414 Nicollet Mall
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VIA ELECTRONIC FILING

January 21, 2014

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101

RE: XCEL ENERGY'S EXCEPTIONS TO ALJ REPORT
IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY TO INITIATE A COMPETITIVE RESOURCE ACQUISITION PROCESS
MPUC DOCKET NO. E002/CN-12-1240
OAH DOCKET NO. 8-2500-30760

Dear Dr. Haar:

Northern States Power Company, doing business as Xcel Energy, submits its Exceptions to ALJ Report, along with Attachment 1, which is a redline of the Company's proposed revisions to the ALJ Report.

Please contact me at james.r.denniston@xcelenergy.com or (612) 215-4662 if you have any questions regarding this filing.

Sincerely,

/s/ James Denniston

JAMES R. DENNISTON
ASSISTANT GENERAL COUNSEL

In the Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process	**CERTIFICATE OF SERVICE** **MPUC Docket No. E002/CN-12-1240** **OAH Docket No. 8-2500-30760**

Rachel Rolseth certifies that on the 21st day of January, 2014, she filed a true and correct copy of the following documents:

1. **Xcel Energy's Exceptions to ALJ Report**

by posting it on www.edockets.state.mn.us. Said document was also served via U.S. Mail and e-mail as designated on the Official Service List on file with the Minnesota Public Utilities Commission.

/s/ Rachel Rolseth

Rachel Rolseth

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STATE OF MINNESOTA

BEFORE THE

MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY TO INITIATE A COMPETITIVE RESOURCE ACQUISITION PROCESS

MPUC DOCKET NO. E002/CN-12-1240

XCEL ENERGY EXCEPTIONS TO ALJ REPORT

January 21, 2014

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I. INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, respectfully submits these Exceptions to the Administrative Law Judge's ("ALJ") Findings of Fact, Conclusions of Law and Recommendation ("ALJ Report") in the above-captioned matter. At the outset, the Company notes its appreciation of the Department and parties in providing thoughtful and thorough comments during this proceeding. We believe it provides the Commission with a thorough and complete record from which to assess the recommendations and conclusions in the ALJ Report.

We submit these exceptions because we respectfully disagree with the ALJ's ultimate recommendations that the Company (i) purchase the Geronimo solar project; (ii) supplemented by short-term capacity credits from Great River Energy ("GRE"); and (iii) defer consideration of any need in the 300-500 MW range for the 2017-2019 time period to our next resource plan.

We are a leader in renewable generation and consider the addition of solar energy to our system to be an important part of our future resource mix. We look forward to the opportunities presented by large scale solar energy. Such a resource has the potential to become cost-effective and could transform our system, much like the addition of wind has. To further the procurement of cost-effective solar resources, we are developing a competitive solar resource acquisition plan to ensure that by 2020 we have sufficient solar energy resources to meet our obligations under Minnesota's new solar energy standard ("SES").[1]

With that said, we do not believe the record in this proceeding supports the selection of Geronimo's solar project as a cost-effective way to meet our potential capacity deficit in the 2017-2019 timeframe. First, our updated September 2013 need

[1] Minn. Stat. § 216B.1691, subd. 2f.

assessment that we introduced into the record in this proceeding includes the solar resources necessary to meet the SES, otherwise our need assessment for the 2017-2019 time period would have been higher. Second, we believe that it is in our customers' interests to utilize a resource acquisition process focused on solar to procure the most cost effective solar resources.

In addition, we do not believe that the combination of Geronimo's solar project and GRE's capacity credit (expiring in 2019) should be selected by the Commission. While we acknowledge that we are in an environment of flat to declining sales and there have been reserve margin calculation changes at Midcontinent Independent System Operator, Inc ("MISO"), we believe it is prudent to consider the impacts to our customers should the 300-500 MW capacity need materialize in the 2017-2019 timeframe.

The better outcome is for the Commission to select new natural gas generation for deployment in 2017-2019 as the Company and the Department propose. To the extent the Commission remains concerned about the timing of our future capacity needs, we commit - as we have already indicated on the record - to provide updates in our 2014 Resource Plan and then again in the Fall of 2014 and 2015. We also commit to structure the selected natural gas transaction(s) to maximize in-service date flexibility.

We believe the selection of new natural gas generation resources is supported by the record for several reasons. First, the natural gas generation resources are the least cost alternatives on the record. This was demonstrated by the Strategist analyses that the Company and the Department independently conducted on all of the proposals, identifying their relative costs and benefits. The principal factors contributing to the low cost of the recommended natural gas proposals include the use of brownfield sites which take advantage of existing infrastructure, and the low cost of natural gas. These two factors deliver significant cost benefits to our customers.

Second, selecting our proposal affords the greatest level of flexibility. The most recent forecast on the record, which includes the solar resources necessary to meet the SES, identifies a need of approximately 307 MW by 2019. With that in mind, it is necessary to take steps now to meet that potential need. However, we appreciate there are differing need estimates on the record. As a result, flexibility is desirable to allow for a change in course, as appropriate.

Our proposal provides just that. For example, our Black Dog Unit 6 proposal includes significant flexibility to delay or cancel this project if subsequent circumstances warrant. We further recommend that the Commission select either Calpine's Mankato or Invenergy's Cannon Falls proposal to supplement the capacity provided by Black Dog Unit 6 based upon the outcome of simultaneous negotiations to determine which of the two projects optimizes our customers' best interests. We recommend those negotiations address a number of important issues, including the vendors' flexibility to delay or cancel their respective projects if circumstances warrant. If neither project can provide the necessary flexibility, the Company can provide the flexibility with our proposed Red River Valley Unit 1 in combination with Black Dog Unit 6.

Lastly, selecting our proposal will still allow the Company to meet its obligations under the SES. At this time the Company plans to deploy approximately 300 MW of solar generation by 2020. We are developing plans for a competitive acquisition process to be implemented in 2014 that will evaluate several proposals for solar projects to help us satisfy the new SES. That process will be designed to foster price competition among solar developers to maximize customer value. By requiring solar projects to compete against one another, we believe we will be able to obtain lower-cost proposals than we would without that competition. Because the

Geronimo project was the only solar proposal in this proceeding, it was not subject to competition with other solar projects to establish that it is the least cost way to comply with the SES. In fact, based on prices we have observed in other jurisdictions, our expectation is that Minnesota solar resources could be acquired at prices below that offered by Geronimo.

Overall, it is in the public interest for the Commission to select 300-500 MW of new, incremental, dispatchable capacity in the 2017-2019 timeframe. The record demonstrates that Black Dog Unit 6 is an appropriate choice in combination with either Calpine's Mankato or Invenergy's Cannon Falls project, and that the choice between Calpine and Invenergy is very close. Strategist provides an 'apples-to-apples' comparison of the relative costs and benefits of all the proposals and provides a sound basis for choosing among the alternatives. Since the total cost difference between Calpine and Invenergy is very small, the best way to choose between them is through simultaneous PPA negotiations as proposed by the Company and supported by the Department, allowing the Commission to assess the overall best resource portfolio for our customers.[2]

In addition, we recommend that the Commission require updates on our projected need in the Fall of 2014 and 2015. If the need level deteriorates in those timeframes, the Commission will have the opportunity to revisit these selections and delay or cancel one or more of the selected projects to adapt to the evolving circumstances.

Finally, the Commission should accept our proposed MERP-style cost recovery proposal for Black Dog Unit 6. It is the best method to keep costs low and provide customer benefits.

[2] We also continue to recommend that our proposed Red River Valley Unit 1 be held in reserve in case neither the Calpine nor Invenergy PPAs meet with the Commission's approval, since this unit was identified by Strategist as among the least cost proposals in this proceeding.

In Attachment 1 to these Exceptions, we have specified the findings, conclusions, and recommendations to which we take exception. We have done this by redlining the ALJ Report to show our suggested deletions, modifications, and additions. The balance of these Exceptions focuses on the ALJ's conclusions regarding the capacity need and public interest and is organized into the following sections:

- Standard of Review
- Capacity Need and Timing of Deployment
- Solar Proposal Not in the Public Interest nor Least Cost
- Conclusion

II. STANDARD OF REVIEW

A. Utility's Service and Planning Obligations

In Minnesota, electric utilities are awarded exclusive service territories with the obligation to provide adequate, efficient, and reasonable service to all customers within the territory.[3] To meet this requirement, utilities develop resource plans to meet the service needs of customers over a prescribed forecast period.[4] Utilities must plan to ensure adequate supplies to serve all of their customers under all reasonable circumstances. As the Department pointed out in these proceedings, the "fundamental goal" of resource planning is to establish a plan that is least cost across a wide range of forecasts.[5] In addition to meeting the forecast amounts, utilities plan to have extra generating capability available. This "reserve margin" is needed to meet unforeseen circumstances, such as unexpected increases in customer demand and

[3] Minn. Stat. § 216B.16, subd. 6.

[4] Minn. Stat. § 216B.2422, subd. 1(d).

[5] Ex. 76 (Shah Direct) at 14.

unforeseen operational problems with existing generation and the transmission system.[6]

Under these circumstances, a conservative approach is warranted to ensure adequate generating capacity on our system under all reasonably plausible outcomes. While this may sometimes mean that available capacity will exceed the identified need for a short period of time, this is preferable to incurring a shortfall of capacity. Further, this conservative planning approach insulates our customers from over-reliance on the MISO market due to routine variations in the availability of system resources.

B. <u>Summary of Certificate of Need Standard</u>

A resource chosen through a Commission-approved competitive resource acquisition process pursuant to Minn. Stat. § 216B.2422, subd. 5(b) is exempt from the requirement to obtain a certificate of need.[7] But as the Commission explained in its order approving the Track 2 competitive bidding process that is being used in this proceeding, the "certificate of need filing requirements and decision criteria are clear, comprehensive, directly relevant . . . , and easily transferable to th[is] resource procurement process."[8] Thus, the criteria for selecting a resource in this proceeding are generally the same as those for a Certificate of Need. The primary decision criteria are:

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[6] Ex. 46 (Wishart Direct) at 5-6.

[7] *In The Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process*, Docket No. E002/CN-12-1240, NOTICE AND ORDER FOR HEARING at 3 (June 21, 2013) ("Competitive Acquisition Hearing Order").

[8] *In the Matter of Northern States Power Company d/b/a Xcel Energy's Application for Approval of its 2004 Resource Plan*, Docket No. E002/RP-0-1752, ORDER ESTABLISHING RESOURCE ACQUISITION PROCESS, ESTABLISHING BIDDING PROCESS UNDER MINN. STAT. § 216B.2422, SUBD. 5, AND REQUIRING COMPLIANCE FILING at 6-7 (May 31, 2006).

> A. Probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states;
>
> B. A more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record;[9]
>
> C. A preponderance of record evidence shows the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health; and
>
> D. The record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.[10]

These four factors serve as an important analytical tool in assessing the record.

There are two other certificate of need criteria that may also warrant consideration in this case. These are that a certificate of need should not be granted to a nonrenewable resource in lieu of a renewable resource unless the record demonstrates the renewable resource (i) is not in the public interest (Minn. Stat. § 216B.2422, subd. 4), and (ii) is more expensive than the nonrenewable resource, including environmental costs (Minn. Stat. § 216B.243, subd. 3a).

As described in more detail below, the addition of Geronimo's solar proposal to our system results in greater costs than the addition of our recommended proposal of Black Dog Unit 6 coupled with either Invenergy's Cannon Falls project or Calpine's Mankato project. The record evidence also indicates that the cost of

[9] *See also* Competitive Acquisition Hearing Order at 4 (noting the Commission will be evaluating the prudence of the competitive resource proposals in this proceeding).

[10] Minn. R. 7849.0120 (emphasis added).

Geronimo's solar proposal is above the market price of other solar projects, and thus is not in the public interest. By contrast, the record evidence shows the Company's natural gas recommendation meets these least cost, public interest criteria.

III. CAPACITY NEED AND TIMING OF DEPLOYMENT

The first issue with which the Company is concerned involves the ALJ's conclusion that the record does not establish a substantial need for incremental new dispatchable capacity in the 2017-19 timeframe. In his Memorandum attached to the Report, the ALJ observes:

> Moreover, while no one in this proceeding confidently predicted that that Xcel would require more than 130 megawatts by 2019, and many suggested the amount is far less, it is certain that Xcel will require significant solar generation resources by 2020. It makes sense to buy the resources that we are certain to need.[11]

We agree that it makes sense to buy resources we need to serve our customers and we fully support a robust process to obtain significant solar generation resources by 2020. However, we disagree with the ALJ's definitive conclusion that the Commission need not address the potential range of Xcel Energy's need in this proceeding because it appears it may be modest. We believe the record supports the conclusion that our need may in fact not be modest in the 2017-2019 timeframe, but we acknowledge that there is uncertainty with both the exact amount and timing of the need.

In light of the Company's obligation to serve and the potential for a significant capacity deficit, as described in the record, it is appropriate to take a conservative approach and plan for the higher range of potential capacity need rather than assume

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[11] ALJ Report at 47 (Memorandum) (emphasis added).

that the need does not exist. If the larger need does not ultimately materialize, the Commission can adapt by delaying or canceling one or more projects.

A. Evidentiary Record on Need

The Company observes that the record supports the potential for a wide range of capacity need in the 2017-2019 time frame. The ALJ does a reasonable job of canvassing the record and identifying the various potential need levels depending on the circumstances. The ALJ, however, concludes that it is appropriate to focus on the low end of the need spectrum. The Company is concerned with the implications of this for our customers and believes that a more conservative approach is preferable.

In its March 5, 2013 order in the Company's 2010 Resource Plan proceeding (Docket No. E002/RP-10-825), the Commission found the Company "will need an additional 150 MW in 2017, increasing up to 500 MW by 2019."[12] The Commission further stated in its order that the identified range of need:

> does not preclude Xcel from acquiring more than 150 MW of new resources by 2017. Those choices will be made in the context of the resource acquisition docket, based on the proposals and the evidence adduced in that docket.[13]

Consistent with this direction that the ultimate amount and timing of the resource(s) to meet the Company's need will be based on the evidentiary record developed in this proceeding, Company introduced updated resource need information so that the record includes the latest available evidence on the Company's anticipated need in the 2017-2019 time period.

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[12] *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E002/RP-10-825, ORDER APPROVING PLAN, FINDING NEED, ESTABLISHING FILING REQUIREMENTS, AND CLOSING DOCKET at 6 (Mar. 5, 2013) ("March 5 Resource Need Order").

[13] March 5 Resource Need Order at 6.

As part of the Company's regular business process, we update our capacity need assessment as new information becomes available. Table 1 below was included in the direct testimony of Company witness Steven Wishart.[14] The September 2013 Update column reflects our need based on 1) our Spring 2013 load forecast; 2) updated unit capacity ratings; 3) Minnesota's new SES requirements; and 4) update forecast of load management resources.[15] The table also illustrates the range of our capacity needs based on changes to the capacity reserve margin required by MISO. Changes to just this one variable alters the forecasted capacity need from 307 MW to just 26 MW.

Table 1 – Impact of MISO's Reserve Margin on Resource Need Assessment

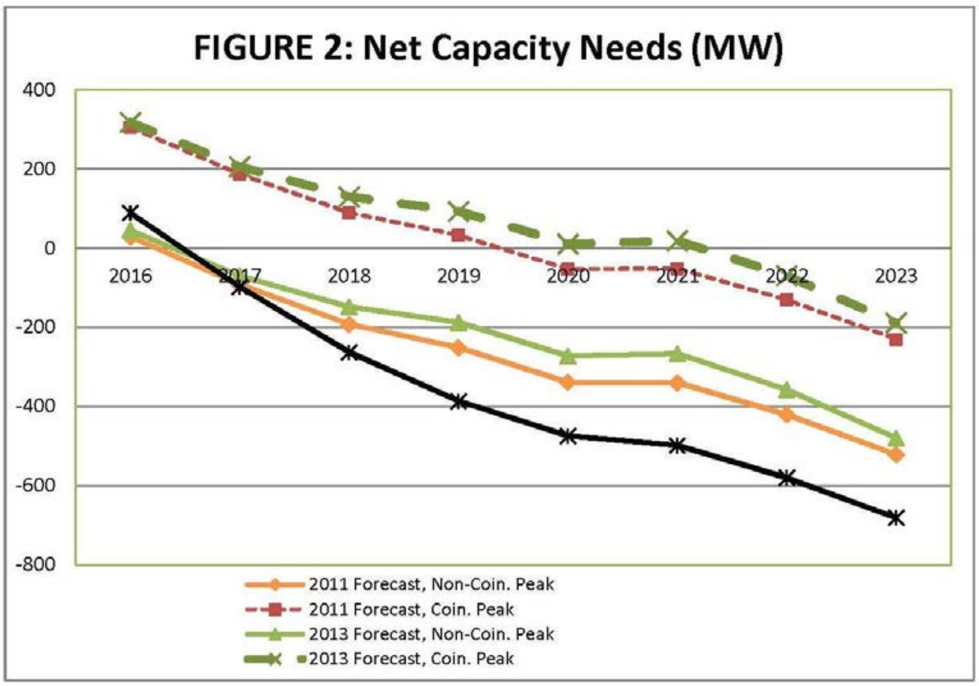
	September 2013 Update			**MISO 2013 Reserve Margin Adjustment**			**2014 Anticipated Reserve Margin**		
	2017	**2018**	**2019**	**2017**	**2018**	**2019**	**2017**	**2018**	**2019**
Peak	9,500	9,590	9,676	9,500	9,590	9,676	9,500	9,590	9,676
Coincidence Factor	100%	100%	100%	95%	95%	95%	95%	95%	95%
Coincident Peak	9,500	9,590	9,676	9,025	9,110	9,192	9,025	9,110	9,192
RM%	3.8%	3.8%	3.8%	6.2%	6.2%	6.2%	7.3%	7.3%	7.3%
Total Obligation	**9,860**	**9,953**	**10,042**	**9,585**	**9,675**	**9,762**	**9,684**	**9,775**	**9,863**
Resources									
Coal	2,367	2,367	2,367	2,367	2,367	2,367	2,367	2,367	2,367
Nuclear	1,623	1,623	1,623	1,623	1,623	1,623	1,623	1,623	1,623
Gas	3,427	3,416	3,416	3,427	3,416	3,416	3,427	3,416	3,416
Wind, Hydro, Bio	1,238	1,189	1,162	1,238	1,189	1,162	1,238	1,189	1,162
Solar	49	66	83	49	66	83	49	66	83
Load Management	1,063	1,074	1,085	1,063	1,074	1,085	1,063	1,074	1,085
Total Resources	**9,768**	**9,735**	**9,735**	**9,768**	**9,735**	**9,735**	**9,768**	**9,735**	**9,735**
Long (Short)	**(93)**	**(218)**	**(307)**	**183**	**60**	**(26)**	**84**	**(40)**	**(128)**

[14] Table 1 is the same as Table 4 in Ex. 46 (Wishart Direct) at 10.

[15] Ex. 46 (Wishart Direct) at 7-8. Because our identified resource need already anticipated the addition of a total of 83 MW of solar resources by 2019, the ALJ's conclusion that the Geronimo project will help fill the identified capacity need is incorrect. Even if the project is acquired our estimated range of need in 2019 under our September 2013 Update is 307 W to 26 MW, depending on which MISO reserve margin calculation is used.

In addition to the MISO reserve margin, other variables such as peak demand forecast and capacity accredidation for existing resources can also impact the forecast of resource need. Thus the range or future capacity need could be even larger than presented in Table 1.

