proceeding:[20]

> [Citizens Energy Task Force] CETF, [North American Water Office/Izaak Walton League of America] NAWO/IWLA, NoCapX 2020 and [United Citizens Action Network] UCAN argue that newly-available information shows that over the past two years customers have demanded less power than forecast - and even less than in prior years - and the utilities are now canceling plans for new generators. UCAN cites Xcel for the proposition that the current recession will dampen customer demand for two years.

[20] Commission's May 22, 2009 *Order Granting Certificate of Need with Conditions*, Docket No. ET-2, E-002, *et al.* /CN-06-1115 ("CAPX Order").

> CETF argues that incorporating this new evidence into Applicants' forecasts would produce a demand forecast for 2020 that would be less than the lowest amount considered in the 2020 Vision Study forecasts which provide the engineering basis for the proposed projects. This analysis, CETF argues, undermines Applicants' rationale for the proposed projects as well as the foundation for the ALJ's Report. On this basis, these parties ask the Commission to re-open evidentiary proceedings to receive evidence documenting these assertions, addressing the recent economic contraction in general, and indicating how this new information should influence the forecast of regional demand.
>
> Applicants and [Department of Commerce] oppose this proposal. Both Applicants and [the Department] have testified to the relationship between the current recession and the need for the proposed projects. In particular, Applicants attest that the proposed facilities would be warranted by a regional demand growth of a mere 2000 MW by 2020.
>
> Applicants note that the parties have already argued that the recession requires Applicants to revise their demand forecasts, and the ALJ has already addressed these concerns. The ALJ found that "reopening the record to analyze short-term consumption will not materially affect the longer term projection," and a "short-term drop in consumption will have little impact on the longer range forecasting of peak demand developed for the certificate of need proceeding."
> …
> The fact that demand is less than forecast reflects a variety of factors, including both the current recession and abnormally cold weather. In evaluating the demand for facilities that are expected to last decades, however, the Commission must focus not on current levels of demand – reflecting fluctuations in the economy and weather - but rather on long-term trends. [Footnotes omitted]

Similarly, it is important in this proceeding to ensure that Xcel will have sufficient resources to meet the needs of its ratepayers reliably and cost-effectively over the long term across a range of potential scenarios. As the Department noted not only in this proceeding but also in Xcel's Resource Plan in which the Commission determined Xcel's need:

> It is important to ensure that, when businesses and consumers who depend on Xcel are ready to expand, flip on switches and plug in new demand, Xcel's system is able to meet these demands. Failure to meet these demands in a reasonable manner would result in higher energy prices, thus dampening the recovery. Significant failure to meet demand could result in problems with reliability,

> such as rolling brownouts that have been experienced in other parts of the United States.
> …
>
> [I]n resource planning the important factor to keep in mind is that forecasts of energy and demand requirements are expected to change substantially over the next 15 years as the economy continues to recover and use of energy by industry and residential consumers increases. It would not be appropriate to assume that the lower demand due to the economic downturn will continue in the long term, nor to plan for an electrical system that is based on energy forecasts occurring during economic downturns since reliability of the electric system as a whole is critical to the health of the economy.
> …
> Use of a reasonably wide forecast band helps to encompass the range of future demand and ensure reasonable planning for the future. The goal is for the preferred plan to be stable [meaning the recommended plan does not change radically under different sets of assumptions, including high and low sales forecasts] across the expected range of future demand encompassed by the forecast band.[21]

The ALJ Recommendations misstate several aspects of the Department's analysis in this proceeding. The Department does not address each of these misunderstandings but addresses several key misunderstandings.

First, the ALJ Recommendations erroneously assumed that the Department's analysis relied solely on Xcel's forecast in the fall of 2011.[22] Rather, in this proceeding the Department relied not only on the forecast that was already analyzed and approved by the Commission and underlying the Commission's need determination of 150 MW by 2017 to 500 MW by 2019 (*i.e.*, the fall 2011 forecast), but also on analyses assuming demand and energy forecasts *below* the level of Xcel's Spring 2013 vintage forecast that was the focus of the ALJ's conclusions.[23] For ease of reference, the Department attaches to these Exceptions the graphs that showed the range of forecasts of energy and capacity needs that the Department used in this proceeding, compared to Xcel's forecasts at different points in time. Attachment A (graphs found in Ex. 76 at 12-13 (Shah Direct)).

Since forecasts are constantly changing, such changes are best addressed through contingency analysis in the modeling process rather than continually updating the base-case forecast in the capacity expansion model.[24] This fact applies not only to forecasts of energy and demand, but also the fuel price forecasts and so on. For example, counsel for Geronimo stated,

[21] DOC Ex. 76 at 4-5 (Shah Direct).
[22] Finding of Fact 265.
[23] Ex. 76 at 13 (Shah Direct).
[24] Ex. 76 at 14 (Shah Direct).

"Geronimo recognizes that Xcel's need for capacity in this time is somewhat uncertain. However, in establishing this docket the Commission was clear that forecasts will continue to change and this docket was set up to provide resources that will work in a variety of different scenarios."[25] If the Commission were to require continual updates to the base case model every time a forecast changed the Commission's processes would never reach a conclusion.

Second, the ALJ Recommendations appear to misunderstand the Department's analysis to have required each bid to provide no less than 300 MW by 2019.[26] On the contrary, the Department did not force bid packages to be 300+ MW by 2019. For example, the Department's first round of analysis analyzed 24 different combinations of forecasts, solar accreditation, required reserve ratios, and wind additions.[27] As a result, each package was analyzed under a variety of deficits. Further, the bids were analyzed individually and in groups, ranging from a low of 71 MW (the Solar Bid on its own) up to a maximum of 700 MW.

Third, on a related note, the ALJ Recommendations appear to misunderstand the Department's analysis as forcing the addition of generic natural gas units. The Department made generic units available to Strategist and the model selected whatever combination of generic units was necessary to meet the minimum reliability requirements under various forecasts.[28] However, if additional generic units (above the minimum reserve requirement) would produce a least cost result, such units could be selected by Strategist. Thus, there was not a common-sized package that the Department forced Strategist to accept. Instead, there was a common required reserve ratio that all packages had to meet and a common pool of generic units that all packages could draw upon as needed.[29] From there, Strategist chose the least-cost results under different energy forecasts and other assumptions.[30]

Fourth, the ALJ Recommendations calculate a market price for Solar Renewable Energy Credits (S-RECs) as reducing the present value of social costs by $10 – 38 million.[31] The $10 million reduction is based upon a $5 per S-REC price; the $38 million figure is based on a $20 per S-REC price. However, the Commission has not considered the potential values of RECs or the sale of excess capacity in assessing the value of resources to Xcel's ratepayers, who ultimately pay for costs of resources on Xcel's system.[32] Resources to serve retail needs should not be acquired based on the speculative value of what some attribute of the resource may be worth when re-sold, whether the sale of S-RECs, RECs, Capacity Credits, or energy transactions made through the MISO market. Resources should be acquired based on the needs of the retail customers.

In addition, the cost of S-RECs indicated in this proceeding exceeds the imputed $10 million to $38 million dollars in present value of social costs. To this amount needs to be added the difference in cost between the least-cost option and the cost of the Solar Bid plus GRE's

[25] Tr.V.1 at 28 (Brusven).
[26] Findings of Fact 181 and 266.
[27] Ex. 84 SR-3 and SR-4a (Rakow Direct Attachments).
[28] Ex. 83 at 31-33 (Rakow Direct).
[29] Ex. 83 at 17-20 (Rakow Direct).
[30] Ex. 84 SR-3 and SR-4a (Rakow Direct Attachments).
[31] Finding of Fact 156.
[32] Ex. 86 at 13-14 (Rakow Rebuttal).

capacity-only proposal. Under Scenario 18 the least cost package, considering all externality costs, is Calpine's proposal plus Xcel's Black Dog unit 6 coming on-line in 2019—consistent with the Department's overall recommendation to the Commission. The Solar Bid plus the 200 MW GRE capacity-only bid package is ranked no. 138 (the packages are listed from the least-cost to the highest cost). The difference in cost between these two Scenarios is a premium of approximately $125 million dollars in present value of social costs.[33] Thus, the total extra cost to Xcel's ratepayers of the S-RECs, including the imputed amount from the ALJ Recommendations is over $100 million dollars in present value of social costs.

Fifth, the ALJ Recommendations also appear to misunderstand other aspects of the record. For example, the ALJ Recommendations assume that Bidders would be willing to make a portion of their proposals available to Xcel, either now or in the future. There is only one proposal that might be said to be scalable—GRE's offer of capacity credits which came in two different sizes (100 MW and 200 MW). All other bids were for a specific quantity of capacity at a specific location(s).[34] GRE's "scalable" offer of capacity credits performed so poorly that it was not even advanced to the second round of analysis by the Department.[35] Moreover, this cost does not include the costs of market energy that would also need to be acquired.[36]

Beyond making an untested assumption that the cost per MW of such resources would be the same in the future, the ALJ Recommendations assume that Xcel would be able to obtain these resources in the future, at the same time that other utilities in the region are expected to have needs for capacity on their systems that exceed total system supply. It would not be reasonable to require Xcel's ratepayers to face the risk of paying much higher prices for resources in the future, based on speculative and untested assumptions.

III. CONCLUSIONS AND RECOMMENDATIONS

Overall, given the Commission's finding of the need to acquire capacity of 150 MW by 2017 and 500 MW by 2019 and based on extensive analyses, the Department concluded that three proposed projects are superior: Calpine's Mankato natural gas project, Invenergy's Cannon Falls natural gas project, and Xcel's Black Dog Unit 6 natural gas project.[37] To maintain competitive pressure on these bids, the Department recommends that the Commission require all three projects to continue in negotiations; it is not expected that all three projects will be chosen.[38] Absent differences negotiated in the PPAs the Department concluded from its analysis that the

[33] Ex. 84 SR-4a (Rakow Direct Attachments) at page 72 of 96.
[34] Ex. 83 at 2-3 (Rakow Direct).
[35] Ex. 83 at 35 (Rakow Direct).
[36] Ex. 83 at 2, fn 1 (Rakow Direct).
[37] Tr.V. 2 at 49-52 (Rakow).
[38] Department Ex. 102 (Rakow Opening Statement); Tr.V.2 at 52 (Rakow). The Department strongly recommends that ratepayers not be put at risk for costs that are higher than bid or for benefits assumed in bids that do not materialize. Further, if negotiated PPAs result in costs that are lower than bid, all bidders including Xcel should be allowed to keep those savings. Department Ex. 101 (Shaw Opening Statement). The Department does not expect PPA negotiations to increase or shift risks to ratepayers. *See* Tr.V. 2 at 43 (Shaw).

best package was Calpine's Mankato project combined with Xcel's Black Dog Unit 6 project as needed.[39]

The Department also strongly recommends that the Commission require Xcel to issue an All-Solar RFP with its Order in this matter to obtain the overall best solar projects for meeting Xcel's obligations under Minnesota's recently enacted solar mandate.[40] This approach would also allow more solar projects to bid into this process and provide better information about solar resources.

The Department recommends that, due to the extensive errors in the ALJ's assumptions and the state's overriding need for reliable energy capacity and the stability of long-term affordable rates, the Commission adopt the Department's exceptions to the ALJ Recommendations, as discussed above. Due to the extensive revisions needed to the ALJ Recommendations, the Department attaches our proposed Findings of Fact from the contested case proceeding to provide the Commission the ability to adopt the Department's original Findings of Fact rather than attempt to edit the ALJ Recommendations.

Dated: January 21, 2014

Sincerely,
/s/Julia E. Anderson

JULIA E. ANDERSON

445 Minnesota Street, Suite 1800
St. Paul, MN 55101-2134
Telephone: (651) 757-1202

Attorney for Minnesota
Department of Commerce
Division of Energy Resources

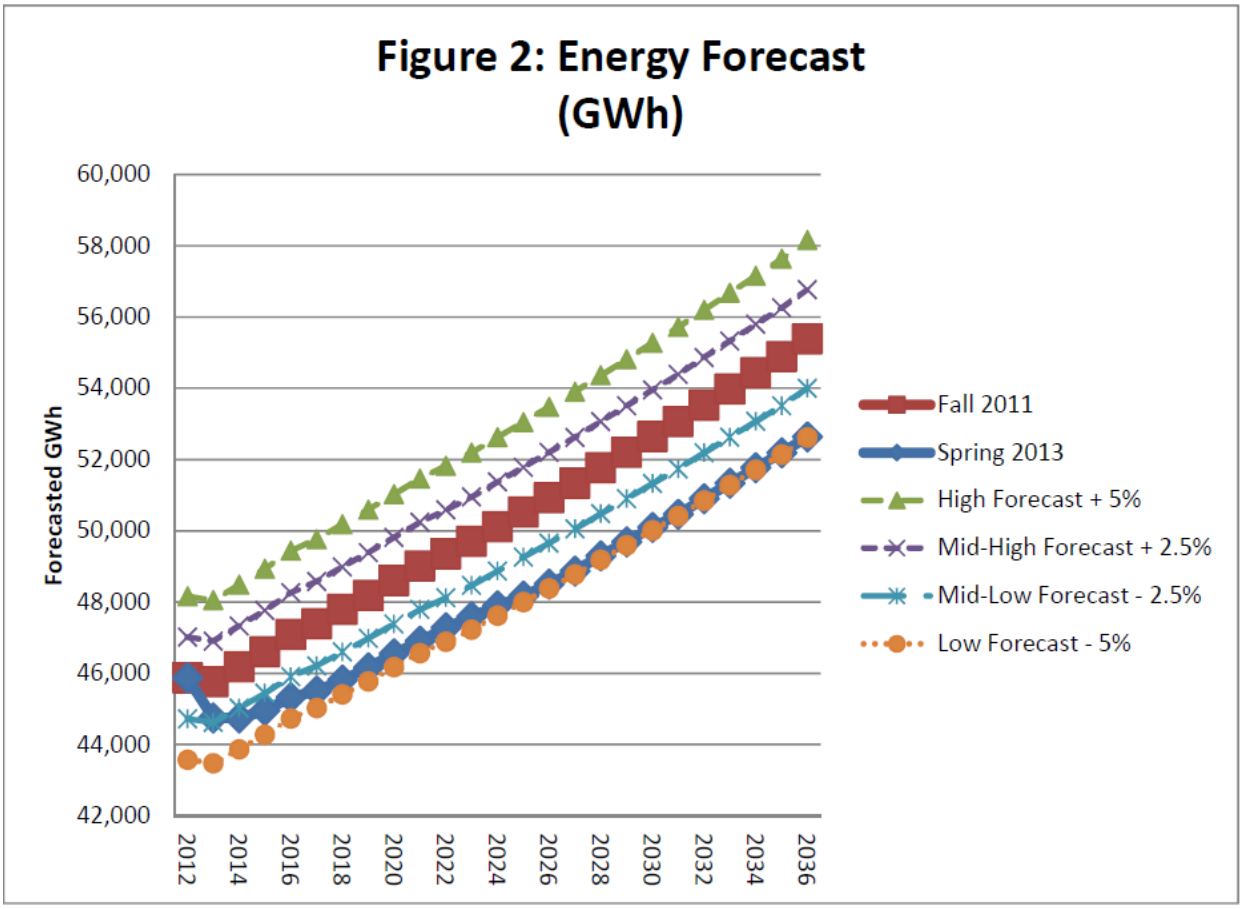
[39] Department Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 50 (Rakow).
[40] Ex. 83 at 43 (Rakow Direct).

LIST OF TERMS

Term	Reference
2013 Resource Order	March 5, 2013 *Order Approving Plan, Finding Need, Establishing Filing Requirements and Closing Docket* in Xcel's 2011-2025 Integrated Resource Plan
ALJ	Administrative Law Judge
Calpine	Calpine Corporation and its affiliate, Mankato Energy Center, LLC
Commission	Minnesota Public Utilities Commission
CRP	Competitive Resource Acquisition Process
Department or DOC	Minnesota Department of Commerce, Division of Energy Resources, Energy Regulation and Planning
Geronimo	Geronimo Wind Energy, LLC, d/b/a Geronimo Energy, LLC
GRE	Great River Energy
Invenergy	Invenergy Thermal Development, LLC
Minnesota SES	Minnesota Solar Energy Standard
PPA	Purchased Power Agreement
RFP	Request for Proposals
Solar Bid	Bid by Wind Energy, LLC d/b/a Geronimo Energy for 100 MW of solar generation
Xcel	Northern States Power, d/b/a Xcel Energy

Attachment A: Comparison of Forecasts

As noted in the Exceptions above, the Department used a forecast band that was wide enough to encompass Xcel's fall 2011 (Commission-approved) and spring 2013 (untested) forecasts. This fact is demonstrated by Figures 2 and 3 from Mr. Shah's direct testimony, reproduced below.[41]



[41] Ex. 76 at 12-13 (Shah Direct).

