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**MPUC Docket No. E002/CN-12-1240 and OAH Docket No. 8-2500-307-60**

**STATE OF MINNESOTA**
**BEFORE THE**
**MINNESOTA PUBLIC UTILITIES COMMISSION**

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

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

**Geronimo Energy's Reply to Exceptions**

**January 31, 2014**

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

**GERONIMO ENERGY'S REPLY TO EXCEPTIONS**

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## I. SUMMARY

Geronimo Wind Energy, LLC d/b/a Geronimo Energy, LLC ("Geronimo") appreciates this opportunity to respond to the exceptions filed by the other parties in this competitive resource acquisition proceeding. Given the competitive nature of this proceeding, it is not surprising that each of the other bidders suggest a wholesale reversal of the Administrative Law Judge's Findings of Fact, Conclusions of Law and Recommendations ("ALJ Recommendations"). Despite the differences of opinion over the ALJ's ultimate recommendation, the ALJ's Recommendations remain a sound reflection of the law and facts in this case. Geronimo respectfully requests that the Commission adopt the ALJ's Recommendations with the limited exceptions outlined in Geronimo's January 21, 2013 Exceptions filing.

This competitive resource acquisition process specifically invited a broad range of proposals from both new and existing resources of all types.[1] Geronimo responded with a distributed solar proposal specifically designed to cost-effectively provide a reliable capacity resource to Xcel while helping to meet Minnesota's greenhouse-gas reduction and renewable-resource acquisition goals. The Commission should adopt the ALJ's Recommendations because, as the ALJ concluded, "the greatest value to Minnesota and Xcel's ratepayers is drawn from selecting Geronimo's solar energy proposal . . . ."[2] "Geronimo entered this bidding process as the sole renewable technology and beat competing offers on total life-cycle costs. It deserves application of the statutory preference [for renewable resources]."[3] The record in this proceeding has demonstrated that Geronimo's Distributed Solar Proposal is the most reasonable and prudent solution offered.

This reply summarizes the applicable standards for the Commission's decision in this case and then addresses a number of exceptions and statements made by the other parties that mischaracterize the ALJ's Recommendations and attempt to introduce extraneous information that is not in the record.

## II. MINNESOTA'S CERTIFICATE OF NEED AND RESOURCE PLANNING STATUTES AND REGULATIONS APPLY TO THE COMMISSION'S DECISION.

It is notable that none of the other parties took exception to the ALJ's Findings No. 230-235 describing the Minnesota Statutes and Rules that govern the Commission's decision in this proceeding. While Xcel and the Department continue to put a great deal of emphasis on the

[1] Order Approving Plan, Finding Need, Establishing Filing Requirements and Closing Docket, *In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan*, Docket No. E002/RP-10-825 (March 5, 2013) (the "March 5, 2013 Commission Order"), at 6.
[2] ALJ's Memorandum, at 47.
[3] ALJ's Memorandum, at 48.

results of their Strategist modeling, the Commission must take a broader and more comprehensive review of record, as the ALJ did, and apply each of the certificate of need criteria to select the most reasonable and prudent resource to meet Xcel's need. As outlined in ALJ Findings No. 230-235, the relevant criteria are found in Minnesota Statutes Section 216B.243 (Certificate of Need Criteria); Minnesota Rules part 7849.0120 (Certificate of Need Criteria); Minnesota Statutes Section 216B.2422, subd. 4 (Renewable Energy Preference); and Minnesota Statutes Section 216B.2426 (Distributed Generation Preference). As the ALJ found, when the facts in this case are applied to these criteria, as required by law, the Geronimo Distributed Solar Proposal is the most reasonable and prudent resource for meeting Xcel's needs.[4]

## III. THE ALJ'S RECOMMENDATIONS ADDRESS A RANGE OF POTENTIAL NEED SCENARIOS.

The ALJ's Memorandum aptly summarizes the division among the parties as to how the Commission should view Xcel's need in this case. As the ALJ stated, the "Commission can either base its resource selection decision upon matters that were certain in 2011 or it can base its selection decision on matters that are certain today."[5] The Department, Invenergy and Calpine assert that the Commission's need determination was final when it issued its order establishing this competitive resource process.[6] However, Xcel, the applicant with the burden in this case, pointed out that the March 5, 2013 Commission Order stated that choices regarding the size and

[4] ALJ's Conclusions of Law, Nos. 6-16; ALJ's Recommendations, at 45.
[5] ALJ's Memorandum, at 47.
[6] *See, e.g.*, Exceptions of the Minnesota Department of Commerce, Division of Energy Resources ("Department's Exceptions"), at 9 and 11; Invenergy Thermal Development LLC's Exceptions to the Findings of Fact, Conclusions of Law and Recommendation of the Administrative Law Judge ("Invenergy's Exceptions"), at 3; Exceptions to ALJ Recommendation of Calpine Corporation ("Calpine's Exceptions"), at 3.

timing of selected resources will be made "in the context of the resource acquisition docket, based on the proposals and the evidence adduced in that docket."[7]

### A. The ALJ Reasonably Concluded that the Size and Timing of Xcel's Need is Uncertain.

On that basis, Xcel provided updated information regarding its needs, including a Spring 2013 forecast showing lower demand levels, increased solar generation resources and changes in MISO reserve margin requirements.[8] Xcel's own trepidation regarding the size of its need remains apparent throughout its Exceptions filing – nearly everywhere Xcel summarizes its need, it uses qualifying language. For example, Xcel uses phrases such as "potential capacity deficit";[9] "should the 300-500 MW capacity need materialize";[10] "we acknowledge that there is uncertainty with both the exact amount and timing of the need;"[11] and "the uncertain capacity deficit."[12] It is entirely reasonable, based on the evidence adduced in this docket, for the ALJ to find, and the Commission to affirm, that the size and timing of Xcel's capacity need may differ from that set forth in the Commission's March 5, 2013 Order.