The Department also analyzed our capacity need based on a range of plausible input assumptions. Although the Department used their own inputs and methodologies, their conclusions regarding future capacity needs were similar to ours. Department witness Dr. Rakow presented a range of capacity need as shown below in Figure 2 from his direct testimony.[16]



This analysis also shows that based on a reasonable range of inputs the 2017-2019 resource need could significantly vary. Dr. Rakow concluded that his analysis of this

[16] Ex. 83 (Rakow Direct) at 26.

updated information was consistent with our analysis indicating a capacity deficit of around 300 MW by 2019.[17]

The consequences of a potential capacity deficit in 2017-2019 are significant and should not be underestimated. Without additional dispatchable generation on our system, the Company may have to rely on MISO's wholesale market for the capacity credits necessary to meet our resource adequacy obligations as well as daily purchases of energy to serve our customers.[18] MISO has indicated there are several large power plants that may be retired in the 2015/2016 timeframe as a result of the federal Mercury and Air Toxics Standard (MATS).[19] Depending on how quickly retired generation is replaced, the supply of capacity credits could be substantially decreased and, in the extreme, inadequate.[20] Inadequate capacity credits means the region could not meet the reserve margins necessary to meet electrical reliability standards, increasing the possibility of power interruptions to customers.[21] Also retirements could cause higher prices in the daily energy market resulting in higher costs for our customers.[22]

B. <u>Strategies to Address Resource Need Uncertainty</u>

As Department witness Sachin Shah emphasized, the goal of these contested case proceedings is to identify the least cost resource(s) with respect to the range of need forecasts, not a single need forecast.[23] Failure to plan for the high end of a

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[17] Ex. 86 (Rakow Rebuttal) at 3.

[18] Ex. 1 (Company's Proposal) at 5-10 (Revised May 14, 2013).

[19] *Id.*

[20] Ex. 1 (Company's Proposal) at 5-10 (revised May 14, 2013).

[21] *Id.*

[22] *Id.*

[23] Ex. 78 (Shah Rebuttal) at 4.

potential range increases the possibility of a generation shortfall on the Company's system.

1. *Company's Proposal Addresses Range and Uncertainty of Need*

To ensure that sufficient resources were evaluated to cover the high end of potential capacity needs, the Company modeled portfolios that ranged from 358 MW to 636 MW.[24] The Company's proposal was to add a single CT unit at its Black Dog plant in 2017, 2018, or 2019, and two CT units at a new Red River Valley plant site near Hankinson, North Dakota in 2018 and 2019.[25] The Company also proposed a MERP-style recovery proposal to provide incentives to provide customers with maximum value.[26]

Based on our Strategist modeling, the Company determined Black Dog Unit 6 is the most cost-effective option as evidenced by the fact that it is included in each of the top 20 resource plans identified in the Company's Strategist analysis.[27] The top cost-effective plans identified by Strategist consisted of a combination of the Cannon Falls Expansion in 2016 followed by Black Dog Unit 6 in 2018, or the Mankato Expansion in 2017 with Black Dog Unit 6 in 2019.[28] The PVSC difference between coupling Black Dog Unit 6 with either the Mankato or Cannon Falls expansions is so small that those two projects could be considered to be essentially equivalent.[29] Given this relative equivalence, we recommended that both the Cannon Falls and Mankato proposals be selected to move forward to contract negotiations, where the finalization

[24] Ex. 46 (Wishart Direct) at 10-11. The Department's modeling similarly considered a range of resource packages, up to 700 MW. Ex. 83 (Rakow Direct) at 16.

[25] Ex. 49 (Alders Direct) at 2-3.

[26] Ex. 49 (Alders Direct) at 4-6.

[27] Ex. 46 (Wishart Direct) at 26, Table 5.

[28] *Id.*

[29] Ex. 46 (Wishart Direct) at 23.

of terms and conditions for the two projects is likely to determine which is most beneficial for our customers.[30] We also recommended that the Commission hold our proposed Red River Valley Unit 1 in reserve in case the PPAs negotiated with Calpine and Invenergy are not acceptable to the Commission. Strategist included Red River Valley Unit 1 in the third least cost plan it identified to meet our potential need in the 2017-2019 timeframe.[31]

Based on its independent Strategist analysis, the Department concurred that some combination of Black Dog Unit 6, Calpine's Mankato Expansion, and Invenergy's Cannon Falls Expansion is the appropriate selection to meet the potential range of our need.[32] The Department further concurred that a competitive negotiation process among the vendors would provide the Commission with helpful information to make its ultimate selection.[33]

To address the uncertainty of our need coming in below the 300 MW level, we offered to file status reports in the Fall of 2014 and 2015 so that the Commission could determine if the circumstances surrounding our capacity need indicate delay or even cancellation of the selected resources is warranted.[34] Consistent with this, we recommended that the Commission direct that the PPA negotiations address the viability of delay and/or cancellation options for the Calpine and Invenergy projects.[35] The Department concurred.[36]

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[30] Ex. 46 (Wishart Direct) at 40-41; Ex. 49 (Alders Direct) at 8.

[31] Ex. 46 (Wishart Direct) at 24, 41.

[32] Ex. 86 (Rakow Rebuttal) at 15.

[33] *Id.*

[34] Ex. 49 (Alders Direct) at 8-9.

[35] *Id.*; Ex. 48 (Wishart Rebuttal) at 27.

[36] Ex. 86 (Rakow Rebuttal) at 12.

Dealing with the uncertainty of our need in this manner gives the Commission the flexibility to deploy new resources as needed, minimizing customer costs while maintaining system reliability. The cost of delaying or canceling Black Dog Unit 6, which the Company would seek to recover, would be small compared to the potential cost of adding a resource before it is needed.[37] And while not part of their original proposals, both Calpine and Invenergy provided in response to our discovery requests preliminary cost estimates for delay options, which indicate that a delay in the in-service dates of their projects to as late as 2019 would result in only a modest change in price.[38]

2. *ALJ Recommendation Does Not Address Range and Uncertainty of Need*

By contrast to the Company's proposal, the ALJ's recommendation does not adequately address the full of range of our capacity need as established in the record. Indeed, the ALJ's conclusion is not actually based on the Company's overall capacity need at all, but rather on the Company's need for solar energy by 2020 to comply with the new SES.

While conceding that the Company's need may be as much as 307 MW in 2019, the ALJ notes that it may be as little as 26 MW as a result of MISO's coincident peak reserve margin methodology.[39] Based on this 26 MW to 307 MW range, the ALJ concludes "it is not efficient to procure one or more gas turbines when the project needs through 2019 are modest – and may be getting smaller."[40] Instead, the ALJ recommends that Geronimo's proposal be selected, with GRE's capacity credit

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[37] Xcel energy Initial Brief at 14.

[38] Ex. 69 (Ewan Rebuttal) at 4; Ex. 87 (Rakow Nonpublic Rebuttal Attachments), Attachment SR-R-9 at 4, and 5-6.

[39] ALJ Report, Findings 238-39.

[40] ALJ Report, Findings at ¶ 250, citing Ex. 46 (Wishart Direct) at 10, Table 4. Table 4 is the same as Table 2 above.

selected next only if further capacity is needed.[41] The rationale for selecting Geronimo's proposal is that "[w]hile Xcel's overall need for additional capacity is uncertain, there is no uncertainty regarding Xcel's need to add solar energy resources to its system."[42]

Although acknowledging that our ultimate capacity need could exceed 128 MW,[43] the ALJ concludes that this can be managed by adjusting the Company's resource acquisition in the next resource plan:

> 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.[44]

We are concerned that this conclusion exposes our customers to too much risk.

If the Company and the independent power producers cancel their projects at this time, it could take significant time and effort to develop new projects for a need that is identified a year or two from now at the conclusion of our next resource plan. Based on the expedited proceedings in this docket, it takes nearly a year and a half to develop and select a proposal once a need is identified, which is in addition to the 21 months assumed by the ALJ from the time the selection has been finalized for construction. Price is also a consideration. The proposed natural gas projects in this proceeding all have attractive pricing. If project selection is delayed it is possible that next time the projects are proposed the costs could be significantly higher.

The ALJ also disagrees with the Company's proposal to negotiate delay and cancellation options with the bidders, finding that "a reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs

[41] ALJ Report, Conclusions at ¶¶ 9-11.

[42] ALJ Report, Conclusions at ¶ 5 (emphasis added).

[43] ALJ Report, Finding 238.

[44] ALJ Report, Finding 261.

when other, reasonably-priced and scalable alternatives exist."[45] The trouble with the ALJ's position is that it fails to recognize that there is no certainty our capacity need will prove to be as low as 26 MW to 128 MW. Indeed, the record evidence is that our potential need includes the range of 300 MW to 500 MW, which the ALJ recommendation fails to address other than to propose that it be dealt with at a later time in other proceedings. This recommendation is inconsistent with the Company's responsibilities to its customers under Minnesota law. It exposes our customers to the possibility of over-relying on a capacity market that is neither robust nor very transparent. It is also possible that the ALJ's recommendation could place the Company in the unenviable position of attempting to acquire additional capacity at a time when other utilities' needs could be increasing due to an improving economy or during a time when fossil fuel plant retirements present a concern about the adequacy of capacity across the MISO footprint.

Equally concerning is the ALJ's implicit assumption that allowing the development of a number of projects that could individually or in combination meet our need subject to delay or cancellation fees is, per se, a negative to be avoided. The ALJ points to nothing in the record to support the conclusion that those costs would be disproportionate to the benefit of ensuring that an adequate level of capacity is being timely developed to enable the Commission to tailor our ultimate resource

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[45] ALJ Report, Finding 267. There are no other findings, conclusions, or recommendations that address let alone explain this assertion that cancellation costs are unreasonable. We also note that neither GRE's nor Geronimo's proposal is "scalable" in the sense that the capacity being offered can be adjusted downward over time to match whatever level of need emerges. GRE offers either a 100 MW or 200 MW capacity credit that can be purchased for 1, 2, or 3 years, but the two capacity credit levels cannot be combined, and our understanding is that neither the 100 or 200 MW capacity credit level can be scaled up or down over time. Ex. 20 (GRE Proposal) at 1-2; Ex. 64 (Selander Rebuttal) at 2-3. Geronimo's proposal is for its entire 100 MW (nameplate) project, and it has warned that selection of less than its entire project would be subject to a change in its pricing. Ex. 12 (Geronimo Proposal) at 13 ("Economies of scale do affect the capital cost of the Project. Should a smaller Project be more advantageous to Xcel Energy, Geronimo reserves the right to adjust its capital costs per MW to reflect the revised project size").

acquisition(s) to closely match the actual capacity need that emerges over the 2017-2019 time period. Similarly, there is nothing in the record to support the conclusion that adding Geronimo and GRE to our system now - with the possibility that still further resources will be needed later - will likely be less expensive for our ratepayers than what the Company and Department are proposing.

In the end, the ALJ's recommendation does not identify the resource(s) that address the range of need forecasted in the record, as the Department cautioned it must. Rather, the ALJ simply makes the general finding that the Company will have a "modest need" in the 2017-2019 timeframe that "may be getting smaller" (Finding 250), and that the Company should select Geronimo because it will meet a portion of Minnesota's new solar energy standard (Conclusion 5). In short, the ALJ has chosen to provide the Commission a recommendation on how the Company should meet its solar obligations, rather than provide a recommendation on how to meet an uncertain capacity deficit in the 2017-2019 time period.

3. ALJ Critique of Negotiation Process Unsupported by the Record

The ALJ also incorrectly concludes that the Company's proposed simultaneous negotiation process somehow distorts the Commission's Track 2 process. To the contrary, the negotiation process proposed by the Company and supported by the Department results in better terms for our customers than if Xcel Energy is required to negotiate a PPA with a single "winner," as that winner will have little incentive to accept ratepayer-friendly terms.

There is no material change being proposed to the Track 2 process. Track 2 provides that the Commission makes a determination which of the resource proposals will proceed to PPA negotiations with the Company based on the evidentiary record developed in the contested case. The Company and selected vendor then have four months to come to terms on a PPA, after which the PPA is brought to the Commission for review and approval.

The only refinement being proposed here is that two resource proposals move forward to the PPA negotiation phase to aid the Commission in determining which should be finally selected. This in no way distorts the Track-2 process. The record supports a finding that either the Calpine Mankato and Invenergy Cannon Falls Expansions could be a reasonable choice to complement Black Dog Unit 6.

Further, the competitive PPA negotiations will address the very same issues that would be addressed if there was only one resource in the negotiations, namely, what are the final PPA terms and conditions upon which the resource proponent and the Company can agree. The only difference here is the competitive nature of the process, as Calpine and Invenergy will know that they are negotiating similar terms, which puts pressure on them to optimize the value of their proposal in order to win the final contract. As the Department observes, the competitive pressures of the process will ensure that the Company as well as Calpine and Invenergy keep the interests of our customers foremost in mind in the course of the negotiations.[46]

Far from lacking transparency, this process will be subject to Commission scrutiny and approval. We contemplate the Commission's PPA review and approval process will involve a comment period during which all parties to the proceeding will be able to examine the terms of the PPAs and comment on which PPA is in the best interests of our customers.

Thus, contrary to the ALJ's assumption, there is no opportunity for the Company to make any determinations unilaterally or behind closed doors. The competitive negotiations will require the Company to deal in good faith with all negotiating parties to reach the best terms that can be agreed to for the benefit of our

[46] Ex. 86 (Rakow Rebuttal) at 15.

customers. The Company's execution of this obligation will then be subject to review by the Commission, with the Department and the two competing parties themselves providing the Commission their point of view on whether the process was appropriately handled by the Company.

IV. SOLAR PROPOSAL NOT IN PUBLIC INTEREST NOR LEAST COST

The second issue of concern arising out of the ALJ Report is the conclusion that the record strongly supports directing the Company to purchase the Geronimo solar project because it is a least cost resource and consistent with the public interest because it will partially fulfill the Minnesota solar energy standard. Under the SES, the Company is required to add approximately 290 MW of solar generation to its system by 2020.[47] The Company is planning a competitive acquisition process for 2014 that will focus on solar. By soliciting proposals from other solar developers we will ensure that the solar resources we do acquire for SES compliance are at the lowest price possible for our customers. But while solar energy is an important part of our future resource mix, we do not believe that the record supports selection of a solar project in this proceeding.

A. Not in Public Interest to Select Geronimo to Meet New SES

It would be contrary to the public interest to select Geronimo's 100 MW solar proposal in this proceeding to meet a portion of our SES obligations. This proceeding does not provide any opportunity for the Commission to determine whether Geronimo's proposal is cost-effective relative to other competing solar proposals that could also meet the solar energy standard.[48] This is a significant public

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[47] Ex. 46 (Wishart Direct) at 22.

[48] Ex. 46 (Wishart Direct) at 36; Ex. 83 (Rakow Direct) at 11.

interest concern given that the evidentiary record on the cost of Geronimo's proposal indicates the pricing of the Geronimo bid is higher than what the Company has seen in solar bids from other jurisdictions when adjusted to reflect what the bids' cost would be in Minnesota.[49] Meeting our SES obligations through a competitive solar acquisition process, however, is plainly in the public interest. It is the only way to ensure the Company procures the lowest-priced solar resources the market has to offer.

The Department also remarked on the relative commercial immaturity of solar projects.[50] In such a situation the Company, as well as the Department and the Commission, wants the benefit of competing solar proposals of the same and different designs to assess the operational and other performance risks of Geronimo's proposal. That did not occur in this proceeding.

For these reasons we continue to recommend that it is in the public interest to consider Geronimo's solar proposal in our upcoming solar solicitation. That way it can be compared against other solar energy proposals so we can adequately confirm that we are obtaining solar generation at the lowest possible price.[51]

B. <u>Geronimo Not Least Cost Resource</u>

The record also does not support the ALJ's conclusion that the Geronimo proposal is the least cost resource within this proceeding. Contrary to the ALJ's findings, the levelized cost of electricity ("LCOE") analysis that Geronimo proffered to show that its project is least cost does not present "a better prediction of costs and

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[49] Hrg. Tr. Vol. I at 110.

[50] Ex. 83 (Rakow Direct) at 11-12.

[51] Ex. 46 (Wishart Direct) at 36. The Department also proposes this approach. Department Initial Brief at 63.

impacts to ratepayers."[52] An LCOE analysis is plainly inferior to Strategist modeling because, as the name implies, it only evaluates the cost of a generation resource, completely ignoring the different benefits that the resource may provide. It is therefore only appropriately used when comparing very similar resources of the same type where cost is the principal, if not only, distinguishing factor between the resources.[53] In this proceeding, however, there is a wide variety of resources: peaking, intermediate, natural gas, solar, and short-term capacity credit. In this situation, a proper analysis must examine both the costs of the proposed resources and their widely varying benefits, which is what the Strategist simulation model does.[54] The Strategist model contains all of the project cost information used to calculate LCOE, but it also performs dispatch simulations to estimate each project's avoided costs.[55] As such, Strategist is a much more robust and comprehensive way to compare disparate projects.

The ALJ's findings in support of the claim that the Geronimo project is least cost even under the Strategist analyses conducted by the Company and the Department are based on two erroneous cost reductions that the ALJ imputed to Geronimo's PVSC:

- $10 million to $38 million realized from the Company's sale of the solar renewable energy credits (S-RECs) obtained under Geronimo's proposal;[56] and

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[52] ALJ Report, Finding 253.

[53] Ex. 48 (Wishart Rebuttal) at 15-16 (quoting Energy Information Agency warning that "the direct comparison of levelized cost of electricity across technologies is often problematic and can be misleading as a method to assess the economic competitiveness of various generation alternatives").

[54] Ex. 48 (Wishart Rebuttal) at 16; *see also* Ex. 74 (Norman Rebuttal) at 6-7 (LCOE analyzes a resource on a standalone basis, while Strategist considers impacts on the system in which resource will operate).

[55] Ex. 46 (Wishart Direct) at 21, 23.

[56] ALJ Report, Finding 156.

- An additional $33 million PVSC reduction from avoided transmission capacity costs associated with the Geronimo project.[57]

These adjustments are not supported by the record, and neither represents expected reductions for our customers that will result from the Geronimo proposal.[58]

1. *Imputed S-REC Sales Based on Double Counting*

The record does not support a finding that the cost of the Geronimo proposal will be reduced by tens of millions of dollars through the sale of the S-RECs generated by the solar project. Geronimo witness Elizabeth Engelking bases the $10 million to $38 million range on S-REC values of $5-$20/MWh, and claims that Xcel could sell these credits to other Minnesota utilities, thus creating an economic benefit to customers.[59] However, the ALJ correctly finds that "[i]f Geronimo's proposal is selected by the Commission, Xcel will use the solar energy generated by the project to meet the requirements of the Minnesota Renewable Energy Standard."[60] In order to satisfy the solar energy standard, Xcel Energy will be required surrender the S-RECs to the State without any type of financial compensation.

Since that is the case, the Company will have nothing to sell in the market to realize additional "savings." The ALJ's assignment of $10 to $38 million in market

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[57] ALJ Report, Findings 208-10.

[58] Finding 206 of the ALJ Report implies that the Company did not consider the reduction in line losses associated with Geronimo's proposal. This is incorrect. Because line loss calculations are not calculated by Strategist, the Company made an out-of-model calculation that the savings would be around $10 million, which is $1 million more than Geronimo's estimate of the line loss savings. Ex. 46 (Wishart Direct) at 35. This benefit, however, is insufficient to overcome the $34 million PVSC differential between Geronimo's proposal and Black Dog Unit 6, which is the least cost proposal in this proceeding. *Id.*

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

[60] ALJ Report, Finding 157 (citing Hrg. Tr. Vol. I at 137); *see also* Xcel Energy Reply Brief at 28.

value benefits to the S-RECs is a case of erroneously finding that the S-RECs can serve two mutually exclusive functions- (i) meet the Company's obligations under the new solar energy standard, and (ii) raise millions of dollars in S-REC sales.

