Minnesota Public Utilities Commission

Staff Briefing Papers

Part 2 of 2

Meeting Date: March 25 and 27, 2014 ..... March 27 - Agenda Item 2

Company: Xcel Energy

Docket No. E002/CN-12-1240

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

Issue(s): Should the Commission adopt the Administrative Law Judge's report? What action should the Commission take regarding the Competitive Resource Acquisition Proposal and Competitive Bids?

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record, unless noted otherwise.

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VIII. Classifications of the Parties' Proposed ALJ Report Modifications

Staff presents the ALJ report in two sections, 1) corrections or clarifications to findings of fact and 2) contested findings of fact. Staff expects some parties or persons will take issue with these classifications and some findings will need to be considered further.

Regarding the proposed clarifications or corrections - staff primarily recommends adopting party specific modifications; however, there are a few staff-proposed findings (noted below). Brief reasoning for each recommended modification is provided in Attachment B in the right-hand column.

Staff views the majority of these modifications as minor, non-contested, or appropriate technical modifications. Therefore, staff believes the Commission can adopt the ALJ Findings 'A' through 204 and Findings 211 to 235 as modified below while not having an impact on any resource selection decision the Commission may make. The Commission may want to consider adopting further party suggested modifications; staff has incorporated all modifications proposed through Section XVIII in Attachment B.

Staff recommends adopting Findings A(-1) through 204 and 211 with the modifications (shown in Attachment B) to the following findings: A-1, J-1, 8-1, 12-1, 15-2, 16-1, 20-1, 21-1, 28-2 (staff), 30-1, 63-1, 65-1, 67-1, 112-1, 115-1, 151-1, 153-2 (staff), 156-1, 171-1, 174-1, 179-1, 180-1, 181-1, 182-2 (staff), 183-2, 187-1, 192-1, 193-1, 219-1, and 233-1.

The second group of findings pertains to six highly contested Sections of the ALJ Report:

1) XVIII. Evaluating Interconnection Costs and Savings (only Findings 205-210 – pertaining to value of solar)
2) XXI. Impact upon Adequacy, Reliability or Efficiency of the Energy Supply (236-250)
3) XXII. The Most Reasonable and Prudent Alternative (251-267)
4) XXIII. Compatibility with Our Socioeconomic and Natural Environments (268-281)
5) XXIV. Future Compliance with Applicable Law (282-289)
6) ALJ Report Conclusions (and Recommendations) (ALJ CoL 1-18)

Most parties recommended the Commission strike all and replace sections XXII-XXIII and the ALJ Conclusions entirely with their own modifications that conclude that their proposal(s) should be selected. Party-proposed wholesale replacements for sections XXI, XXII, XXIII, and Conclusions are available in Appendix C to this document.

Staff has sorted the six sections of controversial findings into the topics discussed below, those are:

1. Need and Forecast (237-239, 249, 250, 258, 260-262, 265, 266)
2. Value of Solar Issues (205-210, 252, 244, 255, 263, 264)
3. Levelized Cost of Energy (253, 254, 257)
4. Power Purchase Agreement Negotiations (267)
5. Other – Mainly Geronimo and GRE Proposal Attributes – Not further discussed (236, 240, 241- 243, 245-248, 251, 256, 259, 268-289)

IX. The ALJ Report, Parties' Exceptions and Staff Analysis

Staff categorizes the discussion below into broad topics (chapters) with questions the Commission may want to consider interspersed throughout. Staff discussed each topic broadly in A-F, then summarized the options for the Commission to move forward in Section G.

A. Size, Type and Timing Determination from the 2011 IRP and the Certificate of Need Criteria

The first step in this Track Two competitive process was for the Commission to determine in the IRP docket Xcel's specific size, type and timing of resource needs to be acquired.

The Commission found in its 2011 IRP Order:

> For purposes of Xcel's competitive bidding docket, the Commission finds it appropriate to solicit proposals for *an additional* 150 MW in 2017, increasing *up to* 500 MW by 2019. This statement does not preclude Xcel from acquiring more than 150 MW of new resources by 2017. Those choices will be made in the context of the resource acquisition docket, based on the proposals and the evidence adduced in that docket.

At the onset, parties disagreed about what was intended by the Commission's 2011 IRP Order – whether the need range in the 2017-2019 timeframe listed in the Commission's Order was a certainty to be acquired in this competitive process, whether it was a starting point to solicit bids and the need was to be reviewed in light of any new information in this certificate-of-need-like process, or whether it had no basis in this new proceeding and need was to be reestablished with new information. The Department in its reply exceptions at pg. 11., "Since the Commission already determined Xcel's resource planning needs in its March 5, 2013 Resource Plan Order, it is not appropriate for the ALJ Recommendations to reach a different conclusion about Xcel's capacity needs."

The Environmental Intervener's (EI's) argued at pg. 4 of their Reply Exceptions, "…the Commission did not establish a defined, immutable need when it opened the Competitive Resource Acquisition Proceeding. Indeed, it was clear to all parties at the time this docket was commenced that the size of Xcel's need would have to be established in the contested case. Whether Xcel has in fact has met its burden to demonstrate a need and other criteria of Minnesota statutes is appropriately the subject of the contested case and this proceeding."

What was intended by the Commission's 2011 IRP and its Order that initiated this competitive resource acquisition process?

As noted above the Commission outlined that the Track Two process would use the certificate of need framework, or certificate-of-need-like process, when Xcel submits a self-build proposal as the certificate of need "decision criteria are clear, comprehensive, directly relevant to resource procurement, and easily transferrable to the resource procurement process."

Parties disagreed about the certificate of need criteria and how those criteria apply to this proceeding. The EI's argued Xcel *must* meet the certificate of need criteria and the intent of the

2006 Order establishing the process was to apply the 216B.243 criteria to this process and the Commission must require proof of all certificate of need elements established in Minn. Stat. 216B.243. The Department and Xcel view the criteria as a framework to guide the Commission's decision only and argue that it is not necessary to make an independent determination of need in this docket.

Staff believes this difference in opinion stems from the difference between the two processes: a statutorily-required certificate of need; and the Track Two process in this proceeding.. The certificate of need statutes are legislatively controlled while the Track Two is a Commission-created process. The Track Two process is under the Commission's purview and ultimately the decision is up to the Commission whether, pursuant to the Commission's Order, the certificate of need criteria was adequately satisfied for the purposes of this process.

How do the Certificate of Need Criteria Apply? And to what extent?

As will be explained below, Xcel's need assessment has changed since the onset of this docket. Some parties argued Xcel *must* fill the 'already established' need - of 150 MW by 2017 and increasing up to 500 MW by 2019. While others believe the record shows that the level of need may no longer exist in those years and the Commission (and Xcel) should account for changed circumstances which suggest a decreased need. Further, others argue that Xcel has not met its burden of proof that a need exists and therefore the Commission should not approve the acquisition of new resources.

Coming out of the IRP docket, staff understood the size, type and timing of Xcel's need was to be reevaluated in light of new information in this contested case. Staff believes need has been reevaluated to the extent possible with the on-going, changing environment.

Ultimately the Commission should determine, given the facts provided in this record, whether a resource need has been established at all, and, if so, in what amount. Furthermore, the Commission should identify the most reasonable strategy to meet Xcel's need, in conjunction with considerations of risk, reliability of the electric system, and potential impacts on customer rates. This is discussed further in Section G., below.

To what level of certainty should Xcel's need be established? To what level of certainty can Xcel's need be established?

B. Changes in Xcel's Potential Capacity Need

The range of Xcel's expected capacity need between 2017 and 2019 is dependent on different assumptions provided in this record. Three main factors change Xcel's capacity needs: the changes in MISO's planning reserve margin methodology, Xcel's updated spring 2013 forecast (which has not been reviewed in-depth by the Department), and inclusion of incremental amounts of accredited capacity from solar resources added to meet the SES.

Forecast		**Surplus (Deficit) MW**		
		2017	**2018**	**2019**
1.	Resource Plan Order[1] • Xcel's Fall 2011 Forecast • Updated Unit Capacity Ratings	(153)	(318)	(443)
2.	September 2013 – Base[2] • Xcel's Spring 2013 Forecast • Updated Unit Capacity Ratings • The SES • Updated Forecast of Load Management Resources	(93)	(218)	(307)
3.	Sept. 2013 – MISO Coincidental Peak 6.2% Reserve Margin[3] • All of Sept. 2013 – Base Changes (above) • 2013 MISO 6.2% Coincidental Peak Reserve Margin	183	60	(26)
4.	Sept. 2013 – MISO Coincidental Peak 7.3% Reserve Margin[4] • All of Sept. 2013 – Base Changes • 2014 MISO 6.2% Coincidental Peak Reserve Margin	84	(40)	(128)

Xcel's assumed accredited capacity from (yet to be acquired) solar resources (is shown in line 5, below). The capacity need identified in the March 3, 2013 Order approving Xcel's Resource Plan (line 1 in the table above) did not yet consider the SES-compliant solar MW's since the statute was not yet passed.

Once the legislation passed, Xcel was able to assume that some of its capacity need would be filled by the solar resources obtained to meet the SES. Therefore, the MW totals in lines 2-4, have decreased (by 49, 66 and 83 MW respectively).

Staff represents the anticipated solar-accredited capacities (below) as deficits as these are yet to be acquired MWs:

		2017	**2018**	**2019**
5.	New Solar Capacity (to be acquired) as part of the SES	(49)	(66)	(83)

The ALJ's need-related findings:

> 237. Xcel'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.[5]

[1] March 2013 Order at 6.

[2] Wishart Direct at 7.

[3] Wishart Direct at 10.

[4] *Id.*

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

> 238. Taking into account only the first two factors – lower overall demand and the new solar resource standard – Xcel projects that it will have a generating capacity shortfall of 93 MW in 2017. This shortfall might conceivably grow to 307 MW by 2019.[6]
>
> 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 does not face a shortfall of generation capacity until 2019. Moreover, this deficit grows only by 26 MW by 2019.[7]
>
> 250. It is not efficient to procure one or more gas turbines when the projected needs through 2019 are modest – and may be getting smaller.[8]
>
> 260. 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.[9]

The ALJ's findings are controversial for several reasons. First, as stated above, the Department (and others) contend that since the Commission already determined Xcel's capacity needs in its March 5, 2013 Order, it is not appropriate for the ALJ to reach a different conclusion.

Second, the Department argued that the ALJ relied too heavily on proposed changes to the MISO planning reserve margins. The Department believes MISO's one-year resource adequacy requirements are not long-term planning criteria, and furthermore, MISO has no authority over the Commission's resource planning process or Minnesota's generating resources. The Department and Xcel had both argued that use of MISO's new PRM methodology was new, evolving and not conducive to resource planning.[10]

Further, the Department argued that issues surrounding the availability of DSM at the time of MISO peak versus the new coincidental peak may not be as great, which adds a layer of uncertainty to the appropriateness of application of the new MISO coincidental peak PRM method.[11]

The Department also questioned whether the diversity factor (inversely, coincidence factor) Xcel used in its new MISO coincidental peak PRM projects was appropriate. As shown earlier in this document, Xcel's diversity factor has varied between 0 and 14% over the past seven years. The Department questioned whether the 5% average is appropriate for planning purposes.[12]

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

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

[8] *Id*.

[9] *Id*.

[10] Xcel Post-Hearing Reply Brief at 14.

[11] Rakow Direct at 24-25.

[12] Rakow Direct at 24.

Third, the Department argued that the ALJ relied too heavily on updated and untested forecasts. The spring 2013 forecast was untested, was not approved by the Commission and prompted questions from the Department that were not resolved within this docket.[13] While the Department did not update their base case in Strategist, the new forecast was within the various contingency ranges modeled and therefore, the Department believes their recommendation is more appropriate (DOC Exceptions at 2):

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

C. ALJ Recommendations to Address Need

The ALJ further found - based on his interpretation of Xcel's need – that the most reasonable solution would be:

> 249. 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.[14]
>
> 258. 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.[15]
>
> 261. If gas turbines are needed to meet larger, forecasted needs after 2019, these turbines can be constructed and placed into service within 21 months of a need determination by the Commission.[16]
>
> 262. 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.[17]

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[13] Shah Direct at 8.

[14] *See generally*, Ex. 46 at 8-10 and Table 4 (Wishart Direct).

[15] *See generally*, Ex. 46 at 8-10 and Table 4 (Wishart Direct).

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

[17] *See*, Section XXII.

Overall, as explained in the Department's initial exceptions, it has significant concerns about the ALJ's recommendation and the impact to the reliability of electric service, if adopted. Others (Geronimo, GRE, XLI, and EI) mostly agreed with the ALJ's recommendations.

The Commission may want to consider the appropriate balance between short-term needs and long-term value. The ALJ recommended the Commission address three years in particular, 2017-2019, which was identified in the resource plan as the period in which Xcel is most likely to incur significant capacity shortfalls. The ALJ is far less concerned about 2020 and beyond, and the ALJ found that future planning proceedings can resolve those shortfalls. The Strategist modeling did not isolate these three years. Instead, Strategist selected the least-cost means to meet Xcel's energy and demand requirements in terms of present value of societal costs (PVSC) of each expansion plan. The portfolio of options among the proposed bids could serve Xcel's customers for the next 20-35 years, depending on the terms of the bid. The Department chose to run the model through 2036, so the costs of the bids (or bid packages) could be evaluate over the long-term, and compared to the cost of alternative plans which would require generic resource additions to meet Xcel's energy and demand requirements.

Xcel disagrees with the ALJ's finding of need, and Xcel disagrees with the ALJ's conclusion that the most reasonable solution is to wait and expect attractively priced resources will be available in the future. According to Xcel, the "proposed natural gas projects in this proceeding all have attractive pricing," and it is risky to assume this attractive pricing (or even the bids themselves) would exist in future planning proceedings.[18]

How does the Commission view Xcel's need in light of the changes (forecast changes, PRM change)?

D. Strategist Modeling

The Department evaluated the packages in three rounds, each with additional layers of specificity. Staff believes the ALJ recommendations require discussion of the distinctions in the Department's three rounds of analysis, particularly between DOC's first and second round.

Overall, the purpose of multiple rounds was to avoid inundating the model with too many possible combinations. By initially screening the packages at a high level, the Department could limit unnecessary run time on the lowest ranking combinations and perform, in a second round, more detailed analysis for those bids which were consistently toward the top of the list.

Perhaps the biggest distinction between the first and second rounds is that the first round is a less-detailed look at a large variety of scenarios, while the second round is a more-detailed look under a broad spectrum of contingencies.

The first round tested the proposed bids under different forecasts (2011 vs. 2013 forecast), reliability methods (coincident vs. non-coincident peak), wind additions (400, 600, or 800 MW of wind), and solar accreditation (50 vs. 72 percent). In total, the first round of Strategist runs

[18] Xcel Exceptions, page 16.

included 24 scenarios and 153 combinations for each scenario (a total of 3,672 runs). Importantly, though, no scenarios in the first round included varying levels of cost assumptions.

The second round stressed various bid "packages" (i.e. one, two or three proposal(s) with different in-service dates) under several contingencies, including but not limited to: high/low carbon prices, high/low fuel prices, high/low wind accreditation, and +/- 2.5 and +/- 5 percent forecast of energy and demand. While not a top performer in the first round, the Department chose to include Geronimo in the second round because of the new SES.

There at least four reasons why the Commission would want to discuss the results from the analysis in the first and the second rounds:

1. The ALJ recommended the Commission select the GRE capacity-only proposal in the event Xcel's capacity deficits materialize. However, the GRE proposal was not evaluated in the Department's second round because "GRE's three-year bid was not one of the three least-cost proposals."[19]

2. In the Department's Reply to Post-Hearing Brief, the Department explained that it did not consider the flexibility of the GRE proposal because "GRE initially offered a three-year bid, with two different capacity credit levels at varying prices." This three-year bid did not make the second round of analysis, and in its Rebuttal Testimony, GRE offered additional alternatives for consideration. However, the Department did not consider these more flexible alternatives because the "new proposals that did not meet the Commission's deadline of April 15, 2013 in this proceeding."[20]

3. The Department's base case in the second round included Xcel's Fall 2011 forecast, the non-coincident, peak reliability method, 800 MW of wind, and 72 percent solar accreditation factor. The ALJ findings seem to disregard, or at least put less emphasis on, the Fall 2011 forecast and non-coincident peak method.

4. Staff believes it is significant that the ALJ recommendations stray so far from the Department's modeling results. This could, in part, be a result of the ALJ's disagreement with the Department's base case in the second round. Thus, the Commission could look to both rounds of analysis if the problem is which future is preferred (coincident vs. non-coincident peak, 2011 vs. 2013 forecast, etc.) If the Commission agrees with the ALJ that Xcel's obligation is far less than what Xcel and the Department believe, then the Commission could either look at the Department's low-forecast contingencies in the second round or refer to those top-ranked packages from the Department's first round of analysis which incorporate the 2013 forecast and MISO-coincident reliability method (for example, Scenario 18 from round one).[21]

[19] DOC post-hearing reply brief, p. 45.

[20] DOC post-hearing reply brief, p. 46.

[21] Direct Attachments of Dr. Steve Rakow , September 27, 2013.

From the results of the first round, the Department selected the following packages for further detailed analysis:

1. Geronimo Solar (GPV1)
2. Black Dog 6 in-service 2017 (BD617)
3. Calpine's combined cycle proposal (CCC1)
4. Invenergy combustion turbine (ICT1)
5. Black Dog 6 in-service in 2017 & Calpine CC (BD619 CCC1)
6. Invenergy combustion turbine & Calpine CC (ICT1 CCC1)
7. Invenergy combustion turbine & Black Dog 6 in-service 2018 (ICT1 BD618)
8. BASE CASE—a no-build alternative.

The Department's second round of analysis showed that "the results clearly demonstrate that the least-cost package is Calpine's proposal combined with Xcel's proposal for a CT unit at the Black Dog site in 2019."[22][23]

	Rank							
Contingency	Bid Package GPV1	Bid Package BD617	Bid Package CCC1	Bid Package ICT1	Bid Package BD619 CCC1	Bid Package ICT1 CCC1	Bid Package ICT1 BD618	Bid Package BASE CASE
BASE CASE	8	4	2	6	1	3	5	7
CO2 Reduction	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED	FAILED
$34 CO2	8	4	2	6	1	3	5	7
$9 CO2	8	3	2	6	1	4	5	7
Low Externalities	8	4	2	6	1	3	5	7
High Market Price - 25%	8	4	2	6	1	3	5	7
Low Market Price + 25%	8	2	4	7	1	5	3	6
High Capital Cost + 10%	8	5	3	6	1	2	4	7
Low Capital Cost - 10%	8	2	3	6	1	5	4	7
High Coal + 20%	8	4	2	6	1	3	5	7
High Coal + 10%	8	4	2	6	1	3	5	7
Low Coal - 10%	8	4	2	6	1	3	5	7
Low Coal - 20%	8	4	2	6	1	3	5	7
Low Natural Gas - $1.50	8	3	2	7	1	5	4	6
Low Natural Gas - $1.00	8	3	2	7	1	4	5	6
Low Natural Gas - $0.50	8	4	2	6	1	3	5	7
High Natural Gas + $0.50	8	4	2	6	1	3	5	7
High Natural Gas + $1.00	8	4	2	6	1	3	5	7
High Natural Gas + $1.50	7	5	3	6	1	2	4	8
High Natural Gas + $2.00	7	5	3	6	1	2	4	8
High Natural Gas + $2.50	7	5	3	6	1	2	4	8
High Wind Credit + 25%	8	4	2	7	1	5	3	6
Low Wind Credit - 25%	8	3	2	7	1	4	5	6
High Forecast + 5%	7	4	3	8	1	2	5	6
Mid-High Forecast + 2.5%	6	4	3	7	1	2	5	8
Mid-Low Forecast - 2.5%	8	2	4	5	1	7	3	6
Low Forecast - 5%	7	2	4	6	1	8	5	3
Manitoba Hydro PPA Renew	8	2	4	5	1	7	3	6
Maximum	8.0	5.0	4.0	8.0	1.0	8.0	5.0	8.0
Average	7.7	3.6	2.6	6.2	1.0	3.7	4.5	6.7
Minimum	6.0	2.0	2.0	5.0	1.0	2.0	3.0	3.0

Geronimo, and ultimately the ALJ, concluded that the Strategist modeling did not capture the full value of the solar proposals, explained in further detail below.

[22] DOC, Rakow Direct, p. 40.

[23] DOC Ex. __ SR-5A, Page 3 of 8.

Calpine and Invenergy, for different reasons, argued that Strategist did not capture the full value of their resources (those specific exceptions are available in the Appendices to this paper and are not repeated here as those concerns are captured in the Party Position sections, in Part 1).

Two ALJ findings related to the Strategist modeling provided:

> 265. 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.[24]
>
> 266. 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.[25]

Regarding Finding 265, while staff agrees with the Department's exception that no party relied on Xcel's Fall 2011 sales forecast alone. The Department ensured that its contingency bandwidth encompassed a range wide enough to include the revised spring 2013 forecast.[26] Further, Xcel used the updated forecast in its base case.

Regarding Finding 266, Xcel's modeling used combinations of packages that were greater than 300 MW, but the Department evaluated all packages that were under 700 MW in its analysis.

Staff does not believe either of these findings needs to be modified (due to their general wording), but wanted to provide clarification to the Commission.

E. The Solar Energy Standard, Solar-Renewable Energy Credits, and the Value of Solar

The Commission's findings in Xcel's resource plan pre-dated the SES and VoS statutes. However, both were (to some degree) incorporated into the modeling results with differing approaches and resource implications by different parties. The ALJ's findings related to solar assumptions included:

> 205. 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.[27]
>
> 206. Xcel 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.[28]
>
> 207. 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

[24] Hearing Transcript - Vol. 2 at 30.

[25] *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).

[26] Shah Direct at 8.

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

[28] Ex. 46 at 35 (Wishart Direct).

system. These reductions make existing transmission capacity available to meet future needs and permit Xcel to avoid costs to expand its transmission system.[29]

208. 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.[30]

209. Neither the Department nor Xcel evaluated the benefits of avoiding additional transmission capacity costs.[31]

210. These savings reduce the PVSC for Geronimo's project by $33 million.[32]

244. A distributed network of generation reduces transmission line losses. This reduction results in a PVSC savings of approximately $9 million.[33]

252. 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.[34]

255. 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.[35]

263. A reasonable and prudent purchaser of energy resources would not have assumed that the value of an SES-qualifying generation source was zero.[36]

264. A reasonable and prudent purchaser of energy resources would not have assumed that the value of avoiding transmission line losses was zero.[37]

a. The SES and S-RECs

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[29] *See*, Ex. 13 at 9-12 (Geronimo Proposal).

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

[31] *Id. at* 7.

[32] *Id.*; Ex. 59 at 20 (Engelking Rebuttal).

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

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

[35] 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)**.**

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

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

Minn. Stat. 216B.1691, Subd. 2f. (the SES) requires Minnesota utilities, including Xcel, to procure or generate solar resources such that "at least 1.5 percent of the utility's total retail electric sales to retail customers in Minnesota is generated by solar energy."[38]

Even though the SES is a mandate in terms of energy and not capacity, Staff believes it is reasonable to assume some amount of Xcel's solar resource additions *will* change its resource obligation. In fact, that is partially the point of the statute. However, since the ALJ specifically recommend a solar project be considered to meet Xcel's capacity deficit, it is important for the Commission to decide on how to account for solar accreditation in this proceeding.

Similar to how Xcel "hard wires," or "forces" wind additions into the model for RES compliance, Xcel assumed incremental levels of accredited capability from solar in years 2017, 2018, and 2019. Thus, in Xcel's Exceptions, the Company believes the SES compliance issue was already accounted for in the modeling and "the ALJ's conclusion that the Geronimo project will help fill the identified [SES] capacity need is incorrect."[39]

Geronimo pointed out that the 1.5 percent of sales by 2020 goal is a floor, not a ceiling. Moreover, the Legislature "established a goal that solar would grow to 10 percent by 2030, a date well within Geronimo's proposed 20-year PPA term."[40] Geronimo further remarked that the "comments regarding how Xcel fulfills its SES obligations are ancillary to the main issue in this docket. Xcel needs to add capacity resources, and in applying the certificate of need criteria and Minnesota law to the resource alternatives in this docket, the ALJ found that the Distributed Solar Proposal is the most reasonable and prudent alternative to fill Xcel's capacity need. The Solar Proposal delivers 71 MW of accredited capacity to meet Xcel's need, and it is clearly the preferred resource under Minnesota law."[41]

The ALJ's recommendations rely heavily on Xcel's statement that changes to MISO's reserve margin standards may reduce the Company's need to only 26 MW by 2019. This deficit assumes up to 83 MW of solar are already available to MISO in the calculation of need, with or without Geronimo's Proposal.[42]

Since the ALJ adopted a minimal investment approach, it is appropriate to contemplate whether Geronimo's Solar Proposal would replace, or be in addition to, the resource capability defined in Xcel's proposed forecasts of need. Xcel assumed 83 MW of SES compliance will be available to MISO regardless of whether Geronimo's proposal is selected or not. While Geronimo believes SES compliance is "ancillary to the main issue." Staff believes the SES qualification question is important because of the potential impact to the final number of "need," which includes both capability and obligation.

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[38] Subd. 2f.(c) adds that "is an energy goal of the state of Minnesota that, by 2030, ten percent of the retail electric sales in Minnesota be generated by solar energy."

[39] Xcel Exceptions, at 10.

[40] Geronimo Reply to Exceptions, at 13.

[41] Geronimo Reply to Exceptions, at 14.

[42] Xcel's calculation of solar accreditation .

Xcel and Geronimo are also at an impasse regarding the application of S-REC values.

If Geronimo's proposal will be used to meet the SES, then Xcel maintains that the Commission cannot also consider the value of excess S-RECs.

If Geronimo's proposal is selected, should the Proposal be used to apply to Xcel's SES?

Geronimo argued:

> If Xcel were to acquire Geronimo's project and not use it to meet the SES, as modeled, Xcel would acquire "excess" S-RECs it could sell to other utilities to meet their own obligations. Neither Xcel's nor the Department's model, however, reflected the value of these excess SRECs. As a result, Geronimo used the S-REC adjustment to show that the Department's and Xcel's modeling constructs did not reflect the full value of the Solar Proposal.

Staff agrees with ALJ Finding 157 that it is reasonable to assume Geronimo's proposal, if selected, will be used to meet Xcel's SES. However, as stated above, Staff recommended (above) the Commission adopt the Department correction to ALJ Finding 156:

> 156-1: If the S-RECs were sold by Xcel, ~~A~~at a price of $5 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $10 million ~~annually~~, without considering degrading performance. At a price of $20 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $38 million ~~annually~~.[43]

If Geronimo's proposal is applied to meet Xcel's SES, is the inclusion of marketable S-REC values a reasonable modeling approach?

As shown in Table 2 below, Xcel did not include any value to S-RECs, while Geronimo applied a range of $5-20/MWH. This results in a $10-38 million difference to the PVSC.[44]

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

[44] Staff notes that in the recent Xcel Community Solar docket, E002/M-13-867, the Commission did set a price for S-RECs to develop the payment for generation prior to adoption of a VoS rate. Under a VoS rate, the statute requires the S-RECs go to the utility, but under the average retail rate (ARR) to be used prior to adoption of a VoS, there is no clear legislative requirement. Therefore, the Commission found it appropriate to use a proxy value for S-RECs. Also, those community solar projects are likely to be small projects that may have not had the negotiating power at the level of the companies providing bids in this docket. Minnesota has had an REO and RES (and therefore RECs) for many years, but the Commission has never set a REC price for any of the renewable projects and PPAs it has previously approved.

Table 2: Adjustments to PVSC Impact of Geronimo Proposal

	PVSC ($M)		
	Wishart Direct	GE Modified, Low SRECs	GE Modified, High SRECs
Geronimo Solar Project			
Geronimo Energy Payments	$186	$186	$186
Long Term Expansion Plan Difference	($1)	($1)	($1)
Value of SRECS	$0	($10)	($38)
Costs Avoided by Solar			
Avoided Energy	$88	$88	$88
Avoided Capacity	$43	$43	$43
Avoided Emissions	$20	$20	$20
Avoided Line Losses (4%)	$0	$9	$9
Avoided Transmission Capacity	$0	$33	$33
Total Avoided Costs	$151	$193	$193
Total NET PVSC	**$34**	**($17)**	**($46)**

Notes:
Table 8 of Wishart Direct, Modified by Geronimo
Value of SRECs is $5 flat (low scenario) and $20 flat (high scenario)
Transmission Capacity Value is $3.80/kw-month, pursuant to MISO's Network Integration Service via MISO's OATT Schedule 9
Line losses are based upon Geronimo's Solar Proposal

b. Value of Solar

Minn. Stat. 216B.164, Subd. 10 (Value of Solar, or VoS) discusses compensation for the value of solar and requires the Department to develop a methodology using specific value-based metrics. Under the statute, the VoS "must, at a minimum, account for the value of energy and its delivery, generation capacity, transmission capacity, transmission and distribution line losses, and environmental value."

As shown in Table 2, above, Geronimo adjusted Xcel's modeling to include transmission capacity and transmission line loss avoided costs, in PVSC terms. Geronimo included $9 million for line losses and $33 million for avoided transmission capacity.

Avoided Transmission Line Losses

Xcel's provided an assessment on transmission line losses.[45] Xcel indicated that Geronimo has proposed to connect most of their solar projects at the distribution level. Xcel had not yet conducted a detailed analysis to determine what line loss savings would be for the Geronimo project and therefore savings were not accounted for in the Strategist analysis. Xcel provided that for rooftop solar projects that avoided all transmission and distribution line losses, Xcel would estimate the savings to be equal to 7% of the energy and capacity benefits – however, since Geronimo's

[45] Wishart at 35.

project would not be located directly at a customer's load (like roof top solar) the actual savings would be less than 7%. Regardless, by Xcel's calculation, the 7% over estimate would be equal to $10 million PVSC and would not be enough to make the project cost effective.

In his Rebuttal Testimony, Geronimo witness R.T. Beach explained how Geronimo estimated its monetized value of the avoided transmission line losses (of $9 million PVSC). Geronimo estimated a 4% line loss reduction (compared to a central generating station facility interconnected at the transmission level) and with its bundled pricing, Geronimo calculated the savings to be $9 million PVSC.