### B. The ALJ's Recommendations Accurately and Reliably Address a Wide Range of Potential Need Within the 2017-2019 Timeframe.

With this uncertainty in mind, Geronimo has continued to assert that the selected resources should work under a variety of need scenarios.[13] The ALJ's Recommendations accurately show that the combination of Geronimo's Distributed Solar Proposal and GRE's

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[7] Xcel Energy's Exceptions to ALJ Report ("Xcel Energy's Exceptions") at 9, citing March 5, 2013 Commission Order, at 6.
[8] Ex. 46, Table 4 at 10 (Wishart Direct).
[9] Xcel Energy's Exceptions, at 1.
[10] Xcel Energy's Exceptions, at 2.
[11] Xcel Energy's Exceptions, at 8.
[12] Xcel Energy's Exceptions, at 18.
[13] *See, e.g.*, Tr. vol. 1 at 28:11-16 (Brusven); Geronimo Initial Brief, at 2-3**.**

market capacity proposal, with the option of a future acquisition process if additional long-term resource needs arise, will address a wide range of potential need while also protecting ratepayers from overbuilding resources.

The combination of Geronimo's Distributed Solar Proposal and GRE's market capacity proposal provides Xcel with as much as 271 MW of accredited capacity in the 2017-2019 timeframe. 271 MW clearly falls within the 150 MW to 500 MW range identified in the March 5, 2013 Commission Order. However, because both projects are scalable, this combination also provides the maximum flexibility to determine exactly how much capacity Xcel needs in a given year. As noted by the ALJ, if Xcel's needs are on the lower end of the expected range, then the only new generation to be built is the Distributed Solar Proposal, which provides 71 MW of accredited capacity while also fulfilling other solar energy requirements that Xcel is subject to in the same timeframe. If Xcel's needs are larger, GRE's accredited capacity can be acquired for any of the years within the 2017-2019 window, either at 100 or 200 MW as needed. As GRE points out, the credits are from existing resources already available on the system.[14]

The Department and Xcel suggest that this combination of resources will not allow Xcel to maintain a reliable system.[15] Invenergy, too, continues to assert that solar, as an intermittent resource, cannot meet the peaking and intermediate needs of the system.[16] However, there is absolutely no evidence in the record to suggest that the accredited capacity acquired from Geronimo or GRE is any less adequate than (or differs from) the accredited capacity that Xcel

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[14] *See, e.g.*, Ex. 63 at 3 (Selander Direct).
[15] *See, e.g.*, Department's Exceptions, at 2; Xcel Energy's Exceptions, at 15-18.
[16] *See, e.g.*, Invenergy's Exceptions at 5.

would obtain from one of the natural gas proposals.[17] As addressed in Geronimo's Reply Brief, there is also no record evidence that Xcel is in need of dispatchable energy during the 2017-2019 timeframe.[18] Xcel's need analysis focused on its summer peak capacity needs, and the ALJ found, "[g]eneration 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."[19] Xcel needs capacity resources, and Geronimo's Distributed Solar Proposal—which was specifically designed to maximize capacity—offers the same type of accredited capacity as that offered by any of the other bidders.[20] Xcel's system reliability will be adequately preserved through this resource selection. The ALJ's Findings No. 236-250 address these issues.

### C. The ALJ's Recommendations Appropriately Address Xcel's Potential Long-Term Needs.

Despite assertions otherwise,[21] the ALJ's Recommendations do not turn a blind eye to Xcel's potential additional long-term needs. First, it is important to note that Geronimo's Distributed Solar Proposal is a long-term resource. Geronimo's proposal offered a 20-year power purchase agreement ("PPA"). Attempts to characterize Geronimo's proposal as only filling a "short-term need"[22] are no more accurate than if such characterizations were used to describe the Invenergy or Calpine PPA proposals. Next, the ALJ specifically concluded:

> 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

[17] Tr. vol. 2 at 22:21-25 – 23:1-15.
[18] Geronimo Reply Brief, at 4-6.
[19] ALJ Finding No. 240.
[20] Tr. vol. 2 at 22:21-25 – 23:1-15.
[21] *See, e.g.*, Department's Exceptions, at 2, 9-11.
[22] *Id.*

> by late 2018. Similarly, other renewable resources could be placed into service in that same timeframe.[23]

A "follow-on procurement" will better inform the Commission on issues like MISO's reserve margin and Xcel's forecast. Further, the ALJ noted that a future acquisition process would also provide an opportunity to "insist upon receipt of fixed prices for a common set of services and interconnection costs" to help alleviate some of the uncertainty surrounding the natural gas proposals offered in this docket.[24]

Not surprisingly, Xcel would rather the Commission select a natural gas resource now and then allow Xcel to recover its cancellation costs if the need never materializes. Xcel has taken a similar approach in other, prior resource proceedings.[25] Based on the facts in this case, the ALJ was concerned about how these cancellation costs, which were neither estimated nor modeled in the record, would impact ratepayers and found adding Geronimo's and GRE's scalable resources a more prudent way to address the need uncertainties. Contrary to the arguments of the other parties, 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.