2. *Imputed Avoided Transmission Capacity is Speculation*

Contrary to the ALJ's findings, the Strategist analysis conducted by the Department and the Company did indeed consider the costs of the transmission associated with all the proposals, and thus determined the value of any particular proposal with respect to avoided transmission costs. In the Strategist modeling, the cost of Geronimo was compared to the cost of natural gas generation alternatives including the cost of incremental transmission associated with each project. Therefore the Strategist PVSC results for the Geronimo proposal, as well as for every other proposal in this proceeding, included the value of any avoided transmission capacity associated with the proposal.[61]

The basis for Geronimo's calculation of the avoided transmission savings is also invalid. The $33 million benefit identified by the ALJ is based on the testimony of Geronimo witness Mr. Beach. Mr. Beach states that a "simple way" to calculate the value of avoided transmission is to use MISO's network integration service rate as the price of avoided transmission.[62] However, as Mr. Beach acknowledges, this rate does not represent the marginal cost for avoided transmission capacity.[63] Moreover, the rate does not reflect any system savings at all because, per MISO's rules governing the network transmission service charges, the Company's transmission payments

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[61] Xcel Energy Initial Brief at 29; Ex. 46 (Wishart Direct) at 23; Ex. 1 (Company's Proposal; Exs. 7 and 9 (Calpine Trade Secret Proposal and Strategist Data); Exs. 22, 27, 29, and 31 (Invenergy Trade Secret Cannon Falls Proposal and Strategist Data).

[62] Ex. 61 (Beach Rebuttal) at 9.

[63] *Id.*

would not change as a result of the addition of the Geronimo project.[64] In reality the only possible way that the Geronimo project will create transmission capacity savings is if the project can delay the construction of a natural gas unit. Although Geronimo claims that their project will have 71 MW of accredited capacity, the Company is concerned that the reliability contribution of intermittent solar resources will likely be significantly lower.[65] Furthermore as the proposals in this record demonstrate, the transmission needed to support a new natural gas generation is de minimus and not nearly as high as the $33 million claimed by Geronimo.

3. Solar Benefits Do Not Override Cost

The ALJ also finds that solar should be selected because of the environmental benefits of solar over fossil generation. This rationale misapprehends Minnesota law on environmental compliance. The finding also ignores the Strategist analysis that showed that Geronimo's solar project was not more cost effective than natural gas even when applying the Commission's cost estimates for CO2 and other effluents.

The Company is a leader in renewable energy and we understand the importance of having a robust renewable energy portfolio, as demonstrated by our approximately 1,800 MW of existing wind (plus 750 MW of wind generation that is currently under active development/construction), 200 MW of biomass, and 1,150 MW of hydroelectric generation on our system. We fully intend to bring this

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[64] *See* MISO Electric Tariff, Module A (Common Tariff Provisions), Section II.1.N (definition of Network Load). Mr. Beach also claims that his proposed methodology was recommended by the Department consultant in the on-going Value of Solar (VOS) workshops. Ex. 61 (Beach Rebuttal) at 9. However, this "recommended" methodology is not included in the Department's November 19, 2013 Draft VOS Methodology, found at: http://mn.gov/commerce/energy/images/DRAFT-MN-VOS-Methodology-111913.pdf.

[65] Ex. 46 (Wishart Direct) at 34; *see also id.* at 22 (noting Company is assuming the accreditation factor for solar will be 42%).

same leadership role to meet or exceed the goals set in the new Minnesota solar energy standard.

Based on the Company's experience, we also understand that the valuable renewable attributes of the Geronimo solar proposal do not, in this instance, override the Company's need for least-cost, reliable capacity as demonstrated on this record. Nor do those attributes create some sort of unrebuttable public interest presumption as assumed in the ALJ Report.

There is no question that the Geronimo proposal will comply with the environmental requirements of Minnesota law. But based on the record in this proceeding, so will Black Dog Unit 6 and the Cannon Falls and Mankato expansion projects.[66] The ALJ erred in giving Geronimo added credit for its environmental compliance.

The Strategist simulations conducted by the Company and the Department included detailed emission inputs for every generation unit on the Company system, and the difference in total system emissions is tracked by the model.[67] The Strategist

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[66] *See generally* Environmental Report- Xcel Competitive Resources Acquisition Proposals (Oct. 2013). Minn. Stat. § 116D.04, subd. 6 does not alter this conclusion, as the Environmental Intervenors suggest in describing the statute as "prohibiting approval of activities that would cause pollution where 'feasible and prudent alternatives' exist and stating that 'economic considerations alone shall not justify such conduct.'" Environmental Intervenors Initial Brief at 5, n.10. Alternatives need only be considered when there is a prima facie showing that the proposed state action will cause "pollution, impairment or destruction" of natural resources within the state. *Iron Rangers for Responsible Ridge Action v. Iron Range Resources*, 531 N.W.2d 874, 882 (Minn. Ct. App. 1995) *rev. denied* (Minn. July 28, 1995). "Pollution, impairment or destruction" is defined as violating an environmental quality standard, limitation, rule, order, license, stipulation agreement, or permit, or materially adversely affecting the environment. Minn. Stat. §§ 116D.04, subd. 1a(b)(incorporating the definition provided in Minn. Stat. § 116B.02, subd. 5). There is no such prima facie showing with respect to any of the proposals in this proceeding, nor could there be given the record evidence indicating all the proposals will meet applicable facility permitting requirements. *See also In re Application for Air Emission Facility Permit*, 566 N.W.2d 98, 105 (Minn. Ct. App. 1997) (there can be no finding of material adverse environmental effects where a facility will comply with all applicable state and federal permitting standards).

[67] Ex. 46 (Wishart Direct) at 21.

model also included the Commission established cost for environmental externalities and forecasted CO_2 compliance costs.[68] The result is that the Strategist simulations showed that even after accounting for a $20 million benefit for emission avoidance, the Geronimo proposal was still $34 million more costly than the natural gas proposals. Nothing in the record indicates that the design, construction, or operation of Black Dog Unit 6 and the Cannon Falls and Mankato expansion projects will fail to comply with relevant state and federal rules and regulations.

Our renewable energy experience has taught us that a robust mix of generation resources best serves our customers' overall needs. At the present time, our customers' are better served with the addition of least-cost natural gas generation. And we are confident that the 2014 solar-specific resource acquisition process that we are planning will produce the least-cost solar resources for our customers. There is no identifiable benefit from accepting the first solar proposal that comes along, especially when it appears from the record evidence that it is priced above market, and dubious quantifications of its economic benefits are being relied upon to justify its selection.

4. *Statutory Preferences for Renewables do not Override Cost*

The ALJ incorrectly concludes that Minnesota's statutes relating to renewable energy preferences overrides the least-cost planning principles that lead to the selection of Black Dog Unit 6 and either the Calpine or Invenergy Expansion proposals. To the contrary, Minnesota law firmly supports the selection of the natural gas proposals based on the record developed in this case.

Minn. Stat. § 216B.243, subd. 3a calls for the Commission in a certificate of need proceeding to consider whether the Company has "explored the possibility of

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[68] Ex. 46 (Wishart Direct) at 21-22.

generating power by means of renewable energy resources and has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source." Thus to be favored over a nonrenewable resource, Geronimo's solar generation proposal must be a least-cost alternative, and, as discussed above, it is not.

In addition, Minn. Stat. § 216B.2422, subd. 4 provides that the Commission shall not approve a nonrenewable resource unless the Company demonstrates that a renewable resource is not in the public interest. Contrary to the ALJ Report, the record evidence supports the determination that the selection of Geronimo's proposal to meet our potential need is not in the public interest.

V. CONCLUSION

The Company appreciates the ALJ's effort and consideration of the important policy issues raised by this case. However, the Company respectfully disagrees with the conclusions the ALJ reached on this record. Rather, the Company respectfully requests that the Commission adopt the proposed findings and conclusions provided as Attachment 1 to this filing.

In summary, the Commission should find that the current record supports finding that:

- Xcel Energy has a potential need in the 300-500 MW range for the 2017-19 period;
- The best way to address the uncertainty associated with this range of need is to select natural gas generation sufficient to meet the entire need, and delay or cancel projects if necessary as circumstances warrant doing so;
- Xcel Energy should file updated need assessments in the Fall of 2014 and 2015 to keep the Commission abreast of circumstances that may warrant delay or cancellation of the selected resources;

- Black Dog Unit 6 in combination with either Calpine's Mankato project or Invenergy's Cannon Falls project is the least cost way to meet Xcel Energy's potential 300-500 MW need consistent with the public interest;
- Both Calpine and Invenergy should proceed to PPA negotiations to determine which of their projects provides the best value for our customers.
- Xcel Energy can use the MERP-style cost recovery mechanism it has proposed to recover the costs for Black Dog Unit 6. In the alternative, the Department's alternative cost-recovery method for Xcel Energy's project should be used.
- The Company's Hankinson Project should be held in reserve to fulfill the remaining capacity need if both the Calpine and Invenergy negotiations are unsuccessful.
- Geronimo's solar proposal should not be selected because it is not as cost effective as other proposals in addressing Xcel Energy's potential need, and is not otherwise in the public interest because it appears to be priced above the market cost for solar energy projects that can help the Company meet its obligations under the new solar energy standard;
- GRE's capacity credit proposal should not be selected because it is not as cost-effective as other proposals in addressing Xcel Energy's potential need.

Dated: January 21, 2014

Respectfully submitted,

By /s/ James Denniston

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ATTORNEYS FOR NORTHERN STATES POWER COMPANY

~~OAH 8-2500-30760~~
~~MPUC Docket No. E-002/CN-12-1240~~

STATE OF MINNESOTA
~~OFFICE OF ADMINISTRATIVE HEARINGS~~

BEFORE THE
~~FOR THE~~MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

In the Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process

MPUC Docket No. E-002/CN-12-1240

FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER ~~RECOMMENDATION~~

On March 5, 2013, the Minnesota Public Utilities Commission (MPUC or Commission) concluded that Northern States Power Company d/b/a Xcel Energy (Xcel Energy) had demonstrated the need for an additional 150 megawatts (MW) of electricity generation by 2017. The Commission further concluded that it was possible that this need could continue to increase to 500 MW by 2019.

Minn. Stat. § 216B.2422, subd. 5 authorizes the Commission to select the resources to meet such needs through a competitive procurement.

In this instance, because there were several different energy companies, including Xcel Energy, that could meet the need for new generation, and a complex array of considerations between and among the competing proposals, the Commission set this matter on for a contested case hearing. It sought a report and recommendation from an Administrative Law Judge following a more complete development of the record. Specifically, the Commission directed that a contested case be undertaken to identify the resource proposal or proposals that will provide the most reasonable and prudent strategy for Xcel Energy to meet the needs of its service area.

On October 21 and 22, 2013, Administrative Law Judge Eric L. Lipman presided over an evidentiary hearing on these issues. The following parties noted their appearance at the evidentiary hearing:

James R. Denniston, Assistant General Counsel, Northern States Power Company, and Michael C. Krikava, Thomas Erik Bailey and Kodi J. Church, Briggs and Morgan, appeared on behalf of Northern States Power Company (Xcel Energy).

Michael J. Bradley, Moss & Barnett and Donna Stephenson, Associate Counsel, appeared on behalf of Great River Energy (GRE).

Kevin Reuther, Legal Director of the Minnesota Center for Environmental Advocacy (MCEA), appeared on behalf of MCEA, Fresh Energy, Sierra Club, and Izaak Walton League - Midwest Office (Environmental Intervenors).

Brian M. Meloy and Andrew J. Gibbons, Leonard, Street and Deinard, appeared on behalf of Calpine Corporation (Calpine).

Eric F. Swanson, Winthrop & Weinstine, appeared on behalf of Invenergy Thermal Development, LLC (Invenergy).

Christina K. Bruvsen, Fredrikson & Byron, appeared on behalf of Geronimo Wind Energy, LLC, d/b/a Geronimo Energy (Geronimo).

Ryan M. Norrell, Special Assistant Attorney General, appeared on behalf of the North Dakota Public Service Commission Advocacy Staff (Advocacy Staff).

Julia E. Anderson, Assistant Attorney General, appeared on behalf of the Minnesota Department of Commerce, Division of Energy Resources, Energy Regulation and Planning (DOC-DER or Department).

On December 31, 2013, the Administrative Law Judge issued his Findings of Fact, Conclusions of Law and Recommendation in this matter.

On March 25, 2014, the Commission heard oral argument on this matter.

On March 27, 2014, the Commission deliberated this matter at a regularly-scheduled agenda meeting.

STATEMENT OF THE ISSUE

What resource proposals provide the most reasonable and prudent strategy for ~~Xcel~~Xcel Energy to meet the needs of its service area?

SUMMARY OF CONCLUSIONS

The record confirms a potential need in the range of 300-500 MW of incremental new capacity in the 2017-19 timeframe. The most reasonable and prudent way to meet that need is to select Xcel Energy's Black Dog Unit 6 proposal in conjunction with either the Calpine Mankato Expansion project or the Invenergy Cannon Falls Expansion project. Since aggregate costs and benefits of the Mankato Expansion and the Cannon Falls Expansion are very close to each other, the most appropriate way to select a winner between them is for Xcel Energy to engage in simultaneous negotiations with both and provide the outcome of those negotiations to the Commission for its final resource selection. ~~The Administrative Law Judge concludes that the most reasonable and prudent solution is to select scalable projects that meet Xcel's near-term shortfalls and for the Commission to conduct a second procurement for needs which may occur after 2019. The Administrative Law Judge further concludes that combining Geronimo's proposal with the GRE's proposal, represents the most reasonable and prudent alternative to meet Xcel's near-term needs.~~

Based upon the submissions of the parties and the contents of the hearing record, the ~~Administrative Law Judge~~Commission makes the following:

FINDINGS OF FACT

I. Plans and Forecasts Predating the Receipt of Proposals in this Docket

1. In August of 2010**,** Xcel Energy filed a resource plan for the planning period of 2011 through 2025.[1]

2. Utilities in Minnesota file biennial resource plans with the Commission. These plans report upon the utility's: (1) projected energy needs over the next 15 years; (2) plans for meeting the projected need; (3) planning process for meeting the projected need; and (4) bases for selecting a specific resource mix proposed to meet the projected need.[2]

3. On March 15, 2011, in parallel filing with the Commission, Xcel Energy sought a Certificate of Need for its Black Dog Generating Plant Repowering Project. In this submission, Xcel Energy sought approval for the development of 450 megawatts (MW) of energy resources. These generation resources would address shortfalls in generation that Xcel Energy projected would occur in 2014.[3]

~~3.~~4. In December of 2011, following a revision of its demand projections, Xcel Energy proposed to cancel the Black Dog Generating Station project. It concluded that the demand for electricity would be lower than it earlier projected and thus this expansion project was not needed.[4]

~~4.~~5. In late October of 2012, Xcel Energy likewise decided that it would not seek to increase the generating capacity of its Prairie Island Nuclear Generating Plant.[5]

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[1] 2010 RESOURCE PLAN, *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E002/RP-10-825 (Aug. 2, 2010).

[2] See, Minn. Stat. § 216B.2422 and Minn. R. 7843.0400.

[3] PETITION, In the Matter of the Petition of Northern States Power Company for a Certificate of Need for the Black Dog Generating Plant Repowering Project, Docket No. E002/CN-11-184 (Mar. 15, 2011).

[4] *In the Matter of the Petition of Northern States Power Company for a Certificate of Need for the Black Dog Generating Plant Repowering Project*, Docket No. E-002/CN-11-184, MOTION TO WITHDRAW APPLICATION AND REQUEST PURSUANT TO MINN. R. 1400.7600 FOR CERTIFICATION OF THIS MOTION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION (Dec. 7, 2011); see also, Hearing Transcript - Vol. 1 at 130 ("We've been working through our potential resource need in our resource plan docket and the outcome of that was the Commission's order identifying a resource need. At the same time, we initiated a proposal for a combined cycle unit at the Black Dog power plant site. As the great recession hit and our projected demand for electricity declined, we asked to withdraw that petition and ultimately the Commission concurred with that.").

[5] SUPPLEMENTAL FILING - NOTICE OF CHANGED CIRCUMSTANCES, *In the Matter of the Application of Northern States Power Company for a Certificate of Need for the Prairie Island Nuclear Generating Plant for an Extended Power Uprate*, Docket Nos. E002 / CN-08-509, E002 / RP-10-825, E002 / CN-11-184 (Oct. 22,

6. In proceedings on its five-year action plan, Xcel Energy reduced its estimates of future demand so as to “reflect, among other things, slower-than-projected economic growth, a loss of wholesale customers, changes in Xcel Energy's wind procurement strategy, reassessments of Xcel Energy's program for refurbishing Black Dog Units 3 and 4 and thePrairie Island Plant, and the anticipated expiration of the Production Tax Credit.”[6]6

~~5.~~7. Mindful of the change in the demand forecasts, the Commission directed Xcel Energy to prepare a notice plan for soliciting proposals to meet the reduced needs in a competitive resource acquisition process. The Commission stated:

> [T]he 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.[7]

~~6.~~8. The precise quantity of energy to be obtained through this process was not stated. Instead, the Commission identified a range of 150 MW in 2017, potentially increasing to 500 MW by 2019. Moreover, the Commission concluded that this description sufficed “to inform potential bidders of the scope of projects that the Commission will be considering.”[8]

~~7.~~9. Because of a specialized statutory exemption, the project or projects selected in this Docket will not require a separate Certificate of Need.[9]

~~8.~~10. The Commission set a deadline of April 15, 2013 for submission of proposals to meet some, or all, of this need.[10]

~~9.~~11. On April 15, 2013, the Commission received proposals from Calpine,

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2012).

[6] See, ORDER ESTABLISHING RESOURCE ACQUISITION PROCESS, *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825 at 6 (Nov. 30, 2012).

[7] *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 at 2 and 6 (Mar. 5, 2013) (emphasis added); *see also*, Ex. 83 at 3 (Rakow Direct).

[8] *Id*. at 2 and 6.

[9] Minn. Stat. § 216B.2422, subd. 5 (b).

[10] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 2 (June 21, 2013).

Geronimo, GRE, Invenergy and Xcel.[11]

II. Events that Followed the Receipt of Proposals which Impact the Forecasted Need for Energy

12. Following the receipt of proposals, there have been significant changes to Xcel Energy's regulatory and operational environment.[12]

13. On May 21, 2013, the Legislature amended Minn. Stat. § 216B.1691, by adding a new subdivision. The amendment established a new solar energy mandate that obliges Xcel Energy (and other utilities) to acquire 1.5 percent of its retail sales from solar energy by 2020. Moreover, these requirements are in addition to existing law which requires Xcel Energy to provide 30 percent of its retail energy needs through renewable energy by the year 2020. The statute states:

> Subd. 2f. Solar energy standard. (a) In addition to the requirements of subdivisions 2a and 2b, 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.[13]

14. In order to meet the requirement that an amount equal to 1.5 percent of its retail electric sales is drawn from solar energy resources, Xcel Energy will require 455,919 MWh of solar energy resources by 2020.[14]

15. On July 16, 2013, Xcel filed a petition for approval of 600 MW of wind generation. Depending upon the availability of transmission upgrades, Xcel Energy forecasted that these wind generation resources would be placed into service between 2017 and 2019.[15]

16. On August 9, 2013, Xcel filed a petition for approval of an additional 150 MW of wind generation. Xcel Energy projected that these wind resources would be

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[11] *Id.*

[12] Ex. 49 at 2 (Alders Direct) (The "September 6 2013 Update of the Company's need indicates a capacity deficit of 93 MW in 2017, which grows to 307 MW by 2019. However, there are factors that create uncertainty and could materially affect our resource need assessment.").