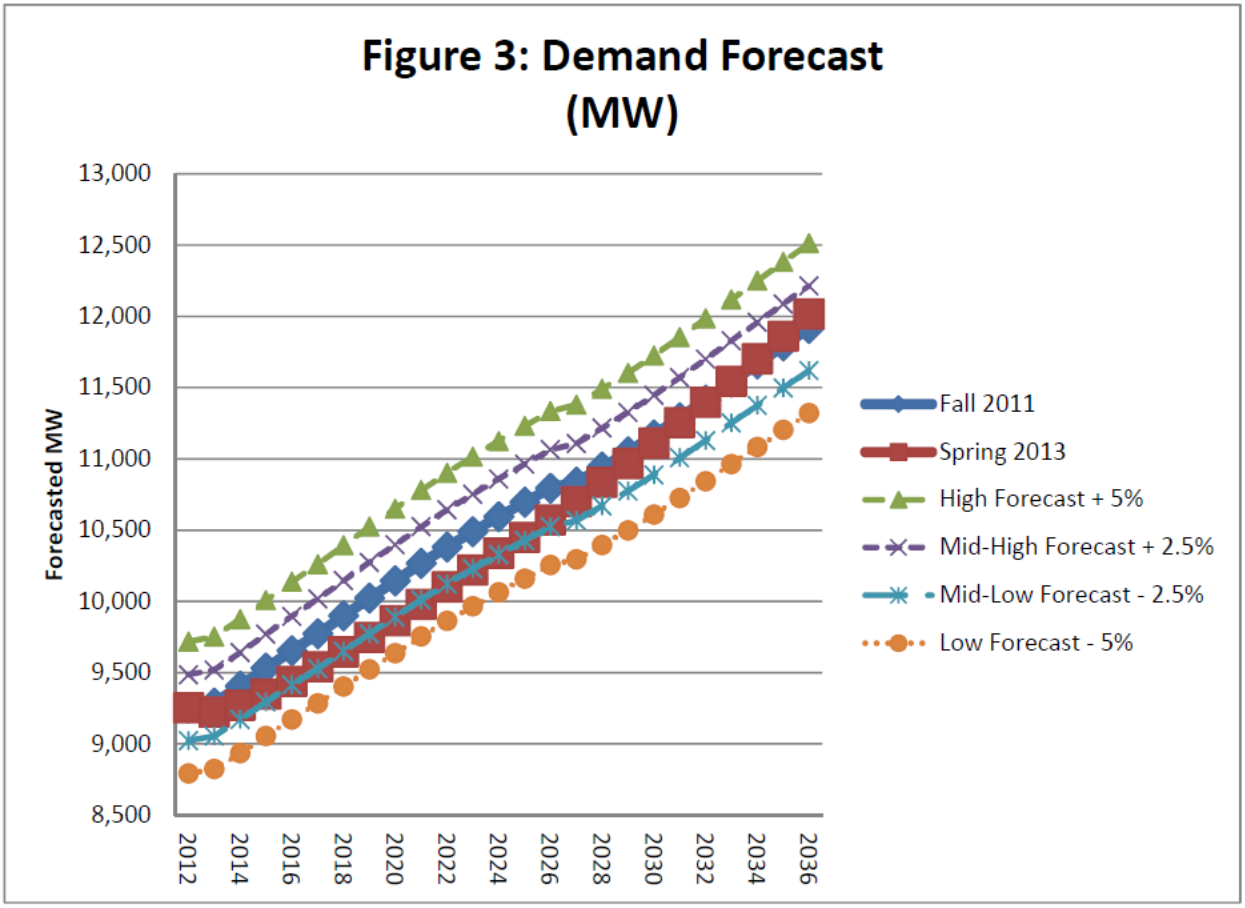


Figure 3: Demand Forecast (MW)
Forecasted MW
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
Fall 2011
Spring 2013
High Forecast + 5%
Mid-High Forecast + 2.5%
Mid-Low Forecast - 2.5%
Low Forecast - 5%

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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	**Docket No. E002/CN-12-1240** **OAH Docket No. 8-2500-30760**

PROPOSED FINDINGS OF FACT

OF THE

MINNESOTA DEPARTMENT OF COMMERCE,

DIVISION OF ENERGY RESOURCES

December 6, 2013

TABLE OF CONTENTS

The Minnesota Department of Commerce, Division of Energy Resources, Energy Regulation and Planning (Department or DOC-DER) respectfully submits these Proposed Findings of Fact for the convenience of the Administrative Law Judge (ALJ) and the Minnesota Public Utilities Commission (Commission). Numbered Proposed Findings begin with the Analysis on page 8, below.

SUMMARY

The docket represents the first time the Commission will select and approve resources in a Commission-established bidding process.[1] The Commission determined the size, type and timing of need in the most recent resource plan[2] of Northern States Power Company d/b/a Xcel Energy (Xcel). The Commission determined, based on extensive evidence, that Xcel needs 150 MW to 500 MW of accredited capacity of peaking or intermediate resources within the 2017-2019 time frame.[3] This competitive resource acquisition proceeding is focused on addressing that need.

DOC-DER reviewed the various proposals of parties, conducted analysis of over 150 combinations of bids under various sets of facts that resulted in thousands of computer runs[4] with a screening analysis for the first step, and detailed cost analysis for the second step.[5] Its final analysis showed that three proposed projects are superior: Calpine Corporation's Mankato

---

[1] DOC-DER Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 49 (Rakow).
[2] The Commission's March 13, 2013, *Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket* (Docket No. E-002/RP-10-825) (2010 IRP Order).
[3] DOC-DER Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 49 (Rakow).
[4] DOC-DER Ex. 83 at 4 (Rakow Direct). DOC-DER's computer analysis employed the capacity expansion software called "Strategist" which determines the set of resources that are the least cost method to meet demand in the future. DOC-DER Ex. 83 at 14 (Rakow Direct).
[5] DOC-DER Ex. 102 (Rakow Opening Statement); Tr.V.2 at 49 (Rakow). Other items such as duel fuel capability also may be negotiated. Tr.V. 2 at 35 (Shah).

project, Invenergy Thermal Development's Cannon Falls project, and Xcel's Black Dog Unit 6 project.[6]

Although the Commission-determined need does not require all of these three projects, the Department reasonably recommends that all three proceed to power purchase agreement (PPA) negotiations with Xcel such that ratepayers may benefit from parties' incentives to provide favorable terms in this stage of the acquisition process.[7] For example, issues regarding use of firm versus interruptible natural gas supply and in-service dates should be addressed in PPA negotiations.[8]

Following review of the negotiated PPAs, the Department reasonably recommends that the Commission select "the best two out of the three" projects.[9] Absent differences negotiated in the PPAs, the Department concluded from its analysis that the best combination is the Black Dog and Calpine projects.[10] The Department recommends, and the ALJ agrees, that the Commission consider requiring Xcel to issue an all-solar request for proposals (RFP) in the context of Xcel's 2014 integrated resource plan (IRP).[11]

PROCEDURAL BACKGROUND

The Commission's June 21, 2013, *Notice and Order for Hearing* in this matter provided the following procedural history:

---

[6] Tr.V. 2 at 49-50 (Rakow).

[7] DOC-DER Ex. 102 (Rakow Opening Statement); Tr.V.2 at 52 (Rakow). The Department strongly recommends that ratepayers not be at risk for costs that are higher than bid or for benefits assumed in bids that do not materialize. Further, if negotiated PPAs result in costs that are lower than bid, all bidders including Xcel should be allowed to keep those savings. DOC-DER Ex. 101 (Shaw Opening Statement). The Department does not expect PPA negotiations to increase or shift risks to ratepayers. *See* Tr.V. 2 at 43 (Shaw).

[8] DOC-DER Ex. 100 (Shah Opening Statement).

[9] DOC-DER Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 49-50 (Rakow).

[10] DOC-DER Ex. 102 at 1 (Rakow Opening Statement); Tr.V.2 at 50 (Rakow).

[11] DOC-DER Ex. 83 at 43 (Rakow Direct).

On March 15, 2011, Northern States Power Company d/b/a Xcel Energy (Xcel) filed a petition for a Certificate of Need to renovate and increase the capacity of its Black Dog Generating Plant. Xcel justified its proposal by arguing that the demand for power in its service area would exceed Xcel's capacities by 2014. Consistent with Commission orders, Xcel proposed soliciting proposals from project developers for alternative means to meet Xcel's anticipated power needs. The Commission assigned the matter to Docket No. E-002/CN-11-184.[12]

On December 7, 2012, Xcel asked to withdraw its Certificate of Need application, arguing that recent events and new data demonstrated that no new generating capacity would be needed by 2014.[13] Xcel continued to argue that it would need new capacity eventually, and continued to propose soliciting proposals from project developers. But given the significant changes in the record, Xcel argued that the Commission should re-establish the amount of power to be acquired, and the schedule for acquiring it.[14]

On November 21, 2012, the Commission issued an order largely adopting Xcel's proposal. The Commission agreed with the need to cancel the Black Dog project, and the need to solicit proposals from project developers based on a revised assessment of Xcel's power needs. Given the degree of change, however, the Commission elected to re-start this solicitation process within the context of a new docket. Consequently the Commission initiated the current docket, but took administrative notice of the record in Docket No. E-002/CN-11-184.[15] And the Commission established a procedural schedule, including the expectation that if the Commission referred this matter to the Office of Administrative Hearings for contested case proceedings, that office would return a report and recommendation by October 2013.

On January 30, 2013, the Commission issued its Order Approving Notice Plan, directing Xcel to begin soliciting new proposals from developers.

On March 5, 2013, in a separate docket, the Commission issued an order declaring that Xcel had demonstrated the need for an additional 150 megawatts (MW) by 2017, increasing up to 500 MW by 2019.[16] And in the current docket,

---

[12] *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).

[13] *Id.*, Xcel Motion to Withdraw Application (December 7, 2011).

[14] *Id.*, Xcel Reply Comments (September 6, 2012).

[15] This docket and Docket No. E-002/CN-11-184, *Order Closing Docket, Establishing New Docket, and Schedule for Competitive Resource Acquisition Process* (November 21, 2012).

[16] *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).

the Commission issued an order designating April 15, 2013, as the deadline for developers to file proposals to meet some or all of Xcel's need.[17]

On April 15, 2013, the Commission received proposals from --

- Calpine Corporation (Calpine),
- Geronimo Energy, LLC (Geronimo),
- Great River Energy (GRE),
- Invenergy Thermal Development, LLC (Invenergy), and
- Xcel.

By May 28, 2013, the Commission had received comments and supplemental filings from –

- project developers,
- the Izaak Walton League -- Midwest Office, Fresh Energy, the Sierra Club, and the Minnesota Center of Environmental Advocacy (collectively, the Environmental Intervenors), and
- the Minnesota Department of Commerce (the Department).

On June 3, 2013, Ecos Energy, LLC (Ecos Energy), petitioned for permission to submit a generation proposal, notwithstanding the passage of the April 15 deadline.

On June 5, 2013, the Department proposed procedures to facilitate environmental review of the various proposals consistent with a timeline compressed to ensure that any project(s) selected by the Commission could begin operations by 2017. The Department noted that adopting these procedures would require varying the Commission's rules.

On June 6, 2013, the Commission met to consider the matter. At that time the Commission received comments from all parties.

Also in its June 21, 2013 *Notice and Order for Hearing,* the Commission referred this matter to the Office of Administrative Hearings for a contested case proceeding, and took the following action:

1. Denied the request of Ecos Energy for permission to submit a generation proposal more than two months after the deadline for project submissions;

[17] This docket, *Order Extending Bidding Deadline and Refining Procedural Framework* (March 5, 2013).

2. Found that the developer of project chosen through this Commission-approved competitive resource acquisition process is exempt from securing a certificate of need under Minn. Stat. § 216B.243 prior to construction;

3. Found that each proposal filed by Calpine, Geronimo, GRE, Invenergy, and Xcel was substantially complete.

4. Regarding the Environmental Report to be prepared by the Department of Commerce's Energy Facilities Permitting Unit (now the Energy Environmental Review and Analysis, or EERA) the Commission:

   a. Granted the EERA's rule variance request and authorized the Department to focus its analysis on the substantially complete alternatives, and on a no-build alternative for each of these alternatives;

   b. Requested that the Department prepare an Environmental Report sufficient to meet the requirements outline in Minn. R. 7849, as varied, for all of the substantially complete alternatives;

   c. Requested that the Department review Geronimo's solar proposal(s) cumulatively for the up to 31 sites; and

   d. Requested that the Department treat the GRE capacity credit proposal as capacity only.

5. Designated the following entities as parties to the contested case proceeding: Calpine, Geronimo, GRE, Invenergy, Xcel, DOC-DER and the Environmental Intervenors.

On July 1, 2013, ALJ Eric L. Lipman convened a prehearing conference, and established the following schedule for this proceeding:[18]

August 2, 2013	Intervention
September 27, 2013	Direct Testimony
October 15-18, 2013	Public Hearings
October 18, 2013	Rebuttal Testimony
October 21, 2013	Close of Discovery Period for Non-Government Parties

[18] *Second Pre-Hearing Order*, July 17, 2013.

October 21-25, 2013	Evidentiary Hearing
November 1, 2013	Close of Public Comment Period
November 22, 2013	Initial Briefs
December 6, 2013	Reply Briefs
December 31, 2013	ALJ Report

On June 7, 2013, and July 10, 2013, Ecos Energy filed a Petition to Intervene and a Verified Petition to Intervene, respectively.

On July 31, 2013, the North Dakota Public Service Commission Advocacy Staff filed a Petition to Intervene.

On August 5, 2013, the Commission denied the reconsideration motion of Ecos Energy to submit a proposal out of time.[19]

On August 21, 2013, having considered objections, the ALJ denied Ecos Energy's Petition to Intervene; the ALJ granted the unopposed Petition to Intervene of the North Dakota Advocacy Staff.[20]

On September 5, 2013, Ecos Energy filed with the ALJ a Motion for Reconsideration or, in the alternative, a Motion for Certification regarding its Petition to Intervene.

On September 27, 2013, the following parties filed Direct Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel, North Dakota Advocacy Staff and DOC-DER.

On October 1, 2013, having considered objections, the ALJ denied Ecos Energy's Motion for Reconsideration and its alternative Motion for Certification.[21]

---

[19] *Order Denying Intervention,* August 5, 2013.
[20] *Third Pre-Hearing Order,* August 21, 2013.
[21] *Fourth Pre-Hearing Order,* October 1, 2013.

On October 4, 2013, the Commission determined that Xcel's plans to acquire 750 MW of wind generation constituted a changed circumstance under resource planning rules, and ordered Xcel to file a Notice of Changed Circumstances in dockets including the present docket, E-002/CN-12-1240.[22]

On October 8, 2008, the Xcel Large Industrials (XLI) filed a Petition to Intervene.

On October 10, 2013, following a prehearing status and scheduling conference, the ALJ: ordered that on October 11, 2013, parties seeking access to trade secret materials in Docket No. 12-1240 and highly-sensitive trade secret materials in Docket No. 13-606 shall furnish protective order "Exhibit A" affidavits to Xcel; modified the Second Pre-Hearing Oder such that motions to strike must be filed by noon on October 21st, and set trial to begin on Tuesday, October 22, 2013.[23]

On October 14, 2013, the Department of Commerce, EERA issued the Environmental Report.

On October 15, 2013, ALJ Steve Mihalchick convened a public hearing in morning at the State Office Building, Basement Conference Room, in St. Paul, Minnesota.