The Department argued regarding transmission line loss savings that: [46]

1) Geronimo did not provide these benefits as part of its initial bid and the Department indicated it modeled each proposal as bid;
2) the benefits Xcel may receive through a reduction in line losses would need to accrue to ratepayers in order to be included in the Department's analysis and ratepayers should not be at risk for benefits that do not materialize;
3) Geronimo did not propose a mechanism by which Xcel could recover from Geronimo any difference between a $9 million assumed savings and any actual benefit that may arise;
4) Xcel provided the Department with location marginal price differential analysis for all bids but the Geronimo proposal, and based on that information and the minimal price difference between the LMPs associated with each bid, the Department concluded that no adjustment to any of the bids was necessary, [47] and,
5) the Department agreed with Xcel, that the $10 million PVSC (which DOC believes is an over estimate) still did not make the proposal cost-effective.

Should the Commission consider the PVSC of the avoided transmission line losses?

Avoided Transmission Capacity Costs

In his Rebuttal Testimony, Geronimo explained how Geronimo estimated the monetized value of the avoided transmission capacity costs (of $33 million). Geronimo took the existing MISO rate for network integration service on the Xcel system (for year 2013: $45,644 per MW per year) and multiplied it by the 71 MW of capacity that Geronimo would contribute to meeting Xcel's peak demands. This results in $3.24 million per year and a Geronimo estimated $33 million PVSC adjustment.[48]

Xcel explained that there is no record to support actual avoided transmission arising from the solar proposal. Nor does Minn. Stat. § 216B.164 contemplate that the value of the avoided transmission of a solar facility should be recognized in addition to the costs a utility pays to add the facility to its system.[49]

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[46] Department Reply Post-Hearing Brief (at 8-9).

[47] This is consistent with the Department's arguments in this docket that avoided costs of solar should only amount to the specific avoided costs of other bids in this proceeding.

[48] See Beach Rebuttal Testimony at 9.

[49] Xcel Post-Hearing Reply Brief at 28-29.

Xcel provided that the only transmission that is likely to be avoided would be short lines used to interconnect new natural gas plants what will not be needed as a result of the SES. Xcel explained that the cost of interconnection was included in each natural gas bid and in the Strategist modeling, and a review of the bids show that interconnection represents a small proportion of each project's total cost.[50] Therefore, the avoided transmission capacity cost savings identified by Geronimo appear to be exaggerated and do not justify selection of the project.

The Department argued that:[51]

1) Avoided transmission capacity costs were not included in its bid;
2) the benefits Xcel may receive through a reduction in transmission capacity costs would need to accrue to ratepayers in order to be included in the Department's analysis and ratepayers should not be at risk for benefits that do not materialize;
3) Geronimo did not propose a mechanism by which Xcel could recover from Geronimo any difference between a $33 million assumed savings and any actual benefit that may arise;
4) Geronimo has already benefitted from the assignment of transmission costs to other bids.

The Department concluded that it is not appropriate to impute an additional avoided transmission capacity cost to Geronimo's bid since those costs have already been accounted for.

After exceptions and replies were due on the ALJ report - the Department of Commerce filed its Value of Solar Methodology Report (VoS Methodology) in Commission Docket M999/M-14-65.[4] The Commission met on March 12, 2014 to review the VoS Methodology and approved the report but provided "that adoption of the DOC's methodology or the values contained is not intended to have any precedential effect."

Regarding avoided transmission capacity costs the report concluded:

> Avoided transmission costs are calculated the same way as avoided generation costs except in two ways. First, transmission capacity is assumed not to degrade over time (PV degradation is still accounted for). Second, avoided transmission capacity costs are calculated based on the utility's 5-year average MISO OATT Schedule 9 charge in Start Year USD, e.g., in 2014 USD if year one of the VOS tariff was 2014. Table 13 shows the example calculation.

From staff's (limited) understanding, this VoS methodology appears similar to that used by Geronimo in arriving at their $33 million PVSC avoided transmission capacity cost estimate. Avoided transmission capacity costs were raised as an issue in the VoS docket and Xcel argued for an approach similar to what it, and witness Dr. Rakow, argued in this proceeding – that the value of avoided transmission capacity costs should be based on current investments plans and

[50] Most of the transmission interconnection figures are trade secret. One public figure is the anticipated $1.5 million for MISO interconnection costs of the Calpine Mankato project.

[51] Xcel's Post-Hearing Reply Brief at 12-13.

[4] The Department filed its VoS Report on January 31, 2014 in Commission Docket E999/M-14-65. This is the same day Reply Exceptions were due on the ALJ Report in this proceeding.

reflect investments that can truly be avoided.[52] Which in this case, the Department has argued is minimal. Further, staff notes that the Department emphasized in the VoS docket that VoS was a ratemaking docket and the analyses performed there may be different than what are done in resource planning and resource acquisition dockets.

Should the Commission consider the PVSC of the avoided transmission capacity costs?

F. LCOE Analysis and Criticisms

The ALJ arrived at his conclusion based in part on the LCOE analysis provided in this proceeding.

As was the case throughout the proceeding, both Xcel and the Department argued that use of the LCOE analysis was only appropriate when comparing very similar resources of the same type where cost is the principal, if not only, distinguishing factor between the resources – which doesn't apply in this proceeding where peaking/intermediate, dispatchable/non-dispatchable, natural gas, solar, and PPA /utility-owned resources are considered.[53] Xcel (and the Department) believe that Strategist is the most appropriate tool to use in this circumstance in that it can examine both the costs of the proposed resources and their widely varying benefits. Xcel argued that a LCOE analysis fails to provide a complete cost-benefit analysis since it only focuses on the various costs of a proposal.

> 253. In this circumstance, a levelized cost of electricity (LCOE) points to a better prediction of costs and impacts to ratepayers.[54]
>
> 254. 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.[55]
>
> 257. On a per MWh basis, a solar unit is also the lowest cost standalone resource.[56]

Calpine asserted that the LCOE analysis can be used to evaluate the thermal resources appropriately, but does not agree with the use of the LCOE to evaluate the Geronimo proposal and "purposefully limited its LCOE analysis to a comparison of only the gas-fired resources submitted in this proceeding to ensure reasonable comparability".[57]

Does the Commission believe the LCOE method is an appropriate analytical tool to evaluate resources in this proceeding?

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[52] Xcel's February 13, 2014 comments on the DOC's VoS Report in Docket E999/M-14-65.

[53] Wishart Rebuttal at 15-16 and Xcel Post-Hearing Reply Brief at 13-14.

[54] *See generally*, Ex. 52 at 7 (Hibbard Direct).

[55] Ex. 52 at 6 (Hibbard Direct).

[56] *See*, Ex. 74 at 7 (Norman Rebuttal).

[57] Calpine Initial Exceptions at 17.

G. Power Purchase Agreement Negotiations

The ALJ Found at 267:

> 267. A reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs when other, reasonably-priced and scalable alternatives exist.[58]

The Department's exception provided:

> 267. A reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs when other, reasonably-priced and scalable alternatives exist.[59] However, since the magnitude of any cancellation costs has not been demonstrated, nor has it been determined that ratepayers would be liable for any such cancellation costs, it would not be reasonable to make long-term resource decisions based on a fact that has not been established.

As Xcel noted in its Reply Briefs (at 37) it indicates Xcel's opinion that further delay or termination provisions should be negotiated in the PPAs - as the Department's exceptions provide, the magnitude of those costs have not been demonstrated. Staff believes the Commission should consider if there are any parameters that may be appropriate to put on the PPA negotiation process, however, which parameters are selected may be dependent on the resources selected.

H. Commission Action and Future Planning Proceedings

The Commission has at least three very distinct courses of action in this proceeding:

1. The Commission could adopt the ALJ approach, which is to pursue minimal investments until the certainty of Xcel's needs becomes more established;
2. The Commission could select proposals in an amount consistent with the Commission's finding of need in the resource plan, while taking into account new information; or
3. The Commission could select no resources until Xcel sufficiently establishes its resource needs.

Option #1: The ALJ's Most Reasonable and Prudent Alternative (Section XXII. of the ALJ Report)

ALJ Finding of Fact 258 states:

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

The first policy question raised to the Commission in Finding #258 is how to address near-term shortfalls, and the second question is the most reasonable path for procuring needs after 2019. Staff will address these two questions separately.

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

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

First, the ALJ's recommended course of action is for the Commission to address the minimal capacity shortfalls identified in Xcel's Wishart's Direct Testimony. This suggests Xcel's need is 26 MW by 2019 if the 5% MISO diversity factor and 6.2% PRM_{UCAP} is extended into each year of the 2017-2019 timeframe. However, Xcel's need could increase with changes to MISO's reserve margins (the PRM has already increased to 7.3% for the 2014/2015 MISO planning year).

Taking the minimal investment approach, Xcel may have to rely on the wholesale market for capacity necessary to meet resource adequacy obligations as well as make additional daily purchases of energy to serve its customers.[60] The Department cautioned the Commission that this capacity may not even be available, and the energy could be prohibitively expensive.[61] GRE's capacity-only proposal, in particular, could subject ratepayers to unreasonable levels of market energy.[62]

In Xcel's IRP, for example, the Company expected to lose over 1,500 GWh annually from retiring Black Dog 3 & 4 in 2015. While significant attention was given in this proceeding to which forecast produced what final capacity number in three particular years, other usual resource planning considerations were marginalized, such as long-term energy requirements and how much each package exposes Xcel and its ratepayers to the wholesale market.

Staff reviewed all of Xcel's monthly fuel clause adjustment (FCA) reports to see what Xcel current exposure to the wholesale market is at present.[63] According to Xcel's monthly FCA reports, short-term market purchases ranged from approximately 5-26 percent of fuel and purchased power in 2013, but typically amounted to approximately 15-25 percent in the summer months. In resource planning, the Commission is generally interested in whether long-term exposure to the market is reasonable.[64]

MISO's PRM requirement will probably be different in 2015, 2016, and so on than it is in 2014. Furthermore, the reserve requirement could be higher, or it could be lower. However, as the Commission considers the near-term shortfalls in this case, a factor to consider is that ratepayer risk is not equal in both directions. Xcel's total resource obligation is approximately 10,000 MW, and a reserve margin change of one percent would therefore result in an increase or decrease of 100 MW. It is a policy question for the Commission as to how to best manage risk, but it is still a risk to ignore Xcel's individual peak completely. As the ALJ cited, Xcel's 2019 peak (9,676 MW) is very close to the amount of resource the Company has (9,735 MW) – and these numbers are using the un-evaluated reduced spring 2013 forecast.[65]

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[60] Xcel Exceptions, at 12.

[61] Department Exceptions, p. 12.

[62] *Id*.

[63] Docket No. 13-1099

[64] At the time, in the resource plan, the Department concluded that Xcel's use of market energy purchases was reasonable because Xcel planned to have sufficient resources, so the MISO market could provide opportunities to purchase hourly energy at prices below the cost of its own generation.

[65] Wishart Direct – Table 4.

In addition to wholesale market exposure, other risks include Xcel's own unit retirements, as well as other retirements, replacements, and retrofits in the region due to EPA's Mercury and Air Toxics Standards (MATS) and enforcement of section 111(d) of the Clean Air Act to regulate CO_2 emissions from existing power plants. Xcel recently developed a Sherco Life Cycle Management Study (Docket No. 13-368) which identified several factors which could favor retiring Sherco 1 and 2, such as lower natural gas prices, higher CO_2 regulatory costs, higher coal prices, and higher-than-expected costs of operating and maintaining the facilities.

The second part of ALJ Finding #258 implies that a second planning proceeding can be accomplished with enough expediency to meet any capacity deficits which may materialize. Xcel expresses significant concern over whether this is a realistic expectation:[66]

> 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.

Staff also questions the ALJ's timeline, given that the 2011 IRP was initially filed more than three years ago. Thus, if the Commission pursues the minimal investment approach, staff recommends a resource plan with shortened timelines and a discussion at oral argument about which forecast will be used, why, and how long it would take for the Department to verify it. Staff does not believe it makes sense for a second planning proceeding to begin with the Department and Xcel still unable to reconcile their forecasting differences.

Option #2: The Commission could select proposals in an amount consistent with the finding of need in the resource plan (DOC's Proposed FOF Modifications).

Staff is not persuaded that 2013/2014 changes to MISO's planning reserve methodology should render the Commission's finding of need in the resource plan obsolete. However, while MISO does not govern state resource planning, it does play a significant role. Even though parties disagree over which methodology is most appropriate, the fact remains that Xcel is a MISO member and market participant, and Xcel is – in the short-term – in excess of its required reserves.

Additionally, it is reasonable to account for new information provided over the course of the CRP. For example, the record questions a major component of Xcel's approved IRP, which was a 125 MW capacity/energy PPA from Manitoba Hydro. Also (as discussed in detail above), the new SES legislation will require 1.5 percent of sales to come from solar resources, and these resources will likely provide some MISO-accredited capability. (Xcel assumes 83 MW of accredited solar by 2019, and the Department assumes 200 MW of accredited solar by 2020.)

Even considering all of these changes, the Commission could still determine its finding of need in resource plan is reasonable. Xcel believes the current record supports a need for 300-500 MW in the

[66] Xcel Exceptions, at 16

2017-19 timeframe. The Department's analysis consistently shows the least-cost package favors the selection of two out of three packages (Black Dog 6, Calpine, and Cannon Falls), even after accounting for SES compliance.

If the Commission selects two or more of the bids, or if the Commission determines the resource plan finding of need is still reasonable, Staff suggests that the Commission discuss the best path forward for future planning cycles. Xcel already has several interrelated pieces, either with firm deadlines or proposed, which have disconnected timelines. For example:

- Parties recommend that various bids should be sent to PPA negotiations (which has a four month negotiation deadline);
- Xcel is presently required to file its next resource plan by July 1, 2014;
- Xcel has announced it will file a solar RFP in April 2014 to procure up to 150 MW of solar;[67]
- Xcel and the Department recommend, as part of the Commission's Order in this proceeding, "status assessments" to be filed by the Company in fall 2014 and fall 2015. These assessments will seemingly provide updates to Xcel's resource need.

The PPA negotiations, the solar RFP, and the status assessments, in staff's view, appear to be three phases of a resource plan, without the benefit of knowing which forecast will be used as the basis for Xcel's need. The Commission could delay the IRP deadline to allow development to all three of the components. However, further delaying the IRP could present timing issues and reliability concerns if the Commission adopts the ALJ recommendations to add minimal amounts of resources to accommodate near-term shortfalls.

What is also not clear is which forecast Xcel plans to use for its 2014 IRP, or for the "status assessments" used to presumably help the Commission know with greater clarity what Xcel's needs are. Whether the Commission elects to proceed with the IRP as scheduled, or whether further delay is necessary, Staff is concerned about the ongoing forecasting issues between Xcel and the Department. Should the Commission consider merging the resource plan and the "status assessments," or should everything be kept as piecemeal filings, it would be helpful to know:

- Which forecast will be used for Xcel's 2014 resource plan?
- How much time does the Department expect to need to verify its accuracy?
- Will the same forecast be the basis for the status assessment and solar RFP?
- Does Xcel expect its next resource plan will apply MISO long-term planning criteria?

According to the Department, "it was not reasonable for Xcel to use its spring 2013 forecast for its base or starting point for Xcel's Strategist analysis."[68] Moreover, "[o]nly Xcel's fall 2011 forecast

[67] Commission Docket No. E002/M-14-162 – Xcel Energy Notice of Solar Resource Acquisition Plan, dated February 28, 2014

[68] Shah Rebuttal

has been reviewed in detail by the Department and approved by the Commission. The Department has not verified the accuracy of Xcel's spring 2013 sales forecast."[69]

To be clear, the Commission did not approve one particular forecast in the resource plan. In fact, one reason the Commission approved a broad range was because the Department had forecasting issues with Xcel during the resource plan. The Department's June 12, 2012 comments in the IRP state, for example, "the Department concludes that Xcel's statistical model is over-identified (over booked with variables) and thus is not well designed to achieve a reasonable forecast."[70] Additionally, the Department disagreed with Xcel's downward adjustment to its energy and demand forecasts. Ultimately, the Department recommended "approval of Xcel's energy forecast and the Department's peak demand forecast for planning purposes only."[71]

If the Commission takes a course of action which adds resources in the amount consistent with the resource plan, Staff believes changes introduced into the record regarding a softening forecast, capability coming from solar resources as a result of the SES, etc. could allow sufficient time to further delay fast-approaching planning cycles in order to bring more cohesion to the various filings Xcel and the parties discuss.

Option 3: The Commission could select no resources until Xcel sufficiently establishes its resource needs.

ALJ Conclusion of Law #4 states:

> It is not clear that there are significant capacity needs on Xcel's system between 2014 and 2018.

Geronimo agreed that "the ALJ was mindful of the potential for a need to emerge at the upper end of the identified range and recommended a more deliberate and measured approach to dealing with that need, which is still likely five or more years away."[72] Geronimo has consistently maintained that its proposal is the least-cost proposal to meet Xcel's capacity deficit. Additionally, "the fact that the Solar Proposal can also help meet the SES is an added benefit."[73]

ALJ Conclusion of Law #5 states:

> 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.

Both Xcel and the Department model SES compliance on the basis of retail sales. However, both Xcel and the Department used different values for solar accreditation in their modeling. Geronimo believes Xcel's estimate of solar capacity credit is greatly understated, and the Commission should

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[69] *Id*, at 29-30.

[70] Department of Commerce, June 12, 2012 Initial Comments in Docket 10-825, Xcel's 2011-2025 Resource Plan, p. 6.

[71] *Id*.

[72] Geronimo Exceptions, at 7.

[73] Engeliking Rebuttal, at 4.

not rely on either Xcel or the Department's solar assumptions.[74] According to Geronimo, "Xcel's estimate of the accredited capacity it will receive on installed solar needed to meet its SES, are based on Xcel's preliminary and low capacity credit assumptions of 42% (AC) and 36% (DC)."[75]

If the Commission agrees with the ALJ that no significant capacity need exists on Xcel's system until 2019, and if the Commission agrees with the ALJ that there is no uncertainty regarding Xcel's need to add solar resources by 2020, and if the Commission agrees with Geronimo that Xcel's identified need includes greatly underestimated solar capability as a result of the SES, it begs the question why the Commission would select any bid at all.

As with Minnesota utilities' experience with wind procurement before tax credit expiration, staff believes it is reasonable to assume Xcel's solar additions will not be incremental, as in the modeling, but lumpy to coincide with the availability of federal tax credits. The solar Investment Tax Credit (ITC) expires at the end of 2016, and it could be reasonably expected that Xcel will take advantage of this tax credit as a cost-effective means to meet the SES.

The ALJ, Geronimo, the Environmental Intervenors, and Xcel Large Industrials (XLI) do not believe there is urgency to add resources now. However, Staff believes it will likely be the case that the Commission will receive an application from Xcel for approval of one or more solar proposals within the next year. If the Commission agrees with Geronimo that Xcel used unreasonably low solar accreditation assumptions, then the Commission could also infer that Xcel's 26 MW capacity deficit by 2019 is unreasonably high.

The burden is on Xcel to sufficiently demonstrate its need. The ALJ does not agree with Xcel's proposed resource need of 300-500 MW in the 2017-2019 timeframe. Instead, the ALJ concludes "the projected needs through 2019 are modest – and may be getting smaller."[76] If the Commission agrees, one option is not to select any resource until Xcel has sufficiently demonstrated its need. As stated above, Xcel is scheduled to file its next IRP in July 1, 2014, and the need could be revisited in that proceeding with another updated forecast, and the results of the solar RFP will be filed in that record.[77]

Xcel will shortly be issuing an RFP soliciting solar proposals for it to procure up to 150 MW of solar resources. Xcel is scheduled to currently file its next IRP in July 2014, and Xcel and the Department are supportive of regular "status assessments" to continue to monitor changes to its resource needs. Whether these related filings will bring more certainty to Xcel's 2017-2019 need is unknown at this time. However, it is an option available if the Commission does not believe Xcel has adequately justified its need, and the Commission decides that answering unresolved questions is more reasonable than hedging against uncertainty.

[74] Beach Rebuttal, at 3-6.

[75] Engelking Rebuttal, at 3.

[76] ALJ Finding of Fact #260

[77] See Commission Docket No. E002/M-14-162 – Xcel Energy Notice of Solar Resource Acquisition Plan, dated February 28, 2014

X. Commission Decision Alternatives

A. Does the Environmental Report address the issues outlined in the Department's Scoping Decision?

B. Does the Commission have sufficient information to select a reasonable and prudent alternative?

C. Should the Commission make corrections or clarification to the ALJ Findings?

1. Adopt the ALJ Findings with staff recommended modifications to: A-1, J-1, 8-1, 12-1, 15-2, 16-1, 20-1, 21-1, 28-2 (staff), 30-1, 63-1, 65-1, 67-1, 112-1, 115-1, 151-1, 153-2 (staff), 156-1, 171-1, 174-1, 179-1, 180-1, 181-1, 182-2 (staff), 183-2, 187-1, 192-1, 193-1, 219-1, and 233-1 as shown in Appendix B.

D. Should the Commission adopt, or adopt with modifications, the following findings?
   1. Need Evaluation (Findings 237-239, 249, 250, 258, 260-262, 265, 266)
   2. Value of Solar Issues (Findings 205-210, 252, 244, 255, 263, 264)
      i. S-RECs
      ii. Transmission Line Loss Savings
      iii. Transmission Capacity Cost Savings
   3. Levelized Cost of Energy (Findings 253, 254, 257)
   4. Power Purchase Agreement Negotiations (267)
   5. Others

E. If not, what alternatives should the Commission consider?

F. Should the Commission set parameters around the Power Purchase Agreement Negotiations?
   1. In-Service Date Delays
   2. Cancellation Clauses
   3. Changes not considered in the bid process
   4. Take no action

G. Should the Commission require status updates from Xcel in 2014 and 2015?

H. Should the Commission take any other action?
   1. Require Xcel to file a compliance filing on future integrated resource plan parameters by May 1, 2014.
      i. Which forecast will be used for Xcel's 2014 resource plan?
      ii. How much time does the Department expect to need to verify its accuracy?
      iii. Will the same forecast be the basis for the status assessment and solar RFP?
      iv. Does Xcel expect its next resource plan will apply MISO long-term planning criteria?

Certificate of Need – Applicable Statute or Rule Citation
7849.0120 CRITERIA. A certificate of need must be granted to the Applicant upon determining that:
A. The probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states, considering:
(1) the accuracy of the applicant's forecast of demand for the type of energy that would be supplied by the proposed facility;
(2) the effects of the applicant's existing or expected conservation programs and state and federal conservation programs;
(3) the effects of promotional practices of the applicant that may have given rise to the increase in the energy demand, particularly promotional practices which have occurred since 1974;
(4) the ability of current facilities and planned facilities not requiring certificates of need to meet the future demand; and
(5) the effect of the proposed facility, or a suitable modification thereof, in making efficient use of resources;
B. a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record, considering:
(1) the appropriateness of the size, the type, and the timing of the proposed facility compared to those of reasonable alternatives;
(2) the cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs,
(3) the effects of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and
(4) the expected reliability of the proposed facility compared to the expected reliability of reasonable alternatives;
C. by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health, considering:
(1) the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs;
(2) the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;
(3) the effects of the proposed facility, or a suitable modification thereof, in inducing future development; and
(4) the socially beneficial uses of the output of the proposed facility, or a suitable modification thereof, including its uses to protect or enhance environmental quality; 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.
Minnesota Statutes
§216B.243, subd. 3 (9). The benefits of enhanced regional reliability.
§216B.243, subd. 3a. Use of renewable resource. § 216B.2422, subd. 4. Preference for renewable resource.
§216B.2426. Opportunities for Distributed Generation.
§216B.1694. subd. 2 (a) (4). Consideration of Innovative Energy Project.
§216B.243, subd. 3 (10). Requirement to comply with § 216B.1691 governing renewable energy objectives.
§216B.1612, subd. 5 (c). Efforts to purchase energy from C-BED Projects.
§216B.243, subd. 3 (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.
§216B.243, subd. 3 (10). Requirement to comply with 216B.2425, subd. 7 governing transmission needed to support renewable resources.
§216B.243, subd. 3 and §216B.243, subd. 3 (8). Consideration of 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;

THE OFFICE OF ADMINSTRATIVE HEARINGS FINDINGS OF FACT, CONCLUSIONS OF LAW AND RECOMMENDATION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION

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

Commission Docket No. E002/CN-12-1240

OAH No. 8-2500-30760

(Department of Commerce (DOC), Calpine: (CLP), Environmental Intervenors (EI), Geronimo (GRN), Great River Energy (GRE), Invenergy (IVN), Xcel (XCL))

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
Administrative Law Judge Report - Procedural Summary					
A	On March 5, 2013, the Minnesota Public Utilities Commission (MPUC or Commission) concluded that Northern States Power Company d/b/a Xcel Energy (Xcel) 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.				
		A-1	DOC	On March 5, 2013, the Minnesota Public Utilities Commission (MPUC or Commission) concluded that Northern States Power Company d/b/a Xcel Energy (Xcel) 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~~ increas~~i~~ing up to 500 MW by 2019.	Yes, properly cites Order.[1]
B	Minn. Stat. § 216B.2422, subd. 5 authorize the Commission to select the resources to meet such needs through a competitive procurement.				
C	In this instance, because there were several different energy companies, including Xcel, 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 to meet the needs of its service area.				
D	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:				
E	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).				
F	Michael J. Bradley, Moss & Barnett and Donna Stephenson, Associate Counsel, appeared on behalf of Great River Energy (GRE).				
G	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).				
H	Brian M. Meloy and Andrew J. Gibbons, Leonard, Street and Deinard, appeared on behalf of Calpine Corporation (Calpine).				
I	Eric F. Swanson, Winthrop & Weinstine, appeared on behalf of Invenergy Thermal Development, LLC (Invenergy).				
J	Christina K. Bruvsen, Fredrikson & Byron, appeared on behalf of Geronimo Wind Energy, LLC, d/b/a Geronimo Energy (Geronimo).				
		J-1	GRN	Christina K. ~~Bruvsen~~Brusven, Fredrikson & Byron, appeared on behalf of Geronimo Wind Energy, LLC, d/b/a	Yes,

[1] *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).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				Geronimo Energy, LLC (Geronimo).	correction.
K	Ryan M. Norrell, Special Assistant Attorney General, appeared on behalf of the North Dakota Public Service Commission Advocacy Staff (Advocacy Staff).				
L	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).				
	Administrative Law Judge Report – Statement of the Issue				
M	What resource proposals provide the most reasonable and prudent strategy for Xcel to meet the needs of its service area?				
	Administrative Law Judge Report – Summary of Conclusions				
N	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.				
		N-1	DOC	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.~~ Send Calpine's Mankato project and Invenergy's Cannon Falls project to Power Purchase Agreement (PPA) negotiations. Following review of the negotiated PPAs, the Commission should select two most reasonable and prudent projects of the following three projects: Calpine's Mankato project, Invenergy's Cannon Falls project, and Xcel's Black Dog Unit 6 project. Absent material differences negotiated in the PPAs, the most reasonable solution is the combination of the Black Dog and Calpine projects. The Commission should order Xcel to issue an All-Solar Request for Proposals (Solar RFP) as soon as possible to obtain the overall best solar projects for meeting Xcel's obligation under Minnesota's recently enacted solar mandate.	No
		N-2	XCL	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.~~	No

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
Administrative Law Judge Report – FINDINGS OF FACT					
I. Plans and Forecast Predating the Receipt of Proposals in this Docket					
1	In August of 2010**,** Xcel filed a resource plan for the planning period of 2011 through 2025.[2]				
		1-1	DOC	In August of 2010**,** Xcel filed an integrated resource plan (IRP) for the planning period of 2011 through 2025.[1]	No
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.[3]				
3	On March 15, 2011, in parallel filing with the Commission, Xcel sought a Certificate of Need for its Black Dog Generating Plant Repowering Project. In this submission, Xcel sought approval for the development of 450 megawatts (MW) of energy resources. These generation resources would address shortfalls in generation that Xcel projected would occur in 2014.[4]				
4	In December of 2011, following a revision of its demand projections, Xcel 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.[5]				
		4-1	DOC	~~I~~On December ~~of~~ 7, 2011, following a revision of its demand projections that account for slower economic growth, the loss of wholesale customers, and changes to Xcel's plans for the current planning cycle, as outlined in its December 1, 2011 IRP Update, Xcel 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.[6]	No
	4a	**(NEW)**	DOC	On February 8, 2012, Xcel filed corrections to its revised plan.[7]	No
	4b	**(NEW)**	DOC	On June 1, 2012, Xcel proposed in a separate docket, contrary to its IRP, to phase out Solar*Rewards, a program that subsidizes customer purchases and installation of photovoltaic solar cells; however, the Department directed Xcel to maintain the Solar*Rewards program.[8]	No

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

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

[4] 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).

[5] *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.").

[6] *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.").