[13] Minn. Stat. § 216B.1691, subd. 2f; *see also,* 2013 Laws of Minnesota, Ch. 85, Art. 10, § 3; Minn. Stat.

§ 216B.1691, subd. 2a (b).

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

[15] *In the Matter of the Petition of Xcel Energy for Approval of the Acquisition of 600 MW of Wind Generation*, Docket No. E-002/M-13-603.

operational and available to Xcel Energy by 2015.[16]

17. 750 MW of wind resources represents much larger acquisitions than Xcel Energy had forecasted it would make in the near-term. Earlier in the year, Xcel Energy projected that it would purchase 200 MW of energy from wind resources.[17]

18. On October 4, 2013, the Commission determined that Xcel Energy's plans to acquire a total of 750 MW of wind generation constituted a changed circumstance to its resource plan. The Commission ordered Xcel Energy to file a Notice of Changed Circumstances reflecting these changes.[18]

19. While this proceeding was underway, the Midcontinent Independent System Operator (MISO) sought a change in the way that "reserve margins" are calculated for electric utilities in the Midwest. "Reserve margins" are the amount of generation capacity that each utility must have in excess of their expected peak demand. These reserve resources can be called upon to maintain the electric grid's reliability in the event of unplanned outages of generation or transmission facilities. MISO establishes a new reserve margin percentage each year. MISO also establishes methods for calculating the available capacity of generation units in the region and applying these amounts to the needed reserve margin.[19]

20. In the past, MISO has calculated reserve margins so that they would be sufficient to meet MISO system peaks.[20]

21. Yet, the MISO system can, and frequently does, reach its system peak at a different hour than Xcel Energy's system. Between 2006 and 2012, for example, customer demand on Xcel Energy's system was 5 percent lower than during MISO's peak times.[21]

22. The change in MISO reserve margins became effective on October 30, 2013 and will be implemented for the 2014 - 2015 planning year.[22]

23. While many stakeholders have asked MISO to solidify its reserve margin methodology so that the reserve amounts do not vary widely from year-to-year, those

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[16] *In the Matter of the Petition of Xcel Energy for Approval of the Acquisition of 150 MW of Wind Generation*, Docket No. E-002/M-13-716.

[17] *See, e.g., Wind RFP Update*, Docket No. E-002/RP-10-825 at 1 (February 4, 2013).

[18] *Order Requiring Notice of Changed Circumstances and Granting Intervention*, Dockets E-002/RP-10-825, E-002/CN-12-1240, E-002/M-13-603, E-002/M-13-716 (October 4, 2013).

[19] Ex. 46 at 5-6 (Wishart Direct); Ex. 83 at 20 n.8 (Rakow Direct).

[20] Ex. 83 at 22-24 (Rakow Direct).

[21] Ex. 46 at 8-9 and Table 3 (Wishart Direct).

[22] Midcontinent Indep. Sys. Operator, Inc., 145 FERC 61,077 (Oct. 29, 2013) (order conditionally accepting filing in Docket No. ER 13-2298-000).

longer-term planning metrics are not now in place. MISO has pledged that it will look into this issue in the coming months and hopes to provide updated long-term planning criteria by the fall of 2014.[23]

24. Calculating the minimum reserve capacity based upon the MISO system peak has a significant impact upon the amount of reserves Xcel must maintain in order to meet applicable reliability standards. The net impact of the methodology changes reduces Xcel Energy's reserve requirements by approximately 200 MW.[24]

25. In recent weeks, Xcel Energy has revised downward its projected energy needs. If the reserve requirements that are applicable today are included in a need forecast, alongside more recent load projections, there is no shortfall in capacity through 2018 and only 26 MW is needed by Xcel Energy in 2019.[25]

~~In a November 4, 2013 filing with the Commission, Xcel projected that its actual sales would fall by .6 percent in 2014 and another .4 percent in 2015.[26]~~

26. Dr. Rakow and the Department express a different view. They assert that Minnesota's economy is improving and that demand for electricity will increase as the economy improves.[27]

27. The Department likewise asserts that only Xcel Energy's Fall 2011 forecast, and not its most-recent estimates, has been approved by the Commission. It states further that it has not verified the accuracy of Xcel Energy's spring 2013 sales forecast, nor relied upon its projections in this proceeding.[28]

28. Given the uncertainty surrounding its resource needs, the regulatory requirements that it will be required to meet in the near-term, and the direction of the state's economy, Xcel Energy recommends that the Commission authorize contract options that permit it to postpone the service dates of any projects that are selected in this proceeding, and perhaps, cancel those projects altogether.[29]

~~28.~~29. The Department joins Xcel Energy in this recommendation, noting

[23] Ex. 46 at 10 (Wishart Direct); *see also*, Ex. 49 at 8 (Alders Direct) ("the Midcontinent Independent System Operator's resource adequacy process is in flux").

[24] Ex. 46 at 10 (Wishart Direct).

[25] *Id.* at 7 - 10 (Wishart Direct).

~~[26] *See, In the Matter of the Application of Northern States Power Company for Authority to Increase Rates for Electric Service in Minnesota*, Docket No. E002 / GR-13-868, Direct Testimony of Jannell E. Marks at 5 (Nov. 4, 2013).~~*[Intentionally omitted]*

[27] Ex. 83 at 41 (Rakow Direct).

[28] Hearing Transcript - Vol. 2 at 29-30.

[29] Ex. 46 at 2 and 11 (Wishart Direct); Ex. 49 at 8 (Alders Direct); Hearing Transcript - Vol. 1 at 125, 134 and 140.

that delayed in- service dates for projects could result in substantial cost savings.[30]

~~29.~~30. It is Xcel Energy's expectation that if any offeror selected in this process incurs expenses in order to meet an in-service date specified in a Purchase Power Agreement, those expenses would be recoverable from ratepayers in the event that the project is later cancelled.[31]

III. Procedural Practice in the Contested Case

~~30.~~31. On June 3, 2013 – after the April 15, 2013 deadline for submission of proposals – Ecos Energy, LLC (Ecos Energy) petitioned the Commission for leave to submit a generation proposal.[32]

~~31.~~32. On June 6, 2013, the Commission met to consider the matter of Xcel's resource acquisition process.[33]

~~32.~~33. In the Commission's June 21, 2013 *Notice and Order for Hearing,* the Commission referred this matter to the Office of Administrative Hearings for a contested case proceeding. The Commission also:

(A) Denied the request of Ecos Energy for permission to submit a generation proposal.

(B) Determined that the developer of a 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.

(C) Found that the proposals filed by Calpine, Geronimo, GRE, Invenergy and Xcel were substantially complete.

(D) Directed that an Environmental Report be prepared by the Department of Commerce, Energy Environmental Review and Analysis (EERA) for the Commission and:

(1) Authorized EERA to focus its analysis on the substantially complete alternatives, and on a no-build alternative for each of these alternatives;

(2) Requested that EERA prepare an Environmental Report sufficient to meet the requirements set forth in Minn.

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[30] *See*, Hearing Transcript, Vol. 2 at 55.

[31] Hearing Transcript, Vol. 1 at 126-27.

[32] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 2 (June 21, 2013).

[33] *Id.*

R. 7849, as varied, for all of the substantially complete alternatives;

(3) Requested that EERA review Geronimo's Solar Proposal cumulatively for the up to 31 sites; and

(4) Requested that EERA treat the GRE capacity credit proposal as capacity only.

(E) Designated the following entities as parties to the contested case proceeding: Calpine, Geronimo, GRE, Invenergy, Xcel, the Department and the Environmental Intervenors.[34]

~~33.~~34. The Administrative Law Judge convened a prehearing conference on July 1, 2013 and established a schedule for further proceedings.[35]

~~34.~~35. Ecos Energy filed a Petition to Intervene on June 7, 2013.[36]

~~35.~~36. Ecos Energy filed a Verified Petition to Intervene, on July 10, 2013.[37]

~~36.~~37. The North Dakota Public Service Commission Advocacy Staff filed a Petition to Intervene on July 31, 2013.[38]

~~37.~~38. On August 5, 2013, the Commission denied the reconsideration motion of Ecos Energy to submit a proposal out of time.[39]

~~38.~~39. On August 21, 2013, having considered objections, the Administrative Law Judge denied the Petition to Intervene from Ecos Energy and granted the Petition to Intervene from the North Dakota Advocacy Staff. Ecos appealed the Commission's adverse rulings and that appeal was dismissed on September 26, 2013.[40]

~~39.~~40. On September 5, 2013, Ecos Energy sought Reconsideration, or in

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[34] Id. at 4.

[35] SECOND PREHEARING ORDER, OAH 8-2500-30760 (July 17, 2013).

[36] eDocket No. 20136-87947-01.

[37] eDocket No. 20137-88996-01.

[38] eDocket No. 20138-89905-01.

[39] ORDER DENYING INTERVENTION, OAH 8-2500-30760 (August 5, 2013).

[40] THIRD PREHEARING ORDER, OAH 8-2500-30760 (August 21, 2013). *See 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*, Court File A13-1659, Order Dismissing Appeal (Minn. Ct. App. Sept. 24, 2013), as amended Sept. 26, 2013, Petition for Review Denied (Minn. Dec. 17, 2013).

the alternative, Certification of, its Petition to Intervene.[41]

~~40.~~41. On September 27, 2013, the following parties filed Direct Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel Energy, North Dakota Advocacy Staff and the Department.[42]

~~41.~~42. On October 1, 2013, having considered objections, the Administrative Law Judge denied Ecos Energy's Motion for Reconsideration and its alternative Motion for Certification.[43]

~~42.~~43. On October 8, 2013, the Xcel Large Industrials (XLI) filed a Petition to Intervene.[44]

~~43.~~44. On October 10, 2013, the Administrative Law Judge set the evidentiary hearing to begin on Tuesday, October 22, 2013.[45]

~~44.~~45. On October 14, 2013, EERA issued the Environmental Report.[46]

~~45.~~46. On October 15, 2013, the Honorable Steve M. Mihalchick presided over a public hearing at the State Office Building in St. Paul, Minnesota.[47]

~~46.~~47. On October 18, 2013, the following parties filed Rebuttal Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel Energy, and the Department.[48]

~~47.~~48. On October 21, 2013, the Administrative Law Judge: (1) denied XLI's Petition to Intervene; (2) extended the public comment period by 21 days to match the deadline for the submission of initial briefs from the parties; and (3) invited both XLI and Ecos Energy to submit briefs as *amicus curiae* by the close of the extended deadline.[49]

~~48.~~49. On October 22 and 23, 2013, the Administrative Law Judge

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[41] eDocket No. 20139-90988-01.

[42] *See generally,* MPUC Docket No. 12-1240 (September 27, 2013).

[43] FOURTH PREHEARING ORDER, OAH 8-2500-30760 (October 1, 2013).

[44] eDocket No. 201310-92220-01.

[45] AMENDED SEVENTH PREHEARING ORDER, OAH 8-2500-30760 (October 10, 2013).

[46] Ex. 38.

[47] eDocket No. 201311-93216-01.

[48] *See generally,* MPUC Docket No. 12-1240 (October 18, 2013).

[49] *See,* EIGHTH PREHEARING ORDER, OAH 8-2500-30760 (October 21, 2013).

convened an evidentiary hearing at the State Office Building in St. Paul, Minnesota.[50]

~~49.~~50. On November 22, 2013, the public comment period closed. Approximately 60 public comments were filed with the Commission, including 17 from local government representatives, 30 from local landowners and individuals, 11 from organizations and companies and 2 from federal and state government agencies representatives.[51]

~~50.~~51. On November 22, 2013, Calpine, Geronimo, GRE, Invenergy, Xcel Energy, the Department and the Environmental Intervenors filed initial briefs.[52]

~~51.~~52. The hearing record closed at 4:30 p.m. on Friday, December 6, 2013, following receipt of the parties' reply briefs.[53]

IV. Overview of the Proposals

~~52.~~53. The Commission accepted proposals from five offerors:

(1) Xcel Energy's 215 MW Black Dog Unit 6 combustion turbine peaking facility and two 215 MW combustion turbine Red River Valley Units 1 and 2;

(2) Calpine's 345 MW combined cycle turbine intermediate facility at Mankato;

(3) Geronimo Energy's 100 MW distributed solar capacity intermittent resource;

(4) GRE's proposed sale of capacity credits; and,

(5) Invenergy, with a 179 MW combustion turbine peaking facility at Cannon Falls and two 179 combustion turbines at Hampton.[54]

~~53.~~54. Because three of the offerors proposed projects utilizing gas-fired turbines, James Alders, Xcel Energy's Rates and Regulatory Affairs Consultant, noted the 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

[50] Hearing Transcripts, Volumes 1 and 2 (October 22 and 23, 2013).

[51] *See,* eDocket No. 201311-94078-01.

[52] *See generally,* MPUC Docket No. 12-1240 (November 22, 2013).

[53] *See generally,* MPUC Docket No. 12-1240 (December 6, 2013).

[54] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 9 (Jun. 21, 2013).

> 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.[55]

V. Features of the Proposal Submitted by Xcel

~~54.~~55. Xcel Energy proposed to construct three natural-gas-fired, simple-cycle, 215 megawatt (MW) combustion turbine generators sequentially to match the identified need.[56]

~~55.~~56. The first combustion turbine unit would be located at Xcel Energy's Black Dog generating plant in Burnsville, Minnesota. Xcel Energy likewise proposes a flexible in-service date of 2017, 2018 or 2019.[57]

~~56.~~57. This unit would substantially replace the coal-fired generating capacity at the Black Dog site.[58]

~~57.~~58. Xcel Energy's Black Dog Unit 6 project would be built in the existing powerhouse at the Black Dog site, in the area where Unit 4 is currently located. This siting would allow Xcel Energy to maximize the use of existing infrastructure and maintain generation within its largest load center.[59]

~~58.~~59. The exhaust stack would be approximately 200 feet tall and would be located adjacent to the unit, in the area of the existing Unit 4 boiler.[60]

~~59.~~60. Black Dog Unit 6 would be connected to the existing 115 kV switchyard and transmission system. For this reason, no upgrades to the existing 115 kV transmission system would be required to bring Unit 6 into service.[61]

~~60.~~61. The unit would be fueled entirely by natural gas. CenterPoint Energy currently serves the plant site. Xcel Energy proposes to secure additional natural gas supply through a competitive process. Xcel Energy anticipates that the winning vendor may need to replace the existing pipeline serving the plant with a new higher pressure

[55] Public Hearing Transcript, Vol. 1 at 11-12.

[56] Ex. 1 at 1-1 and 1-2 (Xcel Energy Proposal).

[57] Ex. 1 at 1-3 to 1-4 (Xcel Energy Proposal); Ex. 46 at 11 (Wishart Direct); Ex. 49 at 2 (Alders Direct).

[58] Ex. 1 at 1-1 (Xcel Energy Proposal).

[59] Ex. 1 at 1-11 (Xcel Energy Proposal).

[60] *Id.*

[61] *Id.*

natural gas line from the Cedar Town Border station.[62]

~~61.~~62. Xcel Energy proposes a Model F combustion turbine. This combustion turbine can generate 150 MW within ten minutes of a "cold start," and operates in a range between 50 to 100 percent load while meeting emission limits. The unit has faster ramp rates over the load range. During summer heat and humidity conditions, the maximum output of the unit is approximately 215 MW.[63]

~~62.~~63. The Black Dog plant is located on a 35-acre parcel. The plant site is well- buffered within a still larger 1,900-acre area owned by Xcel Energy.[64]

~~63.~~64. The output of Black Dog Unit 6 depends upon ambient weather conditions (primarily temperature and humidity) and altitude. Nominal generating capacity will be approximately 215 MW at summer ambient conditions of 95 degrees Fahrenheit and relative humidity of 30 percent, with an altitude of 720 feet above sea level.[65]

~~64.~~65. ~~Black~~ Unit Dog 6 would operate as a peaking generator, with an anticipated annual capacity factor of four to ten percent. The annual availability of Black Dog Unit 6 would be greater than 95 percent, and its service life is expected to exceed 35 years.[66]

~~65.~~66. In the case of a 2017 in-service date, Xcel Energy proposes to construct Unit 6 in 2016 and 2017. Under its proposal, decommissioning, demolition and removal of the existing Unit 4 turbine, generator, boiler and related equipment would begin in the fall of 2014.[67]

~~66.~~67. Xcel Energy anticipates that the construction of its Black Dog combustion turbine unit would require 21 months.[68]

~~67.~~68. Xcel Energy's proposed Red River Valley Units 1 and 2 would be located near the community of Hankinson, North Dakota, near the existing 230 kV transmission system and major natural gas pipeline routes. This plant would utilize less than 35 acres of a larger 160-acre parcel that Xcel Energy plans to acquire. The undeveloped portions of the site would buffer the plant from surrounding uses. The Hankinson site is located within a rural setting with low residential densities.[69]

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[62] Ex. 1 at 1-11 (Xcel Energy Proposal).

[63] Ex. 1 at 1-10 (Xcel Energy Proposal).

[64] Ex. 1 at 1-13 (Xcel Energy Proposal).

[65] Ex. 1 at 4-6 (Xcel Energy Proposal).

[66] Ex. 42 at 3 (Ford Direct).

[67] Ex. 1 at 1-11 (Xcel Energy Proposal).

[68] Ex. 38 at 6 (Environmental Report).

[69] Ex. 1 at 1-11, 1-12 and 1-13 (Xcel Energy Proposal).

~~68.~~69. Xcel Energy proposes to place the Red River Valley Unit 1 combustion turbine and associated natural gas, transmission, and interconnection facilities into service in 2018. It proposes to add Red River Valley Unit 2 to the plant site after the first Red River Valley combustion turbine and place this second unit into service in 2019.[70]

~~69.~~70. Alternatively, Xcel Energy asserts that it could deploy the Red River Valley turbines together in either 2018 or 2019. It notes that this later, simultaneous deployment could result in economies of scale and cost savings.[71]

~~70.~~71. The tallest structure on the Red River site would be the stack, standing at approximately 65 feet tall. Xcel Energy projects that the tanks, combustion turbine, and maintenance and operations building will be less than 40 feet in height.[72]

~~71.~~72. The combustion turbine facility would utilize natural gas. A short gas pipeline would be necessary to connect the plant to the fuel supplier.[73]

~~72.~~73. Xcel Energy's assessment is that the Alliance pipeline has adequate capacity to serve Red River Valley units, and that the fuel would be available with high reliability.[74]

~~73.~~74. Red River Valley Units 1 and 2 would connect to a new 230 kV substation with a short double circuit 230 kV line. The system interconnection will require an upgrade of the existing Hankinson – Wahpeton 230 kV line.[75]

~~74.~~75. Xcel Energy likewise proposes Model F combustion turbines for the Red River Valley Units.[76]

~~75.~~76. The units would be integrated into Xcel Energy's remote dispatch control center. Xcel Energy would use the units for peaking service, dispatching them after all incrementally lower-cost units. The units would be primarily dispatched during higher system load periods in the summer and winter months, during peak demand period, with annual capacity factors between four and ten percent.[77]

~~76.~~77. The output of the Red River Units depends upon ambient weather conditions. Nominal generating capacity is considered about 214 MW at summer

[70] Ex. 1 at 1-2 (Xcel Energy Proposal).

[71] Ex. 1 at 1-2 and 1-12 (Xcel Energy Proposal).

[72] Ex. 1 at 1-12 (Xcel Energy Proposal).

[73] *Id*.

[74] Ex. 46 at 13 (Wishart Direct).

[75] Ex. 1 at 1-12 and 4-11 (Xcel Energy Proposal).

[76] Ex. 1 at 1-10 (Xcel Energy Proposal).