On October 21, 2013, having considered objections, ALJ Lipman denied XLI's Petition to Intervene; the ALJ extended the public comment period by 21 days, from a deadline of November 1 to November 22, 2013.[24]

On October 18, 2013, the following parties filed Rebuttal Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel, and DOC-DER.

---

[22] *Order Requiring Notice of Changed Circumstances and Granting Intervention,* October 4, 2013, Dockets E-002/RP-10-825, E-002/CN-12-1240, E-002/M-13-603, E-002/M-13-716.
[23] *Amended Seventh Pre-Hearing Order,* October 10, 2013.
[24] *Eighth Pre-Hearing Order,* October 21, 2013.

On November 22, 2013, parties filed Initial Post-Hearing Briefs.

STATEMENT OF ISSUES

The Commission identified the issues to be addressed and the process to be used in this matter, as follows:[25]

> The ultimate issue in this case is the identification of resource proposal or proposals that will provide the most reasonable and prudent strategy for Xcel to meet the needs of its service area. That issue depends, in turn, on numerous sub-issues that can be best developed in formal evidentiary proceedings. The parties may also raise and address other issues relevant to that determination.
>
> As noted above, a developer of a selected project need not obtain a Certificate of Need before beginning construction. But when Xcel seeks to offer its own proposal into the competitive resource acquisition process, this process tracks the framework of the Certificate of Need process under Minn. Stat. § 216B.243. [Footnote omitted].

ANALYSIS

I. BIDDERS, BIDS AND CRITERIA

A. Five Bidders Proposed Projects to Meet the Commission-Identified Need

1. Five companies proposed projects in this matter to meet Xcel's capacity need, as follows:

- Calpine Corporation and its affiliate Mankato Energy Center, LLC (Calpine);
- Geronimo Wind Energy, LLC d/b/a Geronimo Energy (Geronimo);
- Great River Energy, a Minnesota cooperative corporation (GRE);
- Invenergy Thermal Development LLC (Invenergy); and

[25] *Notice and Order for Hearing,* at 5.

- Northern States Power Company, d/b/a Xcel Energy (Xcel) (collectively, Bidders).

DOC-DER Ex. 83 at 2 (Rakow Direct).

2. The Department evaluated the qualifications of the Bidders and determined that each is qualified to provide capacity, as requested in Xcel's RFP. DOC-DER Ex. 79 6 (Shaw Direct). Xcel had existing business relationships with Calpine, Invenergy and Geronimo, and either reported no problems with them or that the parties have worked collaboratively to resolve issues. *Id.* at 5-6. GRE provides electric service to its member cooperatives in Minnesota, and also is a qualified bidder. *Id.* at 6.

B. Description of the Eight Proposed Projects

3. The Bidders proposed the following projects:

- Calpine: expand the existing natural-gas-fired Mankato Energy Center combine cycle turbine (CC) by 290 MW of intermediate capacity and 55 MW of peaking capacity (also referred as CCCI);
- Geronimo: build 100 MW of solar generation using photovoltaic panels, located on up to 31 sites adjacent to substations, ranging from 2 to 10 MW per site;
- GRE: two capacity credit proposals to sell Xcel Midcontinent Independent System Operator (MISO) Zone 1 Resource Credits (ZRCs);[26]
- Invenergy: two peaking proposals for gas-fired combustion turbines (CT):

[26] A ZRC is a credit for resources that count towards MISO's resource adequacy requirements. By selling ZRCs GRE would provide Xcel resources that would count for reliability purposes. However, GRE's proposal would not provide Xcel energy production rights. DOC-DER Ex. 83 at 2 (Rakow Direct).

- expand the existing Cannon Falls facility with one CT unit, and
- build a new, Hampton Energy Center with two CT units;

- Xcel: two peaking proposals for gas-fired combustion turbines
  - build one 215 MW CT unit at the existing Black Dog generating station (Black Dog unit 6); and
  - build two 215 MW CT units at a new site near Hankinson, North Dakota (North Dakota units 1 and 2).

DOC-DER Ex. 83 at 2-3 (Rakow Direct).

4. At the public hearing, Xcel Witness Mr. Alders explained differences between combined cycle and combustion turbines:

> It's a large combustion turbine fired with natural gas. Peaking units tend to operate very few hours during the year, only when the demand for electricity is at its highest in the summer. The proposal by Calpine, and they can speak to this in more detail, is called a combined cycling unit, and it is a combustion turbine where the flue gas from that combustion turbine then is used to heat water and create steam in a second cycle to produce more electricity. The economics of those sorts of facilities are such that they're often used more often during the year in an intermediate role in our system.

Public Hr. Tr. 11-12 at (Alders). Calpine's Mr. Flumerfelt added:

> It's a combustion gas turbine. But instead of releasing the exhaust heat directly into the atmosphere, we capture that exhaust heat, turn it into steam, and are able to generate additional power.

Public H. Tr. 14 (Flumerfelt).

5. The proposed projects do not require a certificate of need (CN) in order to be selected by the Commission or to be constructed. Minn. Stat. § 216B.2422, subd. 5 (b). The Commission's May 31, 2006 *Order Establishing Resource Acquisition Process, Establishing Bidding Process under Minn. Stat. § 216B.2422, subd. 5, and Requiring Compliance Filing* (Docket No. E002/RP-04-1752) approved the bidding process used in this proceeding.

Therefore, the Commission-approved bidding process is being used to select proposal(s) that could meet the need identified in Xcel's last resource plan (Docket No. E002/RP-10-825). DOC-DER Ex. 83 at 3 (Rakow Direct).

C. Demand Forecast

6. The Department reasonably determined that its Strategist analysis should use as a starting point Xcel's fall 2011 sales forecast. DOC-DER Ex. 76 at 14 (Shah Direct).

Xcel's capacity need that was determined by the Commission for this proceeding is based on Xcel's fall 2011 update in its 2011-2025 IRP in Docket No. E002/RP-10-825 (2010 IRP). Since that time, Xcel has produced additional forecasts, including its spring 2013 forecast that it uses for its base or starting point for its Strategist analysis. *See* DOC-DER Ex. 76 at 3-7 (Shah Direct).

7. Only Xcel's fall 2011 forecast has been reviewed in detail by the Department and approved by the Commission. The Department has not verified the accuracy of Xcel's spring 2013 sales forecast. Tr.V. 2 at 29-30 (Shah). However, DOC-DER's analysis examined the proposals at sales levels even lower than Xcel's spring 2013 sales forecast.

8. Based on its spring 2013 forecast, Xcel predicts that its customers will use less energy and capacity in the initial years compared to the fall 2011 forecast. In future years, the spring 2013 forecast predicts that customers will continue to use less energy while making higher demands on Xcel's peak compared to the fall 2011 forecast. DOC-DER Ex. 76 at 8-10 (Shah Direct). The combination of these two predictions means that Xcel predicts a significant change (decrease) in the overall load factor of its system. DOC-DER Ex. 76 at 10 (Shah Direct).

9. Department Witness Sachin Shah identified concerns based on his limited review of the spring 2013 forecast, DOC-DER Ex. 76 at 7-13 (Shah Direct), but Xcel did not provide a

reasonable basis or explanation for the predicted changes in that forecast. *Id.* at 9-11 (Shah Direct); Tr.V. 2 at 32-33 (Shah). Mr. Shah reasonably determined that Xcel's 2013 spring demand and energy forecasts are within the various contingencies modeled in this matter by Dr. Rakow.

10. Mr. Shah concluded for the following reasons that it was reasonable for Dr. Rakow to use Xcel's fall 2011 forecast as the base for the Department's Strategist analysis:

11. The fundamental goal in certificate of need and resource planning proceedings is not to establish a plan that is least cost under a single forecast but for the plan to be least cost across a wide range of forecasts; this goal, the Commission's decision not to require continual updating of forecasts in the 2010 IRP (i.e. that the need was based on using the fall 2011 forecast), and the fact that the spring 2013 forecast is within the 5 percent contingency modeled.DOC-DER Ex. 76 at 14 (Shah Direct).

12. For the same reasons noted immediately above, it was not reasonable for Xcel to use its spring 2013 forecast for its base or starting point for Xcel's Strategist analysis. DOC-DER Ex. 78 at 4 (Shah Rebuttal).

D. Natural Gas Supply

13. Three Bidders proposed projects fueled by natural gas: Xcel, Calpine and Invenergy. The Department reviewed the natural gas supply, delivery and cost assumptions of those Bidders' proposals. DOC-DER Ex. 76 at 14-28 (Shah Direct).

14. Calpine and Invenergy indicated that Xcel would be responsible for all fuel supply and delivery costs under their respective bids, without differentiating between reliability and cost associated with firm versus interruptible gas supply. DOC-DER Ex. 76 at 26 (Shah Direct); Tr.V. 2 at 30 (Shah). Xcel, on the other hand, discussed firm versus interruptible

supplies such as potential interruption at times of peak gas demand (winter), possible constraints on pipelines delivering gas and potential pipe construction. DOC-DER Ex. 76 at 7-26 (Shah Direct).

15. A key issue regarding cost assumptions in this matter is whether to assume firm or interruptible gas supply. If it would be necessary for the proposed plants to be counted on to run during winter months, when the gas system is likely to peak, then firm gas service would be important. DOC-DER Ex. 76 at 26 (Shah Direct).

16. Mr. Shah identified various concerns including that since Xcel would be responsible for all fuel supply and delivery costs under the other Bidders' respective proposals, Xcel would be responsible not only for interstate pipeline transportation costs of supplying the natural gas but also for the costs of natural gas and for securing such natural gas services. The Midcontinent Independent System operator (MISO) would be responsible for dispatching the Bidders' plants. It is possible that the plants could be curtailed or "interrupted" because of natural gas supply issues or for economic reasons related to the generation unit as well. DOC-DER Ex. 76 at 27 (Shah Direct).

17. Other issues such as whether the plants have dual fuel capability and plant outages (foreseen or unforeseen) on Xcel's system also will affect how these particular plants (any of the Bidders' proposals) would be dispatched in practice. DOC-DER Ex. 76 at 27 (Shah Direct).

18. The Department requested that Xcelprovide an in-depth review and analysis of the benefits and costs of firm versus interruptible gas supply, how Xcel intends to use its current interstate pipeline contracts or acquire new contracts and services for gas supply or upgrades to the gas system in relations to the Bidders' proposals. Xcel has the obligation under

Minnesota law to provide "safe, adequate, efficient, and reasonable" service to retail customers. Minn. Stat. § 216B.04. DOC-DER Ex. 76 at 27-28 (Shah).

19. Xcel Witness Wishart provided the requested analysis in his Rebuttal Testimony. Xcel Ex. 48 at 3 and 18-24 (Wishart Rebuttal).

20. Based on Xcel's rebuttal testimony, the Department reasonably concluded that issues regarding firm versus interruptible natural gas supply and associated terms and costs, as well as alternative storage capability and associated costs of the dual fuel (natural gas and fuel oil) aspect of Invenergy's proposal, are appropriate issues for negotiated PPAs. Tr.V.2 at 31 (Shah).

21. Mr. Shah confirmed that the Department's Strategist analysis included reasonable natural gas price assumptions: 21. the natural gas prices associated with Northern and used in Dr. Steve Rakow's reference case in evaluating the bids were provided by Xcel, where all prices use similar natural gas costs, and are priced at the same market hub, were reasonably consistent for analyzing the bids in this case, and were based on the information available at that time. DOC-DER Ex. 76 at 28 (Shah Direct).

22. Regardless of the prices used, natural gas prices will change in the future; thus it was reasonable that the Department used a range of natural gas prices in Strategist analysis of the bids. DOC-DER Ex. 76 at 24 (Shah Direct).

E. Transmission Interconnection Costs

23. To ensure that Bidders included all interconnection costs that may be borne by ratepayers or that such costs otherwise were properly considered in the Department's Strategist analysis, the Department reviewed the costs associated with interconnecting the proposed projects to the transmission system, including the potential for curtailment or congestion

charges. Tr.V. 2 at 39 (Shaw). Mr. Shaw reasonably concluded that all interconnection costs were included in Dr. Rakow's Strategist analysis. *Id.* at 45.

24. Bidders proposed to treat interconnection costs including potential network upgrade costs in different ways which initially made comparisons of the proposals challenging. DOC-DER Ex. 79 at 2-3 (Shaw Direct). Assuming that Bidders included all potential interconnection costs in their bids, the Department notified them that ratepayers should not be at risk for interconnection costs beyond those bid such that Parties should not expect that ratepayers will pay for any additional costs that are specific to a particular project beyond those included in each bid. The Department also stated, and the ALJ agrees, that this approach best ensures the integrity of the competitive process. DOC-DER Ex. 79 at 3-4 (Shaw Direct).

25. The Department received no objections to its letter notification that ratepayers should not be at risk for interconnection costs beyond those bid; Calpine responded that its bid did not include MISO's estimated cost of necessary upgrades for its Mankato bid of $650,000 to $1,500,000 with "a final cost to be confirmed upon completion of the facilities study." DOC-DER Ex. 79 at 4 (Shaw Direct).

26. Mr. Shaw reasonably advised Dr. Rakow to include in the Strategist analysis for Calpine's Mankato proposal these additional costs. *Id.* Dr. Rakow did so. DOC-DER Ex. 83 at 7.

27. Xcel stated that it does expect any of the bid proposals to have significant congestion charges and, thus, the Department did not add congestion charges to its Strategist analysis. DOC-DER Ex. 79 at 5 (Shaw Direct).

28. The Department was concerned that Xcel and Invenergy expected ratepayers to be responsible for costs that were not included in their underlying bids. DOC-DER Ex. 82 at 1

(Shaw Rebuttal). Xcel proposed to be allowed to pass extra costs to ratepayers by establishment of a rider similar to the rider that the Commission approved in Xcel's Minnesota Metro Emissions Reduction Project (MERP), Docket No. E002/M-02-633, which did not involve a competitive acquisition process. *Id.* at 2. Xcel did not demonstrate the reasonableness of shifting costs to ratepayers in a competitive bidding process, either as a matter of fairness to other Bidders or to ratepayers. *Id.* at 2-3.

29. Invenergy included $7 million for interconnection costs in its Cannon Falls proposal, but identified a formula to calculate increases or decreases to that amount. DOC-DER Ex. 79 at 3 (Shaw Direct). Invenergy failed to show the reasonableness of its suggestion that unknown costs be shifted to ratepayers following the Commission's selection of proposals. *Id.* at 3-4.

30. The integrity of the competitive process requires that Bidders are responsible for the costs of their proposals and, in the event that actual costs are lower than bid, the Bidders – including Xcel – should be allowed to retain any such savings. DOC-DER Ex. 79 at 3 (Shaw Direct)at 3-4; DOC-DER Ex. 82 at 3 (Shaw Rebuttal).

F. Wind Acquisition

31. During the course of this proceeding, Xcel filed with the Commission two requests for approval to add additional wind resources in Docket Nos. E002/M-13-603 and E002/M-13-716. The Department's recommended approval of Xcel's total request for an additional 750 MW of wind generation in 2015. DOC-DER Ex. 79 at 6-7 (Shaw Direct). In the present docket, Dr. Rakow reasonably included the additional wind resources in the Department's Strategist analysis. DOC-DER Ex. 83 at 21-22 (Rakow Direct).

II. DEPARTMENT'S ANALYTICAL PROCESS OF BID EVALATION

A. The Analytical Process

32. Department Witness Dr. Steve Rakow outlined the analytical process used to analyze the cost of Bidders' proposals, as follows:

> I used the following process:
> 1. put data on each proposal into draft Strategist inputs;
> 2. ran Strategist on the draft proposals to de-bug the inputs;
> 3. sent the Bidders:
>   a. a file with Strategist inputs representing their proposal(s);
>   b. a file with Strategist outputs for the proposal showing unit(s) operational and cost data at different levels of output.
>   c. a request to obtain feedback (proposed changes or confirmation that proposal is represented correctly).
> 4. updated the Department's Strategist database;
> 5. sorted bids into packages to be analyzed;
> 6. wrote commands to run the proposal packages through Strategist;
> 7. ran Strategist on the proposal packages and reviewed the outputs;
> 8. selected a "short list" of packages/bids from the initial runs;
> 9. put the short list through Strategist contingency analysis (high gas cost, low coal cost, etc.);
> 10. selected the "winner(s).