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[23] Conclusions of Law, No. 18; ALJ's Recommendations, at 45.
[24] ALJ's Memorandum, at 48.
[25] *See, e.g.*, Motion to Withdraw Application and Request Pursuant to Minn. R. 1400.7600 for Certificate of this Motion to the Minnesota Public Utilities Commission, *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, (Dec. 7, 2011); Supplement to March 30, 2012 Notice of Changed Circumstances and Petition, *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 No. E002/CN-08-509, (Oct. 22, 2012).

The other parties also suggest that the bids provided in this docket *may not* be available to Xcel at a later date.[26] While this suggestion may be true, it is also reasonable to assume, based on the evidence in the record, exactly the opposite – that the bids in this docket *will* remain available. As Xcel has pointed out,[27] the Calpine – Mankato, Invenergy – Cannon Falls and Black Dog proposals are all brownfield developments in Minnesota. Several of these sites have fuel contracts making a sale to Xcel particularly advantageous for the owner.[28] Moreover, each of these proposals either offered an in-service date of 2019 or offered to delay its original in-service date **[TRADE SECRET DATA HAS BEEN EXCISED…**

**…TRADE SECRET DATA HAS BEEN EXCISED]**.[29] It is unlikely that the Black Dog site will be unavailable to Xcel in the future or that, in a few short months, Xcel might not be able to find available land in North Dakota for its yet-to-be-identified Red River Valley sites. Regardless, a new competitive bid process should not be prejudged based on this record.

Claims that other utilities' future capacity shortfalls may impact the availability of these resources[30] are similarly not supported by this record. Clearly, GRE's surplus capacity is available to Xcel during the 2017-2019 timeframe, but regardless, it is beyond the scope of this proceeding to speculate as to the future needs or resource acquisitions of other utilities that are not a part of this proceeding.

Based on the record in this case, the ALJ appropriately found that Xcel's needs during the 2017-2019 timeframe are uncertain. The ALJ selected the Geronimo and GRE proposals as the

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[26] *See, e.g.*, Department's Exceptions, at 6; Xcel Energy's Exceptions, at 16-17; Calpine's Exceptions, at 11-13.
[27] *See, e.g.*, Xcel Energy's Exceptions, at 2.
[28] Ex. 48, at 19 (Wishart Rebuttal).
[29] Ex. 49, at 2 (Alders Direct); Ex. 86 at 8 (Rakow Rebuttal); and Ex. 87 at SR-R9 (Rakow Trade Secret Rebuttal Attachments).
[30] *See, e.g.*, Xcel's Exceptions, at 17; Department's Exceptions, at 17.

most reasonable and prudent resource combination to address Xcel's need in this timeframe and reasonably determined that if additional resources are required in 2019 or beyond, a future acquisition process can safely be commenced after Xcel's next resource planning process. As noted by the ALJ, regardless of the overall size of Xcel's need, there is no uncertainty regarding Xcel's need to obtain solar resources, and Geronimo's proposal should be selected as the first resource to meet Xcel's capacity needs in this docket.[31]

## IV. GERONIMO'S DISTRIBUTED SOLAR PROPOSAL IS THE MOST REASONABLE AND PRUDENT CAPACITY RESOURCE BASED ON ITS MERITS AND THE RECORD DEVELOPED IN THIS CASE.

The Department, Xcel and Invenergy all attempt to characterize Geronimo's Distributed Solar Proposal as an unfairly recommended resource solely based on the recent passage of the Solar Energy Standard ("SES") and without the benefit of any comparison to other solar options.[32] These assertions continue to ignore the undisputed technical merits of Geronimo's proposal as a valuable capacity resource and the fact that the Distributed Solar Proposal is the least cost resource in *this* highly-competitive, all-resource acquisition process.

### A. The Distributed Solar Proposal Provides a Reliable Capacity Resource.

In Findings No. 98-103, 106-108 and 241-245, the ALJ summarizes the technical characteristics that make the Distributed Solar Proposal a reliable capacity resource. These technical features include: tracking system technology, appropriately-sized modules to inverters, and distributed sites.[33] Based on MISO's methodology for calculating accredited capacity for

[31] Conclusions of Law, No. 5; ALJ's Recommendations, at 44.
[32] Department's Exceptions, at 4-5 and 12-13; Xcel's Exceptions, at 3-4, 18, and 20-21; Invenergy's Exceptions, at 2 and 10.
[33] Ex. 60 at 5-6 (Beach Direct).

non-wind intermittent resources, the Solar Proposal will deliver 71 MW of accredited capacity to Xcel.[34]

The Department postures that issuing an all-solar RFP will provide the best opportunity for "Xcel to gain experience with solar resources on its system and to learn more about issues such as the ability of solar resources to meet the need for electricity on Xcel's system."[35] This assertion is flawed for several reasons. First, it continues to treat all solar technology as equal. By using distributed sites, tracking (rather than fixed) technology and engineering its inverter-to-module ratio to increase production over peak periods, the Distributed Solar Proposal has been specifically designed to meet the capacity need in this docket. The other parties in this docket have not challenged the technical merits of Geronimo's solar technology nor its ability to meet Xcel's capacity needs, and there is little assurance that future SES RFPs would have the same focus on providing reliable, capacity resources given the energy production focus of the SES. In other words, requiring Geronimo's proposal to be evaluated exclusively in an SES RFP will not provide an apples-to-apples comparison because the Distributed Solar Proposal is technologically more akin to the other capacity resources in this proceeding.