[77] Ex. 1 at 1-12 (Xcel Energy Proposal).

ambient conditions of 88 degrees Fahrenheit and relative humidity of 42 percent with an altitude of 900 feet above sea level.[78]

~~77.~~78. The combustion turbines would utilize natural gas as their fuel. The facility The allows for the addition of distillate oil storage and handling if a future need develops to have oil as the backup fuel. Xcel Energy anticipates securing the necessary natural gas supply through a competitive process beginning in 2014.[79]

~~78.~~79. Xcel Energy plans to obtain the water that is needed for the Red River units from either an on-site well or truck shipments.[80]

~~79.~~80. The Red River Valley Units would place generation closer to Xcel Energy's Fargo load center, and would moderate Xcel Energy's reliance on the high voltage transmission system to deliver energy to this part of its system.[81]

~~80.~~81. Xcel Energy proposed the establishment of a rider similar to one that the Commission approved for the Minnesota Metro Emissions Reduction Project (MERP). It proposed that a rate rider be established for each unit in its proposal that is selected by the Commission. Xcel Energy further proposed that each unit's return on equity (ROE) be adjusted – either upwards or downwards – to reflect any difference between the estimated capital cost and the actual cost of constructing the unit. The rider, with adjusted ROE, would be used during the first five years of rate recovery. After that time, Xcel Energy proposed that the last authorized ROE would be used until the projects are included in base rates. Xcel Energy also proposed different adjustments to the Company's ROE based upon the percentage difference of actual costs compared to estimated costs used to evaluate Xcel Energy's proposal.[82]

VI. Features of the Proposal Submitted by Calpine

~~81.~~82. Calpine proposed to construct a 345 MW combined cycle gas plant at its existing Mankato Energy Center (the "Mankato facility") to match the identified need.[83]

~~82.~~83. Calpine proposed to supply 345 MW of the estimated 500 MW of Xcel's forecasted energy needs. Calpine proposes to expand its Mankato Energy Center in the city of Mankato, Minnesota, through the addition of one natural-gas-fired combustion turbine generator, an additional heat recovery steam generator, and related

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[78] Ex. 1 at 4-9 (Xcel Energy Proposal).

[79] Ex. 1 at 4-9 (Xcel Energy Proposal).

[80] *Id*.

[81] Ex. 42 at 4 (Ford Direct).

[82] Ex. 49 at 1, 2 and 5 (Alders Direct); Hearing Transcript, Vol. 1 at 136-137.

[83] *See* Ex. 8 (Calpine's Proposal).

ancillary equipment.[84]

~~83.~~84. The Mankato Expansion would increase the Center's energy output by adding 290 MW of intermediate combined-cycle capacity and 55 MW of peaking capacity.[85]

~~84.~~85. The existing Mankato Energy Center consists of a 375 MW natural gas fired, combined cycle plant with one Siemens 501FD combustion turbine generator, one Nooter/Erikson heat recovery steam generator, a Toshiba TCDF 40L steam turbine generator, and other ancillary equipment.[86]

~~85.~~86. The Mankato Expansion would complete a two-phase project – that was earlier approved by the Commission – for a 720 MW power plant. The first phase of this project was placed into service in 2006. The proposed expansion would be the second phase and completion of the originally-designed project.[87]

~~86.~~87. Because the project would be located entirely on the Mankato Energy Center's existing 25-acre site, it utilizes a brownfield that is now used for electric power generation.[88]

~~87.~~88. Natural gas is provided to the Mankato Energy Center through a 20-inch gas pipeline that interconnects with Northern Natural Gas' interstate pipeline facilities. This existing pipeline lateral is sufficiently sized to accommodate the future requirements of this expansion. The project would also use the existing plant's transmission outlets and interconnections to Xcel Energy's Mankato substation. The existing plant switchyard and adjacent substation are appropriately sized for the incremental plant output.[89]

~~88.~~89. The Mankato Energy Center uses treated wastewater for processing and cooling. Discharges of water from the plant are routed to the city of Mankato's treatment plant. This allows the city of Mankato to manage more effectively the quality of its water discharge.[90]

~~89.~~90. The Mankato Expansion has strong local support and would provide both near-term and long-term local economic benefits through construction jobs, tax revenues to the city of Mankato, and revenues for the city of Mankato water department.[91]

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[84] Ex. 8 at 2 (Calpine's Proposal).

[85] *Id*.

[86] Ex. 55 at 6 (Thornton Direct).

[87] Ex. 8 at 3 (Calpine's Proposal).

[88] Ex. 8 at 6 (Calpine's Proposal); Ex. 55 at 8 (Thornton Direct).

[89] Ex. 55 at 8-9 (Thornton Direct).

[90] Ex. 8 at 6 (Calpine's Proposal).

[91] Ex. 8 at 6 (Calpine's Proposal).

~~90.~~91. Combined cycle plants are typically defined as intermediate generation which has higher expected annual capacity factors. These types of units are more efficient than peaking facilities, but generally have higher construction, operation and maintenance costs.[92]

~~91.~~92. The Mankato facility's combined cycle unit would operate as an intermediate type resource with capacity factors in the 20 to 30 percent range.[93]

~~92.~~93. By utilizing existing gas, generating and transmission infrastructure, Calpine asserts that the Mankato Expansion avoids proliferation of generating sites and transmission corridors.[94]

~~93.~~94. The combined cycle power plant provides comparatively "fast start" capabilities and "start-stop" scheduling flexibility.[95]

~~94.~~95. Calpine asserts that these features make a combined cycle resource the most appropriate addition to Xcel's growing portfolio of intermittent power resources.[96]

~~95.~~96. Calpine projects that it could place the Mankato Expansion into service by June 1, 2017.[97]

VII. Features of the Proposal Submitted by Geronimo

~~96.~~97. Geronimo proposes to develop 130 MW of direct current (DC) nameplate capacity – equivalent to 100 MW of alternating current – of distributed solar energy from within Xcel's Upper Midwest service territory.[98]

~~97.~~98. The project consists of distributed photovoltaic power plants that would be located at approximately 20 sites serving Xcel Energy loads within MISO Planning Resource Zone 1.[99]

~~98.~~99. The distributed solar facilities range in size from 2 MW to 10 MW and would utilize a linear axis tracker to increase the accredited capacity of the systems. The tracking system adjusts the tilt of each array such that the rays of sun

[92] Ex. 46 at 16 (Wishart Direct.)

[93] Ex. 46 at 17 (Wishart Direct.)

[94] Ex. 8 at 6 (Calpine's Proposal)

[95] Ex. 8 - Appendix A at 2; Ex. 55 at 11 (Thornton Direct).

[96] *See,* Ex. 55 at 2 (Thornton Direct).

[97] Ex. 8 at 4 (Calpine's Proposal).

[98] Ex. 13 at 1 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct); Ex. 61 at 3 (Beach Rebuttal).

[99] Ex. 13 at 12 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct); Ex. 62 at 6-7 (Skarbakka Direct).

remain perpendicular to the solar panels in at least one dimension throughout the day. With these additions the accreditation of the unit rises to 71.20 percent.[100]

~~99.~~100. Geronimo sized the solar facilities to offset approximately 20 percent of the existing load at each respective substation. Further, by locating the solar facilities in close proximity to existing substations, the project would be able to make efficient use of existing transmission facilities. Each substation zone ranges in size from 20 to 70 acres and include design features which limit environmental impacts.[101]

~~100.~~101. Geronimo asserts that distributed solar facilities greatly reduce the impact of individual transmission equipment failures and limitations. Outages of individual transmission lines, distribution lines, or a solar facility component will, in nearly all cases, reduce the output from only a single solar facility. In such circumstances, the remainder of the project continues to be operational.[102]

~~101.~~102. Similarly, disbursement of Geronimo's units increases the reliability, and reduces the variability of, energy output from the proposed project.[103]

~~102.~~103. The project would generate energy without significant air emissions.[104]

~~103.~~104. The solar project has no associated fuel costs, and, therefore, provides for a fixed and certain price for the life of the project.[105]

~~104.~~105. Geronimo's facilities can be interconnected at the distribution system, allowing for fewer line losses and greater reliability.[106]

~~105.~~106. The project's estimated average annual availability is in excess of 97 percent. The expected service life of the proposed facilities is 25 to 40 years. The minimum specifications for the solar module production warranty are 90 percent of nameplate capacity at year 10 and 80 percent of nameplate capacity at year 25.[107]

~~106.~~107. As a non-wind variable generation resource, the proposal would provide Xcel with 71 MW of accredited capacity to meet its peak capacity obligation in the MISO Planning Reserve Sharing Pool and up to 200,000 MWh of primarily on-peak

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[100] Ex. 13 at 4 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct).

[101] Ex. 13 at 4 (Geronimo Proposal).

[102] Ex. 13 at 26 (Geronimo Proposal); Ex. 60 at 5 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).

[103] *Id*.

[104] Ex. 13 at 24 (Geronimo Proposal); Ex. 57 at 5 (Engelking Direct).

[105] Ex. 13 at 19 (Geronimo Proposal); Ex. 57 at 5 (Engelking Direct).

[106] Ex. 57 at 5 (Engelking Direct).

[107] Ex. 13 at 16 (Geronimo Proposal).

energy each year.[108]

~~107.~~108. The project would also provide Renewable Energy Credits (RECs) that Xcel can use to meet Renewable Energy Standards or a specific solar requirement in the states it serves.[109]

~~108.~~109. Geronimo has proposed an in-service date of December 2016 so as to meet Xcel's energy needs between 2017 and 2019.[110]

~~109.~~110. Xcel Energy estimated that the Geronimo project would fulfill approximately one- third of Xcel's solar energy requirements – namely, to provide 1.5 percent of its retail sales from solar energy sources – four years before the 2020 compliance date.[111]

~~110.~~111. Xcel Energy could likewise market the Solar Renewable Energy Credits (S-RECs) to other utilities that need to meet solar-specific requirements in other states.[112]

~~111.~~112. The project's primary components are a nominal 300 watt photovoltaic module mounted on a linear axis tracking system and a centralized inverter(s).[113]

~~112.~~113. The tracking system foundations would utilize a driver pier and do not require concrete. The remainder of the plants includes electrical cables, conduit, step up transformers and metering equipment. The solar facilities would be fenced and seeded in a low growth seed mix to reduce run-off and improve water quality.[114]

~~113.~~114. Geronimo submitted two different pricing proposals. The first includes a fixed monthly payment per kilowatt (kW) for capacity and an energy payment for all energy generated by the project. The second pricing proposal is an energy-only payment that bundles all capacity, energy and environmental attributes into a dollars per megawatt hour price.[115]

~~114.~~115. Geronimo's proposed Purchase Power Agreement has a defined price over its twenty-year term.[116]

[108] Ex. 13 at 1 (Geronimo Proposal); Ex. 57 at 2 (Engelking Direct).

[109] Ex. 13 at 1 (Geronimo Proposal).

[110] Ex. 13 at 26 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct).

[111] Ex. 46 at 18 (Wishart Direct).

[112] Ex. 13 at 1 (Geronimo Proposal).

[113] Ex. 13 at 4 (Geronimo Proposal).

[114] *Id.*

[115] Ex. 57 at 5 (Engelking Direct).

[116] Ex. 13 at 19 (Distributed Solar Energy Proposal).

~~115.~~116. Under both pricing scenarios, Geronimo bears all of the interconnection and network upgrade costs associated with the project.[117]

VIII. Features of the Proposal Submitted by Great River Energy

~~116.~~117. Great River Energy's proposal offered accredited capacity from its generation assets to meet a portion of Xcel's need.[118]

~~117.~~118. Great River Energy proposes to sell Xcel Energy MISO Zone 1 Resource Credits within the 2017 - 2019 timeframe. Additionally, GRE signaled its willingness to make a sale of credits in any or all of the three years covered by its proposal.[119]

~~118.~~119. GRE's generators are dispatched by MISO. The operation of these generators is not dependent upon the outcome in this Docket.[120]

~~119.~~120. This proposal could provide an alternative to building new generation resources in the near-term.[121]

~~120.~~121. A sale of existing credits results in no net increase in overall emission levels, externality costs or incremental environmental impacts associated with GRE's proposal.[122]

IX. Features of the Proposal Submitted by Invenergy

~~121.~~122. Invenergy proposes three 179 MW combustion turbine natural gas plants, including a 179 MW plant in Cannon Falls, MN, and two 179 MW plants near Hampton in Dakota County, Minnesota (the "Hampton Energy Center").[123]

~~122.~~123. Invenergy's Cannon Falls Energy Center commenced commercial operations in 2008. The Center consists of two simple cycle, dual fuel General Electric 7FA combustion turbines, providing 357 MW of peaking capacity. It receives natural gas through Greater Minnesota Transmission and Northern Natural Gas. Xcel purchases the output of the project under a long-term power purchase agreement reviewed and approved by this Commission.[124]

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117 Ex. 62 at 10-11 (Skarbakka Direct).

118 Ex. 19 at 1 (GRE Proposal); Ex. 63 at 2-3 (Selander Direct).

119 Ex. 19 at 1 (GRE Proposal); Ex. 64 at 3 (Selander Rebuttal).

120 Ex. 63 at 3 (Selander Direct); Ex. 64 at 4 (Selander Rebuttal).

121 Ex. 19 at 1 (GRE Proposal).

122 Ex. 38 at 12 and 57 (Environmental Report); Ex. 64 at 4-6 (Selander Rebuttal).

123 Ex. 70 at 12 (Shield Direct).

124 Ex. 24 at 7, 11 and 17 (Invenergy Proposal).

~~123.~~124. The Cannon Falls Energy Center has had a 96.9 percent Capacity Availability Factor over the last two years. After adjusting for planned outages, the Cannon Falls facility has shown a reliability of 99.2 percent since the 2008 commercial operation date.[125]

~~124.~~125. The proposed Expansion can be operational as early as January 1, 2016, with commercial operation beginning June 1, 2016, if needed, to meet Xcel's needs.[126]

~~125.~~126. Invenergy proposes to locate the Expansion on 9.3 acres of vacant land that is directly north of the existing Cannon Falls units in an area that is zoned for industrial uses.[127]

~~126.~~127. The Expansion would have minimal impacts to the surrounding area.[128]

~~127.~~128. The Expansion will require water for evaporative cooling on hot summer days and for emission controls when firing back-up fuel. The needed water resources can be supplied through the existing infrastructure. No surface water will be used as part of energy generation.[129]

~~128.~~129. As a peaking facility, the Expansion will operate a limited number of hours each year.[130]

~~129.~~130. Invenergy also proposes to develop the Hampton Energy Center in Dakota County, Minnesota, with the addition of two simple cycle, General Electric 7FA combustion turbine generators.[131]

~~130.~~131. The Hampton site is located approximately 20 miles southeast of the Minneapolis – St. Paul metropolitan area. The southeast area does not now have other Xcel generation resources nearby.[132]

~~131.~~132. The Hampton Energy Center would be installed on a 20-acre parcel north of Hampton, Minnesota. The parcel is located on 215th Street one quarter mile

[125] Ex. 70 at 12 (Shield Direct).

[126] Ex. 70 – Attachment 1 at 4 and 8 (Shield Direct).

[127] Ex. 65 at 17 (Ewan Direct.)

[128] Ex. 38 at 23 and 58 (DOC EERA Environmental Report); Ex. 65 at 18-19 (Ewan Direct).

[129] Ex. 65 at 17 (Ewan Direct); Ex. 38 at 17-18 (DOC EERA Environmental Report).

[130] Ex. 38 at 37 (DOC EERA Environmental Report).

[131] Ex. 26 at 4 (Invenergy Hampton Proposal).

[132] *Id.*; Ex. 65 at 3 (Ewan Direct).

west of State Highway 52. This portion of Dakota County is a rural setting. There are four residences within one half mile of the proposed site.[133]

~~132.~~133. The site is adjacent to a new 345 kV electrical substation that is under construction. The proposed project would interconnect with the new substation.[134]

~~133.~~134. The tallest structure at the facility would be approximately 75 feet above grade. Invenergy proposes berms and landscaping to minimize visual impacts of the site's features.[135]

~~134.~~135. The Hampton proposal includes fuel oil as a back-up fuel. Invenergy proposes to include a 750,000 gallon fuel oil storage tank or similar design as the tank.[136]

~~135.~~136. The facility would require water for evaporative cooling on hot summery days and for emission controls when firing the back-up fuel. Two industrial wells would be drilled to supply the anticipated water needs for the facility. Any needed water treatment would be accomplished with temporary trailer base demineralizers or onsite equipment.[137]

~~136.~~137. The proposed combustion turbine could achieve minimum load within approximately 20 minutes of a "cold start" and full load within 30 minutes of such a start. Invenergy asserts that these features make its combustion cycle resource an appropriate addition to Xcel's growing portfolio of intermittent power resources.[138]

~~137.~~138. Invenergy's proposal did not separately price additional transmission facilities that may be needed.[139]

~~138.~~139. The project would be interconnected to an existing natural gas pipeline of Greater Minnesota Gas, Inc., that runs less than one half mile from the proposed project site.[140]

~~139.~~140. Invenergy proposes to minimize the emissions from its facility through the use of dry low NOx burners, a water injection system to minimize NOx emissions when fuel oil is used and strict limitations on the use of the unit that operates

[133] Ex. 65 at 19-20 (Ewan Direct).

[134] *Id.*

[135] *Id.* at 19 (Ewan Direct).

[136] *Id.* at 7 (Ewan Direct).

[137] *Id.* at 19 (Ewan Direct).

[138] Ex. 65 at 7-8 (Ewan Direct).

[139] *See,* Ex. 26 at 4 (Invenergy Hampton Proposal); Ex. 46 at 15 (Wishart Direct).

[140] Ex. 26 at 4-5 (Invenergy Hampton Proposal).

on fuel oil.[141]

~~140.~~141. The project capacity would range from approximately 310 MW in the summer to 380 MW in the winter. Actual available capacity would be determined by temperature and relative humidity. The project would have a Net Capability of 357 MW at the point of interconnection.[142]

~~141.~~142. The project is scheduled to be in operation as early as January 1, 2016, but no later than January 1, 2017.[143]

~~142.~~143. Invenergy offered identical pricing for either a June 1, 2016 or a June 1, 2017 commercial operation date, thereby providing additional flexibility to Xcel. In addition, Invenergy offered in-service dates of June 1, 2018 and June 1, 2019.[144]

~~143.~~144. For the Expansion, Invenergy offered to enter into a fixed price PPA to be executed and in which Invenergy assumes the construction and operation cost risk associated with the Expansion.[145]

~~144.~~145. In response to Xcel's inclusion of a "replacement cost" assumption in its analysis of the Expansion, Invenergy also offered an additional power purchase agreement term giving Xcel Energy the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[146]

~~145.~~146. Invenergy also offered in-service dates of June 1, 2018 and June 1, 2019 for the Hampton facilties. Further, as with its Expansion proposal, Invenergy offered to grant Xcel Energy the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[147]

X. The Department's Proposed Corrections to Calpine's Bid

~~146.~~147. The Department adjusted Calpine's bid to reflect a summer-time decrease in capacity. Many natural gas-fired units have a lower capacity in summer than in winter for accreditation and energy production purposes.[148]

~~147.~~148. Using Calpine's estimate of summer and winter capacities, and the rating factors from other recently-added generation units – including Blue Lake 7, Blue

[141] Ex. 65 at 20 (Ewan Direct).

[142] Ex. 26 at 8-9 (Invenergy Hampton Proposal).

[143] Ex. 26 at 4 (Invenergy Hampton Proposal).

[144] Ex. 69 at 4 (Ewan Rebuttal); Trade Secret Ex. 87 attachment SR-R-9 at 3-4 (Rakow Rebuttal).

[145] *See*, Ex. 65 at 32 (Ewan Direct).

[146] Ex. 69 at 17 (Ewan Rebuttal).