DOC-DER Ex. 83 at 4-5 (Rakow Direct).

33. Dr. Rakow conducted a "first round" and "second round" of analysis. In the first round, he analyzed through Strategist[27] computer runs all possible bid packages that were less than 700 MW in size from which he created a "short list" of the bids or packages that warranted further analysis in a second round of Strategist runs. The criteria he used to develop the short list were bid packages that were least cost under a variety of circumstances including circumstances that may be of interest to the Commission such as meeting State statutory renewable energy goals. From his short list, Dr. Rakow identified "winners" which meant bids

[27] Strategist is a "capacity expansion model," meaning it determines the set of resources that are the least cost method to meet increases in demand in the future. DOC-DER Ex. 83 at 14 n.4 (Rakow Direct).

or packages that warranted detailed economic analysis in a "second round." DOC-DER Ex. 83 at 5 (Rakow Direct).

B. Proposal Data Development for Strategist Runs

34. The Department, with the assistance of the Bidders, used Bidders' data regarding their proposed projects that were stated in a form that the Strategist computer software could evaluate. Each Bidder completed the Strategist template data form available on Xcel's website as identified in the Department's May 3, 2013 completeness comments. Dr. Rakow either input this data directly into Strategist or calculated the required inputs from the Strategist template data; he then ran Strategist several times to remove any obvious errors in the inputs. DOC-DER Ex. 83 at 5 (Rakow Direct).

35. Once the proposals appeared to be in the correct form, Dr. Rakow ran most of the proposals through Strategist under several different system assumptions (the proposals themselves remained the same). From each run he downloaded data regarding how the proposal's unit(s) performed, and then sent each Bidder the data for each of their proposals. This data allowed the Bidders to see how their unit(s) performed in terms of cost, fuel consumption, pollutants emitted, etc. under a variety of capacity factors. DOC-DER Ex. 83 at 5-6 (Rakow Direct).

36. Geronimo's solar unit and GRE's ZRC (capacity credits) offer are not dispatchable and will always perform the same in Strategist. Therefore, Dr. Rakow sent only one set of outputs to Geronimo and GRE. The Bidders then responded with proposed corrections to inputs the Department intended to use for evaluation of their bids. DOC-DER Ex. 83 at 6 (Rakow Direct).

1. Proposed Corrections to Inputs for Calpine's CC Bid

37. Calpine suggested no corrections to Dr. Rakow's inputs, but did suggest separate treatment for fixed operations and maintenance costs and start charges. Dr. Rakow explained that after some experimentation he could not find a way to adequately model start changes as a variable cost. Thus, Dr. Rakow determined that he would retain the inputs as initially presented by Calpine. DOC-DER Ex. 83 at 6 (Rakow Direct).

38. The Department madeother changes to the inputs for Calpine's bid due to Dr. Rakow noticing that he had not included in the inputs a summer-time decrease in capacity for the Calpine unit. Calpine's proposal contains an estimate of the (lower) summer and (higher) winter capacity. A summer-time capacity de-rating had been included in the inputs for all of the other Bidders' thermal unit bids. DOC-DER Ex. 83 at 6 (Rakow Direct).

39. It is reasonable to include in the inputs a summer-time decrease in capacity because many natural gas-fired units have a lower capacity in summer than in winter for accreditation and energy production purposes. For this reason, Dr, Rakow added a deration pattern for the proposed Calpine unit. This pattern was based upon Calpine's reported deration amount and the deration patterns used by Xcel for other recently-added units, including Blue Lake 7 and 8, Angus Anson 4, and Calpine's existing unit at the Mankato Energy Center. DOC-DER Ex. 83 at 7 (Rakow Direct).

40. Calpine's response to discovery included an updated cost estimate for facilities upgrades that would be necessary in the event that Calpine's proposal were selected and constructed in the range of "$650,000 to $1,500,000 with a final cost to be confirmed upon completion of the facilities study." The Department included these costs in its Strategist analysis; to ensure that Calpine's bid included this cost, Dr. Rakow levelized the $1.5 million cost using the 12.17 percent levelized annual revenue requirement (LARR) input used by Xcel

in Docket No. E002/CN-12-113.[28] He then calculated a present value of about $1.55 million using the discount rate and decision year used by Strategist.[29] The $1.55 million cost is included in a post-model Present Value Rate of Return (PVRR) adjustment for all scenarios and contingencies evaluating Calpine's proposal. DOC-DER Ex. 83 at 7 (Rakow Direct).

41. It is reasonable to include the additional $1.55 million in costs when evaluating Calpine's proposal because doing so ensures that the bid reflects costs as accurately as possible. The inclusion of such costs does not introduce a bias against Calpine's proposal. By evaluating the total costs of bids, the approach is transparent and fair to all parties. DOC-DER Ex. 83 at 7-8 (Rakow Direct).

42. Evaluating bids based on total costs that include interconnection costs, and expecting that ratepayers will not be responsible for costs that exceed the costs of the bids, allows a fair comparison of bids and ensures the integrity of the competitive acquisition process. DOC-DER Ex. 83 at 8 (Rakow Direct).

2. Proposed Corrections to Inputs for Geronimo's Solar Bid

43. Geronimo's response to Department discovery suggested corrections to the costs reported by Strategist. These corrections were based upon future equipment degradation. Similar inputs were not available for the other Bidders' proposals. Rather than put the equipment degradation into Strategist in the base inputs for Geronimo's proposal alone, Dr. Rakow created a separate package that added only Geronimo's proposal with the degraded inputs. DOC-DER Ex. 83 at 8 (Rakow Direct).

---

[28] A LARR is a figure that turns an up-front capital cost into a stream of level, annual payments that are financially equivalent to the up-front cost. The 12.17 percent LARR is the most recent estimate available. DOC Ex. 83 at 7 (Rakow Direct).

[29] The decision year is the year that all dollars are discounted to by Strategist. *Id.*

44. The separate package with degradation allowed comparison to the case with Geronimo's proposal without degradation which, in turn, allowed Dr. Rakow to estimate the overall impact of degradation. Dr. Rakow concluded that the results of adding degradation (specifically, for Scenario 9) are that:

- the expansion plans are identical,
- energy production from Geronimo's unit is decreased, and
- the present value of societal costs (PVSC) increases by about $3.9 million.

That is, there is no change in the expansion plan whether Geronimo's degradation factors are included or not; there is a small impact on cost, and no effect on the selection results. DOC-DER Ex. 83 at 8-9 (Rakow Direct).

3. Evaluating Geronimo's Solar Bid as part of Minnesota's Solar Energy Standard

45. The Department considered evaluating Geronimo's solar bid as a part of Minnesota's new Solar Energy Standard (SES), Minn. Stat. § 216B.1691, subd. 2f, and as a proposal separate from the SES. Dr. Rakow explained that to consider the bid as part of the SES, using the most recent solar cost data available, namely Geronimo's proposal, he would: 1) add Geronimo's proposal and 2) subtract an equivalent amount of capacity (MW), energy (MWh), and cost from the SES units. The two changes would offset each other and leave the system unchanged. This approach would result in Xcel's system being priced using only the cost of the generic expansion units since Geronimo's proposal is added and subtracted from Strategist. DOC-DER Ex. 83 at 9 (Rakow Direct).

46. To consider Geronimo's bid separate from SES would require leaving the SES units as is and make the Geronimo proposal an addition to Xcel's system beyond the SES. This approach is how the Department treated all other (non-Geronimo) proposals in this case.

Under this non-SES approach Xcel's system is evaluated using the cost of Geronimo's proposal as an addition to the cost of generic units at a lower level than if Geronimo's proposal were considered as part of the SES since Xcel's system needs less energy and capacity due to the fact that the SES units are not reduced to reflect the addition of Geronimo. Thus, Geronimo's bid would not be used to meet the SES. DOC-DER Ex. 83 at 8-9 (Rakow Direct).

47. The main reason it was reasonable to consider Geronimo's bid separate from the SES is that this approach is consistent with Xcel's RFP, which the Commission approved. The RFP did not mention obtaining resources for the SES. DOC-DER Ex. 83 at 10 (Rakow Direct).

48. Subsequently, the Commission's March 13, 2013, *Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket* (Docket No. E-002/RP-10-825, IRP Order), set forth the Commission's determination of Xcel's capacity need in terms of the size, type and timing findings, as follows:

> In particular, the current docket supports the finding that Xcel will need an additional 150 MW in 2017, increasing up to 500 MW by 2019. Moreover, a broad range of resources could contribute to meeting this need, justifying solicitation of a broad range of proposals. In particular, Xcel should invite proposals for meeting all of the forecasted need, or any part of it. Xcel should invite proposals for adding peaking resource[s], intermediate resources, or a combination of the two. Xcel should invite proposals that rely on building new generators, as well as proposals that rely on existing generators.

DOC-DER Ex. 83 at 10-11 (Rakow Direct).

49. Proposed solar projects were not precluded by Xcel's RFP, and the Department evaluated Geronimo's solar bid in this proceeding in the same way as it did the other bids. Analyzing Geronimo's solar bid under the SES was problematic for several reasons, such as the fact that there is no way to determine whether Geronimo's proposal is a cost effective means of meeting the SES since there are no other proposals to provide solar energy to which the Geronimo bid could be compared. DOC-DER Ex. 83 at 11 (Rakow Direct).

50. It was reasonable that responses to the RFP included several proposals for the peaking and intermediate identified by the Commission but did not include solar proposals other than Geronimo's since: 1) the RFP did not mention solar resources, 2) solar resources are currently not as commercially developed as wind proposals, and 3) concurrent with the timing of the decisions noted above, the Minnesota Legislature was discussing what is now the Minnesota SES. Thus, there was a fairly high level of uncertainty about what Minnesota law would become and what the regulatory structure for solar projects would be. DOC-DER Ex. 83 at 11 (Rakow Direct).

51. The Commission's IRP Order referenced solar in ordering paragraph 4a, in which it required Xcel to file a report regarding solar generation as follows:

> Solar Energy: Xcel shall report on the expected amount of solar energy on its system, barriers it sees to further solar deployment, and how solar development could contribute to peak demand management, economic development in Minnesota, and meeting Minnesota's renewable energy and environmental mandates and goals.

The Commission's ordering language highlights the difference in commercial maturity of solar and other projects at this time. DOC-DER Ex. 83 at 11-12 (Rakow Direct).

52. The Department suggested ways for the Commission to address the new Minnesota SES apart from this proceeding.[30] For purposes of the present docket, Geronimo's

[30] Dr. Rakow stated:

> Given the difference in the commercial maturity of solar projects compared to other projects, it seems that a more reasonable approach to assess the cost-effectiveness of solar projects would be to direct Xcel to issue a subsequent RFP for solar projects only (an All-Solar RFP, similar to All-Wind RFPs that have been used), at a size and time to be determined in Xcel's next resource plan, which is to be filed in February, 2014. This would allow the RFP to be issued after the solar Effective Load Carrying Capability (ELCC) study is completed, which would give better information regarding the production of solar power compared to Xcel's load. Using this approach would provide better information

(Footnote Continued on Next Page)

proposal would not be a reasonable choice, on a cost basis, for meeting the intermediate and peaking capacity need specified by the Commission, based on information available at this time. Because Geronimo's solar proposal performs poorly for the identified need, Dr. Rakow reasonably concluded that it would be unreasonable to award a contract for that proposal based simply on the rationale that the solar proposal might fill a need not specified in the original RFP. DOC-DER Ex. 83 at 12-13 (Rakow Direct).

53. The Commission could choose to evaluate Geronimo's solar bid as a project that could count towards the SES. Dr. Rakow recommended that the Commission direct Xcel to establish an RFP for solar projects to meet the SES. At that time, Geronimo certainly could submit another bid. DOC-DER Ex. 83 at 13 (Rakow Direct).

54. While certain information is not yet available such as Xcel's solar Effective Load Carrying Capability (ELCC) study, and with the addition of solar integration costs, data generated by the Department would allow evaluation of Geronimo's proposal for purposes of the SES -- in particular, to look at the results for the package that contains no bids—the base case. DOC-DER Ex. 83 at 13 (Rakow Direct).

4. Proposed Corrections to Inputs for GRE's Bid

55. GRE reported that the Department's Strategist outputs contained an error in cost. Dr. Rakow compared the costs of the GRE proposal reported by Strategist to the cost contained in GRE's original proposal, and agreed there was an error that was caused by faulty inputs.

(Footnote Continued from Previous Page)

> about Geronimo's bid than is available at this time and would allow Geronimo's bid to be compared on more of an apples-to-apples basis with other solar projects. Finally, this approach would mean that other potential solar bidders would be more widely noticed, allowing better information to be gathered about solar costs and help ensure that the best solar projects are added to Xcel's system.

DOC-DER Ex. 83 at 12 (Rakow Direct).

The Department worked with GRE to correct the cost inputs. DOC-DER Ex. 83 at 14 (Rakow Direct).

5. Corrections to Inputs for Invenergy's Bid

56. Invenergy suggested three corrections, two of which the Department determined were necessary corrections. First, the company noted that its Hampton Corners proposal price was incorrect on the input spreadsheet; the Department corrected this input. DOC-DER Ex. 83 at 14 (Rakow Direct).

57. Second, Invenergy stated that the data sent by the Department was created assuming a $4/MMBtu natural gas price which was incorrect because Invenergy's calculations suggested that the actual natural gas costs used in the Strategist runs were above $6. Although Invenergy was correct; the Department's assumption did not require any corrections to the Invenergy proposal since the price of natural gas was a background assumption to enable analysis of the inputs and outputs of all Bidders' proposals rather than as an input to Invenergy's specific proposal. DOC-DER Ex. 83 at 14 (Rakow Direct).

58. Third, Invenergy was unable to replicate the emissions values, although Invenergy's calculations were within the same magnitude as the amounts identified in Department discovery. Following further review[31] the Department determined that the differences were very close such that Strategist accurately reflected the inputs provided by the bidders. DOC-DER Ex. 83 at 14-15 (Rakow Direct).

[31] Dr. Rakow reviewed the inputs for SO_2, NO_x, CO, and PM_{10} emissions for Invenergy's bids. He divided the emissions input provided for Xcel's Black Dog unit 6 by the emissions input provided by Xcel in its Strategist input worksheet (in lbs/MMBtu) provided by Invenergy's proposals (both Hampton and Cannon Falls proposals) provided in its Strategist input worksheet. He then compared the ratios to similar ratios derived from the Strategist outputs. The result was that the ratios were very close. For SO_2, the difference (ratio of bidder provided inputs to ratio of Strategist outputs) was about three percent; for NOx, PM_{10}, and CO the difference was about one percent. DOC-DER Ex. 83 at 14-15 (Rakow Direct).

6. Proposed Corrections to Inputs for Xcel's Bid

59. Xcel's initial response to Department discovery was that Dr. Rakow's proposed inputs needed no correction. Later, Xcel provided a spreadsheet (CAP BASE YEAR REVENUE REQUIREMENT CALCS - 6-20-13.xls) that corrected the base year revenue requirements (capital cost) inputs for its proposals. Dr. Rakow revised Xcel's calculations for Black Dog unit 6 assuming a 2018 in-service date as well as Black Dog unit 6 assuming a 2019 in-service date. He then used the revised results for the base year revenue requirements for Black Dog unit 6 and North Dakota units 1 and 2. DOC-DER Ex. 83 at 15 (Rakow Direct).

C. Bid Package Development for Purposes of Strategist Runs

60. The Department analyzed the proposals separately as well as in packages with multiple proposals added together. It did so by requiring Strategist to add the bids to Xcel's system on their own and by forcing Strategist to add the proposals in packages. To analyze all possibilities that reasonably might meet the Commission's identified need, the Department attempted to include all packages in its Strategist computer runs that resulted in less than 700 MW of nameplate capacity being added to Xcel's system. That need was identified in the Commission's *Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket* (Docket No. E-002/RP-10-825), dated March 5, 2013, such that Xcel had demonstrated the need for an additional 500 MW by 2019. DOC-DER Ex. 83 at 16 (Rakow Direct).

61. Since several of the units in the bids added 200 MW or more, Dr. Rakow reasonably concluded that a cut off greater than 500 MW was warranted. For example, the three units in Xcel's proposal could not be included in a single package if a 500 MW cut off were used. Also, Calpine's unit could not be combined with any of the combustion turbine proposals if a 500 MW cut off were used. DOC-DER Ex. 83 at 16 (Rakow Direct).