Second, to the extent that the Department was interested in learning more about the issues it identified in its Exceptions filing, it had every opportunity to evaluate the individual modeling reports, availability data and operational characteristics that Geronimo provided as part of its bid materials[36] and to question the solar expert witness that Geronimo sponsored in direct and

[34] Ex. 57 at 2-3 (Engelking Direct).
[35] Department's Exceptions, at 5.
[36] Ex. 12 at Appendix E (Geronimo's Proposal).

rebuttal testimony.[37] Instead, the Department engaged in limited discovery and asked no questions of Geronimo's solar expert witness, Mr. Beach. The ALJ found Geronimo's evidence to be credible and persuasive and adopted findings noting the Distributed Solar Proposal's ability to reliably meet Xcel's capacity needs.

### B. Renewable Resources Should Be Encouraged to Participate in All-Source Bidding.

A competitive resource acquisition process like this one encourages innovation and competition between utilities and independent power producers ("IPPs") to the benefit of ratepayers. Geronimo's submission of its solar proposal to this competitive resource acquisition process has done exactly that - Geronimo proposes an innovative distributed solar project to cost-effectively meet Xcel's needs *and* Minnesota policy goals. While innovative, Geronimo's proposal rested soundly on the Commission's order establishing this process. In its order, the Commission stated:

> In particular, the current docket supports the finding that Xcel will need an additional 150 MW in 2017, increasing up to 500 MW by 2019. Moreover, *a broad range of resources could contribute to meeting this need, justifying solicitation of a broad range of proposals*. In particular, Xcel should invite proposals for meeting all of the forecasted need, or any part of it. Xcel should invite proposals for adding peaking resources, 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.
>
> Commentors largely agree about the advantages of considering a broad range of potential resources. *While the Department recommends that the Commission direct Xcel to seek gas-fueled sources of generation in particular, the Commission is not persuaded of the need to prohibit consideration of other alternatives.*

[37] *See* Ex. 60 (Beach Direct); Ex. 61 (Beach Rebuttal).

> *Rather, the Commission is willing to rely on the bid evaluation process to identify the best alternatives, regardless of type.*[38] (emphasis added)

The Department's and Xcel's continued objections to Geronimo's proposal because it is the only proposal using solar technology by no means present a fatal flaw to selecting the Distributed Solar Proposal in this proceeding. This competitive resource acquisition process is not for everyone. The process is complicated, expensive, and time consuming and it presents bidders with a great deal of risk and uncertainty. Despite wide notice (and an apparent presumption by Xcel and the Department that this was to be a "gas docket"), only two companies came forward with natural gas proposals to go head-to-head with Xcel's proposal. The two that did – Calpine and Invenergy – are two of the largest IPPs in the country and are both familiar with Minnesota's regulatory process. The only other proposal, in addition to Geronimo's, came from Minnesota's second largest utility – GRE. Geronimo should not be excluded because it took a business risk that others passed on. This docket has one distributed solar plant, one combined cycle plant, one accredited capacity proposal, two IPP combustion turbine plants and three utility combustion turbine plants. It is a diverse and robust field. There is nothing lacking in the process that should give anyone pause about selecting the most reasonable and prudent resource from the over 1,800 MWs of available bids.

### C. Passage of the SES Should Not Disadvantage the Geronimo Proposal.

Ironically, the Department, Xcel and Invenergy continue to use SES passage as the reason <u>not</u> to select the Distributed Solar Proposal in this proceeding. It is true that Geronimo submitted the Solar Proposal into this competitive resource acquisition process before the

[38] March 5, 2013 Commission Order, at 6.

Minnesota Legislature adopted the SES. It did so because the technology, pricing, and environmental attributes of solar generation are superior to non-renewable alternatives. Minnesota law contains numerous preferences for low-emission, renewable resources outside of the SES requirements that were all applicable when the Commission issued its March 5, 2013 order and when the bids were submitted on April 15, 2013.[39]

The other parties justify their position by stating that a large portion of Xcel's SES requirements should not be filled by the Solar Proposal without an opportunity to compare the cost of the Solar Proposal to other solar energy projects that may be submitted in a future SES RFP.[40] As noted above, this position continues to treat all solar technology as equal. However, the position also seems to be rooted in a concern that selection of a solar proposal in this docket would somehow be unfair to other solar developers. That is simply not an issue before this Commission, and, even if it were, Geronimo fails to see how developing a record showing the advantages of selecting a solar resource in an all-resource competitive bidding process will somehow be seen by the rest of the solar industry as a limit on other future market opportunities in Minnesota.