[147] Ex. 69 at 4 and 17 (Ewan Rebuttal); Trade Secret Ex. 87 attachment SR-R-9 at 3-4 (Rakow Rebuttal).

[148] Ex. 83 at 7 (Rakow Direct).

Lake 8, Angus Anson 4, and Calpine's existing unit at the Mankato Energy Center – the Department added a deration pattern for the proposed Calpine unit. Further, a summer-time capacity deration was included in the inputs of each offeror that proposed a thermal unit.[149]

~~148.~~149. Calpine's response to discovery included an updated cost estimate for facilities upgrades that would be necessary in the event that Calpine's proposal was selected. It estimated those costs 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 facilities costs in its Strategist analysis. Specifically, Dr. Rakow levelized the $1.5 million cost using the most recent levelized annual revenue requirement (LARR) data available – a revenue requirement amount of 12.17 percent. With this adjustment, the Department converted the proposed up-front capital costs into a stream of level payments over a period of years. It concluded that the capital costs have a discounted present value of approximately $1.55 million.[150]

~~149.~~150. The $1.55 million cost was reasonably included in a post-model Present Value Rate of Return (PVRR) adjustment for all scenarios and contingencies evaluating Calpine's proposal.[151]

~~150.~~151. Calpine suggested no corrections to Dr. Rakow's inputs, but did suggest separate treatment for fixed operation costs, maintenance costs and start charges. Dr. Rakow explained that he could not find a way to adequately model start changes as a variable cost. Thus, the Department retained the inputs as presented by Calpine.[152]

XI. The Department's Proposed Corrections to Geronimo's Bid

~~151.~~152. The Department assumed that if Geronimo's proposal was selected by the Commission, there would be no reduction in costs to meet the Solar Energy Standard (SES). For the purposes of its evaluation of proposals, the Department assumed that the added value of Geronimo's proposal as a SES-qualifying generation source was zero.[153]

~~152.~~153. The Department asserts that because Xcel's RFP did not call for SES- qualifying solutions, the value of this feature of Geronimo's proposal is zero.[154]

~~153.~~154. Notwithstanding the valuation conferred by the Department, the Solar Renewable Energy Credits (S-RECs) do have a separate market value, and this

[149] *Id.*

[150] The 12.17 percent LARR is the most recent estimate available. DOC Ex. 83 at 7 (Rakow Direct).

[151] Ex. 83 at 7-8 (Rakow Direct).

[152] Ex. 83 at 6 (Rakow Direct).

[153] Ex. 83 at 8-11 (Rakow Direct); Hearing Transcript, Vol. 2 at 145.

[154] Ex. 83 at 10-11 (Rakow Direct).

value is more than zero. S-RECs are sold in other states at prices between $13/S-REC to more than $200/S-REC.[155]

~~154.~~155. At a price of $5 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $10 million annually. At a price of $20 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $38 million annually.[156]

~~155.~~156. If Geronimo's proposal is selected by the Commission, Xcel Energy will use the solar energy generated by the project to meet the requirements of Minnesota Solar Energy Standard.[157]

~~156.~~157. Expressing doubt as to the commercial maturity of solar projects, Dr. Rakow and the Department urge the Commission to host a follow-on procurement that is limited to solar energy generation sources.[158]

XII. The Department's Proposed Corrections to GRE's Bid

~~157.~~158. 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. Following this review he agreed that there had been a series of faulty inputs. The Department revised and updated the cost inputs.[159]

XIII. The Department's Proposed Corrections to Invenergy's Bid

~~158.~~159. Invenergy suggested three corrections to the Department's Strategist analysis. First, the company noted that its Hampton Center proposal price was incorrect on the input spreadsheet and the Department corrected this input.[160]

~~159.~~160. Second, Invenergy stated that the data sent by the Department assumed a $4/MMBtu natural gas price, when, in fact, the natural gas costs used in the Strategist runs were above $6/MMBtu. Although Invenergy was correct as to the discrepancy, the error did not impact Invenergy more than other bidders' proposals. This is because within the Department's model, the price of natural gas was a background assumption that permitted comparison of the inputs and outputs of all Bidders' proposals.[161]

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155 Ex. 59 at 18-19 (Engelking Rebuttal).

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

157 Hearing Transcript, Vol. 1 at 137.

158 Ex. 83 at 12-13 (Rakow Direct).

159 Ex. 83 at 14 (Rakow Direct).

160 *Id*.

161 *Id*.

~~160.~~161. Third, Invenergy was unable to replicate the emissions values developed by the Department. Dr. Rakow further 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 ~~u~~Unit 6 by the emissions input provided by Xcel Energy in its Strategist input worksheet. Moreover, he undertook a similar calculation with Invenergy's data. He then compared these sums to 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 NO_x, PM_{10}, and CO the difference was about one percent.[162]

~~161.~~162. The Department determined that the differences were very close such that Strategist accurately reflected the inputs provided by the bidders.[163]

XIV. The Department's Proposed Corrections to Xcel's Bid

~~162.~~163. Xcel Energy provided a spreadsheet that corrected the base year revenue requirements (capital cost) inputs for its proposals. Dr. Rakow revised Xcel Energy'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 Red River Units 1 and 2.[164]

XV. Strategist Model and the Forecasts of Future Needs

~~163.~~164. On behalf of the Department, Dr. Rakow conducted a series of analyses using Strategist modeling software. Strategist is a "capacity expansion model." It determines the set of resources that are the least cost method to meet increases in demand in the future.[165]

~~164.~~165. The Department's Strategist analysis began with inputs from Xcel Energy's fall 2011 sales forecast.[166]

~~165.~~166. Since 2011, however, Xcel Energy has produced additional forecasts; including its spring 2013 forecast.[167]

~~166.~~167. In its spring 2013 forecast, Xcel Energy predicts that its customers will use less energy and capacity in the initial years compared to the fall 2011 forecast. In future years, Xcel Energy predicts that customers will continue to use less energy while making higher demands on Xcel Energy's peak compared to the fall 2011

[162] *Id*. at 14-15.

[163] *Id*.

[164] *Id*. at 15.

[165] *Id*. at 5 and 14, n.4.

[166] Ex. 76 at 14 (Shah Direct).

[167] *Id*. at 3-7.

forecast.[168]

~~167.~~168. Xcel Energy forecasts a significant decrease in the overall load factor of its system.[169]

~~168.~~169. The Department has not verified the accuracy of Xcel Energy's spring 2013 sales forecast. However, the Department analysis does include sales levels that are even lower than Xcel Energy's spring 2013 sales forecast.[170]

~~169.~~170. The Department included in its analysis different assumptions regarding the amount of capacity that is reserved to serve load during periods of peak demand on the electrical system. On the Department's behalf, 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.[171]

~~170.~~171. The new MISO method is likely to have a significant effect on the amount of reserve capacity that MISO may require of Xcel Energy in future years. This amount is likely to be much lower than the reserves required in 2011.[172]

~~171.~~172. The Department is continuing to evaluate how MISO's changing methods may impact Minnesota's resource planning.[173]

~~172.~~173. Xcel's peak reliability method (also known as "non-coincident peak" method) refers to the reliability method used during the analysis of Xcel Energy's last Commission-approved resource plan – the 2010 IRP. Under this method a 3.79 percent reserve ratio was added to Xcel Energy's forecast of the Company's peak demand – the peak demand that is non-coincident with any other entity's peak. With this capacity target in mind, the Strategist modeling software added resources until Xcel Energy had sufficient capacity to cover both the Company's peak demand forecast and the required reserves.[174]

~~173.~~174. This was the method used by MISO for the June 2012 to May 2013 planning year. It is also the method used by Xcel Energy in its most recent resource plan.[175]

~~174.~~175. The term "MISO coincident peak" refers to a new reliability method

[168] *Id*. at 8-10.

[169] *Id*. at 10.

[170] Hearing Transcript, Vol. 2 at 14 and 32-33; Ex. 76 at 7-13 (Shah Direct); Ex. 78 at 4 (Shah Rebuttal).

[171] Ex. 83 at 22-25 (Rakow Direct).

[172] *Id*. at 23 n.11 and 27.

[173] *Id*. at 23 n.11.

[174] *Id*. at 22-23.

[175] *Id*. at 22.

to be used by MISO for the June 2013 to May 2014 planning year. This reliability method requires that a 6.2 percent reserve ratio be added to Xcel Energy's forecast of its demand at the time of (or coincident with) the MISO system peak.[176]

~~175.~~176. The new reliability method recognizes that the peak demand on Xcel Energy's system may occur on different days, or at different hours on the same day, as the peak demand on the MISO system.[177]

~~176.~~177. 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. For example, if Xcel Energy's peak demand is 100x, but the demand on its system is only 90x at the time that the broader MISO system hits its peak, the diversity factor between the two systems would be the difference between 100 and 90: 10 percent.[178]

~~177.~~178. The Department is not able to accurately forecast the amount of reserves that will be required under the new MISO requirements. For instance, it is not clear which diversity factor should be applied to discount non-coincident peak demand. There are several different alternatives that one may apply. Likewise, it is not clear to what extent demand side management (DSM) measures will reduce Xcel Energy's non-coincident peak demand. Xcel Energy's Saver's Switch air conditioning interruption program, for example, can reduce hour-by-hour demand for energy by approximately 100 MW.[179]

~~178.~~179. The forecasted amount of Xcel Energy's needs varies depending upon whether one uses the previous reliability calculation method or MISO's new method. Moreover, the difference in forecasts is substantial. When the new MISO method of calculating reserves is used, there is a reduction in net peak demand of between about 275 MW and 290 MW each year.[180]

~~179.~~180. Both the Department and Xcel Energy only evaluated combinations of energy plants that produced 300 MW by 2019.[181]

~~180.~~181. The identified need was just larger than Calpine's Mankato facility rated summer capacity of 278 MW.[182]

~~181. The minimum quantity was also more than 11 times Xcel's most-recent~~

[176] *Id*. at 22-23.

[177] *See generally, Id*. at 23-24.

[178] *Id*. at 23 and n.12.

[179] *Id*. at 24-25.

[180] *Id.*

[181] Ex. 46 at 25-27 (Wishart Direct); Ex. 83 at 26 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal).

[182] Ex. 46 at 2 and 16 (Wishart Direct).

~~projection of need for 2019 – 26 MW.[183]~~

182. As configured by the Department and Xcel Energy, when the Strategist model identifies a shortfall in generation, even as small as 1 or 2 MW, the model selects the next full plant to meet the added need. The selection of an additional plant is undertaken even if the added plant capacity is many times the remaining shortfall.[184]

XVI. Strategist Base Case Development

183. To develop a "no build" or base case for Strategist the Department updated its most recent Strategist analysis of Xcel Energy's system as follows:

a. Re-established Xcel Energy's CT and combined cycle (CC) optional expansion units in the years 2027 and beyond;

b. Eliminated the optional wind expansion units.

c. Re-established Xcel Energy'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.

d. Established the new fuel and associated inflation rates required for Xcel Energy's proposed North Dakota units.

e. Removed the Goodhue Wind unit from Xcel Energy's generation portfolio because the wind farm will not be built.

f. Updated the inputs for the LS Power (Cottage Grove) combined cycle unit in accordance with Xcel Energy's 2013 database, as provided in DOC Information Request No. 1.

g. 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 Energy's 2013 database.

h. Updated the wholesale market price inputs per XcelEnergy's 2013 database.

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

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

k. Added about 290 MW nameplate capacity, 200 MW accredited capacity, and 490 GWh of solar energy by 2020 to meet the SES.

~~183 *Id. at* 10.~~

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

l. 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).

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

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

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

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

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

r. Updated the wholesale energy market costs per Xcel Energy's 2013 database.[185]

184. Xcel Energy's 2011 and 2013 databases have the same number of wind expansion units through 2019, after which the "2013 database" has one, two or three additional wind expansion units each year. Dr. Rakow concluded the small number of additional units, at that distance in the future, did not impact the overall analysis.[186]

XVII. Using Generic Credits to Equalize Proposals for Evaluation

185. To affect comparisons between proposals of very different sizes, the Department added generic energy units to its modeling of particular bid packages so as to compare the life-cycle costs of a common package across bidders. The price of a generic unit was based upon the estimate current cost to construct a particular type of energy generation unit, escalated over time for inflation.[187]

186. In this case, Xcel Energy used internal information that it had as to plant costs to develop a price for generic gas units.[188]

187. Xcel Energy likewise developed a price for generic units of solar energy. In

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[185] Ex. 83 at 17-19 (Rakow Direct); *see also,* Ex. 84 SR-2 (Rakow Direct Attachments); *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 (July 26, 2013).

[186] Ex. 83 at 17-18 (Rakow Direct).

[187] *See, e.g.,* Hearing Transcript, Vol. 1 at 109-110.

[188] Hearing Transcript, Vol. 1 at 110.

this instance, however, Xcel Energy did not have internal cost or pricing information available. Instead, Xcel Energy drew upon bidding information for solar projects in other jurisdictions and adjusted those figures "to reflect what we thought the cost in Minnesota specifically would be."[189]

188. Both Xcel Energy and the Department used the same base assumptions with respect to the cost of generic gas and solar units.[190]

189. There are risks associated with adding generic units to proposals during the evaluation process. Smaller proposals rely more upon generic units to account for the stated capacity needs than proposals with larger capacities. Accordingly, if the generic units are more expensive than an offeror's proposal price, adding these expensive units to the model works to the disadvantage of the smaller packages. Larger proposals will tend to look cheaper in a Strategist modeling of outcomes than smaller packages that include generic units.[191]

190. The generic gas unit price that Xcel Energy developed was higher than the prices of the gas plant expansion~~s~~ bids in this docket. The reason for this is that the generic gas units were based on new greenfield construction which assumes all the associated infrastructure for the units must be developed and constructed. By contrast, Black Dog Unit 6 and Calpine's Mankato and Invenergy's Cannon Falls expansions are brownfield projects that do not require all new infrastructure, and are therefore less costly than a greenfield unit. As a result, each of these gas proposals ~~bid in this proceeding~~ was comparably less expensive than the generic units~~; a fact that benefited the gas proposals during the evaluation process~~.[192]

191. The generic solar unit price that Xcel Energy developed was lower than the prices of the solar plant bid in this docket. The pricing of the generic solar unit was based upon competitive bidding information and represented a reasonable estimate of what the cost of solar capacity in Minnesota would be. As a result, Geronimo's proposal was evaluated as comparably more expensive than the generic units~~; a fact that disadvantaged its proposal during the evaluation process~~.[193]

XVIII. Evaluating Interconnection Costs and Savings

192. The Department reviewed the costs associated with interconnecting the proposed projects to the transmission system, including the potential for curtailment or congestion charges.[194]

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[189] *Id.*

[190] Ex. 59 (Engelking Rebuttal, Schedule EME-3).

[191] Ex. 83 at 29-32 (Rakow Direct).

[192] Ex. 83 at 30 (Rakow Direct).

[193] Ex. 46 at 36 (Wishart Direct); Ex. 59 (Engelking Rebuttal, Schedule EME-3); Ex. 83 at 30 (Rakow Direct); Hearing Transcript, Vol. 1 at 110.

[194] Hearing Transcript, Vol. 2 at 39 (Shaw).

193. Xcel Energy stated that it does not expect any of the bid proposals to have significant congestion charges and, thus, the Department did not add congestion charges to its Strategist analysis.[195]

194. The offerors do treat interconnection costs, including potential network upgrade costs, in very different ways.[196]

195. Concerned that Xcel Energy and Invenergy expected ratepayers to cover interconnection costs, the Department notified offerors that it would oppose efforts to recover from ratepayers costs that were not included in their respective proposals.[197]

196. Calpine responded to the Department's notice 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."[198]

197. Dr. Rakow included a $1,550,000 upgrade cost in the Strategist analysis for Calpine's Mankato proposal.[199]

198. Invenergy included $7 million for interconnection costs in its Cannon Falls proposal, but identified a formula to calculate increases or decreases to that amount.[200]

199. Invenergy failed to show the reasonableness of its suggestion that unknown costs be shifted to ratepayers following the Commission's selection of proposals.[201]

200. Xcel Energy proposes ~~to pass extra costs on to ratepayers through a rider to its tariff~~that all costs of its proposal be recovered through a rate rider mechanism that provides an incentive to keep costs low.[202]

201. To the extent that Xcel Energy's proposal permits it to avoid submitting firm pricing for interconnection costs, its rate rider mechanism will ensure that ratepayers are protected by reducing the return on equity to reflect the impact of any costs in excess of its proposal to the benefit of ratepayers ~~is prejudicial to ratepayers and other~~

[195] Ex. 79 at 5 (Shaw Direct).

[196] *Id. at* 2-4.

[197] Ex. 79 at 2-4 (Shaw Direct); Ex. 82 at 4 (Shaw Rebuttal); Ex 83 at 7-8 (Rakow Direct).

[198] Ex. 79 at 4 (Shaw Direct).

[199] Ex. 83 at 7 (Rakow Direct).

[200] Ex. 79 at 3-4 (Shaw Direct).

[201] *Id*.

[202] ~~Ex. 82 at 1-3 (Shaw Rebuttal).~~Ex. 49 at 5 (Alders Direct).

~~offerors~~.[203]

202. By locating the distributed sites in close proximity to load centers, Geronimo's proposal will reduce transmission line losses that occur whenever energy is transmitted across the wires and transformers of an electric system.[204]

203. Based upon demand loss factors by voltage level, Geronimo's proposal will result in a four percent reduction in transmission line losses. This reduction results in a PVSC savings of approximately $9 million.[205]

204. Xcel Energy acknowledges that, if accepted, Geronimo's proposal will result in a reduction in transmission losses ~~and that those avoided transmission line losses are not captured in either Xcel's or the Department's models~~.~~[206]~~ However, the $10 million PVSC reduction that Xcel Energy calculated for the line loss savings does not make up for the project's $34 million PVSC premium over the least cost plans identified by Strategist.[207]

~~205. By selecting sites that will be interconnected on the distribution system, Geronimo's dispatching of energy has the potential to reduce peak loading on Xcel's transmission system. These reductions make existing transmission capacity available to meet future needs and permit Xcel to avoid costs to expand its transmission system in the future.[208]~~

~~206. Using MISO's rate for network integration service on Xcel's system, the avoided transmission capacity benefits associated with Geronimo's proposal is approximately $3.24 million each year.[209]~~

~~207. Neither the Department nor Xcel evaluated the benefits of avoiding additional transmission capacity costs.[210]~~

~~208. These savings reduce the PVSC for Geronimo's project by $33 million.[211]~~

XIX. The Department's Strategist Analysis

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203 *Id*. at 6.

204 Ex. 62 at 4 (Skarbakka Direct).

205 Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).

~~206 Ex. 46 at 35 (Wishart Direct).~~

207 Ex. 46 at 35 (Wishart Direct).

~~208 *See,* Ex. 13 at 9-12 (Geronimo Proposal).~~

~~209 Ex. 61 at 9 (Beach Rebuttal)~~[omitted].

~~210 *Id. at 7.*~~*[omitted].*

~~211 *Id.*; Ex. 59 at 20 (Engelking Rebuttal).~~[omitted].