62. At the time it established the criteria for selecting packages to be analyzed the Department did not know whether changes to the model, if any, would increase, decrease, or leave unchanged the analysis underlying the Commission's determination of a 500 MW capacity need. For this reason, Dr. Rakow concluded that it was reasonable to err on the side of using a cutoff greater than 500 MW since it would be simple to ignore results from packages that turned out to be not needed while it would be difficult to go back and increase the number of packages to be analyzed at a later date if more capacity was warranted. DOC-DER Ex. 83 at 16 (Rakow Direct).

63. As to Geronimo's solar bid, the Department developed the following three packages:

- a package that analyzed the alternative pricing provided by Geronimo;
- a package that analyzed degradation of performance for Geronimo; and
- a package that analyzed both degradation and alternative pricing for Geronimo.

DOC-DER Ex. 83 at 16 (Rakow Direct).

64. The Department's review resulted in a total of 153 packages to be analyzed; including the base case as a "no build" alternative. DOC-DER Ex. 83 at 17 (Rakow Direct).

D. Strategist Base Case Development

65. To develop a "no build" or base case for Strategist the Department updated its most recent Strategist analysis of Xcel's system, a file from the December 18, 2012 comments in Docket No. E002/RP-10-825—Scenario 1 (No "Prairie Island uprate" which means no expansion of the Prairie Island nuclear generation units), in general, as follows:

1. Re-established Xcel's CT and combined cycle (CC) optional expansion units in the years 2027 and beyond.
2. Eliminated the optional wind expansion units.
3. Re-established Xcel's "hard wired" or "forced" wind expansion units for the years 2012 and beyond to ensure that the existing renewable energy standard (RES) is met in Strategist.[32]
4. Established the new fuel and associated inflation rates required for Xcel's proposed North Dakota units.
5. Removed the Goodhue Wind unit from Xcel's generation portfolio because the wind farm will not be built.[33]
6. Updated the inputs for the LS Power (Cottage Grove) combined cycle unit per Xcel's 2013 database.[34]
7. Updated the inputs for Xcel's Prairie Island units, largely removing the capacity attributable to the extended power uprate (Docket No. E002/CN-08-509) per Xcel's 2013 database.
8. Updated the wholesale market price inputs per Xcel's 2013 database.

[32] Xcel's 2011 and 2013 databases have the same number of wind expansion units through 2019, after which the 2013 database has one or two additional wind expansion units each year (except in 2022, when the difference is three units). Given how far in the future this small difference begins, Dr. Rakow concluded that it was too small to pursue further for purposes of this analysis. DOC-DER Ex. 83 at 17-18 (Rakow Direct).

[33] *See* the Commission's July 26, 2013 *Order Declining to Extend Certificate of Need, Finding Statutory Violation, Requiring Further Filings, and Giving Notice of Intent to Revoke Site Permit* in Docket Nos. IP6701/CN-09-1186, IP6701/WS-08-1233, IP6701/M-09-1349, and IP6701/M-09-1350. DOC-DER Ex. 83 at 18 (Rakow Direct).

[34] The Department referred to Xcel's response to DOC Information Request No. 1 as "Xcel's 2013 database."

9. Updated the retirement dates for Xcel's Black Dog units 3 and 4 and French Island unit 3 per Xcel's 2013 database.

10. Updated the in-service (repair) date for Xcel's French Island unit 3 per Xcel's 2013 database.

11. Added about 290 MW nameplate capacity, 200 MW accredited capacity, and 490 GWh of solar energy by 2020 to meet the SES. See DOC-DER Ex. 84 SR-2 (Rakow Direct Attachments) for the calculation of the SES.[35]

12. Updated the externality values per the Commission's June 5, 2013 *Notice of Updated Environmental Externality Values* (Docket Nos. E999/CI-93-583 and E999/CI-00-1636).

13. Updated the heat rates for the nuclear and generic units per Xcel's 2013 database.

14. Updated the coal, nuclear, biomass, natural gas fuel costs for the existing units per Xcel's 2013 database.

15. Updated the natural gas fuel costs for generic expansion units per Xcel's 2013 database.

16. Updated the monthly pattern for natural gas per Xcel's 2013 database.

17. Updated the variable operations and maintenance costs for certain existing units per Xcel's 2013 database.

18. Updated the wholesale energy market costs per Xcel's 2013 database.

DOC-DER Ex. 83 at 17-19 (Rakow Direct).

[35] For Dr. Rakow's modeling assumptions for solar capacity to calculate the SES, *see* DOC-DER Ex. 83 at 19 (Rakow Direct).

III. ANALYSIS OF BID PACKAGES (DIRECT TESTIMONY)

A. First Round (Screening) Set-Up.

66. In its first round of analysis, the Department ran each of the 153 bid packages through 24 scenarios for a total of 3,672 runs. The 24 scenarios are defined in DOC-DER Ex. 84 SR-3 (Rakow Direct). DOC-DER Ex. 83 at 20 (Rakow Direct).

67. The Department explained particular considerations for the first round set up assumptions regarding solar capacity accreditation, wind capacity levels based on Xcel's wind dockets, reliability in the form of reserve ratios for capacity, the Strategist end date, the relationship between the cost of capacity of generic units and the size or amount of capacity in bid packages, and varying levels of cost inputs. DOC-DER Ex. 83 at 20-33 (Rakow Direct). These considerations are described below.

1. Solar Constructs: Two Different Capacity Accreditation Assumptions

68. MISO accredits generation units according to the amount of capacity that reasonably can be expected from such units. The two different solar constructs used by Dr. Rakow relate to a 72 percent and a 50 percent solar accreditation by MISO. The phrase "72 percent solar accreditation" means the solar units—the pre-existing units, the capacity added to meet the SES, and Geronimo's solar proposal—are accredited by MISO at about 72 percent of nameplate capacity for purposes of calculating the reserve margin.[36] The phrase "50 percent solar accreditation" means all solar units are accredited at about 50 percent for purposes of calculating the reserve margin. DOC-DER Ex. 83 at 20 (Rakow Direct).

[36] The reserve margin is a quantity of supply, above the level of the demand forecast, that MISO concludes is necessary to maintain a reliable electrical system. DOC-DER Ex. 83 at 20 n.8 (Rakow Direct).

69. A twenty percentage point reduction in accreditation equals about 60 MW of lost capacity accreditation assuming 300 MW nameplate capacity of solar units. DOC-DER Ex. 83 at 20-21 (Rakow Direct).

2. Wind Capacity Levels and the Tie to Xcel and Utility Wind Dockets

70. The Department used three different levels of wind capacity for its first-round Strategist runs: 400 MW, 600 MW and 800 MW of wind.[37] The term "400 MW of wind" assumed that two 200 MW wind projects, Courtenay and Odell wind units, are approved by the Commission and required to be added in 2015-16 (data on these units was obtained from Xcel in Docket No. E002/M-13-603). Also, generic wind units were removed so that the overall quantity of wind energy added remained relatively constant.[38]

71. The term "600 MW of wind" assumed that the Courtenay, Odell, and Pleasant Valley wind units are required to be added in 2015-16. The assumption was that all three projects (600 MW) will be approved by the Commission in Docket No. E002/M-13-603. Also, generic wind units were removed so that the overall quantity of wind energy added remained relatively constant.[39]

72. The term, "800 MW of wind" assumed the Courtenay, Odell, and Pleasant Valley wind units and a 200 MW generic wind unit would be added in 2015-16.[40] The assumption

[37] Dr. Rakow eliminated from each of these three different levels capacity additions attributed to the withdrawn Goodhue Wind project. DOC-DER Ex. 83 at 21 (Rakow Direct). For greater detail on additions and subtractions of capacity, see DOC-DER Ex. 83 at 21-22 (Rakow Direct).
[38] DOC-DER Ex. 83 at 21-22 (Rakow Direct); DOC-DER Ex. 86 at 14 (Rakow Rebuttal).
[39] *Id.*
[40] Strategist generic wind units are 100 MW in size, and two generic units produce about 17 percent more energy than is expected from the unit actually proposed by Xcel in Docket No. E002/M-13-716. There was insufficient time and too little difference (in energy and accredited capacity) to pursue obtaining additional inputs for the proposed unit at this first stage of the analysis. However, the actual data for the fourth wind unit was used in subsequent Department analysis. DOC-DER Ex. 83 at 21 n.10 (Rakow Direct).

was that all three projects would be approved by the Commission in Docket No. E002/M-13-603 and a single project will be approved in Docket No. E002/M-13-716, for a total of approximately 800 MW.[41] DOC-DER Ex. 83 at 21-22 (Rakow Direct).

73. Also, 200 MW of generic wind units wereno longer added in 2020 and 2022 and 100 MW of wind units was not added in 2024, 2025, and 2026 so that the overall quantity of wind energy added wind remained relatively constant. DOC-DER Ex. 83 at 22 (Rakow Direct).

74. Dr. Rakow added these three new wind units in alphabetical order given that their cost was not an issue in this case, and he added the generic unit last to represent the wind unit for which specific data was not yet available. DOC-DER Ex. 83 at 22 (Rakow Direct).

3. Reliability: Required "Reserve Ratios" for Capacity

75. For reliability purposes, Dr. Rakow included different assumptions regarding the amount of capacity that is reserved to ensure that there is sufficient capacity to serve load during periods of peak demand on the electrical system. Dr. Rakow considered two different methods: the reserve ratio used by Xcel in its 2010 IRP and a new reserve ratio to be used by MISO for its peak, DOC-DER Ex. 83 at 22 (Rakow Direct).

76. The Department is continuing to evaluate how MISO's changing methods may impact Minnesota's resource planning. DOC-DER Ex. 83 at 23 n.11 (Rakow Direct). The new MISO method has not been brought to the Commission for determination as to whether this significant change is a reasonable planning method for regulated utilities in Minnesota. *See id.* The Department showed that the new MISO method is likely to have a significant

[41] On October 17, 2013, the Commission voted to approve the Xcel's acquisition petitions with conditions; a written order will be issued.

(decrease) effect on the amount of reserve capacity that MISO may require of Xcel in future years. DOC-DER Ex. 83 at 27 (Rakow Direct).

77. Xcel's peak reliability method or "non-coincident peak" method refers to the reliability method used during the analysis of Xcel's last Commission-approved resource plan – the 2010 IRP. Under this method a 3.79 percent reserve ratio was added to Xcel's forecast of the Company's peak demand (or, the peak demand that is non-coincident with any other entity's peak). Then, resources were required to be added by Strategist so that Xcel had sufficient capacity to cover the Company's peak demand forecast plus required reserves. This was the method used by MISO for the June, 2012 to May, 2013 planning year and in Xcel's most recent resource plan. DOC-DER Ex. 83 at 22 (Rakow Direct).

78. The term "MISO coincident peak" refers to a new reliability method to be used by MISO for the June, 2013 to May, 2014 planning year. The reliability method requires that a 6.2 percent reserve ratio be added to Xcel's forecast of its demand at the time of (or coincident with) MISO's peak.[42] DOC-DER Ex. 83 at 22-23 (Rakow Direct).

79. The MISO coincident peak demand is determined by discounting the non-coincident peak demand (i.e. the utility's peak demand) by a diversity factor.[43] Dr. Rakow developed the diversity factor using Xcel's response to Minnesota Chamber of Commerce Information Request No. 746 in Docket No. E002/GR-12-961 (MCC IR 746). Then, resources

[42] This method is a significant change from the method typically used in resource planning, where the focus is on ensuring that the utility has enough resources to meet the peak demands on its own system, regardless of when MISO's peak occurs. The Department is continuing to examine how to incorporate MISO's changing methods into Minnesota's resource planning process. DOC-DER Ex. 83 at 23 n.11 (Rakow Direct).

[43] For example, if Xcel's demand at the time of (coincident with) MISO's peak is ten percent lower than Xcel's peak demand, then the "diversity factor" would be equal to ten percent. *Id.* at n.12.

are required to be added by Strategist so that Xcel has sufficient capacity to cover the "MISO coincident peak" forecast plus required reserves. DOC-DER Ex. 83 at 23 (Rakow Direct).

80. Xcel's system is dispatched to meet the Company's forecast of non-coincident (utility) peak demand; the reserve ratio input is calculated to produce the correct quantity of reserves plus coincident peak according to MISO's approach. DOC-DER Ex. 83 at 23 (Rakow Direct).

81. Xcel's peak demand (non-coincident) and MISO's peak may occur on different days or at different hours on the same day. DOC-DER Ex. 83 at 23-24 (Rakow Direct).

82. Uncertainties regarding how to best estimate the impact of MISO's proposed new reliability method required the Department to use both Xcel's (the Commission's) current method and MISO's new method. One uncertainty is the correct diversity factor to apply to the non-coincident (utility) peak demand to determine the coincident peak demand. Xcel's response to discovery indicates that a variety of diversity factors would be reasonable. DOC-DER Ex. 83 at 24 (Rakow Direct).

83. A second uncertainty is the correct level of demand side management (DSM) or customer usage response to assume. At this time it is not clear if the full quantity (in MW) of DSM that is assumed available to reduce Xcel's (non-coincident) peak demand (such as Xcel customer's reducing their usage through Xcel's automated air conditioning control program) is also available to meet Xcel's demand coincident with (at the time of) MISO's peak demand. For example, Dr. Rakow reviewed the hourly Saver's Switch air conditioning interruption data provided by Xcel in annual compliance filings in Docket No. E002/M-01-46. This load management data shows changes in customer usage (demand) from hour to hour that, at times, exceed 100 MW. Thus, it was reasonable for the Department to use these two reliability

methods to determine a reasonable range of capacity needs. DOC-DER Ex. 83 at 25 (Rakow Direct).

84. Interpretation of the results of using the two different reliability methods is significant. The Department's non-coincident (utility) peak demand calculations assume that the capacity forecast reduction (from non-coincident to coincident) is roughly offset by a reduction in DSM capability and the net impact is too small to matter. This result means that Xcel's original (non-coincident, utility peak) calculations are assumed to be a reasonable estimate of the coincident (MISO) peak reliability reserve requirement. DOC-DER Ex. 83 at 25 (Rakow Direct).

85. On the other hand, Dr. Rakow's coincident (MISO) peak demand calculations assume that the amount of capacity or MW of DSM available does not vary significantly with the conditions that are driving the differences in the coincident and non-coincident demand forecasts. Under this assumption it is reasonable to reduce the coincident demand forecast by the original quantity DSM. DOC-DER Ex. 83 at 25 (Rakow Direct).

86. The Department compared Strategist results regarding Xcel's capacity needs under the coincident and non-coincident peak reliability methods as well as under two different demand forecasts (the fall 2011 demand forecast from Xcel's approved 2010 IRP as well as Xcel's proposed spring 2013 demand forecasts).[44] Differences in Strategist results as to Xcel's needs using the two different reliability methods were considerable. DOC-DER Ex. 83 at 25-27 (Rakow Direct).

[44] Only the fall 2011 demand forecast in Xcel's 2010 IRP has been evaluated for reasonableness and approved by the Commission. Tr.V. 2 at 29-30 (Shah).

87. First, the effects of Dr. Rakow's updates to Xcel's Strategist model caused the net capacity deficit to remain relatively unchanged in 2017 but by 2020 the changes reduce the deficit by about 135 MW and by 150 MW in 2021. DOC-DER Ex. 83 at 27 (Rakow Direct).

88. Second, the impact of the choice of net demand forecast (2011 or 2013) did not appear to be significant.[45]

89. Third, the impact of the choice of reliability method caused a reduction in net peak demand under the proposed MISO method of between about 275 MW and 290 MW each year.[46]

90. The uncertainty regarding how to most accurately estimate the impact of the new reliability method on the demand forecast and associated demand-side management resources is significant. DOC-DER Ex. 83 at 27 (Rakow Direct).

4. End Date Used in Models

91. Each Strategist analysis or "run" ends in 2036. The 2036 end date is the approximate end of the proposals for 20-year power purchase agreements coming on-line in 2016 or 2017. The 2036 end date ensures that the 20 year bids are not penalized to a significant degree by speculation regarding the cost of replacement capacity 20 years in the future. DOC-DER Ex 83 at 28 (Rakow Direct).