[7] *See,* ORDER ESTABLISHING PROCEDURAL SCHEDULES AND FILING REQUIREMENTS, *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E-002/RP-10-825 at 2 (Nov. 30, 2012).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	4c	(NEW)	DOC	On June 12, 2012, the Department filed *Comments,* and on August 13, 2012 filed *Reply Comments,* in Xcel's IRP recommending Commission approval of Xcel's 2011-2025 IRP with modifications.[9]	No
	4d	(NEW)	DOC	On August 30, 2012 Xcel filed reply comments further revising its resource plan and proposing to add 400-600 MW of new capacity by 2017-2019 through soliciting proposals from outside parties through a competitive process.[10]	No
5	In late October of 2012, Xcel likewise decided that it would not seek to increase the generating capacity of its Prairie Island Nuclear Generating Plant.[11]				
6	In proceedings on its five-year action plan, Xcel 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's wind procurement strategy, reassessments of Xcel's program for refurbishing Black Dog Units 3 and 4 and the Prairie Island Plant, and the anticipated expiration of the Production Tax Credit."[12]				
7	Mindful of the change in the demand forecasts, the Commission directed Xcel 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.[13]				
		7-1	DOC	~~7. Mindful of the change in the demand forecasts, t~~The Commission directed Xcel to prepare a notice plan for soliciting proposals to meet the ~~reduced~~ Commission-determined 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.[14]	No

[8] *Id* at 2.
[9] *Id* at 1
[10] *Id* at 2.
[11] 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, 2012).
[12] *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).
[13] *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).
[14] *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).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
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."[15]				
		8-1	DOC	The precise quantity of energy to be obtained through this process was not specified ~~stated~~. The Commission stated: In contrast, parties disagree about the magnitude of Xcel's needs. For example, the Environmental Intervenors and the Large Power Intervenors argue that the 500 MW figure may exceed customer demand. In contrast, Calpine and the Department argue that the 500 MW figure is justified, and may even be too low. The idea that Xcel will need an additional 500 MW by 2019 is well-supported in the record. Indeed, Xcel has previously argued that it would need up to 600 MW of additional capacity – and Xcel generated this estimate before it cancelled plans to add 118 MW of new capacity to its Prairie Island plant. For purposes of Xcel's competitive bidding docket, the Commission finds it appropriate to solicit proposals for *an additional* 150 MW in 2017, increasing *up to* 500 MW by 2019. This statement does not preclude Xcel from acquiring more than 150 MW of new resources by 2017.[16] ~~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."[17]	Yes – factually accurate and provides clarity.
9	Because of a specialized statutory exemption, the project or projects selected in this Docket will not require a separate Certificate of Need.[18]				
10	The Commission set a deadline of April 15, 2013 for submission of proposals to meet some, or all, of this need.[19]				
11	On April 15, 2013, the Commission received proposals from Calpine, Geronimo, GRE, Invenergy and Xcel.[20]				
II. Events that Followed the Receipt of Proposals which Impact the Forecasted Need for Energy					
			DOC	**Events that Followed the Receipt of Proposals ~~which Impact the Forecasted Need for Energy~~**	

[15] *Id. at* 2 and 6.
[16] *Id* at 6.
[17] *Id. at* 2 and 6.
[18] Minn. Stat. § 216B.2422, subd. 5 (b).
[19] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 2 (June 21, 2013).
[20] *Id*.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
12	Following the receipt of proposals, there have been significant changes to Xcel's regulatory and operational environment.[21]				
		12-1	DOC	Following the receipt of proposals, there were ~~have been~~ ~~significant~~ changes pertaining to energy resources on Xcel's system and potential changes in need estimated by Xcel; all factors were analyzed in this proceeding ~~regulatory and operational environment~~.[22]	Yes, clarifies and provides detail not otherwise provided for in the report.
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 (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 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.[23]				
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 will require 455,919 MWh of solar energy resources by 2020.[24]				
		14-1		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 estimates it will require 455,919 MWh of solar energy resources by 2020.[25]	No
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 forecasted that these wind generation resources would be placed into service between 2017 and 2019.[26]				
		15-1	DOC	On July 16, 2013, Xcel filed a petition for approval of 600 MW of wind generation. Depending upon the availability of transmission upgrades, Xcel forecasted that these wind generation resources would be placed into service ~~between 2017 and 2019~~ in 2015 and provide accredited capacity in 2021.[27]	No

[21] 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.").

[22] Ex. 49 at ~~2~~ 7 (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. The new need assessment is another data point that should be considered in analyzing which resource proposals should be selected to address the range of the Company's potential need in the 2017-2019 timeframe").

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

[24] 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)).

[25] 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)).

[26] *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.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		15-2	GRN DOC	On July 16, 2013, Xcel filed a petition for approval of 600 MW of wind generation. While these projects are expected to be placed in service in 2015, depending upon the availability of transmission upgrades, Xcel forecasted that these wind generation resources ~~would be placed into service between 2017 and 2019~~will not provide accredited capacity until 2021.[28]	Yes, correction and provides clarity.
16	On August 9, 2013, Xcel filed a petition for approval of an additional 150 MW of wind generation. Xcel projected that these wind resources would be operational and available to Xcel by 2015.[29]				
		16-1	DOC, GRN	On August 9, 2013, Xcel filed a petition for approval of an additional 150 MW of wind generation. Xcel projected that these wind resources would be operational and available to Xcel by 2015 but would not provide accredited capacity until 2021.[30]	Yes, provides clarity.
17	750 MW of wind resources represents much larger acquisitions than Xcel had forecasted it would make in the near-term. Earlier in the year, Xcel projected that it would purchase 200 MW of energy from wind resources.[31]				
		17-1	DOC	750 MW of wind resources represents much larger acquisitions than Xcel had forecasted it would make in the near-term. Earlier in the year, Xcel projected that it would purchase 200 MW of energy from wind resources.[32] Dr. Rakow's first round of Strategist analysis included a run of each scenario with 400 MW, 600 MW, and 800 MW of wind added, and in his third round he ran both 750 MW and 600 MW of wind. The Department did not run any scenarios with no wind added.[33]	No
18	On October 4, 2013, the Commission determined that Xcel's plans to acquire a total of 750 MW of wind generation constituted a changed circumstance to its resource plan. The Commission ordered Xcel to file a Notice of Changed Circumstances reflecting these changes.[34]				
	18a	**(NEW)**	DOC	Dr. Rakow explained that when wind units representing the four proposals in Docket Nos. E002/M-13-603 and E002/M-13-716 were added, equivalent generic wind energy were removed to keep the overall quantity of wind energy for the duration of the Strategist run about equal to Xcel's renewable energy standard requirements. In other words, these specific wind resources replaced generic wind resources. The Department did not perform an analysis similar to Xcel's removal of wind. Contrary to Xcel's method, the Department's wind contingency analysis did not show a significant impact on the costs of bids; the overall impact of differing quantities of wind on the PVSC differences across scenarios was not significant.[35]	No

[27] *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.
[28] *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.
[29] *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.
[30] *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.
[31] *See, e.g., Wind RFP Update*, Docket No. E-002/RP-10-825 at 1 (February 4, 2013).
[32] *See, e.g., Wind RFP Update*, Docket No. E-002/RP-10-825 at 1 (February 4, 2013).
[33] Ex. 86 at 14 (Rakow Rebuttal).
[34] *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).
[35] Ex. 86 at 14-15 (Rakow Rebuttal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
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.[36]				
20	In the past, MISO has calculated reserve margins so that they would be sufficient to meet MISO system peaks.[37]				
		20-1	DOC	In the past, MISO has calculated reserve margins so that they ~~would be sufficient to meet MISO system peaks~~ were applied to each utility's peak demand. However, MISO recently proposed to apply the reserve margin to each utility's demand at the time of MISO's system peak.[38]	Yes, clarifies.
21	Yet, the MISO system can, and frequently does, reach its system peak at a different hour than Xcel's system. Between 2006 and 2012, for example, customer demand on Xcel's system was 5 percent lower than during MISO's peak times.[39]				
		21-1	DOC	Yet, the MISO system can, and frequently does, reach its system peak at a different hour than Xcel's system. Between 2006 and 2012, for example, customer demand on Xcel's system was, on average, 5 percent lower than during MISO's peak times. The difference varied from zero percent (in 2006) to 14 percent (in 2007).[40]	Yes, clarifies.
22	The change in MISO reserve margins became effective on October 30, 2013 and will be implemented for the 2014 - 2015 planning year.[41]				
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 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.[42]				
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's reserve requirements by approximately 200 MW.[43]				
		24-1	DOC	Calculating the minimum reserve capacity based upon the MISO system peak and applying either MISO's 2013 or 2014 reserve margin values to the resource need assessment 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's reserve requirements by approximately 200 MW. However, this 200 MW estimate is not reduced	No

[36] Ex. 46 at 5-6 (Wishart Direct); Ex. 83 at 20 n.8 (Rakow Direct).
[37] Ex. 83 at 22-24 (Rakow Direct).
[38] Ex. 83 at 22-24 (Rakow Direct).
[39] Ex. 46 at 8-9 and Table 3 (Wishart Direct).
[40] Ex. 46 at 8-9 and Table 3 (Wishart Direct); Ex. 83 at 23-24 (Rakow Direct).
[41] Midcontinent Indep. Sys. Operator, Inc., 145 FERC 61,077 (Oct. 29, 2013) (order conditionally accepting filing in Docket No. ER 13-2298-000).
[42] 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").
[43] Ex. 46 at 10 (Wishart Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				for any potential reduction in the quantity of conservation and load management (collectively, DSM) due to the change in the hour used for reserve ratio purposes.[44] In addition, it does not take into account MISO's expected increase of 1 percent in reserve requirement, based on information presented by MISO in a meeting in October, 2013.[45]	
		24-2	CLP	Calculating the minimum reserve capacity based upon the MISO system peak could have ~~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's reserve requirements by approximately 200 MW~~.[46]	No
25	In recent weeks, Xcel 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 in 2019.[47]				
		25-1	DOC	In recent weeks, Xcel has revised downward its ~~projected energy~~ forecasted growth rate in demand and resulting capacity needs. If the minimum reserve requirements that MISO applies today are included in a need forecast, alongside more recent load projections, there ~~is~~ would be no shortfall in capacity through 2018 and only 26 MW is needed by Xcel in 2019.[48] However, this calculation assumes no offsetting adjustments, such as reduced DSM capability due to the new reserve requirements and MISO's expected increase in reserve requirement.	No
		25-2	CLP	In recent weeks, Xcel 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 a small possibility that there will be no shortfall in capacity through 2018 and only 26 MW ~~is~~ needed by Xcel in 2019.[49] However, this is predicated on (1) Xcel and MISO reaching peak demand at different times; and (2) MISO's current interim reserve margin methodology applying in 2017 and beyond. This is unlikely to occur.	No
26	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.[50]				
		26-1	DOC	~~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.~~[51]	No
		26-2	XCL	~~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.~~[52]	No

[44] Ex. 46 at 9~~10~~ (Wishart Direct) and Ex. 83 at 24-25 (Rakow Direct).
[45] Ex. 83 at 39 (Rakow Direct).
[46] Ex. 83 at 39 (Rakow Direct).
[47] *Id. at* 7 - 10 (Wishart Direct).
[48] *Id. At* 2 ~~7—~~ and 10 (Wishart Direct).
[49] *Id. At* 2 ~~7—~~ and 10 (Wishart Direct).
[50] *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).
[51] *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).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
27	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.[53]				
		27-1	DOC	Dr. Rakow and the Department express a different view. They assert that Minnesota's economy is still in the process of recovering ~~improving~~ and that demand for electricity ~~will~~ may increase faster than currently forecasted as the economy improves.[54]	No
28	The Department likewise asserts that only Xcel'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's spring 2013 sales forecast, nor relied upon its projections in this proceeding.[55]				
		28-1	DOC	The Department likewise ~~asserts~~ states the fact that only Xcel'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's spring 2013 sales forecast, nor relied upon its projections in this proceeding.[56] Nonetheless, the Department's analysis of the bids employed a forecast band wide enough to encompass Xcel's spring 2013 sales forecast.[57]	No
		28-2	Staff	The Department likewise asserts that only Xcel'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's spring 2013 sales forecast, nor relied upon its projections in this proceeding.[58] Nonetheless, the Department's analysis of the bids employed a forecast band wide enough to encompass Xcel's spring 2013 sales forecast.[59]	Yes, provides clarity.
29	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 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.[60]				
30	The Department joins Xcel in this recommendation, noting that delayed in-service dates for projects could result in substantial cost savings.[61]				
		30-1	DOC	The Department ~~joins~~ agreed with Xcel that flexible in-service dates could result in substantial cost savings.~~in this recommendation, noting that delayed in- service dates for Invenergy's projects could result in substantial cost savings.~~[62] However, the Department did not take a position on cancelling projects.	Yes, clarifies.

[52] ~~*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).~~

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

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

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

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

[57] Ex. 76 at 13 (Shah Direct).

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

[59] Ex. 76 at 13 (Shah Direct).

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

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

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
31	It is Xcel'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.[63]				
		31-1	DOC	It is Xcel'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.[64] The Department did not take a position on recovery of costs related to cancelled projects.	No
	III. Procedural Practice in the Contested Case				
32	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.[65]				
33	On June 6, 2013, the Commission met to consider the matter of Xcel's resource acquisition process.[66]				
34	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. 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.[67]				

[62] Ex. 86 at 11-12 (Rakow Rebuttal); *See,* Hearing Transcript, Vol. 2 at 55.
[63] Hearing Transcript, Vol. 1 at 126-27.
[64] Hearing Transcript, Vol. 1 at 126-27.
[65] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 2 (June 21, 2013).
[66] *Id*.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		34-1	DOC	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) <u>Identified the ultimate issue to be the identification of the resource proposal or proposals that will provide the most reasonable and prudent strategy for Xcel to meet the needs of its service area.</u> (E) 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. 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. (F) Designated the following entities as parties to the contested case proceeding: Calpine, Geronimo, GRE, Invenergy, Xcel, the Department and the Environmental Intervenors.[68]	No
35	The Administrative Law Judge convened a prehearing conference on July 1, 2013 and established a schedule for further proceedings.[69]				
36	Ecos Energy filed a Petition to Intervene on June 7, 2013.[70]				
37	Ecos Energy filed a Verified Petition to Intervene, on July 10, 2013.[71]				
38	The North Dakota Public Service Commission Advocacy Staff filed a Petition to Intervene on July 31, 2013.[72]				
39	On August 5, 2013, the Commission denied the reconsideration motion of Ecos Energy to submit a proposal out of time.[73]				

[67] *Id.* at 4.
[68] *Id.* at 4.
[69] SECOND PREHEARING ORDER, OAH 8-2500-30760 (July 17, 2013).
[70] eDocket No. 20136-87947-01.
[71] eDocket No. 20137-88996-01.
[72] eDocket No. 20138-89905-01.
[73] ORDER DENYING INTERVENTION, OAH 8-2500-30760 (August 5, 2013).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
40	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.[74]				
		39-1	XCL	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.[75]	No
41	On September 5, 2013, Ecos Energy sought Reconsideration, or in the alternative, Certification of, its Petition to Intervene.[76]				
42	On September 27, 2013, the following parties filed Direct Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel, North Dakota Advocacy Staff and the Department.[77]				
43	On October 1, 2013, having considered objections, the Administrative Law Judge denied Ecos Energy's Motion for Reconsideration and its alternative Motion for Certification.[78]				
44	On October 8, 2013, the Xcel Large Industrials (XLI) filed a Petition to Intervene.[79]				
45	On October 10, 2013, the Administrative Law Judge set the evidentiary hearing to begin on Tuesday, October 22, 2013.[80]				
46	On October 14, 2013, EERA issued the Environmental Report.[81]				
47	On October 15, 2013, the Honorable Steve M. Mihalchick presided over a public hearing at the State Office Building in St. Paul, Minnesota.[82]				
48	On October 18, 2013, the following parties filed Rebuttal Testimony: Calpine, Geronimo, GRE, Invenergy, Xcel, and the Department.[83]				
	48a	**(NEW)**	DOC	On October 1, 2013, Xcel filed its Notice of Changed Circumstances Proposal To Add 750 MW of Wind Resources.[84]	No
	48b	**(NEW)**	DOC	On October 4, 2013, the Commission determined that Xcel's plans to acquire 750 MW of wind generation constituted a changed circumstance under resource planning rules, and ordered Xcel to file a Notice of Changed Circumstances in dockets including the present docket, E002/CN-12-1240. The Commission issued its *Order Requiring Notice Of Changed Circumstances and Granting Intervention*.[85]	No

[74] THIRD PREHEARING ORDER, OAH 8-2500-30760 (August 21, 2013).

[75] 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).

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

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

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

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

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

[81] Ex. 38.

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

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

[84] eDocket No. 201310-91999-01

[85] eDocket No. 201310-92134-02.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
49	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.[86]				
50	On October 22 and 23, 2013, the Administrative Law Judge convened an evidentiary hearing at the State Office Building in St. Paul, Minnesota.[87]				
51	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.[88]				
52	On November 22, 2013, Calpine, Geronimo, GRE, Invenergy, Xcel, the Department and the Environmental Intervenors filed initial briefs.[89]				
53	The hearing record closed at 4:30 p.m. on Friday, December 6, 2013, following receipt of the parties' reply briefs.[90]				
	IV. Overview of Proposals				
54	The Commission accepted proposals from five offerors: (1) Xcel's 215 MW Black Dog 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.[91]				
		54-1	DOC	The Commission accepted proposals from five offerors[92]: (1) Xcel's 215 MW Black Dog 6 combustion turbine peaking facility and two 215 MW combustion turbine units at a new site near Hankinson, North Dakota, Red River Valley Units 1 and 2; (2) Calpine's ~~345 MW combined cycle turbine intermediate facility at Mankato~~ : expansion of the existing natural-gas fired Mankato Energy Center by 290 MW of intermediate capacity and 55 MW of peaking capacity; (3) Geronimo: ~~Energy's 100 MW distributed solar capacity intermittent Resource~~ build 100 MW of solar generation using photovoltaic panels, located on up to 31 sites adjacent to substations,	No

[86] *See,* EIGHTH PREHEARING ORDER, OAH 8-2500-30760 (October 21, 2013).
[87] Hearing Transcripts, Volumes 1 and 2 (October 22 and 23, 2013).
[88] *See,* eDocket No. 201311-94078-01.
[89] *See generally,* MPUC Docket No. 12-1240 (November 22, 2013).
[90] *See generally,* MPUC Docket No. 12-1240 (December 6, 2013).
[91] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 9 (Jun. 21, 2013).
[92] Ex.83 at 2-3 (Rakow Direct)

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				ranging from 2 to 10 MW per site; (4) GRE's ~~proposed sale of capacity credits~~ two proposals to sell Xcel MISO Zone 1 Resource Credits (ZRCs)[93]; and, (5) Invenergy, with a 179 MW combustion turbine peaking facility at Cannon Falls and two 179 combustion turbines at Hampton.[94]	
55	Because three of the offerors proposed projects utilizing gas-fired turbines, James Alders, Xcel'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 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.[95]				
		55-1	DOC	Calpine's Mr. Flumerfelt added: It's a combustion gas turbine. But instead of releasing the exhaust heat directly into the atmosphere, we capture that exhaust heat, turn it into steam, and are able to generate additional power.[96]	No
	V. Features of the Proposal Submitted by Xcel				
56	Xcel proposed to construct three natural-gas-fired, simple-cycle, 215 megawatt (MW) combustion turbine generators sequentially to match the identified need.[97]				
57	The first combustion turbine unit would be located at Xcel's Black Dog generating plant in Burnsville, Minnesota. Xcel likewise proposes a flexible in-service date of 2017, 2018 or 2019.[98]				
58	This unit would substantially replace the coal-fired generating capacity at the Black Dog site.[99]				
59	Xcel's Black Dog 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 to maximize the use of existing infrastructure and maintain generation within its largest load center.[100]				

[93] Ex.83 at 2 (Rakow Direct) ("A ZRC is a credit for resources that count towards MISO resource adequacy requirements. By selling ZRCs GRE would provide Xcel resources that would count for reliability purposes. However, GRE's proposal would not provide Xcel energy production rights.")
[94] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 9 (Jun. 21, 2013).
[95] Public Hearing Transcript, Vol. 1 at 11-12.
[96] Public Hearing Transcript, Vol. 1 at 14 (Flumerfelt)
[97] Ex. 1 at 1-1 and 1-2 (Xcel Energy Proposal).
[98] Ex. 1 at 1-3 to 1-4 (Xcel Energy Proposal); Ex. 46 at 11 (Wishart Direct); Ex. 49 at 2 (Alders Direct).
[99] Ex. 1 at 1-1 (Xcel Energy Proposal).
[100] Ex. 1 at 1-11 (Xcel Energy Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
60	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.[101]				
61	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.[102]				
62	The unit would be fueled entirely by natural gas. CenterPoint Energy currently serves the plant site. Xcel proposes to secure additional natural gas supply through a competitive process. Xcel anticipates that the winning vendor may need to replace the existing pipeline serving the plant with a new higher pressure natural gas line from the Cedar Town Border station.[103]				
63	Xcel 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.[104]				
		63-1	DOC	Xcel 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~~ 208 MW.[105]	Yes, correction.
64	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.[106]				
65	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.[107]				
		65-1	DOC	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~~ 208 MW at summer ambient conditions of 95 degrees Fahrenheit and relative humidity of 30 percent, with an altitude of 720 feet above sea level.[108]	Yes, correction.
66	Black 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 6 would be greater than 95 percent, and its service life is expected to exceed 35 years.[109]				
67	Xcel 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.[110]				
		67-1	XCL GRN	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	Yes, correction.

[101] *Id*.
[102] *Id*.
[103] Ex. 1 at 1-11 (Xcel Energy Proposal).
[104] Ex. 1 at 1-10 (Xcel Energy Proposal).
[105] Ex. 1 at 1-10 (Xcel Energy Proposal); Ex. 46 at 12 (Wishart Direct).
[106] Ex. 1 at 1-13 (Xcel Energy Proposal).
[107] Ex. 1 at 4-6 (Xcel Energy Proposal).
[108] Ex. 1 at 4-6 (Xcel Energy Proposal); Ex. 46 at 12 (Wishart Direct).
[109] Ex. 42 at 3 (Ford Direct).
[110] Ex. 1 at 1-11 (Xcel Energy Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				related equipment would begin in the fall of 2014.[111]	
68	Xcel anticipates that the construction of its Black Dog combustion turbine unit would require 21 months.[112]				
69	Xcel'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 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.[113]				
70	Xcel 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.[114]				
71	Alternatively, Xcel 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.[115]				
72	The tallest structure on the Red River site would be the stack, standing at approximately 65 feet tall. Xcel projects that the tanks, combustion turbine, and maintenance and operations building will be less than 40 feet in height.[116]				
73	The combustion turbine facility would utilize natural gas. A short gas pipeline would be necessary to connect the plant to the fuel supplier.[117]				
74	Xcel'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.[118]				
75	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.[119]				
76	Xcel likewise proposes Model F combustion turbines for the Red River Valley Units.[120]				
77	The units would be integrated into Xcel's remote dispatch control center. Xcel 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.[121]				
78	The output of the Red River Units depends upon ambient weather conditions. Nominal generating capacity is considered about 214 MW at summer ambient conditions of 88 degrees Fahrenheit and relative humidity of 42 percent with an altitude of 900 feet above sea level.[122]				

[111] Ex. 1 at 1-11 (Xcel Energy Proposal).
[112] Ex. 38 at 6 (Environmental Report).
[113] Ex. 1 at 1-11, 1-12 and 1-13 (Xcel Energy Proposal).
[114] Ex. 1 at 1-2 (Xcel Energy Proposal).
[115] Ex. 1 at 1-2 and 1-12 (Xcel Energy Proposal).
[116] Ex. 1 at 1-12 (Xcel Energy Proposal).
[117] *Id*.
[118] Ex. 46 at 13 (Wishart Direct).
[119] Ex. 1 at 1-12 and 4-11 (Xcel Energy Proposal).
[120] Ex. 1 at 1-10 (Xcel Energy Proposal).
[121] Ex. 1 at 1-12 (Xcel Energy Proposal).
[122] Ex. 1 at 4-9 (Xcel Energy Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
79	The combustion turbines would utilize natural gas as their fuel. The facility allows for the addition of distillate oil storage and handling if a future need develops to have oil as the backup fuel. Xcel anticipates securing the necessary natural gas supply through a competitive process beginning in 2014.[123]				
80	Xcel plans to obtain the water that is needed for the Red River units from either an on-site well or truck shipments.[124]				
81	The Red River Valley Units would place generation closer to Xcel's Fargo load center, and would moderate Xcel's reliance on the high voltage transmission system to deliver energy to this part of its system.[125]				
82	Xcel 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 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 proposed that the last authorized ROE would be used until the projects are included in base rates. Xcel 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's proposal.[126]				
	82a-f	**(NEW)**	INV	a. <u>By providing significantly greater capacity than the Commission has determined is needed, the Xcel proposals in aggregate commit greater resources than necessary and leave less flexibility going forward to adapt to continued changes in both the supply side and the demand side of the business.[127]</u> b. <u>In addition, by proposing two North Dakota facilities, Xcel locates these Capacity Resources far from its most significant load and bring no ancillary benefits to the Minnesota economy.</u> c. <u>Xcel's unique role as both "bidder" and "buyer" in this proceeding creates challenges when comparing Xcel's proposal with other parties' formal bids.</u> d. <u>As both bidder and buyer, Xcel fails to offer ratepayers the benefit of a fixed-price proposal.[128] In an effort to compensate for that fact, Xcel proposed a rate rider for each of the three 215 MW units in its proposal.[129] The rider would adjust the return on equity applicable to the investment in each unit "to reflect any difference between [Xcel's] baseline estimated capital cost and the actual capital cost of the unit."[130] If the actual capital cost exceeded the estimate by more than 10%, Xcel proposed a 1% (or 100 basis point) reduction in the return on equity applied to that unit's capital cost. Conversely, if Xcel brought the unit on line below the estimated</u>	No

[123] Ex. 1 at 4-9 (Xcel Energy Proposal).
[124] *Id*.
[125] Ex. 42 at 4 (Ford Direct).
[126] Ex. 49 at 1, 2 and 5 (Alders Direct); Hearing Transcript, Vol. 1 at 136-137.
[127] *See* Ex. 65, pp. 31-32 (Ewan Direct).
[128] *Id*. at 32.
[129] Ex. 49, p. 5 (Alders Direct).
[130] *Id*.

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				cost by 10% or more, Xcel would receive a bonus of 1% (or 100 basis points) above its authorized return on equity.[131] e. Xcel's proposal relates solely to its capital costs, leaving all non-capital costs unchecked. Of course, projects also have associated operating and maintenance ("O&M") costs and general and administrative costs separate and apart from their capital costs. For the Xcel proposals, Department witness Dr. Rakow stated that "Xcel should have included that, to the extent there are such costs, things like fixed O&M, variable O&M."[132] The Department did not ask information requests of Xcel to further explore this issue.[133] Rather, for its modeling, the Department "gave Xcel the inputs we were going to use . . . so it's up to them to figure out how to allocate the costs we gave them."[134] Thus, not only do Xcel's operating costs remain unchecked by any "rider" type mechanism, it is unclear how such a mechanism could even be devised and those costs remain unclear in the economic analyses done to date. f. As to capital costs, the Xcel proposal does not hold customers harmless. In contrast to a fixed price proposal such as that offered by Invenergy, Xcel still seeks full capital cost recovery, with a modestly reduced return on those costs if they exceed the capital cost estimate by more than 10 percent.[135]	
	VI. Features of the Proposal Submitted by Calpine				
83	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.[136]				
84	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 ancillary equipment.[137]				
85	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.[138]				
86	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				

[131] *Id*. The Xcel proposal also suggested a one-half percentage point decrease/increase if capital costs exceeded/fell short of the estimated cost.
[132] Transcript Vol. 2, p. 54 (Rakow) (emphasis added).
[133] *Id*.
[134] *Id*.
[135] Ex. 69, p. 14 (Ewan Rebuttal).
[136] *See* Ex. 8 (Calpine's Proposal).
[137] Ex. 8 at 2 (Calpine's Proposal).
[138] *Id*.

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	equipment.[139]				
87	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.[140]				
88	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.[141]				
89	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's Mankato substation. The existing plant switchyard and adjacent substation are appropriately sized for the incremental plant output.[142]				
90	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.[143]				
91	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.[144]				
92	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.[145]				
93	The Mankato facility's combined cycle unit would operate as an intermediate type resource with capacity factors in the 20 to 30 percent range.[146]				
94	By utilizing existing gas, generating and transmission infrastructure, Calpine asserts that the Mankato Expansion avoids proliferation of generating sites and transmission corridors.[147]				
95	The combined cycle power plant provides comparatively "fast start" capabilities and "start-stop" scheduling flexibility.[148]				
		95-1	INV	~~The combined cycle power plant provides comparatively "fast start" capabilities and "start-stop" scheduling flexibility.~~[149]	No
96	Calpine asserts that these features make a combined cycle resource the most appropriate addition to Xcel's growing portfolio of intermittent power resources.[150]				

[139] Ex. 55 at 6 (Thornton Direct).
[140] Ex. 8 at 3 (Calpine's Proposal).
[141] Ex. 8 at 6 (Calpine's Proposal); Ex. 55 at 8 (Thornton Direct).
[142] Ex. 55 at 8-9 (Thornton Direct).
[143] Ex. 8 at 6 (Calpine's Proposal).
[144] Ex. 8 at 6 (Calpine's Proposal).
[145] Ex. 46 at 16 (Wishart Direct).
[146] Ex. 46 at 17 (Wishart Direct).
[147] Ex. 8 at 6 (Calpine's Proposal).
[148] Ex. 8 - Appendix A at 2; Ex. 55 at 11 (Thornton Direct).
[149] ~~Ex. 8 - Appendix A at 2; Ex. 55 at 11 (Thornton Direct).~~
[150] *See,* Ex. 55 at 2 (Thornton Direct).

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		96-1	CLP	The record shows that the value of Calpine's Expansion to help integrate variable resources is likely higher than the resources proposed by Xcel and Invenergy because combined cycle resources can manage net load variability more efficiently, and at lower cost and lower emissions than CT capacity.[151] ~~Calpine asserts that these features make a~~ A combined cycle resource is the most appropriate addition to Xcel's growing portfolio of intermittent power resources.	No
97	Calpine projects that it could place the Mankato Expansion into service by June 1, 2017.[152]				
	97a-n	**(NEW)**	INV	a. To meet a need of 150 MW of capacity in 2017 (or less if Xcel's September 2013 updated forecast proves accurate), increasing to up to 500 MW of capacity by 2019, Calpine offers a one-time addition of 345 MW of combined cycle capacity with an in-service date of 2017. Calpine also offered pricing for in-service dates of 2018 or 2019. However, the Department's modeling indicated little benefit to ratepayers by delaying the in-service date.[153] b. Combined cycle capacity carries a higher capacity cost (and lower energy cost) than a Capacity Resource such as a combustion turbine.[154] Comparing the capacity pricing offered by Invenergy with that offered by Calpine demonstrates that the Calpine proposal, if accepted, would impose substantially higher capacity payments on Xcel ratepayers.[155] c. Calpine suggests that its combined cycle proposal provides substantial benefits that can justify these higher capacity costs, stating that "the selection of [combined cycle] technology rather than or at least in addition to [combustion turbine] technology provides a hedge against the risk that increasingly stringent control requirements lead to greater than expected retirements of baseload coal-fired capacity since [combined cycle] capacity can operate in baseload and intermediate roles."[156] d. Xcel has already made significant investments in self-built and contracted combined cycle facilities, including Calpine's existing Mankato facility. These facilities are only lightly used relative to their capabilities and relative to combined cycle facilities on other utility systems.[157] In fact, not only has the utilization of Xcel's owned combined cycle facilities continued to lag behind the national median, in 2012 Calpine's existing combined cycle plant in Mankato was utilized only about one-third as much as the national median and far less that either Riverside or High Bridge.[158]	No

[151] *Id.* at p. 18, line 19 through p. 19, line 2.