Even more disappointing is that the Department not only wants to keep all solar in the same box, but it appears the Department would also have the Commission believe that the box is small with a tightly fastened lid. The Department discusses the Distributed Solar Proposal's contribution to meeting the SES as if Geronimo has unfairly beat other solar developers to the

[39] *See, e.g.*, Minn. Stat. § 216B.243, subd. 3a; Minn. Stat. § 216B.2422, subd. 4; and Minn. Stat. § 216H.02.
[40] Xcel's Brief, at 35; Department's Brief, at 22-23; Xcel's Exceptions, at 20-21; Department's Exceptions, at 12-13.

punch and will now consume half of the SES requirement.[41] The Legislature, however, set the 1.5% SES by 2020 as a floor – i.e., utilities must obtain *at least* 1.5% by 2020 – and it further established a goal that solar would grow to 10% by 2030, a date well within Geronimo's proposed 20-year PPA term. As Geronimo has stated, Xcel should be further encouraged to issue an RFP for SES resources, and to the extent that additional cost-effective solar is available, Xcel should be encouraged to increase the amount of solar it has on its system.

Nonetheless, 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.

### D. The ALJ Found that the Strategist Modeling Did Not Capture the Full Value of the Solar Proposal.

The Department's analysis in this case relied almost exclusively on its Strategist model to select a resource.[42] There are several problems with that approach. First, the Strategist model is a useful tool, but its results are only as good as the underlying assumptions. Here, the ALJ did

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[41] It appears the Department's position may also be based on an incorrect interpretation of Minn. Stat. § 216B.1691, subd. 2f. In Footnote 3 of the Department's Exceptions, the Department states that "Xcel is not prohibited from obtaining solar resources prior to [2020]. Moreover, the Commission may decide that utilities like Xcel can rely on solar resources obtained prior to 2020 and "bank" that energy toward meeting the SES prior to 2020." The flaw in this statement is that Minn. Stat. § 216B.1691, subd. 2f(f) very clearly states that "…a solar renewable energy credit associated with a solar photovoltaic device installed and generating electricity in Minnesota after the effective date of this act but before 2020 may be used to meet the solar energy standard established under this subdivision." Thus, the Legislature has already determined that solar energy produced in Minnesota prior to 2020 may be used to meet a utility's SES obligations.

[42] Tr. vol. 2 at 56:10-25.

not find either Xcel's or the Department's analysis persuasive as it related to the Solar Proposal. The ALJ cited a number of deficiencies in the modeling that did not comport with how a reasonable and prudent power purchaser would select resources including that the modeling did not recognize any value for S-RECs, avoided transmission line losses and avoided transmission costs.[43]

The ALJ found that it was not reasonable to ignore the solar attributes of the solar proposal.[44] Both the Department and Xcel chose to run their models in a manner completely divorced from the realities of the marketplace. Xcel and the Department included an assumed number of solar MWs needed to meet the SES and then added the Distributed Solar Proposal's 71 MW on top of that assumed solar need, rather than counting the 71 MW toward the assumed solar need. Both the Department and Xcel took this approach despite Xcel's clear intention to use energy from the Distributed Solar Proposal to meet the SES.[45]

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 S-RECs. 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. Geronimo's PVSC adjustments related to S-REC values did not result in "double counting," as Xcel has argued. Instead, by completely ignoring the S-REC value in its modeling, the Department and Xcel essentially stripped the "solar" from the Distributed Solar Proposal. No one challenged

[43] ALJ's Findings No. 262 to 267.
[44] *See* ALJ's Findings No. 263.
[45] ALJ Finding No. 157.

Geronimo's conservative S-REC values in the record, and the ALJ found that they reflected a reasonable proxy of the Distributed Solar Proposal's added value that was not captured in the Strategist models.

The Department's Exceptions also include several statements indicating that the Department analyzed the Solar Proposal both as part of and in addition to the SES.[46] These statements, however, are directly contradicted by the record. Dr. Rakow, in his Direct Testimony, describes at length his consideration of whether to include the Solar Proposal within Xcel's SES obligations or in addition to them, and his ultimate decision to model the Distributed Solar Proposal in addition to Xcel's SES requirements.[47] The Department's discussion of this point in its Exceptions filings should be ignored as contrary to the record evidence.

In addition to recognizing that Strategist modeling did not reflect the S-REC value attributable to the Distributed Solar Proposal, the ALJ also recognized that the Strategist modeling results failed to recognize the transmission line loss and avoided transmission capacity costs benefits of the proposal.[48] While both the Department and Xcel take exception to the ALJ's findings related to the avoided transmission capacity costs, the ALJ's findings were unchallenged in the evidentiary record. It is important to note that avoided transmission capacity costs are a value of distributed solar that is recognized by the Legislature.[49] This value is created, not only by avoiding interconnection transmission upgrades or displacing a gas plant as claimed by the Department and Xcel, but also, and just as directly, by offsetting load connected to the

[46] *See*, *e.g.*, Department's Exceptions, at 1-2, 8, and 12.
[47] Ex. 84 at 9-10 (Rakow Direct).
[48] *See* ALJ's Findings No. 208 and 264.
[49] Minn. Stat. §216B.164, subd. 10(f) (2013).

distribution substations where Geronimo's distributed sites will be located.[50] The benefits of offsetting load include freeing up transmission capacity and allowing for deferred additions to the distribution and transmission facilities in the area.[51] Geronimo calculated the value of these benefits using the cost-based transmission rate in MISO's tariff as a reasonable proxy, and the ALJ found this evidence persuasive.[52]

Finally, Strategist does not analyze the many factors discussed in Section II above that the Minnesota law requires the Commission to consider when selecting the most reasonable and prudent resource in this docket.

### E. Statements Comparing Geronimo's Price to Solar Market Prices are Unsupported by the Record and Irrelevant.

Throughout Xcel's Exceptions filing, it asserts that the price of Geronimo's Distributed Solar Proposal is higher than prices Xcel has seen in the market.[53] Xcel's attempt to introduce this concept is not supported by the record evidence and is irrelevant to the Commission's decision in this proceeding.