92. Such an end date, even with end effects, likely does not account for the full value of Xcel's bids, which are expected to have a 35 year life. While a 2050 end date would allow the full life of Xcel's bids to be analyzed, that approach would then require the other bids to acquire replacement capacity and energy at the prices assumed in Strategist for the generic

[45] *Id.*
[46] *Id.*

units, and the costs of generic units are generally higher than the costs of the bids. DOC-DER Ex 83 at 28 (Rakow Direct).

93. Dr. Rakow reasonably concluded that it was reasonable to use an end-date of 2036 for several reasons. First, because Xcel traditionally has run Strategist for the full duration available (through 2050), Dr. Rakow expected Xcel to follow that approach in this proceeding (which it did). Thus, he reasonably expected that the record would allow the Commission to compare Strategist results of using an end-date of 2036 with an end-date of 2050. Second, Strategist could complete a run using a 2036 end-date faster than using a 2050 end-date and might avoid problems associated with providing Strategist with too many choices.[47] DOC-DER Ex. 83 at 28 (Rakow Direct). Finally, it appeared to Dr. Rakow that a Strategist run using 2050 as the end date would require at least some expansion units to be locked in rather than allowing the model to choose the optimal expansion plan. Locking expansion units limits the alternatives available in Strategist analysis. DOC-DER Ex. 83 at 31-32 (Rakow Direct).

94. Dr. Rakow reasonably concluded that using 2036 as the end date is the best approach. When reviewing the results of the Department's analysis using 2036 as the end date, Dr. Rakow observed that there is extra value to the Commission in having Xcel's bids on the system for several years beyond the end of the planning period. DOC-DER Ex. 83 at 29 (Rakow Direct).

5. Relationship between Generic Units and Amount of Capacity in Bid Packages

95. Because Bidders' proposals in this matter add significantly different quantities of

[47] Strategist runs can take more than a day to complete if a model is particularly complex; moreover, giving the model too many choices could cause Strategist not to be able to "solve" – that is, not to produce reliable results. DOC-DER Ex. 83 at 28 n.19 (Rakow Direct).

capacity, it is important to understand the relationship between the cost of the generic replacement units in Strategist runs and the cost of the proposals. DOC-DER Ex. 83 at 29 (Rakow Direct).

96. Packages with a small capacity proposal (in MW) rely more upon generic units to fill in the rest of Xcel's capacity need than packages with a large capacity proposal (in MW). If the generic units are cheaper than the proposals in this proceeding, then when Strategist is run the small packages will generally look better (less costly) than large packages because of the more extensive use of the (cheaper) generic units. DOC-DER Ex. 83 at 29 (Rakow Direct). If the generic units are more expensive than the proposals, then when Strategist is run, large packages will tend to look cheaper than smaller packages. DOC-DER Ex. 83 at 29 (Rakow Direct).

97. The costs of generic units in this proceeding are more expensive than the bid proposals of Calpine, Invenergy, and Xcel that rely on combustion turbines or combined cycle proposals such that Strategist runs result in a cheaper -- higher rank -- than the base case (which adds only generic units). DOC-DER Ex. 83 at 30 (Rakow Direct). The opposite is true for Geronimo's solar proposal which is more expensive than the generic units. DOC-DER Ex. 83 at 30 (Rakow Direct). Dr. Rakow explained that by allowing Geronimo's solar proposal to be considered part of the SES requirement the Geronimo proposal would be able to rely more on the lower cost of generic units than would otherwise be the case. *See* DOC-DER Ex. 83 at 30 (Rakow Direct).

98. Differences between the costs of the generic units and the Bidders' proposals raise a concern about the reasonableness of the cost of generic units; if the costs of the generic units

are unreasonably high, smaller capacity (MW) packages would be disadvantaged. DOC-DER Ex. 83 at 31 (Rakow Direct).

99. If the CT and CC proposals represent a temporary availability of low-cost new units and the cost of the generic units is otherwise accurate, then the favorable Strategist results given to the proposals with a large quantity of MW (relative to small quantities of MW) is reasonable, all else being equal. DOC-DER Ex. 83 at 30 (Rakow Direct). If the CT and CC proposals are representative of a long run lower cost of new units (meaning the generic units are over-priced), then the bonus given to the proposals with a large quantity of MW may not be reasonable if the bonus is significant since that would mean that proposals with small quantities of MW would be unfairly disadvantaged. DOC-DER Ex. 83 at 30-31 (Rakow Direct).

100. While more information may become available with future power plant construction or replacement, there is no record basis to conclude that the costs of the generic units are too high. DOC-DER Ex. 83 at 31-32 (Rakow Direct). These costs came from Xcel's most recent resource plan and are intended to represent costs over the planning period rather than costs at a specific time. DOC-DER Ex. 83 at32 (Rakow Direct). For this reason, the Department reasonably assumed that generic unit costs are representative of costs in the long run such that the CT and CC bid prices are representative of such costs. DOC-DER Ex. 83 at 31 (Rakow Direct).

101. Dr. Rakow considered methods that might avoid the potential of over-priced generic units. One such method would be to lock in the expansion plan so that Strategist could not select a large package having a lower cost than a smaller package due only to the addition of fewer generic units being added to the larger package. The Department rejected use of a

locking method due to its limitation on Strategist results. Locking in the expansion plan would restrict Strategist from adapting to various capacity sizes of proposed packages by making other changes in the expansion plan. DOC-DER Ex. 83 at 31-32 (Rakow Direct).

102. By not locking the expansion plan, Strategist runs in this proceeding resulted in a wide variety of potential projects due to the significant difference in the proposed size, type and timing of the bids. DOC-DER Ex. 83 at 31 (Rakow Direct).

103. Another method that may avoid the issue of the relative price of proposals and generic units would be to run Strategist with expansion units as options but then consider only those proposal packages that cover Xcel's capacity deficit through a certain year, thus limiting the bonus given to large capacity (MW) packages. Without a reasonable basis to conclude that the costs of the generic units are too high, however, Dr. Rakow rejected this option. DOC-DER Ex. 83 at 32 (Rakow Direct).

104. The Department's analysis leaves the expansion units as options and considered only those packages covering deficits through the year 2024. DOC-DER 83 at 32-33 (Rakow Direct).

6. Varying Levels of Cost Inputs

105. In its first round of Strategist runs, the Department included no scenarios with varying levels of cost assumptions. The purpose of the first round of analysis was to reduce the number of potential packages to a manageable number while achieving the overall objectives in this proceeding. Use of a variety of load and capability situations provided a reasonable spectrum of situations to assess the relative performances of the packages at a high level. This method was reasonable. Detailed cost analysis of the packages was reserved for the second round of analysis. DOC-DER Ex. 83 at 33 (Rakow Direct).

B. First Round (Screening) Results of Strategist Runs

106. From the results of the first round of its Strategist analysis,[48] the Department selected the following seven packages for further detailed analysis: Those packages are as follows:

1. BD617— Xcel's Black Dog unit 6, 2017 in-service date and CCC1— Calpine's Combined Cycle Mankato Energy Center expansion proposal;
2. ICT1— Invenergy Combustion Turbine proposal 1 (Cannon Falls);
3. GPV1— Geronimo Solar proposal, "bundled" pricing;
4. BD619 CCC1—the least-cost package, with Black Dog unit 6 in-service by 2019 and Calpine's CC Mankato Energy Center expansion proposal;
5. ICT1 BD618—a package covering needs through 2020, with Invenergy Combustion Turbine proposal 1 (Cannon Falls) and Black Dog unit 6 in-service by 2018;

[48] The Department used the following of codes for the units in this analysis:

- BD617—Xcel's Black Dog unit 6, 2017 in-service date;
- BD618—Xcel's Black Dog unit 6, 2018 in-service date;
- BD619—Xcel's Black Dog unit 6, 2019 in-service date;
- CCC1—Calpine Combined Cycle proposal;
- GPV1—Geronimo Solar proposal, "bundled" pricing;
- GPV1 DEGRADE—Geronimo Solar proposal, "bundled" pricing, but performance degrades over time;
- GPV1 FVP—Geronimo Solar proposal, with "Fixed + Variable" pricing;
- GRE1—Great River Energy proposal 1 (the smaller proposal);
- GRE2—Great River Energy proposal 2 (the larger proposal);
- ICT1—Invenergy Combustion Turbine proposal 1 (Cannon Falls);
- ICT2—Invenergy Combustion Turbine proposal 2 (Hampton);
- ND118—Xcel's North Dakota unit 1, 2018 in-service date;
- ND119—Xcel's North Dakota unit 1, 2019 in-service date;
- ND218—Xcel's North Dakota unit 2, 2018 in-service date; and
- ND219—Xcel's North Dakota unit 2, 2019 in-service date.

6. ICT1 CCC1—the only CT/CC combination remaining, with Invenergy Combustion Turbine proposal 1 (Cannon Falls) and Calpine's CC Mankato Energy Center expansion proposal; and

7. Base Case—a no-build alternative.

The first three packages are simply the proposals from the packages selected for detailed analysis on their own. DOC-DER Ex. 83 at 33-34 (Rakow Direct).

107. Dr. Rakow highlighted important aspects of the first round Strategist results, and the selection of packages for further consideration, as follows:

- The package with Xcel's Black Dog CT unit and Calpine's CC unit is the highest ranked under all 24 scenarios and was an obvious candidate for further analysis. However, this is a rather large package, covering Xcel's needs for several years. Thus, to allow for greater exploration of alternative approaches, I examined the effects of using smaller packages covering the deficits for a shorter period of time.

- After the least-cost package above, Strategist tends to produce significantly different results in the various scenarios, meaning Strategist doesn't indicate that there is a highly robust alternative. That result in itself is interesting since it suggests that using the least-cost package above would be a reasonable outcome in this proceeding.

- Focusing on scenario nine and the packages that require a generic unit to be added in 2020, I decided to include a package with Invenergy's Cannon Falls CT unit and Xcel's Black Dog CT unit as well. Finally, considering Minnesota's renewable preference statutes, I included an analysis of Geronimo's proposal to provide the Commission a comparison across a range of cost assumptions.

DOC-DER Ex. 83 at 34-35 (Rakow Direct).

108. Dr. Rakow explained why he selected packages with different in-service dates for Xcel's Black Dog unit 6, even though a 2019 in-service date for Xcel's Black Unit 6 proposal provided the lowest cost:

> When considered alone, Black Dog unit 6 needs to be in-service in 2017 to cover the capacity deficit that year. Black Dog unit 6 in-service in 2018 was the actual

> unit in the package with ICT1 that I selected, use of any other in-service date represent a different package. Black Dog unit 6 in-service in 2019 was the actual unit in the package with CCC1 that is least-cost as noted above.

DOC-DER Ex. 83 at 36 (Rakow Direct).

C. Second Round (Detailed Analysis) Set-Up

109. For the base case in the second round of analysis, the Department used Xcel's 2011 forecast, non-coincident peak reliability method, 800 MW of wind, and 72 percent solar accreditation factor. This is scenario three from the first round of analysis. DOC-DER Ex, 83 at 36 (Rakow Direct).

110. Contingencies run on each package the Department selected for inclusion in the second round of analysis included the list of contingencies used in Xcel's most recent resource plan (Docket No. E015/RP-13-53). Dr. Rakow modified that list by removing contingencies not relevant to this proceeding, such as varying wind prices. DOC-DER Ex. 83 at 36 (Rakow Direct).

111. The resulting list of contingencies for the second round included:

- CO_2 reduction per Minnesota Statutes;
- The Commission's high and low CO_2 internal cost values;
- low externality values;[49]
- high and low wholesale market prices (±25 percent);
- high and low capital costs (±10 percent);
- high and low coal costs (±20 percent and ±10 percent);
- low natural gas costs (-$1.50, -$1.00, -$0.50);

[49] The high externality values are included in the base case. DOC-DER Ex. 83 at 36 n.20 (Rakow Direct).

- high natural gas costs (+$2.50, +$2.00, +$1.50 + $1.00, and, +$0.50);
- high and low wind accreditation (±25 percent); and
- high and low forecast of energy and demand (±5 percent and ±2.5 percent).

DOC-DER Ex. 83 at 36-37 (Rakow Direct).

112. Consistent with its analysis of Xcel's most recent resource plan, the Department in its second round ran each scenario and contingency a second time with the Commission's CO_2 internal cost and externality values removed. DOC-DER Ex. 83 at 37 (Rakow Direct).*Id.*

113. Several issues appeared during Dr. Rakow's second round of Strategist analysis. For example, while testing the low wind capacity accreditation contingency, Dr. Rakow enabled Strategist to determine whether the low wind accreditation packages covered the capacity deficits in the 2017 to 2020 time frame or whether additional long term capacity (from generic units) was needed by forcing the model to add 100 MW of short term capacity in both 2015 and 2016.[50] He made a similar adjustment while testing the high (+ 5 percent) forecast and mid-high (+ 2.5 percent) forecast contingencies.[51] As with the low wind accreditation contingency, this approach enabled Strategist to determine whether the packages covered the capacity deficits in the 2017 to 2020 time frame or whether additional long term capacity (from generic units) was needed. DOC-DER Ex. 83 at 37-38 (Rakow Direct).

114. The Department did not change the energy conservation and load management inputs in the second round, similar to how such contingencies are performed in resource planning, but did replace a generic wind unit with the costs of a particular Xcel wind project. Dr. Rakow explained that his analysis from two other dockets that demonstrated showed "these

[50] For greater detail, see DOC Ex. 83 at 37 (Rakow Direct).
[51] *Id.*

wind proposals to be least-cost in every one of the nearly 1,800 Strategist runs in each of those proceedings." DOC-DER Ex. 83 at 38 (Rakow Direct).

D. Second Round (Detailed Analysis) Results of Strategist

115. From the results from of its second round of Strategist analysis,[52] together with several additional considerations, the Department selected the following packages for Commission approval: Calpine's proposal and Xcel's Black Dog Unit 6 bid with a 2019 in-service date. DOC-DER Ex. 83 at 43 (Rakow Direct).

116. Dr. Rakow identified two risks he considered in his review of second round of Strategist outputs beyond those modeled in Strategist, First, at the September 16, 2013 MISO Loss of Load Expectation Working Group meeting, MISO's presentation provided preliminary results regarding the required capacity reserve ratio for the next year. The preliminary results were that the required reserve ratio was expected to increase by about 1 percentage point. Given a peak demand forecast of about 10,000 MW, each percentage point increase in the reserve ratio requires Xcel to obtain approximately 100 MW of additional accredited capacity. DOC-DER Ex. 83 at 39 (Rakow Direct).

117. Second, Xcel's 125 MW power purchase agreement with Manitoba Hydro (see Docket No. E002/M-10-633) includes as one of Manitoba Hydro's conditions precedent, absolute discretion of Manitoba Hydro, on or before May 1, 2018, regarding the awarding of a contract for construction of a new 1000 MW (installed capacity) hydroelectric project with a targeted in-service date of on or before May 1, 2021. DOC-DER Ex. 83 at 39 (Rakow Direct).

118. Public information regarding Manitoba Hydro's project states that the earliest possible in-service date of the project is 2025. Dr. Rakow concluded that it appears that

[52] The results of the second round are set forth in DOC-DER Ex. 84 SR-5A (Rakow Direct Attachments).

Manitoba Hydro will be able to exercise this condition precedent if it desires. If that happens, Xcel may lose access to this resource. DOC-DER Ex. 83 at 39 (Rakow Direct).

119. Although Dr. Rakow recommended the least-cost bid packages for Commission approval, he acknowledged that the Commission has several options available depending on its goals. If the overall goal is to minimize costs, as is typically the case, then referring to the information including CO_2 costs, the results clearly demonstrate that the least-cost package is Calpine's CC proposal combined with Xcel's proposal for a CT unit at the Black Dog site in 2019. The Calpine proposal plus Black Dog in 2019 covers Xcel's capacity deficit to 2023 under the normal forecast and to 2025 and beyond under the mid-low and low forecasts. DOC-DER Ex. 83 at 40 (Rakow Direct).