[152] Ex. 8 at 4 (Calpine's Proposal).
[153] Ex. 86, p. 11 (Rakow Rebuttal).
[154] Ex. 69, p. 8 (Ewan Rebuttal).
[155] *See* Ex. 87, TRADE SECRET ATTACHMENT SR-R-9, pp. 3-6 (Rakow Rebuttal) (showing the difference in capacity costs between the Expansion and Calpine on a per MW basis) and Ex. 45, HIGHLY SENSITIVE TRADE SECRET ATTACHMENT 2, p. 8 of 10 (Expansion) and p. 10 of 10 (Calpine) (Wishart Direct) (showing the year-by-year difference in total capacity costs).
[156] Ex. 51, pp. 25-26 (Hibbard Direct).
[157] Ex. 73, pp. 28-31 (Norman Rebuttal); Ex. 65, pp. 25-27 (Ewan Direct).
[158] Ex. 65, p. 26 (Ewan Direct) (showing a national median capacity factor for combined cycle facilities of over 50%, while Mankato has operated at between 11 and 17% for the years 2009-2012).

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				e. Calpine witness Mr. Hibbard has previously noted the potential of existing gas units such as Xcel's combined cycle facilities to provide additional power production as opposed to building new units. In an August 2010 report which Mr. Hibbard co-authored, a section of the report titled "Existing Gas Units Have Untapped Power Production Potential" states: "Despite declines in natural gas prices, existing gas units have significant untapped power production potential, which can be expanded during off peak periods without constructing new generation."[159] f. Both Xcel and the Commission Staff have also previously noted the enormous untapped potential of Xcel's currently owned and contracted for combined cycle fleet. In the 2010 IRP Docket, Staff summarized the situation as follows: a. Xcel explained that, when [Xcel] looks at the operation of its system in 2017-2019, the resources to be added likely will not operate many hours. Thus, a combustion turbine peaking resource may meet that need most cost-effectively…. Over the last several years, Xcel has invested in more than 1,000 MW of combined cycle capacity (i.e., roughly 500 MW at High Bridge and 500 MW at Riverside). According to Xcel, 'the capacity factor of those two plants today is roughly 20 percent.' Xcel's Strategist modeling configured the units to operate at 30 percent into 2018. Thus, according to [Xcel], 'there is a huge amount of available production capacity on [Xcel's] system' if the High Bridge and Riverside facilities were to operate at the 30 percent assumed in Strategist. Moreover, 'they can operate at 70-80 percent,' so Xcel does not believe another combined cycle addition benefits the system at this time.[160] g. Given this untapped capacity, to the extent energy needs on the Xcel system materialize faster than currently anticipated, Xcel already has Energy Resources available that can be called on rather than contracting for the cost of a new combined cycle power plant.[161] h. Calpine attempted to support its proposal with a LCOE analysis showing the Calpine proposal as the least cost resource. However, the record demonstrates that the LCOE analysis presented was overly simplistic, fundamentally flawed and designed to skew the results "to favor resource units with lower heat rates and higher capacity factors, such as combined cycle" resources. In part due to those drawbacks, Xcel explained that a LCOE analysis "is 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." The Energy Information Administration provides an even more blunt assessment of the value of LCOE analyses, stating that: "the direct comparison of the levelized cost of electricity across technologies is often problematic and	

[159] Ex. 91, p. 13; Transcript Vol. 1, pp. 54-55 (Hibbard).
[160] Ex. 73, pp. 28-29, quoting Staff Briefing Papers, MPUC Docket No. E-002/RP-10-825, February 20, 2013, p. 5.
[161] Ex. 73, p. 29 (Norman Rebuttal).

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				can be misleading as a method to assess the economic competitiveness of various generation alternatives."[162] i. Calpine also states that its combined cycle proposal could meet "the need for intermediate and baseload capacity in the face of potential retirements, and the need for flexible resources to integrate variable renewable generation."[163] j. The Commission did not initiate this proceeding to satisfy some unidentified and hypothetical need for future intermediate and baseload capacity or to replace current facilities. The Commission initiated this proceeding after finding in the 2010 IRP Docket that "Xcel will need an additional 150 MW in 2017, increasing up to 500 MW by 2019. . . . Xcel should invite proposals for adding peaking resources, intermediate resources, or a combination of the two."[164] Since the date of that Order, Xcel's September 2013 updated forecast suggests the possibility of a lower need, with decreasing energy needs and a lower overall system load factor going forward. None of this indicates a need for "intermediate and baseload capacity in the face of potential retirements." k. The record fails to support the notion that the Xcel system will face heretofore unforeseen retirements of baseload resources in the 2017-2019 time frame of concern in this proceeding. The record instead shows that Xcel's baseload resources will likely continue providing baseload power through the 2017-2019 time frame and beyond.[165] l. Combined cycle facilities also appear highly unlikely to economically displace Xcel's Minnesota assets that traditionally operate in a baseload mode. The record demonstrates that Xcel's Minnesota baseload assets are relatively low variable cost dispatch resources on the Xcel system.[166] These favorable economics have kept Xcel's baseload resources highly utilized plants compared to other baseload generators.[167] Even in 2012 – a year of historically low natural gas prices that, in many cases, resulted in combined cycles supplanting coal-fired resources as more economical baseload choices – Xcel's Sherco 1 and 2 and Allen S. King plants were among the top-performing (from a capacity factor perspective) assets within MISO.[168] m. Xcel's currently owned and contracted combined cycle fleet is underutilized. These underutilized facilities are available to provide substantial additional energy if needed, "at a lower incremental cost to Minnesota ratepayers than through contracting for the (entire cost) of a new combined cycle power plant."[169] n. Given the lack of identified need to replace existing resources, the unlikely circumstances of new combined cycle resources economically displacing existing baseload resources and the substantial available capacity	

[162] Ex. 47, p. 15-16 (Wishart Rebuttal).
[163] Ex. 53, p. 16 (Hibbard Rebuttal).
[164] 2010 IRP Docket, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket, March 5, 2013, p. 6.
[165] Ex. 73, p. 23 (Norman Rebuttal).
[166] *Id.*, p. 25.
[167] *Id.*
[168] *Id.*, pp. 25-26.
[169] *Id.*, p. 29.

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				on Xcel's existing combined cycle resources, adding still more combined cycle capacity fails the "common sense test."[170] Rather, Xcel's near-term capacity needs are best met with relatively less expensive (on a capital basis) Capacity Resources.	
	97 p-cc	**(NEW)**	CLP	p. Calpine's analysis demonstrates that Calpine's Expansion Proposal offers the lowest LCOE across all gas-fired resource bids by a wide margin. The results of Calpine's analysis are shown in Figure 1[171] below: **[TRADE SECRET INFORMATION BEGINS** **TRADE SECRET INFORMATION ENDS]** q. Under base case assumptions,[172] Calpine's Expansion Proposal offers the lowest LCOE across all gas-fired bids at **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS],** while Xcel's proposed Black Dog Unit 6 bid is the lowest cost option among the CT proposals at **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]**. r. The findings presented in Calpine's LCOE analysis are constant, even when a different range of assumptions beyond the base case are applied.[173] In virtually every case, Calpine demonstrated Calpine's Expansion represents the lowest-cost resource from the ratepayer's perspective.[174] s. While Xcel contended that reliance on a LCOE analysis is only appropriate when comparing similar resources of the same type where cost is the principal distinguishing factor between the resources,[175] the record shows that Calpine limited its LCOE analysis to a comparison of the gas-fired resources submitted in this proceeding to ensure reasonable comparability.[176] Calpine's LCOE analysis provides a second useful analytical tool such that the Commission does not need to rely on Strategist alone. t. Invenergy argued that the LCOE analysis is biased in favor of Calpine's Expansion Proposal because the	No

[170] *See* Transcript Vol. 2, pp. 15-16 (Norman).
[171] Figure 1 is set forth in Exhibit No. 51, Hibbard Direct at p. 10.
[172] Exhibit No. __ (PJH-3) to Exhibit No. 51, Hibbard Direct, includes a full list of model assumptions and inputs.

[173] Exhibit No. 53, Rebuttal Testimony Paul J. Hibbard at p. 8, lines 12-17 ("Hibbard Rebuttal").

[174] Exhibit No. 53, Hibbard Rebuttal at p. 8, lines 17-18. The results of Mr. Hibbard's analysis under each of these scenarios is summarized in Exhibit No. __ (PJH-4) to his Direct Testimony, Exhibit No. 51.

[175] Exhibit No. 47, Rebuttal Testimony of Steven Wishart at p. 15, lines 20-22 ("Wishart Rebuttal").

[176] *See e.g.,* Hearing Transcript, Volume 1 (October 22, 2013) at p. 66, lines 2-3.

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				LCOE analysis relies on calculating costs on a $/MWh basis, which favors high-capacity factor resource additions like Calpine's Expansion.[177] This argument is not credible as it would result in the Commission ignoring the efficiency benefit of Calpine's combined cycle Expansion Proposal when compared to less efficient CTs proposed by Invenergy and Xcel. u. The record in this case shows that the value to ratepayers of combined cycle versus CT capacity varies significantly based upon how often the resources are expected to be called on to run, which is expressed as the resource's annual average capacity factor ("CF").[178] Combined cycle resources are more efficient and therefore will be dispatched more often than CT resources. Calpine's clear "efficiency advantage" as a combined cycle resource was appropriately factored into the economic analyses in the record.[179] v. In conducting his LCOE analysis, Calpine Witness Hibbard assumed average annual capacity factors of **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]** for CT units and 20 percent for Calpine's Expansion.[180] w. Under such assumptions, the LCOE of Calpine's Expansion is 42 percent less than the next closest proposal (Xcel's Black Dog CT), and 46 percent to 59 percent less than all other bids that were evaluated. At average annual capacity factor assumptions that are higher than 20 percent for Calpine's Expansion, or lower than **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]** for the CTs proposed by Xcel and Invenergy, Calpine's advantage from a LCOE perspective increases.[181] x. A review of historical CF data presented in Xcel's Fuel Acquisition and Risk Management Plan filed on July 1, 2013 in Docket No. E002/RP-10-825 ("Xcel Fuel Plan") shows that a **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]** may overstate the CF for CTs because Xcel's Fuel Plan shows that the vast majority of CFs for natural gas-fired CT units from 2010 through 2012 were between 1 and 3 percent.[182]	

[177] Exhibit No. 73, Rebuttal Testimony of Ron Norman at p. 8, line 3-5 ("Norman Rebuttal").

[178] Exhibit No. 51, Hibbard Direct at p. 18, lines 7-9.

[179] Exhibit No. 44, Direct Testimony of Steve Wishart at p. 17, lines 5-15 ("Wishart Direct").

[180] Exhibit No. 51, Hibbard Direct at p. 10, lines 12-15.

[181] Exhibit No. 51, Hibbard Direct at p. 11, line 37 through p. 12, line 9.

[182] Exhibit No. 51, Hibbard Direct at p. 16, line 21 through p. 17, line 2.

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				y. In contrast, the Xcel Fuel Plan shows that Xcel's two most efficient combined cycle units (High Bridge and Riverside) – **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS] –** operated at 37 percent and 44 percent CF in 2012, and between 14 and 23 percent in 2010 and 2011. The use of 20 percent for a combined cycle CF is less than the three year average CF (25 percent) for these two plants over the 2010-2012 period.[183] z. Even assuming the CTs proposed by Xcel and Invenergy were expected to operate at higher CFs and Calpine's Expansion Proposal at a lower CF than 20%, Calpine's Expansion is still the most economical resource from a LCOE perspective. As set forth in Figure 2 below,[184] Calpine's Expansion's LCOE is equal to Black Dog 6's (the next most economical resource from a LCOE perspective) at a CF of approximately 8 percent, and *always* lower than this at CFs above 8 percent. aa. This Figure 2 demonstrates that if the Black Dog CT is modeled at a **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]**, Calpine's Expansion will always be more cost effective at any CF above 8 percent. Furthermore, as can be seen in Exhibit No. __ (PJH-5) to Calpine Witness Hibbard's Direct Testimony, at any CF greater than approximately 14 percent, Calpine's Expansion will always be the most cost-effective option on a $/MWh basis compared to any proposed CT operating at the same, or lower, CF.[185] bb. Calpine's assumed 20% CF for Calpine's Expansion and a [**TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]** for the CTs proposed by Xcel and Invenergy is further supported by Xcel's testimony. Xcel Witness Steve Wishart testified that his current expectation is that Black Dog 6 (and Invenergy's proposed Cannon Falls CT) would have around a 5% CF.[186] Mr. Wishart also testified that with Calpine's efficiency advantage, "the unit would operate as an intermediate type resource with capacity factors in the 20%-30% range."[187]	

[183] Exhibit No. 51, Hibbard Direct at p. 17, lines 11-17.

[184] Figure 2 is set forth in Exhibit No. 51, Hibbard Direct at p. 19.

[185] Exhibit No. 51, Hibbard Direct at p. 18, line 20 through p. 19, line 6.

[186] Exhibit No. 44, Wishart Direct at p. 13, lines 10-11; *see also* Hearing Transcript, Volume 1 (October 22, 2013) at p. 93, line 16 through p. 94, line 4 (stating "my expectation is still that any peaking resource should be around 5 percent.").

[187] Exhibit No. 44, Wishart Direct at p. 17, lines 9-10.

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	VII. Features of the Proposal Submitted by Geronimo				
98	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.[188]				
		98-1	DOC	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.[189] Geronimo explained that the estimated production of its facility is expected to decrease over time due to degradation of the plant equipment.[190]	No
99	The project consists of distributed photovoltaic power plants that would be located at approximately 20 sites serving Xcel loads within MISO Planning Resource Zone 1.[191]				
100	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 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.[192]				
101	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.[193]				
102	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.[194]				
103	Similarly, disbursement of Geronimo's units increases the reliability, and reduces the variability of, energy output from the proposed project.[195]				
104	The project would generate energy without significant air emissions.[196]				
105	The solar project has no associated fuel costs, and, therefore, provides for a fixed and certain price for the life of the project.[197]				

[188] Ex. 13 at 1 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct); Ex. 61 at 3 (Beach Rebuttal).
[189] Ex. 13 at 1 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct); Ex. 61 at 3 (Beach Rebuttal).
[190] Ex. 83 at 8 (Rakow Direct).
[191] Ex. 13 at 12 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct); Ex. 62 at 6-7 (Skarbakka Direct).
[192] Ex. 13 at 4 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct).
[193] Ex. 13 at 4 (Geronimo Proposal).
[194] Ex. 13 at 26 (Geronimo Proposal); Ex. 60 at 5 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).
[195] *Id*.
[196] Ex. 13 at 24 (Geronimo Proposal); Ex. 57 at 5 (Engelking Direct).
[197] Ex. 13 at 19 (Geronimo Proposal); Ex. 57 at 5 (Engelking Direct).

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	105a	**(NEW)**	INV	The Geronimo offer provides by far the most expensive resource in this proceeding. As the Department observed, that cost differential meant that Geronimo's proposal "was too far removed to be considered" along with the other proposals, despite the state's renewable energy preference.[198]	No
106	Geronimo's facilities can be interconnected at the distribution system, allowing for fewer line losses and greater reliability.[199]				
107	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.[200]				
108	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 energy each year.[201]				
	108a	**(NEW)**	INV	Geronimo offers a solar capacity proposal that would add even more intermittent resources to a system already rich in intermittent resources.	No
109	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.[202]				
110	Geronimo has proposed an in-service date of December 2016 so as to meet Xcel's energy needs between 2017 and 2019.[203]				
111	Xcel 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.[204]				
	111a	**(NEW)**	INV	Solar energy will play a significant role in Minnesota's energy future, given the recently enacted solar energy standard. However, that role will fill a different need than the need identified in the current docket. Ratepayers will be better benefitted if solar resources are added through a competitive solar acquisition process similar to the competitive wind acquisition processes the Commission has utilized in the past.	No
112	Xcel could likewise market the Solar Renewable Energy Credits (S-RECs) to other utilities that need to meet solar-specific requirements in other states.[205]				
		112-1	DOC	Xcel could likewise market the Solar Renewable Energy Credits (S-RECs) to other utilities that need to meet solar-specific requirements in other states, but only to the extent that Xcel does not use the S-RECs to comply with a Renewable Energy Standard.[206]	Yes, clarifies.
113	The project's primary components are a nominal 300 watt photovoltaic module mounted on a linear axis tracking system and a centralized inverter(s).[207]				

[198] Transcript Vol. 2, p. 56 (Rakow).
[199] Ex. 57 at 5 (Engelking Direct).
[200] Ex. 13 at 16 (Geronimo Proposal).
[201] Ex. 13 at 1 (Geronimo Proposal); Ex. 57 at 2 (Engelking Direct).
[202] Ex. 13 at 1 (Geronimo Proposal).
[203] Ex. 13 at 26 (Geronimo Proposal); Ex. 57 at 3 (Engelking Direct).
[204] Ex. 46 at 18 (Wishart Direct).
[205] Ex. 13 at 1 (Geronimo Proposal).
[206] Ex. 13 at 1 (Geronimo Proposal).
[207] Ex. 13 at 4 (Geronimo Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
114	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.[208]				
115	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.[209]				
		115-1	GRN	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. Both pricing proposals include all renewable or solar energy credits and environmental attributes.[210]	Yes, clarifies.
116	Geronimo's proposed Purchase Power Agreement has a defined price over its twenty-year term.[211]				
117	Under both pricing scenarios, Geronimo bears all of the interconnection and network upgrade costs associated with the project.[212]				
	117a	**(NEW)**	DOC	Some of Geronimo's proposed facilities will interconnect at Xcel distribution feeders or substations, while other facilities will interconnect to Xcel transmission substations.[213]	No
	117b	**(NEW)**	DOC	Regardless of whether its proposed facilities interconnect to the distribution or transmission system, Geronimo states that Xcel will incur no additional transmission costs.[214]	No
	VIII. Features of the Proposal Submitted by Great River Energy				
118	Great River Energy's proposal offered accredited capacity from its generation assets to meet a portion of Xcel's need.[215]				
	118a	**(NEW)**	INV	GRE offers to sell capacity credits for select years. As such, GRE offers no actual capacity or energy to the system and no longer-term solution to fill Xcel's need. Nonetheless, both Xcel and the Department included GRE in the Strategist modeling, to determine if this capacity credit offer had sufficient value to warrant consideration, for example, by delaying the need to actually add resources to the system. However, the value of delaying other resource additions was outweighed by the costs of the GRE proposal.[216] Thus, the record demonstrates that it is neither reasonable nor prudent for Xcel to pursue a capacity credit purchase from GRE.	No

[208] *Id*.
[209] Ex. 57 at 5 (Engelking Direct).
[210] Ex. 57 at 5 (Engelking Direct), Geronimo Solar Proposal, at 19.
[211] Ex. 13 at 19 (Distributed Solar Energy Proposal).
[212] Ex. 62 at 10-11 (Skarbakka Direct).
[213] Ex. 13 at 26 (Geronimo Proposal).
[214] Ex. 13 at 26 (Geronimo Proposal).
[215] Ex. 19 at 1 (GRE Proposal); Ex. 63 at 2-3 (Selander Direct).
[216] Ex. 46, p. 24 (Wishart Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
119	Great River Energy proposes to sell Xcel 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.[217]				
120	GRE's generators are dispatched by MISO. The operation of these generators is not dependent upon the outcome in this Docket.[218]				
121	This proposal could provide an alternative to building new generation resources in the near-term.[219]				
122	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.[220]				
	IX. Features of the Proposal Submitted by Invenergy				
123	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").[221]				
	123a	**(NEW)**	INV	To meet a need of 150 MW of capacity in 2017 increasing to up to 500 MW of capacity by 2019, Invenergy offered two Capacity Resource proposals – the approximately 179 MW combustion turbine Expansion project at Cannon Falls and two approximately 179 MW combustion turbines, for a potential combined 357 MW project at Hampton.	No
124	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.[222]				
125	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.[223]				
126	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.[224]				
127	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.[225]				
128	The Expansion would have minimal impacts to the surrounding area.[226]				
129	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.[227]				

[217] Ex. 19 at 1 (GRE Proposal); Ex. 64 at 3 (Selander Rebuttal).
[218] Ex. 63 at 3 (Selander Direct); Ex. 64 at 4 (Selander Rebuttal).
[219] Ex. 19 at 1 (GRE Proposal).
[220] Ex. 38 at 12 and 57 (Environmental Report); Ex. 64 at 4-6 (Selander Rebuttal).
[221] Ex. 70 at 12 (Shield Direct).
[222] Ex. 24 at 7, 11 and 17 (Invenergy Proposal).
[223] Ex. 70 at 12 (Shield Direct).
[224] Ex. 70 - Attachment 1 at 4 and 8 (Shield Direct).
[225] Ex. 65 at 17 (Ewan Direct).
[226] Ex. 38 at 23 and 58 (DOC EERA Environmental Report); Ex. 65 at 18-19 (Ewan Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
130	As a peaking facility, the Expansion will operate a limited number of hours each year.[228]				
131	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.[229]				
132	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.[230]				
133	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 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.[231]				
134	The site is adjacent to a new 345 kV electrical substation that is under construction. The proposed project would interconnect with the new substation.[232]				
135	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.[233]				
136	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.[234]				
137	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.[235]				
138	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.[236]				
139	Invenergy's proposal did not separately price additional transmission facilities that may be needed.[237]				
		139-1	INV	~~Invenergy's proposal did not separately price additional transmission facilities that may be needed.~~[238]	No
140	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.[239]				

[227] Ex. 65 at 17 (Ewan Direct); Ex. 38 at 17-18 (DOC EERA Environmental Report).
[228] Ex. 38 at 37 (DOC EERA Environmental Report).
[229] Ex. 26 at 4 (Invenergy Hampton Proposal).
[230] *Id.*; Ex. 65 at 3 (Ewan Direct).
[231] Ex. 65 at 19-20 (Ewan Direct).
[232] *Id*.
[233] *Id.* at 19 (Ewan Direct).
[234] *Id.* at 7 (Ewan Direct).
[235] *Id.* at 19 (Ewan Direct).
[236] Ex. 65 at 7-8 (Ewan Direct).
[237] *See,* Ex. 26 at 4 (Invenergy Hampton Proposal); Ex. 46 at 15 (Wishart Direct).
[238] *See,* Ex. 26 at 4 (Invenergy Hampton Proposal); Ex. 46 at 15 (Wishart Direct).
[239] Ex. 26 at 4-5 (Invenergy Hampton Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
141	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 on fuel oil.[240]				
142	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.[241]				
143	The project is scheduled to be in operation as early as January 1, 2016, but no later than January 1, 2017.[242]				
144	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.[243]				
145	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.[244]				
146	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 the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[245]				
		146-1	INV	By offering a proposed 20 year power purchase agreement ("PPA"), the Invenergy proposals provide ratepayers the benefit of a re-evaluation of Xcel's resource needs at the end of that contract.[246] Invenergy also offered an additional PPA term giving Xcel the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[247] To the extent capital costs rise significantly over the next 20 years, this optionality could prove extremely valuable to Xcel ratepayers and no other bidder offered a similar term.	No
147	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 the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[248]				
		147-1	INV	For both proposals, Invenergy offered pricing assuming in-service dates ranging from 2016 to 2019, including identical pricing for either a 2016 or 2017 date.[249] As the Department recognized, modeling suggests that the flexible in-service dates for the Expansion could provide substantial cost savings to ratepayers.[250] While the	No

[240] Ex. 65 at 20 (Ewan Direct).
[241] Ex. 26 at 8-9 (Invenergy Hampton Proposal).
[242] Ex. 26 at 4 (Invenergy Hampton Proposal).
[243] Ex. 69 at 4 (Ewan Rebuttal); Trade Secret Ex. 87 attachment SR-R-9 at 3-4 (Rakow Rebuttal).
[244] *See*, Ex. 65 at 32 (Ewan Direct).
[245] Ex. 69 at 17 (Ewan Rebuttal).
[246] *Id.*, pp. 31-32.
[247] Ex. 69, p. 17 (Ewan Rebuttal).
[248] Ex. 69 at 4 and 17 (Ewan Rebuttal); Trade Secret Ex. 87 attachment SR-R-9 at 3-4 (Rakow Rebuttal).
[249] Ex. 69, p. 4 (Ewan Rebuttal); TRADE SECRET Ex. 87, Attachment SR-R-9, pp. 3-4 (Rakow Rebuttal).
[250] Ex. 86, p. 11 (Rakow Rebuttal); Transcript Vol. 2, p. 55 (Rakow).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				Department did not conduct any detailed modeling of Hampton, Invenergy offered the same flexible structure and slightly *lower* pricing overall for Hampton as for Cannon Falls.[251] Thus, Invenergy offers flexible Capacity Resource additions that can meet the needs of the Xcel system on an incremental and as needed basis.	
	147a	**(NEW)**	INV	Invenergy proposes to construct its facilities in supportive local communities, creating over 100 construction jobs and generating local tax revenues approximating $500,000 per generating unit each year.[252] Cannon Falls testified to its strong support of the Expansion project at the public hearing – the only local community to provide such support to a proposal.[253]	No
	147b	**(NEW)**	INV	The Invenergy facilities take advantage of existing infrastructure and will have minimal impact on the natural environment.	No
	147c	**(NEW)**		The record of this proceeding contains three sets of Strategist modeling results, two from the Department and one from Xcel.[254] Xcel's Strategist modeling shows Invenergy's Expansion proposal (with an early in-service date of 2016) as being a part of the overall least cost set of resources, together with the Xcel self-build at Black Dog.[255] The Department's modeling initially did not place the Expansion proposal as high. However, with the modeling results presented in its rebuttal testimony, the Department included the Expansion in its two top performing packages.[256]	No
	147d	**(NEW)**		The record demonstrates the limitations of Strategist. However, Strategist can nonetheless provide useful information if the Commission recognizes these limitations.	No
	147e	**(NEW)**		The Strategist modeling done by both Xcel and the Department overstate the costs of the Invenergy proposals in several ways. Both the Department and Xcel assumed an in-service date of June 2016. However, Invenergy stated that it would hold its pricing the same with an in-service date of June 2017.[257] Despite this clarification, neither Xcel nor the Department ever modeled the Invenergy proposals with an in-service date of 2017.[258] By not modeling a 2017 start date, these model results penalized the Invenergy proposals by adding a full year of cost on the front end when compared to any other proposal.	No
	147f	**(NEW)**		Xcel's modeling also distorted the variable operation and maintenance expense associated with the Expansion by assuming a run time per start approximately half of that experienced by Invenergy over the last five years of operation at Cannon Falls.[259] Revising the run time per start to equal something more reflective of actual performance would further lower the cost of the Expansion.[260]	No

[251] *See* TRADE SECRET Ex. 87, Attachment SR-R-9, pp. 3-4 (Rakow Rebuttal).
[252] *Id.*, pp. 12-13.
[253] *See* Public Hearing, October 15, 2013 Transcript, pp. 30-34.
[254] Strategist is a complex resource planning software which includes detailed modeling of every unit on Xcel's system and includes an hourly generation dispatch simulation that attempts to calculate total costs and associated air emission costs related to various combinations of resources. Ex. 44, pp. 19-21 (Wishart Direct); Transcript Vol. 1, p. 92 (Wishart).
[255] Ex. 44, p. 26 (Wishart Direct).
[256] Ex. 87, p. 3 (Rakow Rebuttal).
[257] Ex. 69, p. 4 (Ewan Rebuttal); Transcript Vol. 2, p. 8 (Ewan).
[258] *See* Transcript Vol. 1, p. 102 (Wishart) and Transcript Vol. 2, p. 55 (Rakow).
[259] Ex. 69, p. 4 (Ewan Rebuttal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	147g	**(NEW)**		Strategist also incorrectly "rewards" high forced outage rates.[261] Xcel's modeling effectively reduced the capacity of each project by the forced outage rate that the particular entity proposed. Invenergy proposed a lower forced outage rate than the other parties, reflective of the extremely high reliability experienced to date at Cannon Falls.[262] However, this lower forced outage rate then had the effect of adding incremental capacity payment costs to the Invenergy proposals, again making them appear more expensive than other resources.[263]	No
	147h	**(NEW)**		The modeling also assumed air emissions at the level currently permitted at Cannon Falls. However, actual emissions have been far lower than permit levels and Invenergy anticipates that both the Expansion and Hampton will be permitted on a more restrictive basis than the existing Cannon Falls facility. By overstating the emissions and then applying externality costs to those overstated levels, the modeling again inappropriately penalizes the Invenergy proposals.[264]	No
	147i	**(NEW)**		The Strategist results also differed widely between the Department and Xcel, given the different approaches and assumptions made by the two parties. As Xcel witness Mr. Wishart explained, a few key decisions made by the modelers appear to account for the majority of the difference in results. Mr. Wishart explained that Xcel "locked" the model's long-term expansion plan in order to evaluate all resource proposals in the context of the same plan and to get a "cleaner comparison of just the economics of one proposal versus the other."[265]	No
	147j	**(NEW)**		The Department did not "lock" the expansion plan, meaning that with each bid portfolio studied Strategist created different sets of other resources for the period 2020 through 2036.[266] This approach meant that the Department's model results "are not a direct comparison between bid proposals, but rather a comparison of the bids plus the cost of some generic plants that were added by Strategist."[267]	No
	147k	**(NEW)**		The Department modeling also ended at 2036 (as opposed to Xcel's analysis which ran through 2050) and then included substantial "end effects" adjustments to both the Invenergy Expansion and to Black Dog.[268] An "end effects" adjustment incorporates into the results "an estimate of the long-term cost of a resource instead of modeling the long-term cost."[269] For Black Dog, the impact of the Department's adjustment meant "a $10 million penalty for the project."[270] Invenergy's Expansion proposal fared even worse, with Xcel explaining that "the	No