First, the statement Xcel relies on to support this assertion is as follows:

> Q. What was Xcel's basis for the assumed solar generic units in the model?
>
> A. We did not have engineering estimates of the same type that were used for the gas units, generic gas units in the model. Our basis for the solar pricing was based on bids that we had seen in other jurisdictions, proposed bids in other jurisdictions, adjusted the best we could to reflect what we thought the cost in Minnesota specifically would be.[54]

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[50] Ex. 61 at 8 (Beach Rebuttal).
[51] *See id.*
[52] *Id*. at 9.
[53] Xcel Energy's Exceptions, at 4, 8 and 21.
[54] Tr. vol. 1 at 110:15-23.

As shown in the transcript and full record, Xcel never introduced the prices of "these proposed bids in other jurisdictions," nor did Xcel describe the adjustments it made to those bids. The evidence also suggests that Xcel may have made these adjustments *after* viewing Geronimo's trade secret pricing.[55] The ALJ, who was present at the hearing to view the credibility of this evidence did not find Xcel's statements regarding pricing to be persuasive.

There was one other solar price introduced in this record. It was included in Xcel's Competitive Bid Proposal. When Xcel examined solar as an alternative within its initial proposal, Xcel stated, "[f]or this analysis the Company assumed a price of $125/MWh, which reflects our expectation of current market prices."[56] **[TRADE SECRET DATA HAS BEEN EXCISED…**

**…TRADE SECRET DATA HAS BEEN EXCISED]**.

Regardless, the issue of Geronimo's price compared to other solar proposals in the other Xcel jurisdictions is irrelevant in this proceeding. The ALJ examined three economic analyses in this docket and concluded that the Geronimo Distributed Solar Proposal is the least cost proposal when properly modeled and compared to the other thermal and market capacity bids available in this record.

[55] Tr. vol. 2 at 110:24 – 111:21.
[56] Ex 1 at 5-5 (Xcel's Proposal).

### F. The Administrative Law Judge Appropriately Determined the Distributed Solar Proposal Should be the First Resource Selected to Meet Xcel's Needs.

In its Exceptions filing, GRE asserted that the Commission should reverse the ALJ's Recommendation and select its market capacity bid first, over the Distributed Solar Proposal.[57] The Commission should reject this suggestion because GRE's least-cost arguments rely exclusively on the unadjusted Strategist results that undervalue the benefits of the Distributed Solar Proposal. In addition, the Distributed Solar Proposal was offered with a December 2016 in-service date to take advantage of the federal investment tax credit and meet Xcel's summer 2017 capacity needs, so selection of the Distributed Solar Proposal presumes that it will be available at the beginning of the 2017-2019 timeframe.[58] In contrast, the GRE proposal can be added at differing potential MW amounts in 2018 or 2019, making it well-suited to respond to the uncertainty in the timing and amount of Xcel's needs in 2019. The ALJ recommended that Geronimo's Distributed Solar Proposal be selected first based on all of the factors that must be considered in this resource acquisition process, and GRE's exceptions provide insufficient reason to vary from that recommendation.

## V. THE RECORD AND THE LAW SUPPORT SELECTION OF GERONIMO'S DISTRIBUTED SOLAR PROPOSAL.

The ALJ, with the benefit of a robust written record and first-hand account of the evidentiary hearing record, found that Geronimo's Distributed Solar Proposal provides the most reasonable and prudent resource to meet Xcel's capacity needs in the 2017-2019 timeframe. As

[57] Great River Energy Exceptions to the ALJ Report ("GRE's Exceptions"), at 2.
[58] ALJ's Findings No. 110.

the ALJ noted, this decision reflects an "important turning point in Minnesota's energy resource planning process."[59] The Solar Proposal is the lowest cost capacity resource, appropriately protects ratepayers from unknown financial costs or risks, fulfills the statutory preferences for renewable and distributed generation, is an emission-free resource that will help meet Minnesota's greenhouse gas reduction goals, and has minimal environmental impacts.

When making long-term generation decisions, renewable energy resources must be fairly evaluated side-by-side with nonrenewable resources. As the ALJ found, where, as here, the record clearly shows that the Solar Proposal can reliability meet a portion of Xcel's need at a competitive price, while also fulfilling the environmental, renewable and distributed generation preferences in the statute, it must be selected ahead of nonrenewable alternatives.

## VI. CONCLUSION

Geronimo prepared the attached proposed Commission order reflecting Judge Lipman's Findings of Fact, Conclusions of Law and Recommendations and incorporating the minor exceptions described Geronimo's January 21, 2013 Exceptions filing and well as a number of corrections and procedural additions suggested by the other parties. Geronimo respectfully requests that the Commission adopt the ALJ's Recommendations and issue the attached proposed order.

[59] ALJ's Memorandum, at 48.