120. If the Commission is concerned about the MW size of the package, the second ranked package under base case conditions is Calpine's proposal alone. Under certain other contingencies either Black Dog Unit 6 with an in-service date of 2017 or Invenergy's Cannon Falls CT proposal plus Calpine's CC proposal appear favorable. The exact ranking of second round results depends upon which contingencies are of greatest concern. DOC-DER Ex. 83 at 40 (Rakow Direct).

121. Dr. Rakow concluded that Xcel's level of excess capacity reserves that are expected to result after Xcel would add Xcel's Black Dog Unit 6 in 2017 plus Calpine's proposal to be reasonable. DOC-DER Ex. 83 at 40-41 (Rakow Direct).

122. The Department based this determination, stated immediately above, on several additional factors. He examined Xcel's load and capability report (which represents the utility's supply and demand information). He considered the size of the excess reserves based on effects of differences in solar capacity accreditation, the effect of a one percent increase in

required reserves and Xcel's spring 2013 forecast (not yet vetted by the Department or approved by the Commission), which is lower than the fall 2011 forecast by 80 MW to 125 MW between 2017 and 2022.[53] DOC-DER Ex. 83 at 41 (Rakow Direct). He considered the size of the excess reserves to be reasonable in light of the fact that a number of Xcel's resources are aging, which may result in the need to replace those facilities, and that the economy in Minnesota is still in recovery mode, meaning that demand is expected to increase as the economy improves. DOC-DER Ex. 41 (Rakow Direct).

123. Dr. Rakow also found that Xcel's promotional activities with respect to its new Business Incentive Rider (BIS Rider) is not in effect and, thus, could not have contributed to the demand at issue in this proceeding. Dr. Rakow suggested that the Commission carefully evaluate future CN petitions to ensure that Xcel does not benefit financially from promotional practices while imposing costs on others through the CN process. DOC-DER Ex 83 at 42 (Rakow Direct).

E. Recommendation: Department Direct Testimony

124. In Direct Testimony, the Department recommended that the Commission approve Calpine's proposal together with Xcel's proposal for a CT unit at the Black Dog site (Black Dog Unit 6) with a 2019 in-service date. It recommended that the Commission consider requiring Xcel to issue an all solar RFP in consideration with other information that is known in the context of Xcel's next IRP. DOC-DER Ex. 83 at 43 (Rakow Direct).

[53] For greater detail, see DOC-DER Ex. 83 at 40-41 (Rakow Direct).

IV. THIRD ROUND ANALYSIS (REBUTTAL TESTIMONY)

A. Summary of Third Round Analysis

125. In its third round of Strategist runs, the Department included assumptions regarding interruptible natural gas supply and flexible in-service dates among other factors. The results of the third round identified the three top performing packages as follows:

1. Calpine's Mankato proposal with Black Dog Unit 6,
2. Calpine's Mankato proposal with Invenergy's Cannon Falls proposal, and
3. Invenergy's Cannon Falls proposal with Xcel's Black Dog unit 6.

DOC-DER Ex. 86 at 12 (Rakow Rebuttal). Using interruptible natural gas supply assumptions as well as a delayed in-service date of 2019, significantly reduced the cost of Invenergy's Cannon Falls proposal. DOC-DER Ex. 86 at 10-11 (Rakow Rebuttal).

126. The Department recommended that PPA negotiations include consideration of firm and interruptible gas supply as well as flexible in-service dates such that those two of three projects with terms negotiated to be most favorable to ratepayers should be selected by the Commission. DOC-DER Ex. 86 at 2, 15, 21 (Rakow Rebuttal); Tr. V. 2 at 50 (Rakow).

B. Third Round Set-Up for Strategist Analysis

1. Interruptible Natural Gas Supply

127. Contrary to Xcel's Strategist analysis, Dr. Rakow initially did not model interruptible natural gas for any of the proposals. In his Direct Testimony, he evaluated all proposals based upon the same assumption—firm natural gas supplies. The Department's initial approach ensured that all bids were analyzed on an equal basis. DOC-DER Ex. 86 at 4 (Rakow Rebuttal).

128. In Rebuttal Testimony, Dr. Rakow explained that modeling the assumption of firm natural gas supply favored Calpine's Mankato project and Xcel's Black Dog Unit 6 and

disfavored Invenergy's projects. DOC-DER Ex. 86 at 4-5 (Rakow Rebuttal). He agreed with Xcel on this point. *Id.*

129. Dr. Rakow observed that, given that the Invenergy project is proposed as a peaking facility, it is reasonable to explore the use of firm or interruptible natural gas for the Invenergy Cannon Falls project, "at least to allow for more discussions in PPA negotiations, especially since different types of natural gas could affect the costs to be charged to ratepayers." DOC-DER Ex. 86 at 5 (Rakow Rebuttal).

130. The Department used the inputs for interruptible natural gas supply at Invenergy's Cannon Falls proposed project that Xcel provided in response to Department discovery. DOC-DER Ex. 86 at 5 (Rakow Rebuttal). With those inputs, Dr. Rakow ran six additional Strategist scenarios from his second round of Strategist analysis, but replaced firm gas with interruptible gas for bid packages that include Invenergy's Cannon Falls project.[54] These additional six scenarios represented the first part of the Department's third round of analysis. DOC-DER Ex. 86 at 6 (Rakow Rebuttal).

131. Dr. Rakow's consideration of using interruptible natural gas supply for the Invenergy Cannon Falls project was not a recommendation that interruptible rather than firm supply be used, but may be a way to minimize costs while maintaining reliability. He explained that providing this additional analysis allowed interruptible supply to be considered as a factor in PPA negotiations to reduce costs for ratepayers. DOC-DER Ex. 86 at 6-7 (Rakow Rebuttal).

132. Whether there could be a negative effect on electric reliability if interruptible gas supplies were used at Invenergy's peaking project is an issue that will need to be explored

[54] For greater detail, see DOC-DER Ex. 86 at 6 (Rakow Rebuttal).

during PPA negotiations. DOC-DER Ex. 86 at 7 (Rakow Rebuttal). Preliminary information from Xcel suggested that reliability of the Invenergy Cannon Falls project might be acceptable with interruptible gas supply. Assuming that a lack of firm natural gas supply would be a larger problem in winter than in summer, Xcel's winter load and capability information provided in response to Department discovery confirmed that it is reasonable for the Commission to explore the use of interruptible natural gas supplies for the Invenergy project as Xcel has sufficient capacity available in winter months. DOC-DER Ex. 86 at 7 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-R-8 (Rakow Rebuttal Attachments).

2. Flexible In-Service Dates

133. Dr. Rakow, in Rebuttal Testimony, agreed with Xcel Witness Mr. Wishart that several uncertainties such as the expected MISO required capacity reserve ratio, and Xcel's 125 MW PPA with Manitoba Hydro, warranted consideration of flexible options such as delayed in-service dates in order to adjust to changed circumstances. DOC-DER Ex. 86 at7-8 (Rakow Rebuttal).

134. Using data that Xcel obtained from Calpine and Invenergy in this regard, Dr. Rakow re-ran the eight scenarios from the second round of his Strategist analysis that changed the in-service dates for Calpine's Mankato proposal and Invenergy's Cannon Falls proposal, as bid and with a 2019 in-service date.DOC-DER Ex. 86 at 8-9 (Rakow Rebuttal). The Department did not take a position as to the appropriateness of flexible in-service dates but, rather, sought to develop such information for later consideration by the Commission when ultimately evaluating the various proposals. DOC-DER Ex. 86 at 9 (Rakow Rebuttal).

135. These additional eight results represented the second part of the Department's third round of Strategist analysis in this proceeding. To keep the assumptions consistent

throughout the third round of analysis, Dr. Rakow assumed interruptible natural gas supplies for Invenergy's Cannon Falls project. DOC-DER Ex. 86 at 9 (Rakow Rebuttal).

3. Variations in Xcel's Wind Additions

136. The third part of the Department's third Strategist analysis modeled variations in wind projects acquired by Xcel, as Dr. Rakow did in the first round. He ran an additional ten scenarios for the Calpine Mankato project and the Invenergy Cannon Falls project (and assumed interruptible gas supply for the Invenergy project), but with 600 MW of wind added rather than 750 MW to assess effects of uncertainties regarding the 150 MW of wind in Docket No. E002/M-13-716, and he ran the base case, but with 600 MW of wind added rather than 750 MW to provide a point of comparison. DOC-DER Ex. 86 at 9-10 (Rakow Rebuttal).

C. Third Round Results

137. Third round results of Strategist runs regarding the potential use of interruptible natural gas supply for Invenergy's Cannon Falls project showed that this assumption significantly reduced the present value societal cost (PVSC) for the project and, thus, significantly reduced the difference between packages with the Invenergy Cannon Falls project and the other packages—by about $35 million PVSC. DOC-DER Ex. 86 at 10 (Rakow Rebuttal).

138. Third round results with assumptions of a deferred in-service date for Calpine's Mankato project and Invenergy's Cannon Falls project, indicated that the potential for flexible in-service dates for Invenergy's Cannon Falls project significantly reduced the difference between packages with the Invenergy project deferred and the packages with Invenergy's original in-service date for Cannon Falls—by about $50 to $55 million PVSC under base case conditions. DOC-DER Ex. 86 at 11 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-R-11A (Rakow Rebuttal Attachments).

139. Results of third round analysis also indicated that the potential for flexible in-service dates for Calpine's Mankato project has a small impact on the overall PVSC. The difference between packages with Calpine's project deferred and the packages with Calpine's original in-service date is only about $5 to $12 million PVSC under base case conditions. DOC-DER Ex. 86 at 11 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-11A (Rakow Rebuttal Attachments).

140. The combined impact of the two issues—interruptible natural gas and deferred in-service dates, is that the package with Black Dog Unit 6 and Calpine still ranked first, but the gap between that costs of that package and the second and third ranked packages (Calpine with Invenergy's Cannon Falls project and Xcel's Black Dog Unit 6 with Invenergy Cannon Falls) decreased considerably. DOC-DER Ex. 86 at 12 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-R-11A (Rakow Rebuttal Attachments).

141. The impact of potentially acquiring less wind in Docket Nos. E002/M-13-603 and E002/M-13-716 was not shown to be significant. Eliminating one wind project (the final wind project under consideration, Border wind), did not materially impact the results. DOC-DER Ex. 86 at 12 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-R-12 (Rakow Rebuttal Attachments).

142. Based on his third round results, Dr. Rakow concluded that it would be worthwhile for Xcel to pursue negotiations with both Calpine and Invenergy regarding flexibility of in-service dates and use of interruptible natural gas for Invenergy's project. He testified, "While there may not be much gained by adjustments to Calpine's in-service date, adjusting the date of Invenergy's project could yield significant results for ratepayers." DOC-DER Ex. 86 at 12 (Rakow Rebuttal).

V. DEPARTMENT RESPONSE TO PARTIES' TESTIMONY

A. Response to Xcel

143. In addition to issues of interruptible gas service and delayed in-service dates addressed in Findings provided previously in this document, the Department responded to other issues raised by Xcel in its Direct Testimony.

1. Size of Xcel's Capacity Deficit

144. Xcel Witness Mr. Alders stated that the Xcel's most recent analysis "indicates a capacity deficit of 93 MW in 2017, which grows to 307 MW by 2019" based upon its spring 2013 forecast. Xcel Ex. 49 at 7 (Alders Direct). Dr. Rakow agreed with Xcel's calculations using MISO's non-coincident peak method, and not MISO's proposed new coincident peak method. *See* DOC-DER Ex. 86 at 3 (Rakow Rebuttal). The non-coincident peak calculations represent the reliability method used during Xcel's most recent resource plan approved by the Commission on March 5, 2013, *Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket,* (Docket No. E002/RP-10-825) (2010 IRP Order). In the 2010 IRP Order, however, the Commission established the capacity need *in this proceeding* as a need for an additional 150 MW in 2017, increasing up to 500 MW in 2019 based upon the fall 2011 forecast. The Commission further determined that this need should be met by peaking resources, intermediate resources, or a combination of the two. DOC-DER Ex. 86 at 20 (Rakow Rebuttal). The Department's and Xcel's capacity deficit estimates for Xcel's system are consistent with the Commission's 2010 IRP Order.

2. Top Performing Portfolios

145. Xcel identified the top performing proposals from of its Strategist analysis as, "[T]he least cost portfolio includes Black Dog 6 and Invenergy's Cannon Falls Expansion proposal, while the next least cost portfolio includes Black Dog 6 and Calpine's Mankato

Expansion proposal." Xcel Ex. 49 at 7 (Alders Direct). The Department's Strategist analysis, which did not "lock" the model, identified both of these bid packages as least cost together with a third package – Calpine on its own (without Black Dog Unit 6). DOC-DER Ex. 86 at 3 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-5A at 3 and 7 (Rakow Rebuttal Attachments).

3. Avoided Transmission and Distribution Losses

146. Regarding costs associated with avoided transmission and distribution losses associated with Geronimo's solar bid, Xcel Witness Mr. Wishart stated:

> For roof top solar projects that avoid all transmission and distribution line losses we estimate the savings to be equal to 7% of the energy and capacity benefits… even if the full 7% is applied to the energy and capacity credit savings estimated for the Geronimo project, the PVSC of the line loss savings would only equal an additional $10 million, not enough to make the project cost effective.

Xcel Ex. 46 at 35 (Wishart Direct).

147. In general, the Department agreed. Dr. Rakow did not include line loss savings in his analysis of Geronimo's bid because it appeared that Geronimo did not include such data in Geronimo's proposed Strategist inputs. DOC-DER Ex. 86 at 13 (Rakow Rebuttal); DOC-DER Ex. 88 SR-R-6 (Rakow Rebuttal Attachments).

148. The PVSC difference between the package with Geronimo's proposal and all other packages in the Department's second round of Strategist analysis is far greater than the potential $10 million line loss savings. DOC-DER Ex. 88 at SR-5A (Rakow Rebuttal Attachments).

4. Credit for Excess Capacity

149. Xcel stated that inclusion in Strategist modeling of credits for excess capacity was critical. Xcel Ex. 46 at 37 (Wishart Direct).

150. Dr. Rakow disagreed with Xcel on this point. He did not include in Strategist any capacity credits for excess capacity for any of the proposals due to his concern that the model

may have a bias in favor of larger capacity proposes such as Xcel's bid. Including a credit for excess capacity would only serve to reinforce such a bias towards larger packages. DOC-DER Ex. 86 at 13 (Rakow Rebuttal); DOC-DER Ex. 88 at SR-R-6 (response to Geronimo IR 9) (Rakow Rebuttal Attachments). Dr. Rakow provided information regarding the quantity of excess reserves resulting from the addition of each package. DOC-DER Ex. 88 at SR-R-6 (response to Geronimo IR 10) (Rakow Rebuttal Attachments).

5. Treatment of Energy from 750 MW of Wind

151. The Department ran similar Strategist scenarios to assess the impact of differing quantities of wind on the PVSC of bid packages. Xcel stated that it "removed the proposed 750 MW of wind and re-ran the top 20 plans identified by Strategist." Xcel Ex. 46 at 37 (Wishart Direct).

152. Dr. Rakow's first round of Strategist analysis included a run of each scenario with 400 MW, 600 MW, and 800 MW of wind added, and in his third round he ran both 750 MW and 600 MW of wind. The Department did not run any scenarios with no wind added. DOC-DER Ex. 86 at 14 (Rakow Rebuttal).

153. Xcel's conclusion from its wind contingency analysis was that the cost effectiveness of proposals including Calpine's Mankato project "improved significantly" when the 750 MW of wind proposed by the Company was removed from the Strategist model. Mr. Wishart testified, "This is because when wind is removed from the model, natural gas units must run more often to meet customer demand…." Xcel Ex. 46 at 38 (Wishart Direct).

154. The Department did not perform an analysis similar to Xcel's removal of wind. Dr. Rakow explained that when wind units representing the four proposals in Docket Nos. E002/M-13-603 and E002/M-13-716 were added, equivalent generic wind energy were removed to keep the overall quantity of wind energy for the duration of the Strategist run the

same. Contrary to Xcel's method, the Department's wind contingency analysis did not show a significant impact on the costs of bids; the overall impact of differing quantities of wind the on PVSC differences across scenarios was not significant. DOC-DER Ex. 86 at 14-15 (Rakow Rebuttal).