[260] *Id*.
[261] *Id*., p. 5.
[262] *Id*.; Transcript Vol. 2, p. 8 (Ewan).
[263] *Id*.
[264] Ex. 69, p. 5 (Ewan Rebuttal).
[265] Transcript Vol. 1, pp. 97-98.
[266] Ex. 47, p. 7 (Wishart Rebuttal).
[267] *Id*.
[268] The Department did no detailed modeling of Hampton but presumably the same adjustment would have been applied.
[269] Ex. 47, pp. 13-14 (Wishart Rebuttal).
[270] *Id*., p. 6.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				Department's model applies a $50 million 'end effects' penalty to the Invenergy bid. . . . The magnitude of the 'end effects' adjustment is very non-intuitive."[271] Nothing in the record explains the basis for this substantial penalty.	
	147l	**(NEW)**		Despite these flaws, the Strategist modeling presented for the record shows the Expansion as part of the least cost package for meeting Xcel's ratepayer's needs. Correcting the inappropriate cost assumptions built in to this modeling would only improve the standing of the Expansion. In addition, after correcting these assumptions the model results for Hampton may show an even more dramatic effect.[272] As Invenergy explained, Hampton is ideally situated adjacent to both a substation and natural gas line. Invenergy also offered alternative in-service dates for Hampton which, presumably, would have the same "substantial" impact on cost effectiveness as the alternative dates for the Expansion. Therefore, the Strategist modeling to date supports advancing both the Expansion and Hampton proposals.	No
	147 m	**(NEW)**		Calpine raised concerns that Invenergy's Expansion and Hampton proposals pose reliability risk due to the use of an interruptible gas supply. Calpine stated that to eliminate that risk, all modeling of the Invenergy proposals should include the costs of firm gas supply.[273] The record demonstrates that requiring the Expansion to use a firm gas supply adds approximately $35 million in cost. Xcel stated that "the use of an interruptible natural gas supply can deliver significant cost savings without a significant impact on reliability, so long as the unit can operate on back-up fuel oil or there are other system units available to meet the demand."[274] Both the Expansion and Hampton have back-up fuel oil supplies. Moreover, even in the highly unlikely event of the Expansion being completely unavailable in the winter months, Xcel testified that "the project's cost effectiveness does not change."[275]	No
	147n	**(NEW)**		Calpine also criticized the Invenergy (and Xcel) Capacity Resource proposals for not including selective catalytic reduction ("SCR") pollution control technology and recommended that the Commission require such technology be installed on any combustion turbine selected as a result of this proceeding. The record demonstrates that this recommendation would simply add "wholly unnecessary" costs of $15 million to the combustion turbine proposals. SCR technology is not required on combustion turbines, given their low run time and associated low total air emissions and the combustion turbine proposals of both Invenergy and Xcel meet all applicable environmental standards.[276]	No
	X. The Department's Proposed Corrections to Calpine's Bid				
			DOC	**The Department's Proposed Corrections to Calpine's ~~Bid~~ Proposed Strategist Inputs**	

[271] *Id.*, pp. 13-14 (emphasis added).
[272] Ex. 69, p. 5 (Ewan Rebuttal).
[273] *See, e.g.*, Ex. 53, p. 6 (Hibbard Rebuttal).
[274] Ex. 47, p. 20 (Wishart Rebuttal) (emphasis added).
[275] *Id.*, pp. 20-21.
[276] Ex. 69, p. 18 (Ewan Rebuttal); Ex. 43, pp. 3-5 (Ford Rebuttal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
148	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.[277]				
		148-1	DOC	The Department adjusted Calpine's ~~bid~~proposed modeling inputs 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.[278]	No
149	Using Calpine's estimate of summer and winter capacities, and the rating factors from other recently-added generation units – including Blue Lake 7, Blue 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.[279]				
150	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.[280]				
151	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.[281]				
		151-1	DOC GRN	The $1.55 million cost was reasonably included in a post-model Present Value ~~Rate of Return~~of Revenue Requirements (PVRR) adjustment for all scenarios and contingencies evaluating Calpine's proposal.[282]	No
152	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.[283]				
	XI. The Department's Proposed Corrections to Geronimo's ~~Bid~~ Proposed Strategist Inputs				
153	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.[284]				

[277] Ex. 83 at 7 (Rakow Direct).
[278] Ex. 83 at 7 (Rakow Direct).
[279] *Id*.
[280] The 12.17 percent LARR is the most recent estimate available. DOC Ex. 83 at 7 (Rakow Direct).
[281] Ex. 83 at 7-8 (Rakow Direct).
[282] Ex. 83 at 7-8 (Rakow Direct).
[283] Ex. 83 at 6 (Rakow Direct).
[284] Ex. 83 at 8-11 (Rakow Direct); Hearing Transcript, Vol. 2 at 145.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		153-1	DOC	The Department's modeling assumed that if Geronimo's proposal was selected by the Commission, there would be no reduction in capacity, energy, and 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.~~ However, the Department explained how to interpret its modeling results assuming an offsetting reduction in the capacity and energy to meet the SES.[285]	
		153-2	Staff	The Department's modeling assumed that if Geronimo's proposal was selected by the Commission, there would be no reduction in capacity, energy, and 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. However, the Department explained how to interpret its modeling results assuming an offsetting reduction in the capacity and energy to meet the SES.[286]	Yes, clarifies.
154				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.[287]	
		154-1	DOC	The Department asserts that it would not be appropriate to award a contract to a proposal that performs poorly for the identified need on the basis that the proposal might fill a need not specified in the original RFP ~~because Xcel's RFP did not call for SES-qualifying solutions, the value of this feature of Geronimo's proposal is zero~~.[288]	No
155				Notwithstanding the valuation conferred by the Department, the Solar Renewable Energy Credits (S-RECs) do have a separate market value, and this value is more than zero. S-RECs are sold in other states at prices between $13/S-REC to more than $200/S-REC.[289]	
		155-1	DOC	~~Notwithstanding the valuation conferred by the Department, t~~The Solar Renewable Energy Credits (S-RECs) ~~do~~ would have a separate market value if sold, and this value is more than zero. S-RECs are sold in other states at prices between $13/S-REC to more than $200/S-REC.[290] However, Minnesota Statute §216B.1691, subd. 4 states that such credits can be used only once;[291] thus, a credit cannot be used to comply with the Minnesota RES and sold. Xcel expects to use the solar credits resulting from Geronimo's project to comply with its RES, rather than sell the credits.[292] Because a sale of the solar credits is required before Xcel could obtain revenue from the solar-value of Geronimo's project, it would not be appropriate to assume that Xcel or its ratepayers would obtain revenues from the sale of the credits.	No

[285] Ex. 83 at 8-11 (Rakow Direct); Hearing Transcript, Vol. 2 at 145.
[286] Ex. 83 at 8-11 (Rakow Direct); Hearing Transcript, Vol. 2 at 145.
[287] Ex. 83 at 10-11 (Rakow Direct).
[288] Ex. 83 at ~~10-11~~13 (Rakow Direct).
[289] Ex. 59 at 18-19 (Engelking Rebuttal).
[290] Ex. 59 at 18-19 (Engelking Rebuttal).
[291] The statute states:

> (a) To facilitate compliance with this section, the commission, by rule or order, shall establish by January 1, 2008, a program for tradable renewable energy credits for electricity generated by eligible energy technology. The credits must represent energy produced by an eligible energy technology, as defined in subdivision 1. Each kilowatt-hour of renewable energy credits must be treated the same as a kilowatt-hour of eligible energy technology generated or procured by an electric utility if it is produced by an eligible energy technology. The program must permit a credit to be used only once.

[292] Hearing Transcript, Vol. 1 at 137.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
156				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.[293]	
		156-1	DOC	If the S-RECs were sold by Xcel, ~~A~~at a price of $5 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $10 million ~~annually~~, without considering degrading performance. At a price of $20 for each marketable S-REC, the Geronimo proposal will result in a PVSC reduction of $38 million ~~annually~~.[294]	Yes, correction.
157	If Geronimo's proposal is selected by the Commission, Xcel will use the solar energy generated by the project to meet the requirements of Minnesota Solar Energy Standard.[295]				
158	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.[296]				
		158-1	DOC	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.[297] Mr. Wishart stated Xcel's intention, in the near future, to issue a solar RFP. A solar RFP would enable all parties and the Commission to evaluate Geronimo's proposal in comparison to other solar projects. Xcel intends to work with the Commission, the Department, and interested parties on the solar acquisition plan.[298]	No
	XII. The Department's Proposed Corrections to Great River Energy's Bid				
159	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.[299]				
		159-1	DOC	GRE reported that the Department's proposed 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.[300]	No
	XIII. The Department's Proposed Corrections to Invenergy's ~~Bid~~ Proposed Strategist Inputs				

[293] Ex. 59 at 18-19 and Table 2 (Engelking Rebuttal).
[294] Ex. 59 at 18-19 and Table 2 (Engelking Rebuttal).
[295] Hearing Transcript, Vol. 1 at 137.
[296] Ex. 83 at 12-13 (Rakow Direct).
[297] Ex. 83 at 12-13 (Rakow Direct).
[298] Ex. 46 at 36 (Wishart Direct).
[299] Ex. 83 at 14 (Rakow Direct).
[300] Ex. 83 at 14 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
160	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.[301]				
161	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.[302]				
162	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 unit 6 by the emissions input provided by Xcel 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 NOx, PM_{10}, and CO the difference was about one percent.[303]				
163	The Department determined that the differences were very close such that Strategist accurately reflected the inputs provided by the bidders.[304]				
		163-1	DOC	The Department determined that the differences were very close such that Strategist accurately reflected the inputs provided by Invenergy~~the bidders~~.[305]	No
	XIV. The Department's Proposed Corrections to Xcel's ~~Bid~~ Proposed Strategist Inputs				
164	Xcel provided a spreadsheet that corrected the base year revenue requirements (capital cost) inputs for its proposals. Dr. Rakow revised Xcel's calculations for Black Dog Unit 6 assuming a 2018 in-service date as well as Black Dog Unit 6 assuming a 2019 in-service date. He then used the revised results for the base year revenue requirements for Black Dog Unit 6 and Red River Units 1 and 2.[306]				
	XV. Strategist Model and the Forecasts of Future Needs				
165	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.[307]				
166	The Department's Strategist analysis began with inputs from Xcel's fall 2011 sales forecast.[308]				

[301] *Id*.
[302] *Id*.
[303] *Id*. at 14-15.
[304] *Id*.
[305] *Id.*
[306] *Id*. at 15.
[307] *Id*. at 5 and 14, n.4.
[308] Ex. 76 at 14 (Shah Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
167	Since 2011, however, Xcel has produced additional forecasts; including its spring 2013 forecast.[309]				
168	In its spring 2013 forecast, Xcel predicts that its customers will use less energy and capacity in the initial years compared to the fall 2011 forecast. In future years, Xcel predicts that customers will continue to use less energy while making higher demands on Xcel's peak compared to the fall 2011 forecast.[310]				
		168-1	DOC	In its untested spring 2013 forecast, Xcel predicts that its customers will use less energy and capacity in the initial years compared to the fall 2011 forecast. In future years, Xcel predicts that customers will continue to use less energy while making higher demands on Xcel's peak compared to the fall 2011 forecast.[311]	No
169	Xcel forecasts a significant decrease in the overall load factor of its system.[312]				
		169-1	DOC	Xcel forecasts a significant change (decrease) in the overall load factor of its system.[313] Xcel did not provide a reasonable basis or explanation for the predicted changes in that forecast.[314]	No
	169a	**(NEW)**	INV	The record developed in this proceeding shows two significant developments since the Commission Order that must be considered in selecting an appropriate resource or resources to fill this need – the addition of significantly greater Intermittent Resources to the Xcel system and Xcel's continually declining load factor.	No
170	The Department has not verified the accuracy of Xcel's spring 2013 sales forecast. However, the Department analysis does include sales levels that are even lower than Xcel's spring 2013 sales forecast.[315]				
		170-1	DOC	The Department has not verified the accuracy of Xcel's spring 2013 sales forecast. The Department identified concerns based on its limited review of the spring 2013 forecast.[316] In fact, the spring 2013 forecast was not been reviewed in detail by any party.[317] However, the Department's analysis does include sales levels that are even lower than Xcel's spring 2013 sales forecast.[318]	No
171	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.[319]				
		171-1	DOC	The Department included in its analysis different assumptions regarding the reserve ratio that is applied to the~~amount of capacity that is reserved to serve load during periods of~~ peak demand on the electrical system. On	Yes, clarifies.

[309] *Id*. at 3-7.
[310] *Id*. at 8-10.
[311] *Id*. at 8-10.
[312] *Id*. at 10.
[313] *Id*. at 10.
[314] *Id*. at 9-11; Tr. V. 2 at 32-33 (Shah).
[315] Hearing Transcript, Vol. 2 at 14 and 32-33; Ex. 76 at 7-13 (Shah Direct); Ex. 78 at 4 (Shah Rebuttal).
[316] *Id*. At 7-13.
[317] Ex. 76 at 4 and 7 (Shah Direct); Ex. 74 at 15, n.11 (Norman Rebuttal).
[318] Hearing Transcript, Vol. 2 at 14 and 32-33; Ex. 76 at 7-13 (Shah Direct); Ex. 78 at 4 (Shah Rebuttal).
[319] Ex. 83 at 22-25 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				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.[320] This reserve ratio does not reflect the higher percentage reserve requirement that MISO presented in October, 2013.[321]	
172	The new MISO method is likely to have a significant effect on the amount of reserve capacity that MISO may require of Xcel in future years. This amount is likely to be much lower than the reserves required in 2011.[322]				
		172-1	DOC	The new MISO method is likely to have a significant effect on the amount of reserve capacity that MISO may require of Xcel in future years. It is not known at this time what MISO's long-term reserve requirement will be;[323] moreover, it is difficult to predict how MISO's short-term reserve requirement will change over time. ~~This amount is likely to be much lower than the reserves required in 2011~~.	No
		172-2	CLP	The new MISO method may ~~is likely to~~ have a significant effect on the amount of reserve capacity that MISO may require of Xcel in future years. ~~This amount is likely to be much lower than the reserves required in 2011.~~	No
173	The Department is continuing to evaluate how MISO's changing methods may impact Minnesota's resource planning.[324]				
		173-1	DOC	The Department is continuing to evaluate how MISO's changing methods may impact Minnesota's resource planning.[325] For example, the impact of the new reserve requirements on items such as the quantity of DSM requires further analysis. Decreases in DSM capability would serve to effectively increase the required reserve. Moreover, MISO indicated in October 2013 that the reserve requirement percent is expected to increase.[326]	No
174	Xcel's peak reliability method (also known as "non-coincident peak" method) refers to the reliability method used during the analysis of Xcel's last Commission-approved resource plan – the 2010 IRP. Under this method a 3.79 percent reserve ratio was added to Xcel's forecast of the Company's peak demand – 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 had sufficient capacity to cover both the Company's peak demand forecast and the required reserves.[327]				
		174-1	DOC	~~Xcel's~~ MISO's prior peak reliability method (also known as "non-coincident peak" method) refers to the reliability method used during the analysis of Xcel's last Commission-approved resource plan – the 2010 IRP. Under this method a 3.79 percent reserve ratio was added to Xcel's forecast of the Company's peak demand – 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 had sufficient capacity to cover both the Company's peak demand forecast and the required reserves.[328]	Yes, correction.

[320] Ex. 83 at 22-25 (Rakow Direct).
[321] Ex. 83 at 39 (Rakow Direct)
[322] *Id*. at 23 n.11 and 27.
[323] Ex. 46 at 10 (Wishart Direct); *see also*, Ex. 49 at 7~~8~~ (Alders Direct) ("the Midcontinent Independent System Operator's resource adequacy process is in flux")
[324] *Id*. at 23 n.11.
[325] Ex. 83~~*Id.*~~ at 23 n.11.
[326] *Id.* at 24-25 and 39.
[327] *Id*. at 22-23.
[328] *Id*. at 22-23.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
175	This was the method used by MISO for the June 2012 to May 2013 planning year. It is also the method used by Xcel in its most recent resource plan.[329]				
176	The term "MISO coincident peak" refers to a new reliability method to be used by MISO for the June 2013 to May 2014 planning year. This reliability method requires that a 6.2 percent reserve ratio be added to Xcel's forecast of its demand at the time of (or coincident with) the MISO system peak.[330]				
177	The new reliability method recognizes that the peak demand on Xcel's system may occur on different days, or at different hours on the same day, as the peak demand on the MISO system.[331]				
178	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'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.[332]				
179	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's non-coincident peak demand. Xcel's Saver's Switch air conditioning interruption program, for example, can reduce hour-by-hour demand for energy by approximately 100 MW.[333]				
		179-1	DOC	Due to the uncertainties discussed above, 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's non-coincident peak demand. The amount of the hour-by-hour demand reduction from Xcel's Saver's Switch air conditioning interruption program, for example, can ~~reduce hour-by-hour demand for energy~~ vary by ~~approximately~~ more than 100 MW.[334]	Yes, correction.
180	The forecasted amount of Xcel'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.[335]				
		180-1	DOC	The forecasted amount of Xcel'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	Yes, clarifies and provides correction.

[329] *Id*. at 22.
[330] *Id*. at 22-23.
[331] *See generally, Id*. at 23-24.
[332] *Id*. at 23 and n.12.
[333] *Id*. at 24-25.
[334] *Id*. at 24-25.
[335] *Id.*

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				each year. This calculation does not take into account any changes in DSM capability or changes in MISO's short-term reserve requirement percentages.[336]	
		180-2	CLP	The forecasted amount of Xcel's needs varies depending upon whether one uses the previous reliability calculation method or MISO's new method. Moreover, the difference in forecasts could be ~~is~~ substantial. Therefore, it is prudent for the Commission to require Xcel enter into PPA negotiations for new gas-fired capacity (such PPAs remaining subject to final Commission review and approval) and that Xcel be required to file updated need assessments in 2014 and 2015 of its capacity need in the 2017-2019 time period. ~~reduction in net peak demand of between about 275 MW and 290 MW each year.~~	No
181	Both the Department and Xcel only evaluated combinations of energy plants that produced 300 MW by 2019.[337]				
		181-1	DOC	~~Both the Department and Xcel only evaluated combinations of energy plants that produced 300 MW by 2019~~.In the first round of Strategist analysis the Department evaluated 24 different combinations of forecasts, solar accreditation, required reserve ratios, and wind additions. This analysis resulted in a wide variety of capacity deficits. In the second round of Strategist analysis, under base case conditions the Department's model has a deficit of about 300 MW by 2019. However, the Department also used four different forecast contingencies, again presenting Strategist with a variety of capacity deficits. Xcel's Strategist analysis evaluated the proposals assuming a deficit of about 300 MW in 2019. [338]	Yes, correction.
		181-2	GRN	Both the Department and Xcel identified a need exceeding 300 MW. Accordingly, Xcel only evaluated combinations of energy plants that produced 300 MW by 2019, and the Department added generic units to its model to supplement generation resources smaller than the identified need.[339]	
182	The identified need was just larger than Calpine's Mankato facility rated summer capacity of 278 MW.[340]				
		182-1	DOC	The ~~identified~~ need identified by Xcel was just larger than Calpine's Mankato facility rated summer capacity of 278 MW.[341]	No
		182-2	Staff	The ~~identified need~~ minimum threshold used by Xcel was just larger than Calpine's Mankato facility rated summer capacity of 278 MW.[342]	Yes, correction.
183	The minimum quantity was also more than 11 times Xcel's most-recent projection of need for 2019 – 26 MW.[343]				
		183-1	DOC	The minimum quantity in Xcel's modeling was also more than 11 times Xcel's most-recent projection of need for 2019 – 26 MW. Xcel most-recent projection of need uses the new MISO reserve method, but did not consider the need for offsetting changes in DSM capability and other factors that may increase Xcel's need for capacity.[344]	No

[336] *Id*.
[337] Ex. 46 at 25-27 (Wishart Direct); Ex. 83 at 26 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal).
[338] Ex. 46 at ~~25-27~~10-11 (Wishart Direct); Ex. 84 SR-3 and SR-4A (Rakow Direct Attachments)~~Ex. 83 at 26 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal)~~.
[339] Ex. 46 at ~~25-27~~ 23-27 (Wishart Direct); Ex. 83 at 26, 29-31 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal), Ex. 83 at 29-31 (Rakow Direct).
[340] Ex. 46 at 2 and 16 (Wishart Direct).
[341] Ex. 46 at 2 and 16 (Wishart Direct).
[342] Ex. 46 at 2 and 16 (Wishart Direct).
[343] *Id. at* 10.
[344] *Id. at* 10.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		183-2	XCL INV	~~The minimum quantity was also more than 11 times Xcel's most-recent projection of need for 2019 – 26 MW.~~[345]	Yes, too many variables not explained in finding.
184	As configured by the Department and Xcel, 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.[346]				
		184-1	DOC	As configured by the Department and Xcel, a wholesale energy market was available, but not a wholesale capacity market. Thus, 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. This treatment of capacity is consistent with long-standing Commission decisions regarding how to use the wholesale market in ensuring that utilities are able to provide reliable service.[347]	No
				Additional FOF for consideration under Section XV. Strategist Model and Forecasts of Future Needs	
	184a	**(NEW)**	INV	Xcel will add dramatically greater wind energy to its system than envisioned by the Commission at the time it initiated this proceeding.[348] At that time, the Commission and Xcel both anticipated that Xcel would add 200 MW of wind energy to its system through a wind acquisition proceeding.[349] Instead, Xcel ultimately petitioned the Commission to acquire 750 MW of wind, a change significant enough that the Commission required Xcel to file a Notice of Changed Circumstances in both the 2010 IRP Docket and in the current docket.[350]	No
	184b	**(NEW)**	INV	Calpine witness Mr. Hibbard testified that, "combustion turbines in particular can be used as fast-start, fast-ramp resources, and provide net-load-following capability in off-line and on-line mode."[351] The Invenergy proposals provide Capacity Resources with the ability to start quickly (achieving minimum load within 20 minutes and full load within 30 minutes) and then can be ramped up and down to follow load as needed.[352]	No
	184c	**(NEW)**	INV	In addition to the dramatic increase in wind now planned for Xcel's system, Xcel will be adding significant new solar energy resources. Minnesota enacted its first-ever solar energy mandate after the Order initiating this docket. Under that mandate, investor-owned utilities such as Xcel must provide one and one-half percent of their retail electric sales to retail customers in Minnesota with solar energy resources.[353]	No

[345] *Id. at* 10.
[346] Hearing Transcript, Vol. 1 at 105; *see also,* Ex. 83 at 16 (Rakow Direct).
[347] Hearing Transcript, Vol. 1 at 105; *see also,* Ex. 83 at 19~~16~~ (Rakow Direct).
[348] *See* Transcript Vol. 2, p. 10 (Ewan).
[349] 2010 IRP Docket, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket, March 5, 2013, p. 4.
[350] MPUC Docket Nos. E-002/RP-10-825, E-002/CN-12-1240, E-002/M-13-603 and E-002/M-13-716, Order Requiring Notice of Changed Circumstances and Granting Intervention, October 4, 2013, p. 4.
[351] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).
[352] Ex. 65, p. 7 (Ewan Direct).
[353] Minn. Stat. § 216B.1691, subd. 2f; *see also* Transcript Vol. 2, p. 10 (Ewan).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	184d	**(NEW)**	INV	Xcel's increasing levels of Intermittent Resources raise two specific concerns relevant to this resource selection proceeding – the need to manage for the variability of those resources and the need for quick-starting resources in the event of extreme and unexpected drop offs in generation.[354] These concerns typically lead utilities to add Capacity Resources in the form of peaking facilities as they add Intermittent Resources.[355]	No
	184e	**(NEW)**	INV	Xcel currently lags far behind its own subsidiary Public Service Company of Colorado ("PSCo") with respect to the level of Capacity Resources on its system. PSCo has nearly twice as much peaking capacity as wind capacity – capacity that proved beneficial when PSCo experienced an unexpected wind ramp down of nearly 800 MW within 30 minutes last year.[356] In contrast, Xcel's current peaking capacity fails to even match its existing wind capacity.[357] After the addition of another 750 MW of wind, Xcel's peaking capacity will decrease to only two-thirds of its wind capacity,[358] leaving it particularly vulnerable to wind ramp down events.	No
	184f	**(NEW)**	INV	Capacity Resources of the type Invenergy proposes best complement the Intermittent Resources on Xcel's system. Calpine witness Mr. Hibbard testified that combustion turbines provide "fast-start, fast-ramp resources, and provide net-load-following capability in off-line and on-line mode."[359]	No
	184g	**(NEW)**	INV	In contrast, a combined cycle facility such as that proposed by Calpine can only provide balancing functions when on-line and requires "on the order of several hours" to come on-line from a cold start.[360] Such a facility is "often operated as close to the most efficient operational point, with a dispatch range that is narrow relative to its size, limiting ramp/flexibility potential."[361]	No
	184h	**(NEW)**	INV	Prior Department modeling has also shown the impact of significant Intermittent Resources to the Xcel system. As Mr. Norman noted, previous Strategist modeling by the Department in the Black Dog Docket found that any need for combined cycle generation was typically delayed by the addition of large amounts of wind generation.[362] Specifically, the Department stated that its modeling showed that "addition of a combined cycle is delayed to 2020 or later under certain circumstances, usually involving large quantities of wind additions."[363]	No
	184i	**(NEW)**	INV	The Department noted that Xcel's most recent forecast predicts that its load factor will decrease significantly over time, with customers demanding ever more from Xcel's peak while using less energy overall.[364]	No
	184j	**(NEW)**	INV	The potential need for greater capacity at peak, while requiring less energy overall, suggests that Capacity Resources, not Energy Resources, best fit Xcel's customers' needs and best ensure those customers a continued	No

[354] Ex. 73, pp. 16-17 (Norman Rebuttal).
[355] *Id*.
[356] *Id*., pp. 17-18.
[357] *Id*.
[358] *Id*, p. 19.
[359] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).
[360] Transcript Vol. 1, pp. 42-43 (Hibbard).
[361] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).
[362] Ex. 73, pp. 21-22 (Norman Rebuttal), citing MPUC Docket No. E-002/CN-11-184, Department of Commerce Letter, March 1, 2012, p. 2.
[363] MPUC Docket No. E-002/CN-11-184, Department of Commerce Letter, March 1, 2012, p. 2.
[364] Ex. 76, p. 10 (Shah Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				adequate electric supply.	
	184k	**(NEW)**	INV	Consideration of the most efficient means of meeting Xcel's needs must also consider the characteristics of Xcel's system. A low load factor indicates a system where supply resources will sit idle for periods of time until higher load conditions occur.[365] On such systems, ratepayer costs are minimized with Capacity Resources, since a Capacity Resource such as a combustion turbine imposes significantly lower capacity costs on the system than an Energy Resource such as a combined cycle or coal plant.[366]	No
	184l	**(NEW)**	INV	Xcel's recent analyses of its system needs have shown a preference for the kind of Capacity Resource proposed by Invenergy. In the Black Dog Docket, Xcel withdrew its application for a certificate of need for a combined cycle facility, stating that the proposal was no longer in the best interest of ratepayers given the softening demand and lower energy forecasts now seen for its system.[367] Given those lower energy needs, which the record shows continues to hold true, Xcel stated that "it is more likely that the next resource should be a combustion turbine,"[368] rather than a combined cycle facility such as that proposed by Calpine.	No
	184m	**(NEW)**	INV	To summarize the adequacy, reliability and efficiency considerations relevant to this proceeding, the Commission has already established a need on the Xcel system of 150 MW of capacity in 2017 and up to 500 MW by 2019. Since that decision, Xcel has committed to adding significant new Intermittent Resources to its system. In addition, forecast updates suggest a need in 2017 possibly lower than the 150 MW identified by the Commission, with a continually decreasing load factor. Each of these factors indicates a need for lower capital cost, quick starting facilities in the form of peaking resources as proposed by Invenergy and Xcel.	No
	184n	**(NEW)**	CLP	Three parties submitted comprehensive quantitative economic analyses outlining the financial impact that selection of one or more of the resources proposed in this procurement would have on Xcel customers.	No
	184o	**(NEW)**	CLP	Calpine analyzed the thermal (*i.e.*, gas-fired) resources offered in this procurement by Xcel, Calpine, and Invenergy based on the levelized cost of energy ("LCOE") as seen from the perspective of Xcel's ratepayers.	No
	184p	**(NEW)**	CLP	The Department and Xcel undertook independent Strategist analyses, which analyzed the present value of societal costs ("PVSC") of different combinations of bids. No other party submitted a quantitative economic analysis – though parties commented on and challenged various aspects of the analyses submitted.	No
	184q	**(NEW)**	CLP	Calpine recognized both the value and limitations of the Strategist modeling undertaken by the Department and Xcel in evaluating the resource proposals submitted by bidders. As a check on the "black box" proprietary Strategist modeling, Calpine presented a LCOE analysis to provide the Commission with another analytical tool to inform its decision.[369]	No

[365] *Id.*, p. 11.
[366] *Id.*
[367] MPUC Docket No. E-002/CN-11-184, Xcel Motion to Withdraw Application, p. 2.
[368] *Id.*
[369] Exhibit No. 51, Direct Testimony of Paul J. Hibbard at p. 8, lines 18-21 ("Hibbard Direct").

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	184r	(NEW)	CLP	Under Calpine's LCOE analysis, capacity, energy, and other cost elements in project proposals are translated into an equivalent dollars-per-megawatt hour (MWh) metric, using consistent financial, market, and temporal assumptions across all proposals.[370] The purpose of the LCOE analysis is to determine the cost of proposals to Xcel customers.	No
	184s	(NEW)	CLP	Calpine developed the LCOE for Calpine's combined cycle Expansion Proposal and Invenergy and Xcel's CT proposals using data contained in each proposal, including capital costs, energy costs, operating costs, financing costs, and pollutant emissions provided by each company.[371]	No
	XVI. Strategist Base Case Development				
185	To develop a "no build" or base case for Strategist the Department updated its most recent Strategist analysis of Xcel's system as follows: a. Re-established Xcel'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'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's proposed North Dakota units. e. Removed the Goodhue Wind unit from Xcel'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'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's 2013 database. h. Updated the wholesale market price inputs per Xcel's 2013 database. i. Updated the retirement dates for Xcel's Black Dog units 3 and 4 and French Island unit 3 per Xcel's 2013 database. j. Updated the in-service (repair) date for Xcel's French Island unit 3 per Xcel'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. 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's 2013 database. n. Updated the coal, nuclear, biomass, natural gas fuel costs for the existing units per Xcel's 2013 database. o. Updated the natural gas fuel costs for generic expansion units per Xcel's 2013 database. p. Updated the monthly pattern for natural gas per Xcel's 2013 database.			