Dated: January 31, 2014

Respectfully submitted,

/s/ *Christina K. Brusven*

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

STATE OF MINNESOTA
~~OFFICE OF ADMINISTRATIVE HEARINGS~~

~~FOR~~BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

| | |
|---|---|
| ~~In the Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process~~ | ~~**FINDINGS OF FACT, CONCLUSIONS OF LAW AND RECOMMENDATION**~~ |
| Beverly Jones Heydinger | Chair |
| David C. Boyd | Commissioner |
| Nancy Lange | Commissioner |
| | Commissioner |
| Betsy Wergin | Commissioner |

| | |
|---|---|
| **In the Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process** | **FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER** |
| **MPUC Docket No. E-002/CN-12-1240** | |

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## STATEMENT OF THE ISSUE

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

## SUMMARY OF CONCLUSIONS

The Administrative Law Judge concludes that the most reasonable and prudent solution is to select scalable projects that meet ~~Xcel's~~Xcel Energy'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~~Xcel Energy's near-term needs.

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

## FINDINGS OF FACT

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

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

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

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

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

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

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

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

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

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

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

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

> [T]he current docket supports the finding that Xcel will need an additional 150 MW in 2017, increasing up to 500 MW by 2019. Moreover, a broad range of resources could contribute to meeting this need, justifying solicitation of a broad range of proposals. In particular, Xcel should invite proposals for meeting all of the forecasted need, or any part of it. Xcel should invite proposals for adding peaking resource[s], intermediate resources, or a combination of the two. Xcel should invite proposals that rely on building new generators, as well as proposals that rely on existing generators.[7]

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

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

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

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[5] SUPPLEMENTAL FILING - NOTICE OF CHANGED CIRCUMSTANCES, *In the Matter of the Application of Northern States Power Company for a Certificate of Need for the Prairie Island Nuclear Generating Plant for an Extended Power Uprate*, Docket Nos. E002 / CN-08-509, E002 / RP-10-825, E002 / CN-11-184 (Oct. 22, 2012).

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

[7] In the Matter of Xcel Energy's 2011-2025 Integrated Resource Plan, Docket No. E-002 / RP-10-825, ORDER APPROVING PLAN, FINDING NEED, ESTABLISHING FILING REQUIREMENTS AND CLOSING DOCKET at 2 and 6 (Mar. 5, 2013) (emphasis added); see also, Ex. 83 at 3 (Rakow Direct).

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

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

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

11. On April 15, 2013, the Commission received proposals from Calpine, Geronimo, GRE, Invenergy and Xcel Energy.[11]

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

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

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

> Subd. 2f. Solar energy standard. (a) In addition to the requirements of subdivisions 2a and 2b, each public utility shall generate or procure sufficient electricity generated by solar energy to serve its retail electricity customers in Minnesota so that by the end of 2020, at least 1.5 percent of the utility's total retail electric sales to retail customers in Minnesota is generated by solar energy.[13]

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

15. On July 16, 2013, Xcel filed a petition for approval of 600 MW of wind generation. 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. [15]

[11] *Id.*

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

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

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

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

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 but would not provide accredited capacity until 2021. [16]

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

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

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

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

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

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

23. While many stakeholders have asked MISO to solidify its reserve margin methodology so that the reserve amounts do not vary widely from year-to-year, those longer-term planning metrics are not now in place. MISO has pledged that it will look into this issue

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

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

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

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

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

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

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

in the coming months and hopes to provide updated long-term planning criteria by the fall of 2014.[23]

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

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

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.[26]

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.[27]

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

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 Energy recommends that the Commission authorize contract options that permit it to postpone the service dates of any projects that are selected in this proceeding, and perhaps, cancel those projects altogether.[29]

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

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

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

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

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

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

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

30. The Department joins Xcel Energy in this recommendation, noting that delayed in-service dates for projects could result in substantial cost savings.[30]

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

## III. Procedural Practice in the Contested Case

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.[32]

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

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 Energy 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;

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

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

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

[33] *Id.*

(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 Energy, the Department and the Environmental Intervenors.[34]

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

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

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

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

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

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. Ecos appealed the Commission's adverse rulings and that appeal was dismissed on September 26, 2013.[40]

41. On September 5, 2013, Ecos Energy sought Reconsideration, or in the alternative, Certification of, its Petition to Intervene.[41]

42. On September 27, 2013, the following parties filed Direct Testimony:

[34] *Id*. at 4.

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

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

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

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

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

[40] THIRD PREHEARING ORDER, OAH 8-2500-30760 (August 21, 2013). *See in the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of Competitive Resource Acquisition Proposal and Certificate of Need*, Court File A13-1659, Order Dismissing Appeal (Minn. Ct. App. Sept. 24, 2013), as amended Sept. 26, 2013, Petition for Review Denied (Minn. Dec. 17, 2013).

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

Calpine, Geronimo, GRE, Invenergy, Xcel Energy, North Dakota Advocacy Staff and the Department.[42]

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.[43]

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

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

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

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

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

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.[49]

50. On October 22 and 23, 2013, the Administrative Law Judge convened an evidentiary hearing at the State Office Building in St. Paul, Minnesota.[50]

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.[51]

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

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

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

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

[46] Ex. 38.