6. Flexibility in PPAs.

155. Xcel's proposal included adjustable in-service dates, and the Company concluded that similar flexibility is important for the PPA proposals and that such options may impact pricing. Xcel Ex. 49 at 8 (Alders Direct). The Department agreed that changes in in-service dates may affect pricing of the proposals. Dr. Rakow testified that any in-service date flexibility ultimately approved by the Commission may increase or decrease the overall PVSC of a package for Xcel's ratepayers. Analysis of the impact of in-service date flexibility on the cost/ranking of various packages is provided previously in this Initial Brief. DOC-DER Ex. 86 at 10 (Rakow Rebuttal).

7. Competition in the PPA Negotiation Process

156. The Department agreed with Xcel's view that maintaining competition though the PPA negotiation phase is an important consideration, *see* Xcel Ex. 46 at 42 (Wishart Direct), but that it is also important to maintain competitive pressures on Xcel in order to ensure that ratepayers' interests are foremost. DOC-DER Ex. 86 at 15 (Rakow Rebuttal). For example, terms of the negotiated PPAs may mean that Black Dog Unit 6 is more expensive than either Calpine's or Invenergy's proposal. Tr.V. 2 at 52 (Rakow).

157. A PPA process that includes such competitive pressures on Xcel may ensure that the Black Dog Unit 6 proposal, if selected by the Commission, is a competitive proposal. Tr.V. 2 at 52-53 (Rakow). Dr. Rakow agreed that it is prudent for multiple projects to proceed

towards PPA negotiations, but only as long as the projects are reasonably close in economic performance. DOC-DER Ex. 86 at 15 (Rakow Rebuttal).

158. Based on its third round of Strategist analysis, the Department recommended that the Commission send both Invenergy's Cannon Falls project and Calpine's Mankato project to PPA negotiations. Based on the results of those negotiations, the Department recommends that the Commission select the two most favorable projects of the three under consideration: Invenergy's Cannon Falls project, Calpine's Mankato project, and Xcel's Black Dog Unit 6 proposal. DOC-DER Ex. 86 at 15 (Rakow Rebuttal).

B. Response to Geronimo's Testimony

159. Geronimo claimed that the Department should have updated its inputs and modeling as to sizes and locations of proposed solar facility sites based on Geronimo's supplemental data. Geronimo Ex. 57 at 2 (Engleking Direct).

160. Dr. Rakow disagreed with Geronimo's criticisms of its Strategist modeling.The Department ran its initial Strategist analysis after determining that Geronimo's suggested corrections to inputs had no effect on the selection results. DOC-DER Ex. 83 at 8-9 (Rakow Direct). Geronimo's Appendix F contains the Strategist input data. Updates to those inputs, in Dr. Rakow's view, were too small to matter based on the results of his Strategist analysis and following discussion of the proposed changes with Geronimo. DOC-DER Ex. 86 at 16 (Rakow Rebuttal). Also, by the time Geronimo supplemented its data, significant portions of the Strategist analysis in this matter was completed. *Id.*

161. The Department disagreed that Geronimo's correction of the estimated accredited capacity for its solar project from 72 megawatts ("MW") to 71 MW was a material change for purposes of Strategist analysis. Dr. Rakow testified, "*Because Geronimo's 72 MW accredited proposal was so significantly below the top performing packages* in terms of Strategist results,

a 1 MW change in the accredited capacity of the project would not result in a material difference in the Strategist results." DOC-DER Ex. 86 at 16 (Rakow Rebuttal) (Emphasis added).

162. Dr. Rakow explained that he had advanced the poorly performing Geronimo solar project to the second round of Strategist analysis simply due to Minnesota's renewable resource preferences. However, renewable preferences were not enough to recommend for the Department to recommend that the Commission consider the Geronimo project for purposes of this present docket. He explained:

> If Geronimo had been closer, state policy preferences regarding renewables may have been a consideration, but it was too far removed to be considered.

Tr.V.2 at 56 (Rakow).

C. Response to Calpine's Testimony

1. Dispatch in Strategist

163. Calpine Witness Mr. Hibbard raised concerns with respect to the dispatch model used in Strategist, as follows:

> [T]he Strategist model may fail to capture operational details…as variable renewable resources become a major contributor to generation, the dispatch model used in Strategist may not be well-suited to understanding how units will be committed and/or operated to manage potential variations in wind and solar output."

Calpine Ex. 52 at 7-8 (Hibbard Direct).

164. While he agreed with Calpine's above statement and the materials from Xcel's resource plan that Calpine quoted regarding Strategist's approach of simplifying dispatch and certain operational details, Dr. Rakow determined that Calpine's concerns were not particularly relevant to this proceeding; Xcel's generating units are dispatched by MISO in the context of the regional electric grid. DOC-DER Ex. 86 at 17 (Rakow Rebuttal).

165. Dr. Rakow explained that when considering the details of system dispatch and unit operation it should be kept in mind that Xcel's system is modeled in Strategist by Xcel and the Department in isolation from the regional electric grid while generating units are not dispatched in such isolation. Instead, Xcel's generating units are dispatched by the Mid-Continent Independent System Operator (MISO). DOC-DER Ex. 86 at 17 (Rakow Rebuttal).

166. MISO's dispatch includes not only Xcel's generating units, but the generating units of many utilities in Minnesota and the surrounding states. This means that any potential needs regarding load following, adjusting to the output of intermittent resources, and so forth must be considered in the broader, regional context of MISO rather than Xcel's system in isolation. Xcel does not have a need to adapt its generation dispatch to adapt to wind and solar output, but MISO may have such a need. Such a need for the larger MISO region may well be different than the need for an individual utility. Dr. Rakow testified that he does not know if such a need exists at MISO or, if it does exist, how MISO would indicate such a need to its members. DOC-DER Ex. 86 at 17 (Rakow Rebuttal).

167. Dr. Rakow concluded that Strategist modeling cannot capture the precise dispatch that will occur on the MISO system. However, the goal in this proceeding is to reflect how costs on Xcel's system could be affected by addition of the bids in this proceeding. Given that Xcel does not have a need to adapt its generation dispatch to adapt to wind and solar output due to MISO's role, attempting to adjust Strategist modeling to capture expectations about changes in dispatch of Xcel's system alone would not capture the bigger picture as to how MISO dispatches resources and thus would not be accurate. DOC-DER Ex. 86 at 17-18 (Rakow Rebuttal).

2. Environmental Costs

168. The Department agreed with Calpine that the Commission should – and does – consider the value of mitigating environmental impacts of CT capacity since failure to do so "would place Mankato at a competitive disadvantage, and would, in effect, punish Mankato for being a cleaner option." Calpine Ex. 52 at 29-30 (Hibbard Direct).

169. The Commission's externality values, CO_2 internal cost estimate, and the cost of SO_x and NO_x emissions credits (collectively, Emissions Costs) all serve to reward units that are more efficient in terms of environmental impact (i.e., reduced air emissions). These Emissions Costs were all included in Strategist. Thus, the proposals for CT units can then either have a higher cost via proposing to install the emissions control technologies discussed by Mr. Hibbard or have a higher cost when Strategist applies the Emissions Costs to the air emissions. DOC-DER Ex. 86 at 18 (Rakow Rebuttal).

D. Response to Invenergy's Direct Testimony

1. Strategist Modeling

170. Contrary to Invenergy's view that Strategist's extended time horizon will penalize a 20-year PPA proposal by requiring that the PPA be replaced at the end of the PPA's term with a generic unit, Invenergy Ex. 65 at 15 (Ewan Direct), Dr. Rakow's process of running Strategist for this proceeding does not do so. The Department ran Strategist through 2036 to avoid the necessity of speculating regarding the addition of generic units at the end of a PPA's term. DOC-DER Ex. 86 at 19 (Rakow Rebuttal).

171. Regarding Invenergy's concern about how Strategist may consider other important issues such as the cost-benefit impact of including or not including dual fuel capabilities, Invenergy Ex. 65 at 16 (Ewan Direct), the Department clarified that some potential benefits of dual-fuel capability are captured in Strategist. Dr. Rakow explained:

> Strategist is not a dispatch model; it is a long term planning model. Thus, any operational benefits or costs related to having dual fuel capability are unlikely to be recognized. However, the long run economic trade-offs can be analyzed. For example, Strategist could be run under the assumption that a particular unit has firm natural gas and the resulting system costs reported. Then the economic assumptions can be changed so that the same unit is priced assuming interruptible natural gas. Both Mr. Wishart in his Direct Testimony and myself (see above) compared the cost of Xcel's system assuming firm natural gas for ICT1 to the same cost but with interruptible natural gas. Thus, some of the potential benefits of dual-fuel capability are reflected in the analysis in this record.

DOC-DER Ex. 86 at 19-20 (Rakow Rebuttal).

172. The Department disagreed in part with Mr. Ewan's view that "since Strategist reduces resource options to a net present value for comparison, the timing of resource additions becomes critical." Invenergy Ex. 65 at 16 (Ewan Direct). This may or may not be the case. While the Department's analysis of flexible in-service dates demonstrated that this is a critical issue for Invenergy's Cannon Falls proposal, it has a relatively minor impact on the PVSC for Calpine's proposal. DOC-DER Ex. 86 at 20 (Rakow Rebuttal).

2. Need Established by the Commission

173. Invenergy correctly stated that the capacity need established by the Commission in this proceeding is for an additional 150 MW in 2017, increasing up to 500 MW in 2019. The Commission determined that this need should be met by peaking resources, intermediate resources, or a combination of the two. The Commission determined the size and timing of Xcel's need, and it left the type of resource that would best fill the need open to both peaking and intermediate resources. DOC-DER Ex. 86 at 20 (Rakow Rebuttal).

VI. NEXT STEPS: THE PPA PROCESS

174. The Department recommended that three projects be further considered by the Commission: Calpine's Mankato project, Invenergy's Cannon Falls project, and Xcel's Black Dog Unit 6 project. DOC-DER Ex. 102 (Rakow Opening Statement); Tr.V.2 at 49-52 (Rakow).

175. Both the Calpine Mankato project and Invenergy Cannon Falls project should proceed to PPA negotiations. Based on the results of those negotiations, the Commission should select the two projects with terms most favorable to ratepayers. If no issues arise with these three projects, Calpine's Mankato project and Xcel's Black Dog Unit 6 project provide the overall best package. DOC-DER Ex. 86 at 21.

176. While it has been the Department's expectation that PPA negotiations would occur after the Commission made its initial determination in this matter, Bidders may choose to begin negotiating at any time. Tr.V.2 at 41-42 (Shaw). The PPA process should result in negotiated contracts that are brought to the Commission for final evaluation, selection and approval of the two most reasonable and prudent projects. *Id.* at 43-44 (Shaw); Tr.V.2 at 102 (Rakow).

177. The Department recommends terms such as pricing, characteristics of resources, in-service dates, firm versus interruptible gas supply, dual fuel capability, and interconnection that are negotiated as part of the PPA process must be consistent with the analysis conducted in this matter. Tr.V.2 at 42-43 (Shaw).

178. It will be Xcel's burden to demonstrate the reasonableness of the PPA's for which it seeks Commission approval. Tr.V. 2 at 43 (Shaw). The Department has put Bidders on notice that negotiated terms that shift risk or unknown costs to ratepayers are not likely to be reasonable, in the Department's view. *Id.* at 44. Ratepayers should not be 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 the bids, all bidders including Xcel should be allowed to keep those savings. DOC-DER Ex. 101 (Shaw Opening Statement).

VII. OVERALL DEPARTMENT RECOMMENDATION

179. The Department recommended that the Commission send Calpine's Mankato Project and Invenergy's Cannon Falls project to PPA negotiations such that ratepayers may benefit from parties' incentives to provide favorable terms. DOC-DER Ex. 102 (Rakow Opening Statement); Tr.V.2 at 52 (Rakow). Based on the results of those negotiations, the Department recommended that the Commission approve two of the following three projects: Calpine's Mankato project, Invenergy's Cannon Falls project, and Xcel's Black Dog Unit 6 project. Absent differences negotiated in the PPAs, the best combination is the Black Dog and Calpine projects.[55] The Department also recommended that the Commission consider requiring Xcel to issue an all solar RFP in consideration with other information that is known in the context of Xcel's next IRP**.**

CONCLUSION

180. The Department recommends that the Commission send Calpine's Mankato Project and Invenergy's Cannon Falls project to PPA negotiations such that ratepayers may benefit from parties' incentives to provide favorable terms. Issues regarding use of firm versus interruptible natural gas supply, flexible in-service dates and dual fuel capability, among others, should be addressed in PPA negotiations. Following review of the negotiated PPAs, the Department recommends that the Commission select the two most reasonable and prudent projects of the following three projects: Calpine's Mankato project, Invenergy's Cannon Falls project, and Xcel's Black Dog Unit 6 project. Negotiated PPAs, however, should not put ratepayers at risk for costs that are higher than bid or for benefits assumed in bids that do not materialize. If negotiated PPAs result in costs that are lower than bid, all bidders including Xcel

[55] *Id.*; Tr.V.2 at 50 (Rakow).

should be allowed to keep those savings. Absent differences negotiated in the PPAs, the Department recommends as the best combination the Black Dog and Calpine projects. The Department also recommends that the Commission consider requiring Xcel to issue an all solar RFP in consideration with other information that is known in the context of Xcel's next IRP**.**

Dated: December 6, 2013

Respectfully submitted,

/s/ **Julia E. Anderson**

JULIA E. ANDERSON
Assistant Attorney General
Atty. Reg. No. 0138721

445 Minnesota Street, Suite 1800
St. Paul, Minnesota 55101-2134

ATTORNEY FOR MINNESOTA
DEPARTMENT OF COMMERCE,
DIVISION OF ENERGY RESOURCES

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Exceptions to the ALJ Recommendations

Docket No. E002/CN-12-1240

Dated this **21st** day of **January 2014**

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_12-1240_Official CC Service List
Thomas	Bailey	tbailey@briggs.com	Briggs And Morgan	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Michael	Bradley	mike.bradley@lawmoss.com	Moss & Barnett	Suite 4800 90 S 7th St Minneapolis, MN 55402-4129	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson & Byron, P.A.	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Kodi	Church	kchurch@briggs.com	Briggs & Morgan	2200 IDS Center 80 South Eighth Street Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, Fifth Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_12-1240_Official CC Service List
Burl W.	Haar	burl.haar@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_12-1240_Official CC Service List
Linda	Jensen	linda.s.jensen@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota Street St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_12-1240_Official CC Service List
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_12-1240_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Lipman	eric.lipman@state.mn.us	Office of Administrative Hearings	PO Box 64620 St. Paul, MN 551640620	Electronic Service	Yes	OFF_SL_12-1240_Official CC Service List
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
Brian	Meloy	brian.meloy@leonard.com	Leonard, Street & Deinard	150 S 5th St Ste 2300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
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
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Frwy Bloomington, MN 55431	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Donna	Stephenson	dstephenson@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 55369	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_12-1240_Official CC Service List
SaGonna	Thompson	Regulatory.Records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_12-1240_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Katie	Clark Sieben	katie.clark.sieben@state.mn.us	DEED	332 Minnesota St, #E200 1st National Bank Bldg Saint Paul, MN 55101	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Randall	Doneen	randall.doneen@state.mn.us	Department of Natural Resources	500 Lafayette Rd, PO Box 25 Saint Paul, MN 55155	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Travis	Germundson	travis.germundson@state.mn.us		Board of Water & Soil Resources 520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Leah	Hedman	Leah.Hedman@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St Saint Paul, MN 55101	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Ray	Kirsch	Raymond.Kirsch@state.mn.us	Department of Commerce	85 7th Place E Ste 500 St. Paul, MN 55101	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Karen	Kromar	karen.kromar@state.mn.us	MN Pollution Control Agency	520 Lafayette Rd Saint Paul, MN 55155	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Susan	Medhaug	Susan.medhaug@state.mn.us	Department of Commerce	Suite 500, 85 Seventh Place East St. Paul, MN 551012198	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Bob	Patton	bob.patton@state.mn.us	MN Department of Agriculture	625 Robert St N Saint Paul, MN 55155-2538	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS
Michele	Ross	michele.ross@state.mn.us	Department of Health	625 N Robert St Saint Paul, MN 55101	Electronic Service	No	SPL_SL__CN - CERTIFICATE OF NEEDS