[370] Exhibit No. 51, Hibbard Direct at p. 5, lines 8-12.

[371] Exhibit No. 51. Hibbard Direct at p. 9, lines 3-5.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				q. Updated the variable operations and maintenance costs for certain existing units per Xcel's 2013 database. r. Updated the wholesale energy market costs per Xcel's 2013 database.[372]	
		185-1	DOC	To develop a ~~"no build" or~~ base case for Strategist the Department updated its most recent Strategist analysis of Xcel's system as follows: a. Re-established Xcel'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'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's proposed North Dakota units. e. Removed the Goodhue Wind unit from Xcel'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'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's 2013 database. h. Updated the wholesale market price inputs per Xcel's 2013 database. i. Updated the retirement dates for Xcel's Black Dog units 3 and 4 and French Island unit 3 per Xcel's 2013 database. j. Updated the in-service (repair) date for Xcel's French Island unit 3 per Xcel'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. 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's 2013 database. n. Updated the coal, nuclear, biomass, natural gas fuel costs for the existing units per Xcel's 2013 database. o. Updated the natural gas fuel costs for generic expansion units per Xcel's 2013 database. p. Updated the monthly pattern for natural gas per Xcel's 2013 database. q. Updated the variable operations and maintenance costs for certain existing units per Xcel's 2013 database. r. Updated the wholesale energy market costs per Xcel's 2013 database.[373]	No

[372] 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).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
186				Xcel'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.[374]	
	XVII. Using Generic ~~Credits~~ Units to Equalize Proposals for Evaluation				
187	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.[375]				
		187-1	DOC	To affect comparisons between proposals of very different sizes, the Department allowed Strategist to add~~ed~~ generic ~~energy~~ units to its modeling of particular bid packages so as to compare the ~~life-cycle~~ costs to Xcel's system of ~~a common~~ the various package~~s across bidders~~. The price of a generic unit was provided by Xcel and was based upon the estimated current cost to construct a particular type of energy generation unit, escalated over time for inflation.[376]	Yes, corrects and clarifies.
188	In this case, Xcel used internal information that it had as to plant costs to develop a price for generic gas units.[377]				
189	Xcel likewise developed a price for generic units of solar energy. In this instance, however, Xcel did not have internal cost or pricing information available. Instead, Xcel 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."[378]				
190	Both Xcel and the Department used the same base assumptions with respect to the cost of generic gas and solar units.[379]				
		190-1	DOC	Geronimo claimed that b~~B~~oth Xcel and the Department used the same base assumptions with respect to the cost of generic gas and solar units. However, while Xcel did apply a cost to the solar energy added to Strategist, the Department did not apply any cost to the solar energy added to Strategist. Instead the Department merely increased the energy production at existing units. No cost was appropriate since the energy production for the solar mandate is the same in each Strategist run.[380]	No
191	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				

[373] 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).
[374] Ex. 83 at 17-18 (Rakow Direct).
[375] *See, e.g.,* Hearing Transcript, Vol. 1 at 109-110.
[376] *See, e.g.,* Hearing Transcript, Vol. 1 at 109-110.
[377] Hearing Transcript, Vol. 1 at 110.
[378] *Id*.
[379] Ex. 59 (Engelking Rebuttal, Schedule EME-3).
[380] Ex. 59 (Engelking Rebuttal, Schedule EME-3); Hearing Transcript, Vol. 1 at 110; Ex. 83 at 19 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	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.[381]				
		191-1	DOC	There are risks associated with adding generic units to proposals during the evaluation process. <u>These risks are analyzed by running contingency analysis in Strategist assuming higher and lower capital costs.</u>[382] 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.[383]	No
192	The generic gas unit price that Xcel developed was higher than the prices of the gas plants bid in this docket. As a result, each of the 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.[384]				
		192-1	DOC	The generic gas unit price that Xcel developed was higher than the prices of the gas plants bid in this docket. As a result, each of the gas proposals bid in this proceeding was comparably less expensive than the generic units; a fact that benefited the gas proposals <u>in proportion to their size</u> during the <u>Department's</u> evaluation process <u>(the larger the proposal the less it relies upon the more expensive generic units). Since Xcel locked-in the expansion plan in Strategist this issue did not impact Xcel's modeling.</u>[385]	Yes, clarifies.
		192-2	XCL	The generic gas unit price that Xcel <u>Energy</u> developed was higher than the prices of the gas plant <u>expansion</u>~~s~~ bid<u>s</u> in this docket. <u>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.</u> As a result, each of the<u>se</u> 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~~.	No
		192-1	INV	~~The generic gas unit price that Xcel developed was higher than the prices of the gas plants bid in this docket. As a result, each of the 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.~~[386]	No
193	The generic solar unit price that Xcel developed was lower than the prices of the solar plant bid in this docket. 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.[387]				

[381] Ex. 83 at 29-32 (Rakow Direct).
[382] <u>Ex. 83 at 36-37 (Rakow Direct).</u>
[383] Ex. 83 at 29-32 <u>and 37</u> (Rakow Direct).
[384] Ex. 83 at 30 (Rakow Direct).
[385] <u>Ex. 46 at 36 (Wishart Direct);</u> Ex. 83 at 30 (Rakow Direct).
[386] Ex. 83 at 30 (Rakow Direct).
[387] 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.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		193-1	DOC	~~The generic solar unit price that Xcel developed was lower than the prices of the solar plant bid in this docket. As a result,~~ Geronimo's proposal was ~~evaluated as comparably~~ more expensive than the generic units in the Department's modeling~~; a fact that disadvantaged its proposal during the evaluation process~~. Geronimo's proposal was also the smallest among the bids submitted. Therefore, Geronimo's proposal actually relied more upon the (lower cost) generic units and also benefitted. Again, since Xcel locked-in the expansion plan in Strategist this issue did not impact Xcel's modeling.[388]	Yes, clarifies and corrects.
		193-2	XCL	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~~.	No
		193-3	INV	~~The generic solar unit price that Xcel developed was lower than the prices of the solar plant bid in this docket. 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.~~[389]	No
	XVIII. Evaluating Interconnection Costs and Savings				
194	The Department reviewed the costs associated with interconnecting the proposed projects to the transmission system, including the potential for curtailment or congestion charges.[390]				
195	Xcel 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.[391]				
196	The offerors do treat interconnection costs, including potential network upgrade costs, in very different ways.[392]				
197	Concerned that Xcel 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.[393]				
198	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."[394]				
199	Dr. Rakow included a $1,550,000 upgrade cost in the Strategist analysis for Calpine's Mankato proposal.[395]				
		199-1	DOC	Dr. Rakow included a $1,550,000 PVSC upgrade cost in the Strategist analysis for Calpine's Mankato proposal.[396]	No

[388] 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.
[389] 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.
[390] Hearing Transcript, Vol. 2 at 39 (Shaw).
[391] Ex. 79 at 5 (Shaw Direct).
[392] *Id. at* 2-4.
[393] Ex. 79 at 2-4 (Shaw Direct); Ex. 82 at 4 (Shaw Rebuttal); Ex 83 at 7-8 (Rakow Direct).
[394] Ex. 79 at 4 (Shaw Direct).
[395] Ex. 83 at 7 (Rakow Direct).
[396] Ex. 83 at 7 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
200	Invenergy included $7 million for interconnection costs in its Cannon Falls proposal, but identified a formula to calculate increases or decreases to that amount.[397]				
201	Invenergy failed to show the reasonableness of its suggestion that unknown costs be shifted to ratepayers following the Commission's selection of proposals.[398]				
		201-1	INV	~~Invenergy failed to show the reasonableness of its suggestion that unknown costs be shifted to ratepayers following the Commission's selection of proposals.~~[399]	No
202	Xcel proposes to pass extra costs on to ratepayers through a rider to its tariff.[400]				
		202-1	XCL	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.[401]	No
203	To the extent that Xcel's proposal permits it to avoid submitting firm pricing for interconnection costs, it is prejudicial to ratepayers and other offerors.[402]				
		203-1	XCL	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 offerors~~.[403]	No
204	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.[404]				
205	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.[405]				
		205-1	DOC	Based upon demand loss factors by voltage level, Geronimo indicates that its proposal will result in a four percent reduction in transmission line losses. Geronimo calculated that t~~T~~his reduction would result~~s~~ in a PVSC savings of approximately $9 million.[406]	No
206	Xcel 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.[407]				
		206-1	DOC	Xcel would incur any costs associated with transmission losses through the differential in locational marginal prices	No

[397] Ex. 79 at 3-4 (Shaw Direct).
[398] *Id*.
[399] *Id*.
[400] Ex. 82 at 1-3 (Shaw Rebuttal).
[401] Ex. 82 at 1-3 (Shaw Rebuttal).
[402] *Id*.
[403] *Id*.
[404] Ex. 62 at 4 (Skarbakka Direct).
[405] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).
[406] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).
[407] Ex. 46 at 35 (Wishart Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				(LMP) between a generator and its load (called congestions charges). Xcel provided the Department with an analysis of the LMP differential for all bids except for the Geronimo proposal; for Geronimo, Xcel stated that "The Company will be responsible for congestion charges associated with … any portion of the Geronimo Energy proposal that interconnects to the MISO transmission grid.[408] ~~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.~~ Xcel stated that Geronimo's proposal was not evaluated due to insufficient information on the locations of the various solar sites.[409] Based upon Xcel's data, the Department concluded that no adjustment to any of the bids was necessary.[410] A $9 million PVSC adjustment would not significantly change the Department's Strategist modeling results.[411]	
		206-2	XCL	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~~. 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.[412]	No
207	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.[413]				
		207-1	DOC	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. To the extent Geronimo is able to interconnect at the distribution level, t~~T~~hese reductions may make existing transmission capacity available to meet future needs and permit Xcel to avoid costs to expand its transmission system.[414] However, Geronimo also proposed to interconnect some of its proposed facilities at Xcel's transmission system.[415]	No
		207-2	XCL	~~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.[416]~~	No
208	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.[417]				
		208-1	DOC	Using MISO's rate for network integration service on Xcel's system, Geronimo calculated the avoided transmission	No

[408] Ex. 81 at CJS-5 at 4 (Shaw Direct Attachments).
[409] *Id.*
[410] ~~Ex. 46 at 35 (Wishart Direct)~~ Ex. 81 at CJS-5 at 8 (Shaw Direct Attachments); Ex. 79 at 5 (Shaw Direct).
[411] See Ex. 84 SR-4A, SR-5A, and SR-5B (Rakow Direct Attachments).
[412] Ex. 46 at 35 (Wishart Direct).
[413] *See,* Ex. 13 at 9-12 (Geronimo Proposal).
[414] *See,* Ex. 13 at 9-12 (Geronimo Proposal).
[415] Ex. 13 at 26 (Geronimo Proposal).
[416] ~~*See,* Ex. 13 at 9-12 (Geronimo Proposal).~~
[417] Ex. 61 at 9 (Beach Rebuttal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				capacity benefits associated with Geronimo's proposal ~~is~~ to be approximately $3.24 million each year beginning the first year Geronimo's proposal is in service.[418]	
		208-2	XCL	~~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.~~[419]	No
209	Neither the Department nor Xcel evaluated the benefits of avoiding additional transmission capacity costs.[420]				
		209-1	DOC	~~Neither the Department nor Xcel evaluated the benefits of avoiding additional transmission capacity costs.~~The Department conducted analysis to ensure that all transmission-related concerns associated with each proposed project were properly considered. [421]	No
		209-2	XCL	~~Neither the Department nor Xcel evaluated the benefits of avoiding additional transmission capacity costs.~~[422]	No
210	These savings reduce the PVSC for Geronimo's project by $33 million.[423]				
		210-1	DOC	Geronimo further calculated that t~~T~~hese $3.24 million annual savings reduce the PVSC for Geronimo's project by $33 million. However, Geronimo was unable to demonstrate any need for Xcel's transmission system to be expanded in the areas its proposed project would be built. Therefore, potential savings, if any, are very speculative and no adjustment is proper.[424]	No
		210-2	DOC	~~These savings reduce the PVSC for Geronimo's project by $33 million.~~[425]	No
	XIX. The Department's Strategist Analysis				
211	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.[426]				
212	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.[427]				
213	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				

[418] Ex. 61 at 9-10 (Beach Rebuttal).
[419] ~~Ex. 61 at 9 (Beach Rebuttal).~~
[420] *Id. at* 7.
[421] ~~*Id. at 7.*~~Ex. 79 at 2-4 (Shaw Direct).
[422] ~~*Id. at 7.*~~
[423] *Id*.; Ex. 59 at 20 (Engelking Rebuttal).
[424] *Id*.; Ex. 59 at 20 (Engelking Rebuttal).
[425] ~~*Id*.; Ex. 59 at 20 (Engelking Rebuttal).~~
[426] Ex. 83 at 5 (Rakow Direct); *see also,* Department's May 3, 2013 Comments, CN-12-1240.
[427] Ex. 83 at 5-6 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	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.[428]				
214	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.[429]				
215	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.[430]				
216	From the results of the first round of its Strategist analysis, the Department selected seven packages for more detailed analysis: 1. BD617— Xcel'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; 4. BD619 CCC1 — Xcel'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 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.[431]				
217	Dr. Rakow's first round of modeling revealed that Xcel'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.[432]				
218	Xcel also undertook analyses of proposals using Strategist modeling software. The Black Dog 6 unit was the lowest-cost resource of the proposals that Xcel reviewed and was a feature of each of the top 20 highest-rated plans in its modeling.[433]				
219	Importantly, however, the Black Dog 6 Unit 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.[434]				
		219-1	DOC	Importantly, however, the Black Dog ~~6~~ Unit 6 combined with Calpine's CC unit is a large ~~unit~~ package. To broaden and deepen the Department's analyses, Dr. Rakow analyzed the effects of deploying smaller energy solutions (and	Yes, corrects.

[428] Ex. 83 at 37 (Rakow Direct).
[429] *Id.* at 37-38.
[430] *Id.* at 5.
[431] *Id.* at 35.
[432] *Id.* at 34.
[433] Ex. 46 at 19 (Wishart Direct); Hearing Transcript, Vol. 1 at 124.
[434] Ex. 83 at 36-37 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				covering the deficits for a shorter period of time) and adjusting the proposed in-service dates of energy generation sources.[435]	
220	For the base case in a second round of analysis, the Department used: (a) Xcel'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.[436]				
221	Against these assumptions, the Department tested a set of contingencies drawn from Xcel'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); • 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).[437]				
222	Additionally, the Department ran each scenario and contingency a second time with the Commission's CO_2 internal cost and externality values removed.[438]				
223	Following a second round of analyses, Dr. Rakow's Strategist modeling gave the highest rating to Calpine's proposal when combined with Xcel'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.[439]				
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.[440]				
225	Assuming use of a firm natural gas supply favored Calpine's Mankato project and Xcel's Black Dog Unit 6 and disfavored Invenergy's proposal.[441]				
		225-1	INV	~~Assuming use of a firm natural gas supply favored Calpine's Mankato project and Xcel's Black Dog Unit 6 and disfavored Invenergy's proposal.~~[442]	No

[435] Ex. 83 at 36-37 (Rakow Direct).
[436] *Id.* at 36.
[437] *Id.* at 36-37.
[438] *Id.* at 37.
[439] Ex. 83 at 40 and 43 (Rakow Direct); Ex. 84 SR-5A (Rakow Direct Attachments).
[440] Ex. 86 at 4 (Rakow Rebuttal).
[441] *Id.* at 4-5.
[442] *Id.* at 4-5.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
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's Black Dog unit 6.[443]				
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.[444]				
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, Calpine and Invenergy and that, based upon the results of these negotiations, two of three projects should be selected by the Commission.[445]				
229	Dr. Rakow also concluded that Geronimo's solar energy proposal was "significantly below the top performing packages in terms of Strategist results."[446]				
	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 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.[447]				
		230-1	DOC	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 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~~ the process tracks the framework of the Certificate of Need process under Minn. Stat. §216B.243~~criteria~~.[448]	No
231	Minn. Stat. § 216B.243 provides that in assessing need, the Commission shall evaluate:				

[443] Ex. 86 at 12 (Rakow Rebuttal).
[444] Ex. 86 at 10-12 (Rakow Rebuttal); Ex. 88 at SR-R-11A (Rakow Rebuttal Attachments).
[445] Ex. 86 at 2, 15 and 21 (Rakow Rebuttal); Hearing Transcript, Vol. 2 at 50 (Rakow).
[446] Ex. 83 at 16 (Rakow Rebuttal).
[447] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 5 (June 21, 2013); Minn. Stat. § 216B.243, subd. 5.
[448] NOTICE AND ORDER FOR HEARING, OAH 8-2500-30760 at 5 (June 21, 2013); Minn. Stat. § 216B.243, subd. 5.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				(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 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.[449]	
232				Minn. R. 7849.0120 summarizes the statutory criteria found in Minn. Stat. § 216B.243 as follows: (A) the probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states … ; (B) a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record … ; (C) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the	

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

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	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.[450]				
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."[451]				
		233-1	DOC	Importantly, however, Minn. Stat. §§ 216B.2422, subd. 4 and 216B.243, subd. 3a, places a limitation on the Commission's powers to confer a certificate of need. The statutes 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." and "may not issue a certificate of need under this section for a large energy facility that generates electric power by means of a nonrenewable energy source, … unless the applicant for the certificate has demonstrated to the commission's satisfaction that it has explored the possibility of generating power by means of renewable energy sources and has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source.[452]	Yes, clarifies.
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.[453]				
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.[454]				
	XXI. Impact upon Adequacy, Reliability or Efficiency of the Energy Supply (All parties included below except for INV – see Appendix C)				
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.[455]				
237	Xcel'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				

[450] Minn. R. 7849.0120.
[451] Minn. Stat. § 216B.2422, subd. 4; *see also,* Minn. Stat. § 216B.243, subd. 3a.
[452] Minn. Stat. § 216B.2422, subd. 4; *see also,* Minn. Stat. § 216B.243, subd. 3a.
[453] Minn. Stat. § 216B.2422, subd. 4.
[454] Minn. Stat. § 216B.2426.
[455] Minn. R. 7849.0120 (A).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	(3) new reserve margin requirements issued by MISO.[456]				
		237-1	DOC	Xcel's needs for additional capacity have not been shown in this proceeding to require a change to the determination by the Commission that Xcel needs 150 MW of capacity by 2017 and up to 500 MW of capacity by 2019. Several factors were asserted to have a potential effect on Xcel's capacity needs, namely ~~are undergoing significant change because of three key factors~~: (1) Xcel's assertion of expected lower overall demand; (2) the addition of between 72 and 200 MW of accredited capacity from solar resources, needed by 2020 to meet Minnesota's Solar Energy Standard; and (3) new short-term reserve margin requirements issued by MISO.[457]	
238	Taking into account only the first two factors – lower overall demand and the new solar resource standard – Xcel projects that it will have a generating capacity shortfall of 93 MW in 2017. This shortfall might conceivably grow to 307 MW by 2019.[458]				
		238-1	DOC	Taking into account ~~only~~ the first two factors – Xcel's assertion of lower overall demand and the new solar resource standard – along with less significant changes such as updated unit capacity ratings and forecast of load management Xcel projects that it will have a generating capacity shortfall of 93 MW in 2017. This shortfall might conceivably grow to 307 MW by 2019.[459] No party performed a detailed review of the spring 2013 forecast of lower overall demand. However, there is preliminary evidence that there may be problems with Xcel's lower demand forecast.[460] Nonetheless, the Department's analysis of the bids employed a forecast band wide enough to encompass Xcel's spring 2013 sales forecast.[461]	
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 does not face a shortfall of generation capacity until 2019. Moreover, this deficit grows only by 26 MW by 2019.[462]				
		239-1	DOC	However, if MISO's reserve requirements are calculated on the basis of coincident peaks, as they are today, before consideration of the impact of changing the reserve requirement methodology on DSM resources and without regard to higher short-term reserve requirement percentages suggested by MISO, the projected deficit in generation capacity may be lower; there is uncertainty about the level of reserve requirements that will be in place over the long run ~~shrinks even further~~.[463] ~~If all three factors reducing the need for capacity are considered, Xcel does not face a shortfall of generation capacity until 2019. Moreover, this deficit grows only by 26 MW by 2019.~~	
		239-2	CLP	~~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~~	

[456] Ex. 46 at 7-8 (Wishart Direct); Ex. 83 at 19 (Rakow Direct).
[457] Ex. 46 at 7-8 (Wishart Direct); Ex. 83 at 19 (Rakow Direct).
[458] Ex. 46 at 7 and Table 2 (Wishart Direct).
[459] Ex. 46 at 7-8 and Table 2 (Wishart Direct).
[460] Ex. 74 at 15 (Norman Rebuttal); Ex. 76 at 7-13 (Shah Direct).
[461] Ex. 76 at 13 (Shah Direct).
[462] Ex. 46 at 8-10 and Table 4 (Wishart Direct).
[463] Ex. 83 at 39 (Rakow Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				~~considered, Xcel does not face a shortfall of generation capacity until 2019. Moreover, this deficit grows only by 26 MW by 2019.~~[464]	
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.[465]				
		240-1	DOC	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. Solar power sources are accredited based upon performance during the hours ending 2 p.m., 3 p.m., and 4 p.m. regardless of when Xcel's peak demand occurs. Also, the new MISO reserve methodology is based upon the time of the MISO system peak demand rather than individual utility demand peaks.[466]	
		240-2	XCL	~~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.~~[467]	
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.[468]				
		241-1	XCL	~~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.~~[469]	
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.[470]				
		242-1	XCL	~~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.~~[471]	
243	A distributed network of generation reduces the risk of outages at any particular point of the transmission system.[472]				
		243-1	DOC	A distributed network of generation may reduce~~s~~ the ~~risk~~ impact of outages at any particular point of the transmission system but subjects the proposal to outages at a greater number of points on the transmission system.[473]	
		243-2	XCL	~~A distributed network of generation reduces the risk of outages at any particular point of the transmission system.~~[474]	

[464] Ex. 46 at 8-10 and Table 4 (Wishart Direct).
[465] Ex. 60 at 12-13 and 15-16 (Beach Direct).
[466] Ex. 60 at 12-13 and 15-16 (Beach Direct); Ex. 83 at 22-23 (Rakow Direct).
[467] ~~Ex. 60 at 12-13 and 15-16 (Beach Direct).~~
[468] Ex. 60 at 3-5 and 18-19 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).
[469] ~~Ex. 60 at 3-5 and 18-19 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).~~
[470] Ex. 57 at 9 (Engelking Direct).
[471] ~~Ex. 57 at 9 (Engelking Direct).~~
[472] Ex. 62 at 3-4 (Skarbakka Direct).
[473] Ex. 62 at 3-4 (Skarbakka Direct).
[474] ~~Ex. 62 at 3-4 (Skarbakka Direct).~~

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
244	A distributed network of generation reduces transmission line losses. This reduction results in a PVSC savings of approximately $9 million.[475]				
		244-1	DOC	A distributed network of generation reduces transmission line losses. Geronimo calculated that t~~T~~his reduction results in a PVSC savings of approximately $9 million.[476] However, Geromino proposes to interconnect its facilities at both the distribution and transmission system.[477] In any case, no adjustment is necessary to any of the bids based on the LMP differentials which include transmission losses.[478]	
		244-2	XCL	~~A distributed network of generation reduces transmission line losses. This reduction results in a PVSC savings of approximately $9 million.~~[479]	
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.[480]				
		245-1	DOC	A distributed network of generation reduces transmission line losses. Geronimo calculated that t~~T~~his reduction results in a PVSC savings of approximately $9 million.[481] However, Geromino proposes to interconnect its facilities at both the distribution and transmission system.[482] In any case, no adjustment is necessary to any of the bids based on the LMP differentials which include transmission losses.[483]	
		245-2	XCL	~~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.~~[484]	
246	GRE proposes to sell capacity from its existing generators to Xcel.[485]				
		246-1	XCL	~~GRE proposes to sell capacity from its existing generators to Xcel.~~[486]	
247	Those energy resources are fully integrated into the existing transmission system and dispatched by MISO within its energy market.[487]				
		247-1	XCL	Those energy resources are fully integrated into the existing transmission system and dispatched by MISO within its energy market.[488]	
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.[489]				

[475] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).
[476] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).
[477] Ex. 13 at 26 (Geronimo Proposal).
[478] Ex. 81 at CJS-5 at 4-8 (Shaw Direct Attachments).
[479] ~~Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).~~
[480] Ex. 57 at 7 (Engelking Direct).
[481] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 61 at 7 (Beach Rebuttal).
[482] Ex. 13 at 26 (Geronimo Proposal).
[483] Ex. 81 at CJS-5 at 4-8 (Shaw Direct Attachments).
[484] ~~Ex. 57 at 7 (Engelking Direct).~~
[485] Ex. 63 at 3 (Selander Direct).
[486] ~~Ex. 63 at 3 (Selander Direct).~~
[487] Ex. 63 at 3 (Selander Direct).
[488] ~~Ex. 63 at 3 (Selander Direct).~~
[489] Ex. 63 at 2-3 (Selander Direct); Ex. 64 at 3 (Selander Rebuttal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		248-1	DOC	Over the three-year period that includes 2017, 2018 and 2019, GRE's rebuttal testimony indicated that 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.[490]	
		248-1	XCL	~~Over the three-year period that includes 2017, 2018 and 2019, GRE's rebuttal testimony indicated that 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.~~[~~491~~]	
249	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.[492]				
		249-1	DOC	Even with potential changes in factors suggested in this proceeding that may increase or decrease Xcel's near term capacity needs, it is important to ensure that Xcel is able to provide reliable electric service, as required by Minn. Stat. §216B.04. The most efficient solution in this circumstance is to require Calpine's Mankato natural gas project, Invenergy's Cannon Falls natural gas project, and Xcel's Black Dog Unit 6 natural gas project to continue in negotiations and report to the Commission in a timely manner; there is not a basis in this proceeding for all three projects to be chosen. Ratepayers must not be at risk for costs that are higher than bid or for benefits assumed in bids that do not materialize.[493] ~~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~~.	
		249-2	XCL	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~~.[494]	
250	It is not efficient to procure one or more gas turbines when the projected needs through 2019 are modest – and may be getting smaller.[495]				
		250-1	DOC	It is not reasonable or efficient to procure insufficient capacity to cover a range of potential needs and hope that wholesale market capacity is available to cover any shortfalls~~one or more gas turbines when the projected needs through 2019 are modest – and may be getting smaller~~.[496]	
		250-2	XCL	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.[497]	

[490] Ex. 63 at 2-3 (Selander Direct); Ex. 64 at 3 (Selander Rebuttal).
[491] ~~Ex. 63 at 2-3 (Selander Direct); Ex. 64 at 3 (Selander Rebuttal).~~
[492] *See generally,* Ex. 46 at 8-10 and Table 4 (Wishart Direct).
[493] Department Ex. 102 (Rakow Opening Statement); Tr.V.2 at 52 (Rakow) and Tr.V. 2 at 43 (Shaw).
[494] *See generally,* Ex. 46 at 7~~8~~-10 and Table2 and 4 (Wishart Direct); Ex. 78 at 4 (Shah Rebuttal).
[495] *Id*.
[496] *Id.*
[497] *Id*. Ex. 46 at 10-11.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		250-3	CLP	~~It is not efficient to procure one or more gas turbines when the projected needs through 2019 are modest – and may be getting smaller.~~[498]	
	250a		XCL	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.[499]	
	XXII. The Most Reasonable and Prudent Alternative (DOC below, See Appendix C for CLP, INV and XCL)				
251	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 preponderance of the evidence on the record.[500]				
252	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.[501]				
		252-1	DOC	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.[502] The Department's analysis shows that, using the (lower) spring 2013 forecast, 72 percent solar accreditation, 800 MW of wind, and (new) coincident peak reliability calculations Geronimo's proposal on its own appears as package number 118, meaning that 117 packages were lower cost, including costs of externalities. The Department demonstrated that the PVSC for this package is $100 million higher than the least cost package.	
253	In this circumstance, a levelized cost of electricity (LCOE) points to a better prediction of costs and impacts to ratepayers.[503]				
		253-1	DOC	In this circumstance, the evidence and long-standing Commission precedent is that capacity expansion modeling~~a levelized cost of electricity (LCOE)~~ points to a better prediction of costs and impacts to ratepayers than a levelized cost of electricity (LCOE) analysis.[504]	
254	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.[505]				
		254-1	DOC	LCOE represents the net present value of the expected annual costs – including variable and fixed operations and	

[498] *Id*.

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

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

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

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

[503] *See generally,* Ex. 52 at 7 (Hibbard Direct).

[504] Ex. 47 at 2-3 (Wishart Rebuttal)~~*See generally,* Ex. 52 at 7 (Hibbard Direct)~~.

[505] Ex. 52 at 6 (Hibbard Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
				maintenance costs, capital costs and the return on investment – divided by annual generation over the term of the proposal. However, LCOE does not include any impacts on a utility's existing resources when another resource is added – such as avoided fuel costs, avoided variable costs, and avoided capacity costs of the existing facilities.[506]	
255	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.[507]				
		255-1	DOC	~~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.~~[508]	
256	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.[509]				
		256-1	DOC	Geronimo's proposal ~~likewise~~ may manage~~s future~~ certain risks but may create other risks. Because its facilities create energy from sunlight, Geronimo's solution poses no risk of higher fuel costs in the future.[510] However, given that only one solar firm submitted a bid, it is not possible to conclude that Xcel's ratepayers would be getting the best solar resources if the Solar Bid were approved in this proceeding.	
257	On a per MWh basis, a solar unit is also the lowest cost standalone resource.[511]				
		257-1	DOC	On a system cost ~~per MWh~~ basis, a solar unit is also the highest ~~lowest~~ cost standalone resource.[512]	
258	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.[513]				
		258-1	DOC	~~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~~.	
259	Combining Geronimo's proposal with GRE's proposal, represents the most reasonable and prudent alternative to meet Xcel's near-term needs.[514]				
		259-1	DOC	Combining two of the following proposals: Xcel's Black Dog unit 6, Invenergy's Cannon Falls expansion, and Calpine's Mankato expansion ~~Geronimo's proposal with GRE's proposal~~, represents the most reasonable and prudent alternative to meet Xcel's near-term needs.[515]	

[506] *Id.*~~Ex. 52 at 6 (Hibbard Direct).~~
[507] 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).
[508] Ex. 13 at 31 (Distributed Solar Energy Proposal); Ex. 5~~7~~9 at 18-19 (Engelking Direct); Ex. 5~~9~~8 at 18 (Engelking Rebuttal); Ex. 61 at 7 (Beach Rebuttal).
[509] Ex. 13 at 19 (Distributed Solar Energy Proposal).
[510] Ex. 13 at 19 (Distributed Solar Energy Proposal).
[511] *See,* Ex. 74 at 7 (Norman Rebuttal).
[512] *See,* Ex. 74 at 7 (Norman Rebuttal), referencing Dr. Rakow and Mr. Wishart's direct testimonies.
[513] *See generally,* Ex. 46 at 8-10 and Table 4 (Wishart Direct).
[514] *See,* Section XXII.