~~209.~~205. Each Bidder completed the Strategist template data form that is available on Xcel's website and forwarded the completed templates to the Department. Then, Dr. Rakow either entered this data directly into Strategist or calculated the required inputs from the Strategist template data to complete a series of computer models.[212]

~~210.~~206. From the computer runs that he completed, Dr. Rakow downloaded data as to how each proposal performed. Dr. Rakow then sent each offeror the data corresponding to its proposal. With these disclosures, offerors were able to review how their proposed solutions performed – in terms of cost, fuel consumption, pollutants emitted, and other factors – under a variety of different conditions.[213]

~~211.~~207. Dr. Rakow's Strategist analyses included a series of capacity and performance assumptions. For example, in one instance, Dr. Rakow programmed Strategist to add 100 MW of short term capacity (forced into the supply mix during June, July, and August) in both 2015 and 2016. Through this limitation, Strategist assessed 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.[214]

~~212.~~208. Additionally, Dr. Rakow analyzed proposal performance at different levels of forecasted need. For the "high forecast contingency," Dr. Rakow programmed Strategist to add 400 MW of short term capacity in 2015 and 500 MW in 2016. For the "mid-high forecast contingency," he obliged Strategist to add 100 MW of short term capacity in 2015 and 250 MW in 2016.[215]

~~213.~~209. During a "first round" of analyses, Dr. Rakow assessed all possible bid packages that were less than 700 MW in size. From this range of proposals, he created a "short list" of the bids or packages that, in his view, warranted more detailed economic analysis during a "second round" of analysis.[216]

~~214.~~210. From the results of the first round of its Strategist analysis, the Department selected seven packages for more detailed analysis:

1. BD617— Xcel Energy's Black Dog Unit 6, with an in-service date of 2017 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;

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[212] Ex. 83 at 5 (Rakow Direct); *see also,* Department's May 3, 2013 Comments, CN-12-1240.

[213] Ex. 83 at 5-6 (Rakow Direct).

[214] Ex. 83 at 37 (Rakow Direct).

[215] *Id.* at 37-38.

[216] *Id.* at 5.

4. BD619 CCC1 — Xcel Energy's Black Dog Unit 6, with an in-service date of 2019 and Calpine's CC Mankato Energy Center expansion proposal;
5. ICT1, BD618 — Invenergy Combustion Turbine proposal 1 (Cannon Falls) and Black Dog ~~u~~Unit 6 in-service by 2018;
6. ICT1 CCC1 — Invenergy Combustion Turbine proposal 1 (Cannon Falls) and Calpine's CC Mankato Energy Center expansion proposal; and
7. The Base Case — a no-build alternative.[217]

217. Dr. Rakow's first round of modeling revealed that Xcel Energy's Black Dog CT unit and Calpine's CC unit (number 4 in the listing immediately above) was the highest ranked proposal under all 24 scenarios.[218]

218. Xcel Energy also undertook analyses of proposals using Strategist modeling software. ~~The~~ Black Dog Unit 6 ~~unit~~ was the lowest-cost resource of the proposals that Xcel Energy reviewed and was a feature of each of the top 20 highest-rated plans in its modeling.[219]

219. Importantly, however, ~~the~~ Black Dog ~~6~~ Unit 6 is a large unit. To broaden and deepen the Department's analyses, Dr. Rakow analyzed the effects of deploying smaller energy solutions (and covering the deficits for a shorter period of time) and adjusting the proposed in-service dates of energy generation sources.[220]

220. For the base case in a second round of analysis, the Department used: (a) Xcel Energy's 2011 forecast of need; (b) a non-coincident peak reliability method; (c) the assumed acquisition 800 MW of wind; and (d) an accreditation factor for solar energy solutions of 72 percent.[221]

221. Against these assumptions, the Department tested a set of contingencies drawn from Xcel Energy's most recent resource plan. The resulting list of contingencies for the second round included:

- a statutory mandate on CO_2 reduction;
- use of the Commission's high and low CO_2 internal cost values;
- low externality values;
- high and low wholesale market prices (±25 percent);

[217] *Id.* at 35.

[218] *Id.* at 34.

[219] Ex. 46 at 19 (Wishart Direct); Hearing Transcript, Vol. 1 at 124.

[220] Ex. 83 at 36-37 (Rakow Direct).

[221] *Id.* at 36.

- 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);
- 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).[222]

222. Additionally, the Department ran each scenario and contingency a second time with the Commission's CO_2 internal cost and externality values removed.[223]

223. Following a second round of analyses, Dr. Rakow's Strategist modeling gave the highest rating to Calpine's proposal when combined with Xcel Energy's Black Dog Unit 6 (and a 2019 in-service date for the Black Dog unit). When combined, these units cover the capacity deficits through 2023; and, if demand is lower than was projected in 2011, perhaps much longer.[224]

224. During a "third round" of Strategist analyses, the Department included assumptions regarding interruptible natural gas supply and flexible in-service dates. The Department's earlier analyses had assumed the use of firm natural gas supplies for all offerors that proposed a thermal solution.[225]

225. Assuming use of a firm natural gas supply favored Calpine's Mankato project and Xcel Energy's Black Dog Unit 6 and disfavored Invenergy's proposal.[226]

226. The results of the third round of Department analyses identified three top performing packages:

a. Calpine's Mankato proposal with Black Dog Unit 6,

b. Calpine's Mankato proposal with Invenergy's Cannon Falls proposal, and

c. Invenergy's Cannon Falls proposal with Xcel Energy's Black Dog unit 6.[227]

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[222] *Id.* at 36-37.

[223] *Id.* at 37.

[224] Ex. 83 at 40 and 43 (Rakow Direct); Ex. 84 SR-5A (Rakow Direct Attachments).

[225] Ex. 86 at 4 (Rakow Rebuttal).

[226] *Id.* at 4-5.

[227] Ex. 86 at 12 (Rakow Rebuttal).

227. If the Department assumed both flexible in-service dates and the use of interruptible gas supplies, the cost of Invenergy's Cannon Falls proposal was significantly reduced.[228]

228. The Department recommended that PPA negotiations include consideration of firm and interruptible gas supply as well as flexible in-service dates. It recommended that such negotiations be limited to Xcel Energy, Calpine and Invenergy and that, based upon the results of these negotiations, two of three projects should be selected by the Commission.[229]

229. Dr. Rakow also concluded that Geronimo's solar energy proposal was "significantly below the top performing packages in terms of Strategist results."[230]

XX. Statutory and Regulatory Requirements for this Proceeding

230. While Minn. Stat. § 216B.2422, subd. 5 authorizes a utility to "select resources to meet its projected energy demand through a bidding process approved or established by the Commission," and to exempt selected proposals from the requirement to obtain a Certificate of Need, the Commission has decided to condition its approval powers in this case. In part, this is because Xcel Energy is both the public utility with a resource need and an offeror with a proposal of its own to meet that need. In this circumstance, the Commission decided that it will compare competing proposals against the ordinary Certificate of Need criteria.[231]

231. Minn. Stat. § 216B.243 provides that in assessing need, the Commission shall evaluate:

> (1) the accuracy of the long-range energy demand forecasts on which the necessity for the facility is based;
>
> (2) the effect of existing or possible energy conservation programs under sections 216C.05 to 216C.30 and this section or other federal or state legislation on long-term energy demand;
>
> (3) the relationship of the proposed facility to overall state energy needs, as described in the most recent state energy policy and conservation report prepared under section 216C.18, or, in the case of a high-voltage transmission line, the relationship of the proposed line to regional energy needs, as presented in the transmission plan submitted

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[228] Ex. 86 at 10-12 (Rakow Rebuttal); Ex. 88 at SR-R-11A (Rakow Rebuttal Attachments).

[229] Ex. 86 at 2, 15 and 21 (Rakow Rebuttal); Hearing Transcript, Vol. 2 at 50 (Rakow).

[230] Ex. 83 at 16 (Rakow Rebuttal).

[231] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 5 (June 21, 2013); Minn. Stat. § 216B.243, subd. 5.

under section 216B.2425;

(4) promotional activities that may have given rise to the demand for this facility;

(5) benefits of this facility, including its uses to protect or enhance environmental quality, and to increase reliability of energy supply in Minnesota and the region;

(6) possible alternatives for satisfying the energy demand or transmission needs including but not limited to potential for increased efficiency and upgrading of existing energy generation and transmission facilities, load-management programs, and distributed generation;

(7) the policies, rules, and regulations of other state and federal agencies and local governments;

(8) any feasible combination of energy conservation improvements, required under section 216B.241, that can (i) replace part or all of the energy to be provided by the proposed facility, and (ii) compete with it economically;

(9) with respect to a high-voltage transmission line, the benefits of enhanced regional reliability, access, or deliverability to the extent these factors improve the robustness of the transmission system or lower costs for electric consumers in Minnesota;

(10) whether the applicant or applicants are in compliance with applicable provisions of sections 216B.1691 and 216B.2425, subdivision 7, and have filed or will file by a date certain an application for certificate of need under this section or for certification as a priority electric transmission project under section 216B.2425 for any transmission facilities or upgrades identified under section 216B.2425, subdivision 7;

(11) whether the applicant has made the demonstrations required under subdivision 3a; and

(12) if the applicant is proposing a nonrenewable generating plant, the applicant's assessment of the risk of environmental costs and regulation on that proposed facility over the expected useful life of the plant, including a proposed means of allocating costs associated with that risk.[232]

232. Minn. R. 7849.0120 summarizes the statutory criteria found in Minn. Stat. § 216B.243 as follows:

(F) the probable result of denial would be an adverse effect upon

[232] Minn. Stat. § 216B.243, subd. 3.

> the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states … ;
>
> (G) a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record … ;
>
> (H) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health … ; and
>
> (I) the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.[233]

233. Importantly, however, Minn. Stat. § 216B.2422, subd. 4, places a limitation on the Commission's powers to confer a certificate of need. The statute provides that the Commission "shall not approve a . . . nonrenewable energy facility in an integrated resource plan or a certificate of need . . . unless the utility has demonstrated that a renewable energy facility is not in the public interest."[234]

234. Section 216B.2422, subd. 4 further provides that the determination of the public interest must include consideration of whether the resource plan helps the utility to achieve Minnesota's greenhouse gas reduction goals, renewable energy standard, or the solar energy standard.[235]

235. Minn. Stat. § 216B.2426 requires that the Commission ensure that "opportunities for the installation of distributed generation" are considered in resource planning and certificate of need proceedings.[236]

XXI. Impact upon Adequacy, Reliability or Efficiency of the Energy Supply

236. The first criterion under Minn. R. 7849.0120 is whether the proposed resource would have adverse effects upon the future adequacy, reliability, or efficiency of energy supply of the utility, its customers, or to the people of Minnesota and neighboring states.[237]

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[233] Minn. R. 7849.0120.

[234] Minn. Stat. § 216B.2422, subd. 4; *see also,* Minn. Stat. § 216B.243, subd. 3a.

[235] Minn. Stat. § 216B.2422, subd. 4.

[236] Minn. Stat. § 216B.2426.

[237] Minn. R. 7849.0120 (A).

237. Xcel Energy's needs for additional capacity are undergoing significant change because of three key factors: (1) lower overall demand; (2) the addition of between 72 and 200 MW of accredited capacity from solar resources, needed to meet Minnesota's Solar Energy Standard; and (3) new reserve margin requirements issued by MISO.[238]

238. Taking into account only the first two factors – lower overall demand and the new solar resource standard – Xcel Energy projects that it will have a generating capacity shortfall of 93 MW in 2017. This shortfall might conceivably grow to 307 MW by 2019.[239]

239. However, if MISO's reserve requirements are calculated on the basis of coincident peaks, as they are today, the projected deficit in generation capacity shrinks even further. If all three factors reducing the need for capacity are considered, Xcel Energy does not face a shortfall of generation capacity until 2019. Moreover, this deficit grows only by 26 MW by 2019.[240]

~~240. Generation from solar power sources is the greatest on sunny days during the summer. Xcel's peak demand for electricity most often occurs on sunny days during the summer.[241]~~

~~241. Geronimo's proposal includes features – such as tracking system technology, appropriately-sized modules, and distributed sites – to ensure that the project reliably delivers energy capacity.[242]~~

~~242. Geronimo proposes to generate energy from approximately 20 different locations across Xcel's service territory. These facilities will generate between 2 MW and 10 MW of electricity. Each site will be served by separate interconnection facilities.[243]~~

~~243. A distributed network of generation reduces the risk of outages at any particular point of the transmission system.[244]~~

~~244. A distributed network of generation reduces transmission line losses. This reduction results in a PVSC savings of approximately $9 million.[245]~~

[238] Ex. 46 at 7-8 (Wishart Direct); Ex. 83 at 19 (Rakow Direct).

[239] Ex. 46 at 7 and Table 2 (Wishart Direct).

[240] Ex. 46 at 8-10 and Table 4 (Wishart Direct).

~~[241] Ex. 60 at 12-13 and 15-16 (Beach Direct).~~

~~[242] Ex. 60 at 3-5 and 18-19 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).~~

~~[243] Ex. 57 at 9 (Engelking Direct).~~

~~[244] Ex. 62 at 3-4 (Skarbakka Direct).~~

~~[245] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).~~

~~245. Geronimo proposes an in-service date of December 2016, so as to ensure that its generation capacity would be available to meet any of Xcel's capacity needs in the summer of 2017.[246]~~

~~246. GRE proposes to sell capacity from its existing generators to Xcel.[247]~~

~~247. Those energy resources are fully integrated into the existing transmission system and dispatched by MISO within its energy market.[248]~~

~~248. Over the three-year period that includes 2017, 2018 and 2019, GRE's proposal is fully scalable. It will sell Xcel needed capacity for one, two or three years, as Xcel's reserve requirements become apparent.[249]~~

~~249.~~240. The most ~~efficient~~ appropriate solution in this circumstance is to select ~~scalable~~ projects that meet the potential range of Xcel Energy's ~~near-term~~ shortfalls (as described in Table 4 of Mr. Wishart's Direct Testimony) to ensure sufficient generating capacity to meet all reasonable scenarios~~and for the Commission to conduct a second procurement for needs which may occur after 2019~~.[250]

241. Since the identified need from 2017-2019 could reasonably be 300-500 MW based on this record, it is appropriate ~~It is not efficient~~ to procure one or more gas turbines ~~when the projected needs through 2019 are modest – and may be getting smaller~~with sufficient capacity to provide at least 300-500 MW of capacity in that timeframe.[251]

~~250.~~242. Because of the uncertainty surrounding Xcel Energy's need, however, it would be prudent for the Commission to obtain updated assessments of its 2017-2019 need in the fall of 2014 and 2015. This will enable the Commission to potentially delay or cancel any of the resources selected to meet Xcel Energy's need in the 2017-2019 time period if circumstances warrant doing so.[252]

XXII. The Most Reasonable and Prudent Alternative

243. The second criterion under Minn. R. 7849.0120 is whether a more reasonable and prudent alternative to the proposed facility has been demonstrated by a

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~~[246] Ex. 57 at 7 (Engelking Direct).~~

~~[247] Ex. 63 at 3 (Selander Direct).~~

~~[248] Ex. 63 at 3 (Selander Direct).~~

~~[249] Ex. 63 at 2-3 (Selander Direct); Ex. 64 at 3 (Selander Rebuttal).~~

[250] *See generally,* Ex. 46 at 7~~8~~-10, and Tables 2 and 4 (Wishart Direct); Ex. 78 at 4 (Shah Rebuttal).

[251] ~~*Id.*~~Ex. 46 at 10-11.

[252] Ex. 49 at 8-9 (Alders Direct); Ex. 46 at 11 and 44 (Wishart Direct); Ex. 86 at 7 (Rakow Rebuttal).

preponderance of the evidence on the record.[253]

~~251.~~244. Xcel Energy recommended that Black Dog Unit 6 in combination with Calpine's Mankato project or Invenergy's Cannon Falls project be ultimately selected by the Commission to meet Xcel Energy's range of potential need in the 2017-2019 timeframe.[254]

~~252.~~245. Xcel Energy recommended that the Commission direct both Calpine and Invenergy to move forward to the negotiation phase of these proceedings to finalize the terms and conditions of their respective PPAs. This will incentivize Calpine and Invenergy to provide their best terms, and allow the Commission to select the PPA that provides the greatest benefits to Xcel Energy's ratepayers.[255]

~~253.~~246. Xcel Energy also recommended that its Red River Valley Unit 1 serve as a contingency option in the event that both the Calpine and Invenergy PPAs do not move forward for any reason, since it was part of the third least cost plan identified by Strategist.[256]

~~254.~~247. Calpine recommended that its Mankato project be selected to meet Xcel Energy's need and be directed to engage in PPA negotiations with Xcel Energy.[257] Calpine opposed Invenergy's Cannon Falls project also being selected to proceed to the PPA negotiation phase on the grounds that it was not supported by the record.[258]

~~255.~~248. Invenergy recommended that both its Cannon Falls and Hampton Corners projects should be directed to engage in PPA negotiations with Xcel Energy to determine which in combination with Black Dog Unit 6 should meet Xcel's range of potential need.[259] Invenergy opposed Calpine's Mankato project also being selected to proceed to the PPA negotiation phase on the grounds that Xcel Energy currently has underutilized combined cycle plants on its system and therefore does not need another one.[260]

~~256.~~249. The Department recommended that Black Dog Unit 6 be selected to move forward, and that Xcel Energy pursue negotiations for a PPA with Invenergy's Cannon Falls and Calpine's Mankato projects.[261] The Department believed that if negative issues are identified with any of these three proposals, the Commission should

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[253] Minn. R. 7849.0120 (B).

[254] Ex. 46 at 23-24, 40-41 (Wishart Direct); Hearing Transcript, Vol. 1 at 124-125.

[255] Ex. 46 at 41-42 (Wishart Direct).

[256] *Id*. at 24, 41.

[257] Ex. 54 at 20-21 (Hibbard Rebuttal).

[258] Calpine Initial Brief at 31-32.

[259] Ex. 69 at 20 (Ewan Rebuttal).

[260] *Id*. at 19.

[261] Ex. 86 at 15 (Rakow Rebuttal); Hearing Transcript, Vol. 2 at 49-50.

then select the other two proposals.[262]

~~257.~~250. The Department agreed with Xcel Energy that it is important for multiple projects to proceed to PPA negotiations, as long as the projects are reasonably close in economic performance, to maintain competitive pressures on all of the proposed vendors and to protect ratepayers.[263]

251. Additionally, the Department recommended that the Commission consider requiring Xcel Energy to issue an all solar RFP in consideration with other information that is known in the context of Xcel Energy's next Integrated Resource Plan.[264]

~~258.~~252. Both the Department and Xcel Energy recommended that the negotiation process focus on arriving at a prudent and reasonable PPA that reflects the economic, operational, and reliability terms contained in the successful bid(s).[265] If the parties should reach an impasse during the negotiations, they would bring the issue(s) causing the impasse back to the Commission for direction on how to proceed.[266]

~~259.~~253. In addition, the Department recommended that any PPA brought to the Commission for approval should not only have pricing terms consistent with the prices that were used to evaluate the bid, but also should include appropriate ratepayer protections.[267] These protections should be similar to the protections typically included in proposed PPAs such as the security fund, appropriate milestones, and well-defined events of defaults and remedies, among other provisions.[268] The Department also recommended that the use of interruptible gas be discussed during negotiations with Invenergy.[269]

~~260.~~254. In addition, Xcel Energy recommended that the Commission direct that the PPA negotiations address delay and cancellation options so that the Commission would have the flexibility to delay or cancel implementation of a selected resource in the event changed circumstances warranted doing so.[270] Xcel Energy also recommended that the PPA negotiations address security fund, CO_2 emission costs and allowances, and capital lease accounting issues.[271]

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[262] Ex. 86 at 15 (Rakow Rebuttal).

[263] *Id.*

[264] Ex. 83 at 43 (Rakow Direct).

[265] Ex. 46 at 45 (Wishart Direct); Ex. 82 at 4 (Shaw Rebuttal).

[266] Ex. 46 at 45 (Wishart Direct).

[267] Ex. 82 at 4-5 (Shaw Rebuttal).

[268] *Id.*

[269] Ex. 86 at 12 (Rakow Rebuttal).

[270] Ex. 49 at 8 (Alders Direct).

[271] Ex. 46 at 47-49 (Wishart Direct).