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
260	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.[516]				
		260-1	DOC	It is not reasonable and prudent to procure resources that may not cover the known range of potential needs~~one or more gas turbines~~, when the projected needs through 2019 are subject to several uncertainties that may increase or decrease the need for resources ~~modest – and may be getting smaller~~.[517]	
261	If gas turbines are needed to meet larger, forecasted needs after 2019, these turbines can be constructed and placed into service within 21 months of a need determination by the Commission.[518]				
		261-1	DOC	If gas turbines are needed to meet larger, forecasted needs ~~after 2019~~, these turbines cannot be counted on to be constructed and placed into service within 21 months of a need determination by the Commission.[519]	
262	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.[520]				
		262-1	DOC	~~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.~~	
263	A reasonable and prudent purchaser of energy resources would not have assumed that the value of an SES-qualifying generation source was zero.[521]				
		263-1	DOC	A reasonable and prudent purchaser of energy resources would not have assumed that the value of an SES-qualifying generation source was zero.[522] However, all analyses assumed that Xcel would fully comply with Minnesota's SES by 2020.[523] Further, as indicated in Section XI above, Xcel cannot use the S-RECs to comply with Minnesota's SES and sell the S-RECs; as a result, the value of the credits is fully accounted for in the Department's analyses.	
264	A reasonable and prudent purchaser of energy resources would not have assumed that the value of avoiding transmission line losses was zero.[524]				
		264-1	DOC	A reasonable and prudent purchaser of energy resources would not have assumed that the value of avoiding transmission line losses was zero.[525] Thus, the Department analyzed the transmission-related issues attributable to each proposal and ensured that all transmission costs were included in each bid.[526]	

[515] *See,* Section XXII.
[516] *Id*.
[517] *Id.*
[518] Ex. 38 at 6 (Environmental Report); *see also,* Ex. 70 attachment 1 at 8 (Shield Direct).
[519] Ex. 38 at 6 (Environmental Report); *see also,* Ex. 70 attachment 1 at 8 (Shield Direct).
[520] *See,* Section XXII.
[521] *Compare,* Ex. 83 at 8-10 (Rakow Direct); Hearing Transcript, Vol. 1 at 145 with Ex. 59 at 18-19 (Engelking Rebuttal).
[522] *Compare,* Ex. 83 at 8-10 (Rakow Direct); Hearing Transcript, Vol. 1 at 145 with Ex. 59 at 18-19 (Engelking Rebuttal).
[523] Ex. 83 at 9-13 (Rakow Direct)
[524] *See generally,* Ex. 46 at 35 (Wishart Direct); Hearing Transcript, Vol. 2 at 45.
[525] *See generally,* Ex. 46 at 35 (Wishart Direct); Hearing Transcript, Vol. 2 at 45.
[526] Ex. 81 at CJS-5 at 8 (Shaw Direct Attachments); Ex. 79 at 5 (Shaw Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
265	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.[527]				
		265-1	DOC	A reasonable and prudent purchaser of energy resources, for Xcel's ~~stated~~ needs determined by the Commission~~,~~ would not have relied upon Xcel's Fall 2011 sales forecast alone.[528] As a result, the Department not only relied upon Xcel's Fall 2011 sales forecast but also employed a forecast uncertainty band wide enough to encompass Xcel's more recent (spring 2013) forecasts.[529]	
266	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.[530]				
		266-1	DOC	A reasonable and prudent purchaser of energy resources, for Xcel's ~~stated~~ needs determined by the Commission would not have limited the evaluation to energy plants that produced 300 MW by 2019.[531] Therefore, the Department analyzed combinations of plants less than 300 MW and analyzed all combinations of plants under deficits far smaller than 300 MW by 2019.[532]	
267	A reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs when other, reasonably-priced and scalable alternatives exist.[533]				
		267-1	DOC	A reasonable and prudent purchaser of energy resources would not risk incurring project cancellation costs when other, reasonably-priced and scalable alternatives exist.[534] However, since the magnitude of any cancellation costs has not been demonstrated, nor has it been determined that ratepayers would be liable for any such cancellation costs, it would not be reasonable to make long-term resource decisions based on a fact that has not been established.	
	XXIII. Compatibility with Our Socioeconomic and Natural Environments (DOC below, See Appendix C for XCL, CLP and INV proposed modifications)				
268	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.[535]				
269	Geronimo's proposal will benefit society in ways that are consistent with the natural environment. Importantly, the construction and operation of Geronimo's Proposal will not generate carbon dioxide (CO2) or "criteria pollutants."[536]				

[527] Hearing Transcript - Vol. 2 at 30.
[528] Hearing Transcript - Vol. 2 at 30.
[529] Ex. 76 at 14 (Shah Direct).
[530] *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).
[531] *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).
[532] Ex. 84 SR-3 and SR-4A (Rakow Direct Attachments); Ex. 84 SR-5A (Rakow Direct Attachments).
[533] *See generally,* Hearing Transcript, Vol. 1 at 126-27.
[534] *See generally,* Hearing Transcript, Vol. 1 at 126-27.
[535] Minn. R. 7849.0120 (C).
[536] Ex. 38 at 38 (Environmental Report).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		269-1	DOC	~~Geronimo's~~ All of the proposals ~~will~~ would benefit society in ways that are consistent with the natural environment. ~~Importantly~~ For example, construction and operation of Geronimo's Proposal ~~will~~ would not generate carbon dioxide (CO_2) or "criteria pollutants."[537] As a result, the analyses in this proceeding were based on the Commission's approved externality values, at average, low and high values.[538]	
270	Criteria pollutants include sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), lead (Pb), and particulate matter (PM).[539]				
		270-1	DOC	Criteria pollutants include sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), and particulate matter (PM).[540] The Commission currently has externality values for each of the criteria pollutants.	
271	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-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.[541]					
272	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.[542]				
		272-1	DOC	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.[543] However, because the Commission has not established externality values for HAPs and VOCs, the relative effects of these factors were not included in this proceeding.	
273				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.[544]	
		273-1	DOC	Because Geronimo's facilities will not produce air emissions, Geronimo claims that their offsetting impacts will result in an annual reduction of 94,133 tons of CO_2, 115.98 tons of CO, 63.26 tons of NOx, 27.08 tons of PM_{10}, 3.44 tons of VOCs, and 10.48 tons of SO_2.[545] The value of any reduction in system emissions of CO_2, CO, NOx, PM_{10}, and SO_2 were taken into account in the system-based modeling of the Department and Xcel through use of the Commission's externality values.[546]	

[537] Ex. 38 at 38 (Environmental Report).
[538] Ex. 83 at 18 (Rakow Direct).
[539] *Id. at* 34.
[540] *Id. at* 34.
[541] *Id*.
[542] *Id*. at 39.
[543] *Id*. at 39.
[544] Ex. 13 at 24 (Distributed Solar Energy Proposal).
[545] Ex. 13 at 24 (Distributed Solar Energy Proposal).
[546] Ex. 83 at 19, 36 (Rakow Direct); Ex. 46 at 21-22 (Wishart Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
274	By contrast, each of the gas-powered turbines proposed in this proceeding produces criteria pollutants and CO2 during the combustion of natural gas.[547]				
		274-1	DOC	By contrast, each of the gas-powered turbines proposed in this proceeding produces criteria pollutants and CO_2 during the combustion of natural gas.[548] Again, the cost of any increase in system emissions of CO_2, CO, NOx, PM_{10}, and SO_2 were taken into account in the system-based modeling of the Department and Xcel through use of the Commission's externality values.[549]	
275	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.[550]				
		275-1	DOC	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.[551] Xcel does not foresee any changes to the existing Groundwater Appropriations Permit due to the addition of Unit 6. Calpine anticipates that the current agreement with the city of Mankato provides more than sufficient water. Invenergy does not anticipate that any changes to the city of Cannon Fall's water system would be necessary to provide the additional increment of water.[552]	
276	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.[553]				
		276-1	DOC	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. Construction of Xcel's Black Dog Expansion proposal is not anticipated to require more than 60 workers at any one time. Calpine anticipates that approximately 250 construction workers would be employed during the peak of construction activity. Invenergy estimates that approximately 100 construction workers during the peak of construction activity.[554] Further, operation and maintenance of ~~its~~ Geronimo's power generation facilities will require up to 10 permanent positions.[555] No new operations jobs are expected to be created with the Black Dog, Mankato, and Cannon Falls proposals.[556]	
277	The wages and salaries from these jobs will contribute to the total personal income in the region and state.[557]				

[547] *Id.,* at 2.
[548] ~~*Id.* at 2.~~ Ex. 13 at 24 (Distributed Solar Energy Proposal).
[549] Ex. 83 at 19, 36 (Rakow Direct); Ex. 46 at 21-22 (Wishart Direct).
[550] *Id*. at 23-25 and 32-33.
[551] ~~*Id.*~~Ex. 13 at 23-25 and 32-33 (Distributed Solar Energy Proposal).
[552] Ex. 38 at 18-19 (Environmental Report).
[553] Ex. 38 at 31-33 (Environmental Report).
[554] Ex. 38 at 30-31 (Environmental Report).
[555] *Id*. at 31-33.
[556] *Id.* at 29.
[557] Ex. 13 at 32-33 (Distributed Solar Energy Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
278	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.[558]				
		278-1	DOC	Project-related expenditures for materials, equipment, operating supplies and services will benefit businesses located in the host counties and the state. Additionally, <u>for Geronimo's solar proposal</u> landowners who host solar panels or other project facilities will receive annual land payments.[559]	
279	Selection of Geronimo's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.[560]				
		279-1	DOC	Selection of Geronimo's proposal ~~will~~ <u>would</u> provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health. <u>Selection of the natural gas proposal similarly would provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.</u>[561]	
280	GREs emission levels will be the same whether it effects a sale of capacity credits to Xcel or not.[562]				
		280-1	DOC	<u>Since GRE's proposal would not provide Xcel energy production rights, GRE's</u> emission levels will be the same whether it effects a sale of capacity credits to Xcel or not. <u>Thus, Xcel's existing system would produce the required energy. These facts were taken into account in the Department's and Xcel's modeling.</u>[563]	
281	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.[564]				
		281-1	DOC	~~If added capacity is needed beyond 71 MW,~~<u>It has not been shown that</u> selection of GRE's proposal ~~will~~ <u>would</u> provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.[565]	
	XXIV. Future Compliance with Applicable Law				
282	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.[566]				
	282a	**(NEW)**	XCL	<u>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.</u>[567]	

[558] *Id*.
[559] *Id.*
[560] *See,* Section XXIII.
[561] *See,* Section XXIII.
[562] Ex. 63 at 3 (Selander Direct).
[563] Ex. 63 at 3 (Selander Direct); Ex. 83 at 2 n. 1 (Rakow Direct); Ex. 46 at 19 (Wishart Direct).
[564] *See,* Section XXIII.
[565] *See,* Section XXIII.
[566] Minn. R. 7849.0120 (D).
[567] *See generally* Ex. 38 at Sections 6 and 7 (Environmental Report).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	282b	(NEW)	INV	Invenergy has listed the relevant permits for both the Expansion and Hampton.[568] In addition, the record demonstrates Invenergy's strong commitment to regulatory compliance.[569] The strong support Invenergy has received from the Cannon Falls community serves as evidence of the strong relationship Invenergy builds with government officials in its communities. Thus, the ALJ and Commission can have full confidence that both the Expansion and Hampton projects will comply with all applicable policies, rules and regulations.	
283	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.[570]				
		283-1	DOC	~~Among the proposals in this proceeding, Geronimo's solution best supports~~ Minnesota~~'s~~ has enacted a goal to move to reduce greenhouse gas emissions across all emission- producing sectors. However, none of the proposals or packages of proposals analyzed in this proceeding enabled Xcel's system to meet Minnesota's goal ~~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.~~[571]	
		283-2	XCL INV	~~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.~~[572]	
284	If the Commission selects Geronimo's proposal, Xcel will use the solar energy produced by the project to meet its requirements under the SES.[573]				
		284-1	XCL INV	~~If the Commission selects Geronimo's proposal, Xcel will use the solar energy produced by the project to meet its requirements under the SES.~~[574]	
285	Geronimo's project will provide approximately 200,000 MWh annually and will make an early and substantial step towards compliance with the new standards.[575]				

[568] Ex. 65, pp. 18-19, 21-22 (Ewan Direct).
[569] *Id.*; Ex. 70, p. 21 and Attachment 1, p. 13 and Attachment 2, p. 13 (Shield Direct).
[570] Minn. Stat. § 216H.02, subd. 1; Ex. 13 at 24 (Distributed Solar Energy Proposal).
[571] Minn. Stat. § 216H.02, subd. 1; Ex. 83 SR-5A (Rakow Direct Attachments)~~Ex. 13 at 24 (Distributed Solar Energy Proposal)~~.
[572] Minn. Stat. § 216H.02, subd. 1; Ex. 13 at 24 (Distributed Solar Energy Proposal).
[573] Ex. 46 at 18 (Wishart Direct); Hearing Transcript, Vol. 1 at 137:4-8.
[574] Ex. 46 at 18 (Wishart Direct); Hearing Transcript, Vol. 1 at 137:4-8.
[575] Ex. 57 at 8 (Engelking Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		285-1	DOC	Geronimo's project will provide approximately 200,000 MWh annually and will make an early and substantial step towards compliance with the new standards.[576] However, given the timing of this proceeding, this bidding process was not specified as obtaining projects to meet the SES and thus there were was only one solar bid, providing no competition of resources to meet the SES.	
		285-2	XCL INV	~~Geronimo's project will provide approximately 200,000 MWh annually and will make an early and substantial step towards compliance with the new standards.[577]~~	
286	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.[578]				
		286-1	XCL INV	~~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.[579]~~	
287	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.[580]				
		287-1	DOC	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 1,000 pounds of CO_2 per megawatt hour.[581] Only Calpine's proposal qualifies as a fossil-fuel-fired boiler, integrated gasification combined cycle (IGCC) unit, or stationary combined cycle turbine unit.	
		287-2	XCL INV	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.[582]	
288	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.[583]				

[576] Ex. 57 at 8 (Engelking Direct).
[577] Ex. 57 at 8 (Engelking Direct).
[578] 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.
[579] 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.
[580] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).
[581] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).
[582] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).
[583] Ex. 13 at 33-39 (Distributed Solar Energy Proposal).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		288-1	DOC	Because Geronimo's proposed facilities do not produce CO_2 emissions, they pose few risks of higher future costs from more intensive regulation of carbon pollution.[584] The benefits related to Geronimo's avoided CO_2 emissions are covered through the use of the Commission's approved costs of $9 to $34 for future CO_2 emissions. These values were used in the modeling of the Department and Xcel.[585]	
		288-2	XCL INV	~~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.~~[586]	
289	Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.				
		289-1	DOC	~~Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.~~ There is no evidence that any of the bidders will fail to comply with all relevant policies, rules, and regulations of state and federal agencies and local governments applicable to construction and operation of the proposed projects.	
		289-2	XCL INV	~~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 Commission ~~Administrative Law Judge~~ makes the following: **Conclusions of Law** **(DOC Below, See Appendix C for CLP, INV, GRE, GRN, and XCL)**				
C1	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.				
C2	The Commission provided appropriate public notice and all procedural requirements of law and rule have been fulfilled.				
C3	Under the competitive bidding process, it is the Commission's role to select the most reasonable, prudent resources to meet Xcel's need.				
		C3-1	DOC	Under the competitive bidding process, it is the Commission's role to select the most reasonable~~,~~ and prudent resources to meet Xcel's need.	
C4	It is not clear that there are significant capacity needs on Xcel's system between 2014 and 2018.[587]				
		C4-1	DOC	It is not clear ~~that there are significant~~ what the exact capacity needs on Xcel's system will be between 2014 and 2018.[588] However, the Commission approved a need of 150 MW by 2017 and up to 500 MW by 2019 in its March 5, 2013 Order in Xcel's Integrated Resource Plan (Docket E002/RP-10-825).	

[584] Ex. 13 at 33-39 (Distributed Solar Energy Proposal).
[585] Ex. 83 at 36 and 40 (Rakow Direct); Ex 46 at 21-22 and 37 (Wishart Direct).
[586] Ex. 13 at 33-39 (Distributed Solar Energy Proposal).
[587] *See,* Ex. 46 at Table 4 (Wishart Direct).
[588] *See,* Ex. 46 at Tables 2 and 4 (Wishart Direct); Ex. 76 at Figures 1 and 3 (Shah Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
C5	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.[589]				
		C5-1	DOC	While Xcel's overall need for additional capacity is uncertain, ~~there~~ it is ~~no uncertainty regarding~~ clear that Xcel~~'s~~ will need to add solar energy resources to its system before 2020 under Minnesota's Solar Energy Standard.[590]	
C6	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.				
		C6-1	DOC	The record in this proceeding indicates that Geronimo's proposal, when properly analyzed under ~~either a LCOE or~~ Strategist modeling~~,~~ is not the lowest cost resource proposed. Considering that the Strategist modeling assumed that Xcel would fully meet Minnesota's SES by 2020 and the analyses reflected the avoided emissions benefits, the evidence in this proceeding demonstrates that the bidding process explored use of renewable energy and demonstrated that the alternative selected is less expensive (including environmental costs) than the power generated by Geronimo's proposal.[591]	
C7	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.				
		C7-1	DOC	The most efficient, reasonable and prudent solution in this circumstance is to select ~~scalable~~ the least cost projects that meet the range of Xcel's near-term shortfalls (as described in Tables 2 and 4 of Mr. Wishart's Direct Testimony) and for the Commission to require Xcel to initiate an all-solar bidding process as soon as possible ~~conduct a second procurement for needs which may occur after 2019~~.	
C8	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.				
		C8-1	DOC	~~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.~~	
C9	Combining Geronimo's proposal with GRE's proposal represents the most reasonable and prudent alternative to meet Xcel's near-term needs.				
		C9-1	DOC	Combining two of the three least cost proposals into a package (as indicated by the Department and Xcel)—Xcel's Black Dog unit 6, Calpine's Mankato expansion, and Invenergy's Cannon Falls expansion) ~~Geronimo's proposal with GRE's proposal~~ represents the most reasonable and prudent alternative to meet Xcel's near-term needs.	
C10	Selection of Geronimo's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.				
		C10-	DOC	Selection of ~~Geronimo's proposal~~ two of the three least cost proposals into a package (as indicated by the	

[589] *See,* Hearing Transcript - Vol. 1 at 149-150.
[590] *See,* Hearing Transcript - Vol. 1 at 149-150; Ex. 76 at Figure 2 (Shah Direct).
[591] Ex. 83 at 10-11 and 35 (Rakow Direct); Ex. 84 at SR-4A and SR-5A (Rakow Direct Attachments); Ex. 46 at 25 and 33-36 (Wishart Direct).

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
		1		Department and Xcel)—Xcel's Black Dog unit 6, Calpine's Mankato expansion, and Invenergy's Cannon Falls expansion will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.	
C11	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.				
		C11-1	DOC	~~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.~~	
C12	Selection of Geronimo's proposal is in accord with Minnesota's preferences for low-emission, renewable and distributed generation.				
		C12-1	DOC	~~Selection of Geronimo's proposal is in accord with Minnesota's preferences for low-emission, renewable and distributed generation.~~	
C13	Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.				
		C13-1	DOC	~~Among~~ There is no evidence that any of the proposals in this proceeding~~,~~ present a significant ~~Geronimo's solution represents the lowest~~ risk~~s~~ of non-compliance with state and federal policies, rules, and regulations.	
C14	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.				
C15	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.				
		C15-1	DOC	While the facilities in question are exempt from the certificate of need statute, ~~T~~the hearing record ~~does not~~ establishes that selection of a nonrenewable energy source ~~to meet the first 71 MW of need~~ is in the public interest.	
C16	Selection of Geronimo's proposal furthers the public interest.				
		C16-1	DOC	Selection of ~~Geronimo's proposal~~ two of the three least cost proposals as a single package—Xcel's Black Dog unit 6, Calpine's Mankato project, and Invenergy's Cannon Falls project furthers the public interest in a reliable, low cost electric system while protecting the socio-economic and natural environments.	
C17	If added capacity beyond 71 MW is needed before the end of 2019, selection of GRE's proposal is in the public interest.				
		C17-1	DOC	The most reasonable way to ensure compliance with the SES is to require Xcel to issue an All-Solar RFP as soon as possible to obtain the overall best solar projects for meeting Xcel's obligations under Minnesota's recently enacted solar mandate.	
C18	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				

ALJ No.	New FOF No.	Mod. FOF No.	Pro-poser:	ALJ Language (white) or Proposed Modification (grey)	Staff Rcmmdtn to adopt:
	timeframe.				
		C18-1	DOC	~~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: **Recommendations**				
R19	Select Geronimo's proposal.				
		R19-1	DOC	Order that both the Calpine Mankato project and Invenergy Cannon Falls project proceed to PPA negotiations. ~~Select Geronimo's proposal~~.	
R20	Determine if added capacity beyond 71 MW is needed before the end of 2019.				
		R20-1	DOC	Require negotiated contracts to be brought to the Commission for final evaluation, selection and approval. ~~Determine if added capacity beyond 71 MW is needed before the end of 2019.~~	
R21	Select GRE's proposal if added capacity beyond 71 MW is needed before the end of 2019.				
		R21-1	DOC	Select the two projects with terms most favorable to ratepayers among Xcel's Black Dog unit 6, Calpine's Mankato project, and Invenergy's Cannon Falls project. ~~Select GRE's proposal if added capacity beyond 71 MW is needed before the end of 2019.~~	
R22	Direct Xcel to undertake Purchase Power Agreement negotiations with the selected offerors.				
		R22-1	DOC	Require that terms negotiated as part of the PPA process must be consistent with the analysis conducted in this matter. ~~Direct Xcel to undertake Purchase Power Agreement negotiations with the selected offerors.~~	
R23	Conduct a second competitive bidding process for Xcel's needs beyond 71 MW that are likely to occur after 2019.				
		R23-1	DOC	Order Xcel to issue an All-Solar RFP as soon as possible to obtain the overall best solar projects for meeting Xcel's obligations under Minnesota's recently enacted solar mandate. ~~Conduct a second competitive bidding process for Xcel's needs beyond 71 MW that are likely to occur after 2019.~~	

Section XXI. Impact on the Adequacy Reliability or Efficiency of Energy Supply.
Parties Replacement Findings

Invenergy

For all of the reasons discussed above regarding the ALJ's inappropriate reversal of the Commission's determination of need, Invenergy respectfully requests that the Commission strike ALJ Findings 237 – 250 and replace them with the following:

- The bidders in this docket collectively propose three different types of resources to fill the need existing on the Xcel system in the 2017-2019 time frame: (1) "Capacity Resources," in the form of combustion turbines, as proposed by both Invenergy and Xcel and providing principally peaking capacity; (2) "Energy Resources," namely the Calpine proposal to add 345 MW of combined cycle intermediate resources, providing both capacity and energy; and (3) "Intermittent Resources," in Geronimo's solar energy proposal.[1]

- The Commission Order concluding Xcel's 2010 IRP Docket informs the size, type and timing of resources necessary in this proceeding. In that Order, the Commission stated that: "Xcel will need an additional 150 MW in 2017, increasing up to 500 MW by 2019. . . . Xcel should invite proposals for adding peaking resources, intermediate resources, or a combination of the two."[2]

- The record developed in this proceeding shows two significant developments since the Commission Order that must be considered in selecting an appropriate resource or resources to fill this need – the addition of significantly greater Intermittent Resources to the Xcel system and Xcel's continually declining load factor.

- Xcel will add dramatically greater wind energy to its system than envisioned by the Commission at the time it initiated this proceeding.[3] At that time, the Commission and Xcel both anticipated that Xcel would add 200 MW of wind energy to its system through a wind acquisition proceeding.[4] Instead, Xcel ultimately petitioned the Commission to acquire 750 MW of wind, a change significant enough that the Commission required Xcel to file a Notice of Changed Circumstances in both the 2010 IRP Docket and in the current docket.[5]

- As a result of dramatically increasing its acquisition of wind resources, Xcel will have significantly more Intermittent Resources on its system in the 2017-2019 time frame than assumed at the time of the Commission Order. With such resources, Xcel must accept power deliveries except when curtailment issues arise.[6] Given wind's unpredictable nature, Xcel must simultaneously maintain sufficient amounts of flexible and efficient quick-starting resources – Capacity Resources – to balance the system.[7]

- Calpine witness Mr. Hibbard testified that, "combustion turbines in particular can be used as fast-start, fast-ramp resources, and provide net-load-following capability in off-line and on-line mode."[8] The Invenergy

[1] GRE does not offer a "resource" that would add any physical capacity to the system. Rather, GRE offers to sell capacity credits.
[2] 2010 IRP Docket, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket, March 5, 2013, p. 6.
[3] *See* Transcript Vol. 2, p. 10 (Ewan).
[4] 2010 IRP Docket, Order Approving Plan, Finding Need, Establishing Filing Requirements, and Closing Docket, March 5, 2013, p. 4.
[5] MPUC Docket Nos. E-002/RP-10-825, E-002/CN-12-1240, E-002/M-13-603 and E-002/M-13-716, Order Requiring Notice of Changed Circumstances and Granting Intervention, October 4, 2013, p. 4.
[6] Ex. 65, p. 23, fn. 1 and p. 27 (Ewan Direct); Ex. 73, p. 4, fn. 4 and pp. 16–20 (Norman Rebuttal).
[7] Ex. 65, p. 27 (Ewan Direct); Ex. 73, pp. 16-20 (Norman Rebuttal).
[8] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).

proposals provide Capacity Resources with the ability to start quickly (achieving minimum load within 20 minutes and full load within 30 minutes) and then can be ramped up and down to follow load as needed.[9]

- In addition to the dramatic increase in wind now planned for Xcel's system, Xcel will be adding significant new solar energy resources. Minnesota enacted its first-ever solar energy mandate after the Order initiating this docket. Under that mandate, investor-owned utilities such as Xcel must provide one and one-half percent of their retail electric sales to retail customers in Minnesota with solar energy resources.[10]

- Xcel's increasing levels of Intermittent Resources raise two specific concerns relevant to this resource selection proceeding – the need to manage for the variability of those resources and the need for quick-starting resources in the event of extreme and unexpected drop offs in generation.[11] These concerns typically lead utilities to add Capacity Resources in the form of peaking facilities as they add Intermittent Resources.[12]

- Xcel currently lags far behind its own subsidiary Public Service Company of Colorado ("PSCo") with respect to the level of Capacity Resources on its system. PSCo has nearly twice as much peaking capacity as wind capacity – capacity that proved beneficial when PSCo experienced an unexpected wind ramp down of nearly 800 MW within 30 minutes last year.[13] In contrast, Xcel's current peaking capacity fails to even match its existing wind capacity.[14] After the addition of another 750 MW of wind, Xcel's peaking capacity will decrease to only two-thirds of its wind capacity,[15] leaving it particularly vulnerable to wind ramp down events.

- Capacity Resources of the type Invenergy proposes best complement the Intermittent Resources on Xcel's system. Calpine witness Mr. Hibbard testified that combustion turbines provide "fast-start, fast-ramp resources, and provide net-load-following capability in off-line and on-line mode."[16]

- In contrast, a combined cycle facility such as that proposed by Calpine can only provide balancing functions when on-line and requires "on the order of several hours" to come on-line from a cold start.[17] Such a facility is "often operated as close to the most efficient operational point, with a dispatch range that is narrow relative to its size, limiting ramp/flexibility potential."[18]

- Prior Department modeling has also shown the impact of significant Intermittent Resources to the Xcel system. As Mr. Norman noted, previous Strategist modeling by the Department in the Black Dog Docket found that any need for combined cycle generation was typically delayed by the addition of large amounts of wind generation.[19] Specifically, the Department stated that its modeling showed that "addition of a combined cycle is delayed to 2020 or later under certain circumstances, usually involving large quantities of wind additions."[20]

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[9] Ex. 65, p. 7 (Ewan Direct).
[10] Minn. Stat. § 216B.1691, subd. 2f; *see also* Transcript Vol. 2, p. 10 (Ewan).
[11] Ex. 73, pp. 16-17 (Norman Rebuttal).
[12] *Id*.
[13] *Id*., pp. 17-18.
[14] *Id*.
[15] *Id*, p. 19.
[16] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).
[17] Transcript Vol. 1, pp. 42-43 (Hibbard).
[18] Transcript Vol. 1, pp. 62-63 (Hibbard); Ex. 93 (Hibbard presentation to Clean Energy Regulatory Forum, April 2012).
[19] Ex. 73, pp. 21-22 (Norman Rebuttal), citing MPUC Docket No. E-002/CN-11-184, Department of Commerce Letter, March 1, 2012, p. 2.
[20] MPUC Docket No. E-002/CN-11-184, Department of Commerce Letter, March 1, 2012, p. 2.

- The Department noted that Xcel's most recent forecast predicts that its load factor will decrease significantly over time, with customers demanding ever more from Xcel's peak while using less energy overall.[21]

- The potential need for greater capacity at peak, while requiring less energy overall, suggests that Capacity Resources, not Energy Resources, best fit Xcel's customers' needs and best ensure those customers a continued adequate electric supply.