255. Xcel Energy anticipates that the resulting PPAs will include the potential for cost reimbursement to the selected vendor(s) in the event that a selected project was delayed or cancelled, and upon Commission approval of those terms, all costs reasonably incurred under the PPA would be borne by Xcel's customers.[272]

~~261.~~

~~262.~~

256. The above findings of fact on the record evidence support the following resource selections and directives in conducting the resulting PPA negotiations:

- Black Dog Unit 6 should be selected first to meet a portion of Xcel Energy's potential range of capacity need because it is the lowest cost resource option. Black Dog 6 is the most appropriate resource with the optimum flexibility for meeting the need that emerges in the 2017-2019 timeframe. The in-service date of Black Dog Unit 6 should be flexible and determined in conjunction with the PPA negotiations with the other selected project(s).

- Both Invenergy's Cannon Falls and Calpine's Mankato are reasonably close in economic performance in the Strategist modeling. Because either Invenergy's Cannon Falls or Calpine's Mankato expansion project could emerge from PPA negotiations as the better option to meet Xcel Energy's need in combination with Black Dog Unit 6, both of these projects should proceed to the PPA negotiation stage of this proceeding.

- PPA negotiations should address important commercial issues such as (i) schedule; (ii) performance security; (iii) environmental considerations; (iv) gas supply considerations; (v) accounting considerations; (vi) delay and cancellation options, as well as (vii) all of the other PPA negotiation issues identified in the findings of this section.

- At the end of the negotiations, the Commission should select the PPA that offers the best value, security, and flexibility in conjunction with Black Dog Unit 6.

- The Red River Valley Unit 1 proposal should be held in reserve in the event that the PPAs negotiated for Invenergy's Cannon Falls and Calpine's Mankato projects are unacceptable to the Commission.

~~263. Xcel asserts that the least-cost plan that includes the Geronimo proposal is a package that combines Invenergy's Cannon Falls Facility and the Geronimo proposal, with in-service dates for each in 2016, with Black Dog Unit 6 joining the group in 2019. Xcel calculates the PVSC for this combination as $34 million higher than its least-cost plan.~~[273]

[272] *Id.*

[273] ~~Ex. 46 at 34-35 (Wishart Direct).~~

~~264. In this circumstance, a levelized cost of electricity (LCOE) points to a better prediction of costs and impacts to ratepayers.~~[274]

~~265. LCOE represents the net present value of the expected annual costs – including variable and fixed operations and maintenance costs, capital costs and the return on investment – divided by annual generation over the term of the proposal.~~[275]

~~266. When one accounts for avoided energy costs, avoided capacity costs, avoided transmission costs, the impact of emissions and the cost to Xcel from transmission line losses, the benefits of Geronimo's proposal amounts to a savings of $46 million of net present value of societal costs.~~[276]

~~267. Geronimo's proposal likewise manages future risk. Because its facilities create energy from sunlight, Geronimo's solution poses no risk of higher fuel costs in the future.~~[277]

~~268. On a per MWh basis, a solar unit is also the lowest cost standalone resource.~~[278]

~~269. 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.~~[279]

~~270. Combining Geronimo's proposal with GRE's proposal, represents the most reasonable and prudent alternative to meet Xcel's near-term needs.~~[280]

~~271. It is not reasonable and prudent to procure one or more gas turbines, when the projected needs through 2019 are modest – and may be getting smaller.~~[281]

~~272. If gas turbines are needed to meet larger, forecasted needs after 2019,~~

~~274 *See generally,* Ex. 52 at 7 (Hibbard Direct).~~

~~275 Ex. 52 at 6 (Hibbard Direct).~~

~~276 Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 59 at 18-19 (Engelking Direct); Ex. 58 at 18 (Engelking Rebuttal); Ex. 61 at 7 (Beach Rebuttal).~~

~~277 Ex. 13 at 19 (Distributed Solar Energy Proposal).~~

~~278 *See,* Ex. 74 at 7 (Norman Rebuttal).~~

~~279 *See generally,* Ex. 46 at 8-10 and Table 4 (Wishart Direct).~~

~~280 *See,* Section XXII.~~

~~281 *Id.*~~

~~these turbines can be constructed and placed into service within 21 months of a need determination by the Commission.[282]~~

~~273. The Department's Strategist analysis does not lead to identification of a more reasonable alternative than acceptance of Geronimo's proposal – particularly when it is combined with acceptance of GRE's capacity offer.[283]~~

~~274. A reasonable and prudent purchaser of energy resources would not have assumed that the value of an SES-qualifying generation source was zero.[284]~~

~~275. A reasonable and prudent purchaser of energy resources would not have assumed that the value of avoiding transmission line losses was zero.[285]~~

~~276. A reasonable and prudent purchaser of energy resources, for Xcel's stated needs, would not have relied upon Xcel's Fall 2011 sales forecast alone.[286]~~

~~277. A reasonable and prudent purchaser of energy resources, for Xcel's stated needs, would not have limited the evaluation to energy plants that produced 300 MW by 2019.[287]~~

~~278. A reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs when other, reasonably-priced and scalable alternatives exist.[288]~~

XXIII. Compatibility with Our Socioeconomic and Natural Environments

~~279.~~257. The third criterion under Minn. R. 7849.0120 is whether the proposed resource will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health.[289]

~~280. Geronimo's proposal will benefit society in ways that are consistent with the natural environment. Importantly, the construction and operation of Geronimo's~~

~~[282] Ex. 38 at 6 (Environmental Report); *see also,* Ex. 70 attachment 1 at 8 (Shield Direct).~~

~~[283] *See,* Section XXII.~~

~~[284] *Compare,* Ex. 83 at 8-10 (Rakow Direct); Hearing Transcript, Vol. 1 at 145 with Ex. 59 at 18-19 (Engelking Rebuttal).~~

~~[285] *See generally,* Ex. 46 at 35 (Wishart Direct); Hearing Transcript, Vol. 2 at 45.~~

~~[286] Hearing Transcript - Vol. 2 at 30.~~

~~[287] *Compare*, Ex. 46 at 25-27 (Wishart Direct); Ex. 83 at 26 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal); Hearing Transcript - Vol. 2 at 29-30 with Ex. 46 at 10 (Wishart Direct).~~

~~[288] *See generally,* Hearing Transcript, Vol. 1 at 126-27.~~

[289] Minn. R. 7849.0120 (C).

~~Proposal will not generate carbon dioxide (CO2) or "criteria pollutants."~~[290]

~~281.~~258. ~~Criteria pollutants include sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), lead (Pb), and particulate matter (PM).~~Each of the natural gas proposals is required to operate within the limits prescribed by their applicable permits. Based on the record in this proceeding, Black Dog Unit 6 and the Cannon Falls and Mankato expansion projects will operate within the requirements of their permits.

259. Each of the build proposals would result in creation of jobs for construction of and operation of their respective projects. Each would contribute to the State's economy. None of the proposals provides a significant benefit compared to the others as it pertains to the socioeconomic factors.

260. Another socioeconomic question is whether Minnesota's statutory preferences for renewable energy require Geronimo's project to be selected rather than Black Dog Unit 6, Cannon Falls, or Mankato. Minn. Stat. § 216B.243, subd. 3a calls for the Commission in a certificate of need proceeding to consider whether Xcel Energy has "explored the possibility of generating power by means of renewable energy resources and has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source." Thus to be favored over a nonrenewable resource Geronimo's solar generation proposal had must be a least-cost alternative. The record demonstrates that Geronimo is not the least cost resource in comparison to Black Dog Unit 6, Calpine's Mankato project, and Invenergy's Cannon Falls project.[291]

261. In addition, Minn. Stat. § 216B.2422, subd. 4 provides that the Commission shall not approve a nonrenewable resource unless Xcel Energy demonstrates that a renewable resource is not in the public interest. Under the SES, Xcel Energy is required to add approximately 290 MW of solar generation to its system by 2020, and the record evidence indicates that Geronimo's 100 MW solar proposal is priced above the market for other solar resources..[292] It would contrary to the public interest to nevertheless select Geronimo's 100 MW solar proposal to meet one third of Xcel Energy's obligations under SES when there is no evidentiary support for a finding that the proposal is cost-effective in comparison to other solar options that could meet the requirements of the mandate.[293]

~~282.~~ [294]

~~283. Sulfur dioxide causes acid rain and human respiratory illness. Nitrogen oxides are greenhouse gases that cause ozone and related respiratory illnesses. Carbon monoxide is a colorless, toxic gas produced by incomplete burning of carbon-~~

[290] ~~Ex. 38 at 38 (Environmental Report).~~

[291] Ex. 46 at 25, 33-35 (Wishart Direct); Ex. 48 at 25-26 (Wishart Rebuttal); Ex. 83 at 13 (Rakow Direct).

[292] Ex. 46 at 22 (Wishart Direct); Hearing Transcript, Vol. 1 at 110.

[293] Ex. 46 (Wishart Direct) at 36; Ex. 83 (Rakow Direct) at 11.

[294] ~~*Id. at* 34.~~

~~based fuels and reduces the blood's ability to provide sufficient oxygen to the body. Lead is a metal that is known to have adverse health impacts on the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system. Inhalation of particulate matter causes and contributes to human respiratory illness.~~[295]

~~284. Geronimo's facilities will not produce emissions of hazardous air pollutants (HAPs) or volatile organic compounds (VOCs). Both HAPs and VOCs are known or suspected of causing cancer and other serious health effects.~~[296]

~~285. Because Geronimo's facilities will not produce air emissions, their offsetting impacts will result in an annual reduction of 94,133 tons of CO2, 115.98 tons of CO, 63.26 tons of NOx, 27.08 tons of PM10, 3.44 tons of VOCs, and 10.48 tons of SO2.~~[297]

~~286. By contrast, each of the gas-powered turbines proposed in this proceeding produces criteria pollutants and CO2 during the combustion of natural gas.~~[298]

~~287. Geronimo's proposed solution will have minimal impacts on the environment. Specifically, Geronimo's facilities will not require water for power generation or discharge wastewater containing heat and chemicals during their operation.~~[299]

~~288. Geronimo's proposal will produce numerous socioeconomic benefits. In particular, the construction phase of Geronimo's project will include approximately 500 jobs, dispersed in work crews of between 13 and 40 members each. Further, operation and maintenance of its power generation facilities will require up to 10 permanent positions.~~[300]

~~289. The wages and salaries from these jobs will contribute to the total personal income in the region and state.~~[301]

~~290. Project-related expenditures for materials, equipment, operating supplies and services will benefit businesses located in the host counties and the state. Additionally, landowners who host solar panels or other project facilities will receive annual land payments.~~[302]

~~[295] *Id.*~~

~~[296] *Id.* at 39.~~

~~[297] Ex. 13 at 24 (Distributed Solar Energy Proposal).~~

~~[298] *Id.*, at 2.~~

~~[299] *Id.* at 23-25 and 32-33.~~

~~[300] Ex. 38 at 31-33 (Environmental Report).~~

~~[301] Ex. 13 at 32-33 (Distributed Solar Energy Proposal).~~

~~[302] *Id.*~~

~~291. Selection of Geronimo's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.[303]~~

~~292. GREs emission levels will be the same whether it effects a sale of capacity credits to Xcel or not.[304]~~

~~293. If added capacity is needed beyond 71 MW, selection of GRE's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.[305]~~

XXIV. Future Compliance with Applicable Law

262. The fourth criterion under Minn. R. 7849.0120 is whether the proposed resource will comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.[306]

~~294.~~263. All of the proposals in this record will comply with relevant policies, rules and regulations of other state and federal agencies and local governments. This criteria does not provide an advantage to any of the proposals.[307]

~~295. Among the proposals in this proceeding, Geronimo's solution best supports Minnesota's move to reduce greenhouse gas emissions across all emission- producing sectors. Minnesota has committed itself to move "to a level at least 15 percent below 2005 levels by 2015, to a level at least 30 percent below 2005 levels by 2025, and to a level at least 80 percent below 2005 levels by 2050." Geronimo's project will not produce greenhouse-gas emissions of its own, and (based on an average system mix needed to generate energy) avoids 94,133 tons of CO2 emissions each year.[308]~~

~~296. If the Commission selects Geronimo's proposal, Xcel will use the solar energy produced by the project to meet its requirements under the SES.[309]~~

~~297. Geronimo's project will provide approximately 200,000 MWh annually and will make an early and substantial step towards compliance with the new standards.[310]~~

~~[303] *See*, Section XXIII.~~

~~[304] Ex. 63 at 3 (Selander Direct).~~

~~[305] *See*, Section XXIII.~~

[306] Minn. R. 7849.0120 (D).

[307] *See generally* Ex. 38 at Sections 6 and 7 (Environmental Report).

~~[308] Minn. Stat. § 216H.02, subd. 1; Ex. 13 at 24 (Distributed Solar Energy Proposal).~~

~~[309] Ex. 46 at 18 (Wishart Direct); Hearing Transcript, Vol. 1 at 137:4-8.~~

~~[310] Ex. 57 at 8 (Engelking Direct).~~

~~298. Power plants represent the single largest source of industrial greenhouse gas emissions in the United States and account for approximately 40 percent of all U.S. anthropogenic CO2 emissions.~~[311]

~~299. The EPA has proposed a Carbon Pollution Standard for New Power Plants. EPA's proposed standard would set uniform national limits on the amount of carbon pollution new power plants can emit. EPA's proposed standards apply to fossil- fuel-fired boilers, integrated gasification combined cycle (IGCC) units and stationary combined cycle turbine units that generate electricity for sale and are larger than 25 MW. The proposed standards would require covered units to achieve an emission rate of 1000 pounds of CO2 per megawatt hour.~~[312]

~~300. Because Geronimo's proposed facilities do not produce CO2 emissions, they pose few risks of higher future costs from more intensive regulation of carbon pollution.~~[313]

~~301. Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.~~

Based on the foregoing Findings of Fact, the ~~Administrative Law Judge~~Commission makes the following:

CONCLUSIONS OF LAW

1. The Administrative Law Judge and the Commission have jurisdiction over the subject matter of this hearing pursuant to Minn. Stat. §§ 14.50, 14.57 and 216B.2422, subd. 5.

2. The Commission provided appropriate public notice and all procedural requirements of law and rule have been fulfilled.

3. Under the competitive bidding process, it is the Commission's role to select the most reasonable, prudent resources to meet Xcel's need.

4. The Department of Commerce conducted an appropriate environmental analysis of the proposed projects for the purposes of this proceeding and produced an Environmental Report that satisfies Minnesota Rule 7849.1200.

5. The Environmental Report addresses the issues and alternatives raised in scoping to a reasonable extent considering the availability of information and the time

~~[311] Table 2-1 from "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009," U.S. Environmental Protection Agency, EPA 430-R-11-005, April 2011.~~

~~[312] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).~~

~~[313] Ex. 13 at 33-39 (Distributed Solar Energy Proposal).~~

limitations for the process. Moreover, the Environmental Report was prepared in compliance with the procedures in Minnesota Rule 7849.110 to Minnesota Rule 7849.2100.

6. Public hearings were conducted in communities located near the proposed energy generation facilities. Proper notice of the public hearings was provided, and the public was given the opportunity to speak at the hearings and to submit written comments. All procedural requirements have been satisfied.

7. The evidence in the record demonstrates that Xcel Energy's Black Dog Unit 6 is the lowest cost resource. It also offers considerable flexibility because it can be places into service in 2017, 2018, and 2019, and Xcel Energy has agreed that it may be cancelled provided the prudent and reasonable costs incurred prior to cancellation are recoverable.

8. The evidence in the record demonstrates that Invenergy's Cannon Falls and Calpine's Mankato proposals are the next least-cost proposals that could meet a portion of Xcel's potential capacity need, and would have essentially the same impact on Xcel's system costs. Consequently, both Invenergy's Cannon Falls and Calpine's Mankato facilities should proceed to PPA negotiations.

9. The evidence in the record demonstrates that Xcel Energy, Invenergy, and Calpine should explore delay and cancellation options in the course of PPA negotiations to provide the Commission the flexibility to delay or cancel these projects if circumstances warrant doing so.

10. The evidence in the record demonstrates that at the end of the PPA negotiation process with Invenergy and Calpine, the Commission should select the PPA that offers best value, security, and flexibility for ratepayers.

11. The evidence in the record demonstrates that in the event that neither the Invenergy or Calpine PPA emerge from the negotiations are acceptable, the Commission should select Xcel Energy's Red River Valley Unit 1 in combination with Black Dog Unit 6 to meet its potential need.

~~11. It is not clear that there are significant capacity needs on Xcel's system between 2014 and 2018.~~[314]

~~12. While Xcel's overall need for additional capacity is uncertain, there is no uncertainty regarding Xcel's need to add solar energy resources to its system.~~[315]

~~13. The record in this proceeding indicates that Geronimo's proposal, when properly analyzed under either a LCOE or Strategist modeling, is the lowest cost resource proposed.~~

[314] ~~*See*, Ex. 46 at Table 4 (Wishart Direct).~~

[315] ~~*See*, Hearing Transcript - Vol. 1 at 149-150.~~

~~14. The most efficient 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.~~

~~15. 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.~~

~~16. Combining Geronimo's proposal with GRE's proposal represents the most reasonable and prudent alternative to meet Xcel's near-term needs.~~

~~17. Selection of Geronimo's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.~~

~~18. If added capacity is needed beyond 71 MW, selection of GRE's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.~~

~~19. Selection of Geronimo's proposal is in accord with Minnesota's preferences for low-emission, renewable and distributed generation.~~

~~13. Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.~~

~~14. Minn. Stat. § 216B.243, subd. 3(a) prohibits the Commission from issuing a certificate of need for an energy facility that uses nonrenewable fuels unless it can be demonstrated that: (a) the possibility of generating power by means of renewable energy resources was explored, and (b) selection of a renewable energy source to meet the stated need is not in the public interest.~~

~~15. The hearing record does not establish that selection of a nonrenewable energy source to meet the first 71 MW of need is in the public interest.~~

~~16. Selection of Geronimo's proposal furthers the public interest.~~

~~17. If added capacity beyond 71 MW is needed before the end of 2019, selection of GRE's proposal is in the public interest.~~

~~18. If the Commission determines that more than 71 MW is needed in 2019, the decision to procure additional resources could safely be postponed until after Xcel's next resource planning process. Assuming a procurement decision is made in early 2017, a natural gas turbine could be constructed and placed into service by late 2018. Similarly, other renewable resources could be placed into service in that same timeframe.~~

~~Based upon the foregoing Conclusions, and as detailed further in the Memorandum below, the Administrative Law Judge makes the following:~~

~~RECOMMENDATION~~O RDER

IT IS ~~RESPECTFULLY RECOMMENDED~~HEREBY ORDERED that the Commission:

1. Selects ~~Geronimo's~~ Xcel Energy's Black Dog Unit 6 proposal.

2. ~~Determine if added capacity beyond 71 MW is needed before the end of 2019~~Selects both the Calpine Mankato Expansion and the Invenergy Cannon Falls Expansion to proceed to simultaneous PPA negotiations with Xcel Energy.

~~19. Select GRE's proposal if added capacity beyond 71 MW is needed before the end of 2019.~~

3. Directs Xcel Energy to ~~undertake Purchase Power Agreement negotiations with the selected offerors~~report the outcome of those negotiations to the Commission within four months of the date of this Order. At that time the Commission will select whether the Calpine or Invenergy project should proceed.

4. ~~Conduct a second competitive bidding process for Xcel's needs beyond 71 MW that are likely to occur after 2019~~Directs Xcel Energy to file an update with the Commission in the Fall of 2014 and again in the Fall of 2015 an updated assessment of its system capacity need, including whether its need supports delaying or cancelling any of the selected projects.

5. Directs that the parties proceed as provided above.

Dated: ~~December 31, 2013~~April __, 2014