- In assessing resource addition proposals, Minnesota rules require the Commission to consider more than simply ensuring that the utility has an adequate supply. The rules also require the Commission to consider the reliability and efficiency of that supply.[22]

- Invenergy's combustion turbine proposals offer superior reliability to the Xcel system. Invenergy proposes adding identical combustion turbines to those currently employed at the existing Cannon Falls site. Those turbines have shown very high reliability both in terms of their starting reliability and in terms of an extremely low forced outage rate of less than one percent over the last four years.[23]

- The Invenergy proposals assume interruptible gas supply to the facilities. The record demonstrates that interruptible supply saves ratepayers significant expense without jeopardizing reliability.[24] The Xcel system peaks in the summer when gas supply is readily available.[25] The existing Cannon Falls facility operated by Invenergy has historically seen the vast majority of its operating hours in the summer, to meet those peak needs, with only forty hours of operation in the past four winters combined.[26] In addition, both the Expansion and Hampton will have a back-up supply of fuel oil in the unlikely event that the facilities will be called upon when natural gas is not available.[27]

- Requiring a firm gas supply would add unnecessary costs to ratepayers, lessening the efficiency of the system while not increasing the reliability. The Department analyzed the cost savings of an interruptible gas supply for the Expansion and found a savings of approximately $35 million compared to the use of firm supply.[28] In contrast, Xcel's modeling which assumed zero availability for the Expansion in the winter months added only $1 million of cost compared to the Expansion being available (through use of firm gas).

- Consideration of the most efficient means of meeting Xcel's needs must also consider the characteristics of Xcel's system. A low load factor indicates a system where supply resources will sit idle for periods of time until higher load conditions occur.[29] On such systems, ratepayer costs are minimized with Capacity Resources, since a Capacity Resource such as a combustion turbine imposes significantly lower capacity costs on the system than an Energy Resource such as a combined cycle or coal plant.[30]

- Xcel's recent analyses of its system needs have shown a preference for the kind of Capacity Resource proposed by Invenergy. In the Black Dog Docket, Xcel withdrew its application for a certificate of need for a combined cycle facility, stating that the proposal was no longer in the best interest of ratepayers given the softening demand and lower energy forecasts now seen for its system.[31] Given those lower energy needs,

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[21] Ex. 76, p. 10 (Shah Direct).
[22] Minn. R. 7849.0120 (A).
[23] Transcript Vol. 2, pp. 9-10 (Ewan).
[24] Ex. 69, pp. 8-9 (Ewan Rebuttal); Ex. 47, p. 20 (Wishart Rebuttal).
[25] *Id*.; Ex. 47, p. 21 (Wishart Rebuttal).
[26] *Id*.
[27] Ex. 69, p. 9 (Ewan Rebuttal).
[28] Ex. 87, p. 10 (Rakow Rebuttal).
[29] *Id*., p. 11.
[30] *Id*.
[31] MPUC Docket No. E-002/CN-11-184, Xcel Motion to Withdraw Application, p. 2.

which the record shows continues to hold true, Xcel stated that "it is more likely that the next resource should be a combustion turbine,"[32] rather than a combined cycle facility such as that proposed by Calpine.

- To summarize the adequacy, reliability and efficiency considerations relevant to this proceeding, the Commission has already established a need on the Xcel system of 150 MW of capacity in 2017 and up to 500 MW by 2019. Since that decision, Xcel has committed to adding significant new Intermittent Resources to its system. In addition, forecast updates suggest a need in 2017 possibly lower than the 150 MW identified by the Commission, with a continually decreasing load factor. Each of these factors indicates a need for lower capital cost, quick starting facilities in the form of peaking resources as proposed by Invenergy and Xcel.

[32] *Id*.

XXII - The Most Reasonable and Prudent Alternative. Parties Replacement Findings

Calpine - Section XXII. The Most Reasonable and Prudent Alternative.

Delete Findings 258, 259, 260, 261, 262, 267 and add:

- The record evidence supports a finding that Xcel may have a potential capacity need of 100-150 MW in 2017, that could increase up to 300-500 MW by 2019. However, due to changes in MISO's reserve margin calculations and other market factors, both the Department and Xcel Energy consider the need during that timeframe to be uncertain.

- In light of the uncertainty surrounding the level of need that will emerge in the 2017-2019 time period, both the Department and Xcel Energy recommended that the Commission require Xcel Energy to file updated need assessments in 2014 and 2015 of its capacity need in the 2017-2019 time period.

Add the additional following findings:

- Relying on its Strategist analysis, the Department initially recommended that the Commission approve Calpine's Expansion and Xcel's proposal for a unit at the Black Dog site with a 2019 in-service date.[1] Dr. Rakow tested 27 different scenarios for his eight preferred resource plans[2] varying inputs such as load forecast, fuel prices, CO_2 prices and externality values, market prices, and capital costs. The results show that the Calpine Expansion/Black Dog combination was the lowest-cost option across all 27 scenarios.[3]

- The Department noted that if Invenergy's Cannon Falls proposal is modeled on interruptible fuel and Invenergy's proposed in-service date is moved out from its original proposed in-service date,[4] the gap between Calpine's Proposal and Invenergy's proposal narrows. As the Department's Strategist analysis showed, a later in-service date for Invenergy's proposed Cannon Falls CT significantly reduces the difference between packages with Cannon Falls deferred and the packages with Cannon Falls' original in-service date – by about $50 to $55 million PVSC.[5]

[1] Exhibit No. 83, Direct Testimony of Dr. Steve Rakow at p. 43, lines 3-6 ("Rakow Direct").

[2] Dr. Rakow's eight best resource plans were selected based upon his initial screening of resource plans in Strategist. Exhibit No. 83, Rakow Direct at p. 35, lines 9-20.

[3] Exhibit No. 81, Rakow Direct, Department Direct Testimony Attachment (SRR-5A), page 3 of 8.

[4] Exhibit No. 86, Rebuttal Testimony of Dr. Steve Rakow at p. 11, lines 11-14 ("Rakow Rebuttal").

[5] Exhibit No. 86, Rebuttal Testimony of Dr. Steve Rakow at p. 11, lines 11-14 ("Rakow Rebuttal").

- Even with these changes that benefit Invenergy's Cannon Falls proposal, Under the Department's Strategist analysis, Calpine's Expansion along with Black Dog Unit 6 is still ranked first from a PVSC standpoint.[6]

- Based on its separate Strategist analyses, Xcel recommended that the Commission identify Black Dog 6 in combination with either Invenergy's Cannon Falls proposal or Calpine's Expansion Proposal as the least cost projects.[7]

- Table 9 of Xcel Witness Wishart's Direct Testimony, however, shows that in (1) virtually every resource plan Calpine is the most robust across different sensitivity tests – that is – Calpine's Expansion is even more favorable economically in scenarios involving higher gas costs, higher CO2 costs and increased capacity values, and (2) every plan involving Invenergy's units fails relative to Calpine's Expansion in particular – as well as all other plans – when all bids are compared consistently on the basis of firm natural gas transportation costs.[8]

- The ratepayer benefits of Calpine's Expansion Proposal are strongly supported by the modeling analyses carried out by Xcel and the Department.

- The Department and Xcel's Strategist analyses and recommendations understate the value of Calpine's Expansion is several material respects, including (1) by failing to base their final recommendations on firm fuel requirements for all thermal resources; and (2) by failing to include the costs of selective catalytic reduction ("SCR") technology on the CT resources proposed in the proceeding.

- Both Xcel and the Department's recommendations assume that Invenergy's pricing for natural gas at its proposed Cannon Falls CT will be based on interruptible natural gas transportation service, with no cost adjustment for sufficient alternative fuel storage capability needed to ensure reliable, year-round operations.[9]

- When modeled on a comparable basis, Invenergy's Cannon Falls proposal is not economically competitive. Under Xcel's Strategist analysis, the total PVSC for its top rated plan (Plan 1) that includes Invenergy's Cannon Falls CT increases by about $30 million with the addition of firm gas, "making it uncompetitive with the Calpine proposal."[10] Under the Department's Strategist analysis, the use of interruptible natural gas supply for Invenergy's Cannon Falls facility significantly reduces the PVSC for Invenergy's proposal and significantly reduces the difference between packages with Cannon Falls and the other packages by about $35 million PVSC.[11]

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[6] Exhibit No. 86, Rakow Rebuttal at p. 12, lines 3-6.

[7] Exhibit No. 44, Wishart Direct at p. 43, line 16-18.

[8] Exhibit No. 44, Wishart Direct, Table 9 at page 39; *see also,* Exhibit No. 53, Hibbard Rebuttal at p. 9, line 18 through p. 10, line 2.

[9] Xcel Witness Wishart noted that "…the fuel tanks at the site are barely sufficient to support the operation of a single turbine. For reliable winter operation the amount of on-site fuel storage would need to be expanded. Invenergy has not included these costs in their bid and has not provided supplemental information on the issue." Exhibit No. 44, Wishart Direct at p. 50, lines 1-5.

[10] Exhibit No. 47, Wishart Rebuttal at p. 22, lines 11-13.

[11] Exhibit No. 86, Rakow Rebuttal at p. 10, lines 21-23.

- Assuming a comparable firm-fuel transportation requirement for the proposed Invenergy Cannon Falls CT would cause the Strategist results to assign even greater value to the Calpine/Black Dog 6 combination as the highest-ranked resource combination under the Department's analysis.

- If the Commission determines that it is appropriate to allow Invenergy's proposed Cannon Falls CT to use interruptible rather than firm gas service, it is appropriate to ascribe greater value to Calpine's and Xcel's proposals from a reliability perspective. This is because a resource's availability could impact its capacity accreditation by MISO.[12] If served by interruptible fuel, the proposed Cannon Falls CT will not be available on many winter days[13] potentially decreasing the value of the CT's capacity.[14] The greater possibility that Cannon Falls will be interrupted in the winter would result in a lower level of certainty of service and other units on the system needing to pick up the slack.[15] In addition to the relative economics, such reliability considerations favor moving forward with Calpine's Expansion.

- Calpine argued that the Commission should consider the value of mitigating the environmental impacts of CT capacity used to help manage net load variability by requiring the installation of state-of-the-art selective catalytic reduction ("SCR") technology on Invenergy and Xcel's proposed CT resources and that the costs of that equipment be included in the economic evaluation of the bids.[16]

- While Xcel and Invenergy argued that SCR is not required to permit the proposed CTs, Xcel Witness Ford and Invenergy Witness Ewan conceded that including SCR would reduce expected emissions at their proposed CT facilities.[17]

- In light of the state's policy objectives as reflected in Minnesota's renewable energy standards and other efforts to address power plant emissions, requiring SCR on Xcel and Invenergy's proposed CTs creates a more level playing field from an emissions perspective for the resources under consideration and evaluation in this procurement. Based on the record in this case, the cost of SCR installations on the CTs proposed in this proceeding would be approximately $15 million in 2017 dollars.[18] Including such costs for Invenergy and Xcel's proposed CTs would further widen the gap between the cost-effectiveness of Calpine's Expansion and Xcel and Invenergy's proposed projects.

- Minnesota has adopted an aggressive renewable energy standard, which requires that eligible renewable electricity account for 31.5% of Xcel's total retail electricity sales in Minnesota by 2020.[19] Z

[12] Hearing Transcript, Volume 2 (October 23, 2013) at p. 21, lines 13-15.

[13] Exhibit No. 77, Attachments to the Direct Testimony of Mr. Sachin Shah at DOC Attachment __ at (SS-5), pp. 30 and 31 of 32 ("Shah Direct Attachments").

[14] Exhibit No. 44, Wishart Direct at p. 6, lines 10-14 (emphasis added).

[15] Hearing Transcript, Volume 1 (October 22, 2013) at p. 89, lines 4-19 and p. 91, lines 2-15.

[16] *See e.g.,* Exhibit No. 55, Direct Testimony of Mr. Todd Thornton at p. 12, lines 12-22 ("Thornton Direct").

[17] Hearing Transcript, Volume 1 (October 22, 2013) at p. 78, lines 2-9 and Volume 2 (October 23, 2013) at p. 12, lines 11-17.

[18] Exhibit No. 51, Hibbard Direct at p. 30, FN 35.

[19] *See* Minn. Stat. § 216B.1691.

- The record in this case shows that the CTs proposed by Xcel and Invenergy and Calpine's combined-cycle Expansion can be used to support the integration of renewable resources on Xcel's system.[20]

- The record shows, however, that the value of Calpine's Expansion to help integrate variable resources is likely higher because combined cycle resources can manage net load variability more efficiently, and at lower cost and lower emissions than CT capacity.[21]

Invenergy - Section XXII. The Most Reasonable and Prudent Alternative.

Again, for the reasons discussed above, the ALJ Recommendation determining the Geronimo proposal to be the most reasonable and prudent alternative cannot be sustained. The Geronimo proposal does not meet the need identified by the Commission with respect to either the size or type of resource required. Therefore, Invenergy respectfully requests that the Commission strike ALJ Findings 252 – 267 and replace with them with the findings already [provided by Invenergy] set forth in Sections IX, XV and XXI above, as well as the following:

- GRE offers to sell capacity credits for select years. As such, GRE offers no actual capacity or energy to the system and no longer-term solution to fill Xcel's need. Nonetheless, both Xcel and the Department included GRE in the Strategist modeling, to determine if this capacity credit offer had sufficient value to warrant consideration, for example, by delaying the need to actually add resources to the system. However, the value of delaying other resource additions was outweighed by the costs of the GRE proposal.[22] Thus, the record demonstrates that it is neither reasonable nor prudent for Xcel to pursue a capacity credit purchase from GRE.

Xcel Energy - Section XXII. The Most Reasonable and Prudent Alternative.

Strike 252-267, Add new: 251-264

252. Xcel 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's range of potential need in the 2017-2019 timeframe.[23]

253. Xcel 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's ratepayers.[24]

254. 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.[25]

255. Calpine recommended that its Mankato project be selected to meet Xcel Energy's need and be

[20] Exhibit No. 53, Hibbard Rebuttal at p. 17, lines 17-19.

[21] Exhibit No. 53, Hibbard Rebuttal at p. 18, line 19 through p. 19, line 2.

[22] Ex. 46, p. 24 (Wishart Direct).

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

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

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

directed to engage in PPA negotiations with Xcel Energy.[26] 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.[27]

256. 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.[28] Invenergy opposed Calpine's Mankato project also being selected to proceed to the PPA negotiation phase on the grounds that Xcel currently has underutilized combined cycle plants on its system and therefore does not need another one.[29]

257. The Department recommended that Black Dog Unit 6 be selected to move forward, and that Xcel pursue negotiations for a PPA with Invenergy's Cannon Falls and Calpine's Mankato projects.[30] The Department believed that if negative issues are identified with any of these three proposals, the Commission should then select the other two proposals.[31]

258. 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.[32]

259. 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.[33]

260. 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).[34] 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.[35]

261. 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.[36] 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.[37] The Department also recommended that the use of interruptible gas be discussed during negotiations with Invenergy,[38]

262. In addition, Xcel 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

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

[27] Calpine Initial Brief at 31-32.

[28] Ex. 69 at 20 (Ewan Rebuttal),

[29] *Id*. at 19.

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

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

[32] *Id*.

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

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

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

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

[37] *Id*.

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

implementation of a selected resource in the event changed circumstances warranted doing so.[39] Xcel Energy also recommended that the PPA negotiations address security fund, CO_2 emission costs and allowances, and capital lease accounting issues.[40]

263. 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.[41]

264. The record evidence supports 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'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.

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

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

[41] *Id*.

Appendix C (Part 3 of 4)
Commission Docket E002/12-1240

Section XXIII. Compatibility with Our Socioeconomic and Natural Environments.
Parties Replacement Findings

Calpine - Section XXIII. Compatibility with Our Socioeconomic and Natural Environments.

34. Calpine argued that the emissions from the proposed Calpine Expansion are lower than from the CTs proposed in this procurement on a per unit of energy generated basis. The relative impact of CT versus CC technologies from an emission perspective was presented in Exhibit Nos. __ (PJH-6a) and (PJH-6b) to Calpine Witness Hibbard's Direct Testimony, Exhibit No. 51.

35. Exhibit Nos. __ (PJH-6a) and (PJH-6b) show emission rates from each unit proposed on a pounds per MWh (lbs/MWh) basis as well as the reductions in emissions resulting from the installation of SCR. Exhibit No. __ (PJH-6a), reproduced below, shows emission rates by technology for nitrous oxide ("NOx"):

[TRADE SECRET INFORMATION BEGINS:

TRADE SECRET INFORMATION ENDS]

36. As shown in this Exhibit __ (PJH-6a), the NOx emission rates for Calpine's Expansion are lower than the next-closest option by **[TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]**.

37. Exhibit No. __ (PJH-6b), reproduced below, shows emission rates by technology for carbon dioxide ("CO_2"):

[TRADE SECRET INFORMATION BEGINS:

TRADE SECRET INFORMATION ENDS]

38. As shown in this Exhibit __ (PJH-6b), the CO_2 emission rates for Calpine's Expansion are lower than the next-closest option by [**TRADE SECRET INFORMATION BEGINS TRADE SECRET INFORMATION ENDS]**.

39. The record shows that these emission rates are primarily a direct function of the relative energy efficiency (*i.e.,* heat rates) of the respective projects. With respect to NO_x, the differential is also due to the fact that Calpine's Expansion includes back-end emission control technology, *i.e.,* SCR, that is not included in Invenergy and Xcel's proposed CT resources.[1]

40. Both Xcel and Invenergy argued that total annual emissions are likely to be lower for the CTs proposed by Invenergy and Xcel than Calpine's Expansion.[2] The record shows, however, that assessing the environmental impacts of the thermal projects in this procurement requires a

[1] Exhibit No. 51, Hibbard Direct at p. 29, lines 13-17.

[2] *See e.g.*, Exhibit No. 43, Rebuttal Testimony of Xcel Witness Gregory Ford at p. 4, lines 18-22 (noting that Calpine's emissions could be higher on an annual basis due to the fact that combined cycle units commonly operate "at a capacity factor that is four times higher than the capacity factor for CTs.") ("Ford Rebuttal").

comparison not of total annual tonnage, but based on emissions per unit of energy produced.[3] Thus, assuming equal quantities of MWh produced, the Calpine Expansion would have lower total emissions than the CTs proposed.

41. To the extent that the Calpine Expansion operates more hours than the CTs due to its efficiency advantage, on a unit-to-unit comparison basis, the Calpine Expansion could have higher total annual emissions. However, for every hour of operation of Calpine's proposed combined cycle resource it is likely displacing generation from resources that also have a higher emission rate in lbs/MWh than the new combined cycle facility, and thus emissions are reduced.[4]

Invenergy - Section XXIII. Compatibility with Our Socioeconomic and Natural Environments.

The ALJ Recommendation fails to reflect the record regarding the benefits of the Invenergy proposals and the strong local support for those proposals. Therefore, Invenergy requests that the Commission strike Findings 269-281 and replace them with the following:

- The Expansion and Hampton both bring significant benefits to the community, while protecting or enhancing the natural and socioeconomic environments.
- In assessing any project under this criterion, the Commission considers first "the relationship of the proposed facility, or a suitable modification thereof, to overall state energy needs."[5] The Invenergy proposals provide necessary Capacity Resources to support both the influx of new renewable energy resources and the declining load factor experienced on Xcel's system. These facilities impose low capital costs, while having the ability to quickly provide power to the system to maintain reliability. Invenergy has built an impressive track record of reliable and efficient operation at its existing Cannon Falls facility and proposes employing the same technology at its new facilities, taking advantage of its substantial expertise and experience.
- The Expansion and Hampton projects also bring substantial socioeconomic benefits. The Expansion and Hampton projects will employ a peak labor force of approximately 100 and 150 workers, respectively, during their 12 month construction periods.[6] Once operational, the projects will provide an additional approximately $500,000 per year in taxes and payments in lieu of taxes to the local economy in Cannon Falls and $1,000,000 per year in Hampton assuming the installation of two generating units there.[7]
- Cannon Falls City Administrator Aaron Reeves stated that: "Invenergy has been an excellent business partner in Cannon Falls," generating zero complaints from citizens or businesses while involving itself in the community and financially supporting the schools and other local projects. Given its experience with Invenergy, Cannon Falls views the Expansion as "an excellent economic development opportunity for the city" and that the city sees "no issue at all with providing the necessary local approvals that would move forward quickly."[8]
- The Invenergy proposals also provide indirect benefits to the community and the business environment. By providing cost-effective and reliable energy supply to the Xcel system, the Invenergy proposals will minimize the financial impact to Xcel's business and residential ratepayers at a time when they face regular and significant rate increases.[9]

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[3] Exhibit No. 53, Hibbard Rebuttal at p. 19, lines 10-13.

[4] Exhibit No. 53, Hibbard Rebuttal at p. 20, lines 7-10.

[5] Minn. R. 7849.0120 C (1).
[6] Ex. 65, pp. 12-13 (Ewan Direct).
[7] *Id*., p. 13.
[8] Public Hearing, October 15, 2013 Transcript, pp. 30-34; *see also* Ex. 70, Attachment 3 (Shield Direct).
[9] Ex. 70, p. 20 (Shield Direct).

- Invenergy's facilities will take advantage of substantial existing infrastructure, minimizing the impacts on existing land use. In addition, Invenergy employs Environmental, Health and Safety staffs who work together with staff at its facilities to maintain compliance with local, state and federal regulations.[10] Each facility will implement a comprehensive compliance tracking program and to ensure ongoing compliance and to alert appropriate staff to upcoming requirements.[11]
- The Expansion and Hampton will fully comply with all applicable air quality regulations, including undergoing a Best Available Control Technology review.[12] Once operational, emissions from the facilities will be minimized through multiple means.[13] The Cannon Falls facility has operated well below its permitted emissions levels.[14]
- Regarding air emissions, Calpine contends that its combined cycle proposal is "a cleaner option" than the combustion turbines proposed by Invenergy.[15] However, Calpine's combined cycle facility will not necessarily result in significantly lower emissions.[16] As Calpine acknowledged, combined cycle facilities have a longer start-up time than combustion turbines.[17] During that start-up time, combustion controls are not yet effective and emissions are higher than the "steady state" emissions from the facility.[18] Moreover, combined cycle facilities typically operate at a higher capacity factor than a combustion turbine, meaning significantly more total emissions.[19] Thus, it is not possible to state with any degree of certainty that the Calpine proposal will have less environmental impact than the Invenergy proposals.

Xcel Energy - Section XXIII. Compatibility with Our Socioeconomic and Natural Environments.

Leave 268, strike ALJ FOF 269-281and add:

- 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.

- Each of the proposals would result in creation of jobs for construction of and operation of the project. 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.

- Another socioeconomic question is whether Minnesota's statutory preferences for renewable energy require Geronimo 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 the Company has "explored the possibility of generating power by means of renewable energy resources and has demonstrated that the

[10] Ex. 70, Attachment , p. 13 (Shield Direct).
[11] *Id*.
[12] Ex. 69, pp. 12, 18 (Ewan Rebuttal).
[13] Ex. 65, pp. 17-18 (Ewan Direct).
[14] Ex. 69, p. 5 (Ewan Rebuttal).
[15] Ex. 51, p. 30 (Hibbard Direct).
[16] Ex. 69, p. 12 (Ewan Rebuttal); Ex. 43, pp. 4-5 (Ford Rebuttal).
[17] Transcript Vol. 1, pp. 42-43, 62-63 (Hibbard); Ex. 93.
[18] Ex. 69, p. 12 (Ewan Rebuttal).
[19] Ex. 43, p. 4 (Ford Rebuttal).

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.[20]

- 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. 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..[21] It would contrary to the public interest to nevertheless select Geronimo's 100 MW solar proposal to meet one third of our 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.[22]

[20] Ex. 46 at 25, 33-35 (Wishart Direct); Ex. 48 at 25-26 (Wishart Rebuttal); Ex. 83 at 13 (Rakow Direct).
[21] Ex. 46 at 22 (Wishart Direct); Hearing Transcript, Vol. 1 at 110.
[22] Ex. 46 (Wishart Direct) at 36; Ex. 83 (Rakow Direct) at 11.

Conclusions of Law and Recommendations
Parties Replacement Findings

Calpine - Conclusions of Law and Recommendations

Delete Conclusion of Law 4, 7, 8, 9, 11, 17, 18 and add:

- A significant portion of Xcel's resource need should be met by combined cycle technology that can operate as an intermediate or baseload resource.

- If baseload coal-fired resources become uneconomic as a result of changes in the dispatch of resources due to low natural gas costs and/or existing and future environmental requirements, there may be a need to replace retiring resources with intermediate or baseload capacity, such as can be provided by Calpine's Expansion as proposed in this proceeding.[1]

- Installing cost-effective combined-cycle capacity can provide a valuable hedge against the risk of intermediate and baseload resource retirements in light of anticipated environmental regulation or unforeseen factors.[2]

- The ability of Calpine's Expansion to serve as a hedge against future market uncertainty is an important attribute from a public policy perspective. The records shows that selection of Calpine's Expansion is cost-effective and will provide the Commission with greater flexibility in making resource decisions in the future.

- The Commission is selecting resources in this procurement that will not only meet the projected capacity need in the 2017-2019 timeframe, but also in the decades to come.

- The record shows that this procurement will provide Xcel with the opportunity to add aggressively priced natural gas-fired generation resources to its resource portfolio. Delay in adding such resources could subject Xcel's customers to higher capacity costs in the future.

- Delaying the addition of natural gas-fired resources on Xcel's system is not in the best interests of ratepayers.

CONCLUSIONS

1. The quantitative economic analyses outlining the objective merits of the proposed resources support the selection of Calpine's Expansion Proposal to meet all or a portion of Xcel's future resource needs. Calpine Witness Paul J. Hibbard demonstrated that Calpine's Expansion Proposal is the least expensive option among the thermal energy resources offered in this procurement by Xcel, Calpine, and Invenergy based on the LCOE as seen from the perspective of Xcel's ratepayers. The LCOE results show that the Calpine Expansion is the least cost resource over a broad range of differing

[1] Exhibit No. 53, Hibbard Rebuttal at p. 16.

[2] Calpine Witness Todd Thornton testified that "[p]eaking units are often selected not because they provide greater value to the market in terms of energy production or operational flexibility, but simply because they typically require a lower capital investment than a combined-cycle unit." Exhibit No. 55, Thornton Direct at p. 11, lines 17-20.

scenarios, assumptions and contingencies – demonstrating that the Expansion can serve as a valuable hedge against foreseeable and unknown changing system conditions for years to come.

2. The Department and Xcel's Strategist analyses, which analyzed the present value of societal costs ("PVSC") of different combinations of bids, similarly support the selection of Calpine's Expansion. No other party submitted a quantitative economic analysis. As a result, the Commission has before it three separate modeling exercises – conducted using similar inputs but slightly varying methods and assumptions – that conclude that Calpine's Expansion should be viewed as the best (or in Xcel's analysis, among the best) resource options available to the Commission from LCOE and PVSC perspectives.

3. In addition, the record demonstrates that the economic modeling performed understates the value of Calpine's Expansion Proposal. Mr. Hibbard's LCOE analysis purposefully used conservative assumptions that tended to disadvantage Calpine relative to its competition. Notwithstanding this purposeful approach, Calpine's Expansion has the lowest LCOE among the thermal resource proposals by wide margin. The Strategist modeling relied on by the Department and Xcel in making their recommendations failed to ascribe certain fuel costs and costs related to environmental control technology to other thermal bids, the effect of which is to undervalue the relative cost-effectiveness of Calpine's Expansion. These facts further support the selection of Calpine's Expansion based on purely quantitative metrics.

4. From a qualitative standpoint, the economic modeling fails to fully reflect the significant "non-price" benefits related to the operation of Calpine's proposed combined-cycle generation compared with simple-cycle generation proposed by Xcel and Invenergy. The Expansion's environmental performance and the ability to serve as a hedge against future market uncertainty set Calpine's Proposal apart from the CT resources proposed in this proceeding. Calpine's Expansion Proposal also benefits from being an expansion of an existing facility that was planned and constructed with the Expansion in mind. While such planning allowed Calpine to price its proposal aggressively, the planning also reduces the Expansion's impact on the environment and the community in which it operates. These are important qualitative attributes that also support the selection of Calpine's Expansion Proposal.

5. The record in this case highlights the importance of adding combined cycle capacity through this procurement. The record shows that selecting only CT peaking capacity in this proceeding – compared to combined cycle capacity or a mix of CT and combined cycle capacity – would diminish the resilience of Xcel's resource mix to respond to higher-than-expected load growth and future resource retirements, and would constrain the flexibility Xcel's system has to integrate variable renewable resources in an economically- and environmentally-responsible manner.

6. Accordingly, based on the record developed in this proceeding, the Commission directs Xcel to enter into PPA negotiations with Calpine to secure the clear benefits of the Calpine Expansion for Xcel's customers.

Geronimo - Conclusions of Law and Recommendations

Add:

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 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. A public hearing was conducted in St. Paul, Minnesota. Proper notice of the public hearing was provided, and the public was given the opportunity to speak at the hearing and to submit written comments. All procedural requirements have been satisfied.

GRE - Conclusions of Law and Recommendations

11. If added capacity is needed beyond 200 MW, selection of GRE's proposal to meet the first 200 MW, supplemented by Geronimo's proposal for up to an additional 71 MW, will provide benefits to society, in a manner compatible with protecting the natural and socioeconomic environments, including public health.

12. Selection of Geronimo's proposal to supplement GRE's proposal is in accord with Minnesota's preference for new facilities with low-emission, renewable and distributed generation.

13. Among the proposals in this proceeding, GRE's and Geronimo's solutions 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 any new 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 new nonrenewable energy source to meet the first 200 MW ~~71 MW~~ is in the public interest.

16. Selection of GRE's and Geronimo's proposals further the public interest.

17. If added capacity beyond 200 MW ~~71 MW~~ is needed before the end of 2019, selection of Geronimo's ~~GRE's~~ proposal (or other proposal of the Commission's choice) is in the public interest.

Recommendation

19. Select GRE's ~~Geronimo's~~ proposal.

21. Select Geronimo's ~~GRE's~~ proposal (or other proposal of the Commission's choice) if added capacity beyond 200 MW ~~71 MW~~ is needed before the end of 2019.

Invenergy - Conclusions of Law and Recommendations

Therefore, Invenergy recommends that the Commission not adopt the ALJ Conclusions and instead conclude that:

- The record in its totality demonstrates that the Invenergy Expansion and Hampton proposals most reasonably and prudently meet the need on Xcel's system in the 2017-2019 time frame and should be selected. Xcel and Invenergy should proceed to PPA negotiations and the final PPAs should be presented to the Commission for its review and approval.

Xcel - Conclusions of Law and Recommendations

Leave 1-3, strike all and add:

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 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. Applicants and the Department of Commerce gave proper notice of the public hearings, 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'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 the Company 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, 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.