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

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

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

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

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

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

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

## IV. Overview of the Proposals

54. The Commission accepted proposals from five offerors:

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

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

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

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

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

55. Because three of the offerors proposed projects utilizing gas-fired turbines, James Alders, ~~Xcel's~~Xcel Energy's Rates and Regulatory Affairs Consultant, noted the differences between combined cycle and combustion turbines:

> It's a large combustion turbine fired with natural gas. Peaking units tend to operate very few hours during the year, only when the demand for electricity is at its highest in the summer. The proposal by Calpine, and they can speak to this in more detail, is called a combined cycling unit, and it is a combustion turbine where the flue gas from that combustion turbine then is used to heat water and create steam in a second cycle to produce more electricity. The economics of those sorts of facilities are such that they're often used more often during the year in an intermediate role in our system.[55]

## V. Features of the Proposal Submitted by Xcel Energy

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

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

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

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

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

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

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

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

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.[60]

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

62. The unit would be fueled entirely by natural gas. CenterPoint Energy currently serves the plant site. Xcel Energy proposes to secure additional natural gas supply through a competitive process. Xcel Energy anticipates that the winning vendor may need to replace the existing pipeline serving the plant with a new higher pressure natural gas line from the Cedar Town Border station.[62]

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

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

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

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

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

[60] *Id.*

[61] *Id.*

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

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

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 Energy.[64]

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.[65]

66. Black Dog Unit 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.[66]

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

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

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

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

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

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

66 Ex. 42 at 3 (Ford Direct).

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

68 Ex. 38 at 6 (Environmental Report).

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

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

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

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

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

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

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.[75]

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

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

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.[78]

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

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

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

[73] *Id.*

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

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

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

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

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

oil as the backup fuel. Xcel Energy anticipates securing the necessary natural gas supply through a competitive process beginning in 2014.[79]

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

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

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

## 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.[83]

84. Calpine proposed to supply 345 MW of the estimated 500 MW of ~~Xcel's~~Xcel Energy'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.[84]

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.[85]

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

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

80 *Id.*

81 Ex. 42 at 4 (Ford Direct).

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

83 See Ex. 8 (Calpine's Proposal).

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

85 *Id.*

Nooter/Erikson heat recovery steam generator, a Toshiba TCDF 40L steam turbine generator, and other ancillary equipment.[86]

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.[87]

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.[88]

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~~Xcel Energy's Mankato substation. The existing plant switchyard and adjacent substation are appropriately sized for the incremental plant output.[89]

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.[90]

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.[91]

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.[92]

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.[93]

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

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

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

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

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

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

92 Ex. 46 at 16 (Wishart Direct).

93 Ex. 46 at 17 (Wishart Direct).

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

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

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

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

## 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~~Xcel Energy's Upper Midwest service territory.[98]

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

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.[100]

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.[101]

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

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

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

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

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

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

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

101 Ex. 13 at 4 (Geronimo Proposal).

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.[102]

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

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

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

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

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.[107]

108. As a non-wind variable generation resource, the proposal would provide Xcel Energy 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.[108]

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

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

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

[103] *Id.*

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

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

106 Ex. 57 at 5 (Engelking Direct).

107 Ex. 13 at 16 (Geronimo Proposal).

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

109 Ex. 13 at 1 (Geronimo Proposal).

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

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

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

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).[113]

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.[114]

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. Both pricing proposals include all renewable or solar energy credits and environmental attributes.[115]

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

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

## VIII. Features of the Proposal Submitted by Great River Energy

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

111 Ex. 46 at 18 (Wishart Direct).

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

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

[114] *Id.*

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

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

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

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

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

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

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

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.[122]

## 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").[123]

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 Energy purchases the output of the project under a long-term power purchase agreement reviewed and approved by this Commission.[124]

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.[125]

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~~Xcel Energy's needs.[126]

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

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

[121] Ex. 19 at 1 (GRE Proposal).

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

123 Ex. 70 at 12 (Shield Direct).

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

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

126 Ex. 70 - Attachment 1 at 4 and 8 (Shield Direct).

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.[127]

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

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.[129]

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

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.[131]

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 Energy generation resources nearby.[132]

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.[133]

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.[134]

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.[135]

127 Ex. 65 at 17 (Ewan Direct).

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

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

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

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

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

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

134 *Id*.

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

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.[136]

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.[137]

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~~Xcel Energy's growing portfolio of intermittent power resources.[138]

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

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.[140]

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.[141]

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.[142]

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

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

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

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

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

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

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

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

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

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

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.[145]

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

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 Energy the option to extend the PPA in five year increments at a reduced capacity price for up to three additional five year terms.[147]

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

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.[148]

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 summertime capacity deration was included in the inputs of each offeror that proposed a thermal unit.[149]

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-

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

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

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

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

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

[149] *Id*.

front capital costs into a stream of level payments over a period of years. It concluded that the capital costs have a discounted present value of approximately $1.55 million.[150]

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

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.[152]

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

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.[153]

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

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.[155]

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.[156]

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

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

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

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

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

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

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

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

157 Hearing Transcript, Vol. 1 at 137.

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

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

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.[159]

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

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.[160]

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.[161]

162. Third, Invenergy was unable to replicate the emissions values developed by the Department. Dr. Rakow further reviewed the inputs for SO2, NOx, CO, and PM10 emissions for Invenergy's bids. He divided the emissions input provided for ~~Xcel's~~Xcel Energy's Black Dog Unit 6 by the emissions input provided by Xcel Energy in its Strategist input worksheet. Moreover, he undertook a similar calculation with Invenergy's data. He then compared these sums to ratios derived from the Strategist outputs. The result was that the ratios were very close. For SO2, the difference (ratio of bidder provided inputs to ratio of Strategist outputs) was about three percent; for NOx, PM10, and CO the difference was about one percent.[162]

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

## XIV. The Department's Proposed Corrections to ~~Xcel's~~Xcel Energy's Bid

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

159 Ex. 83 at 14 (Rakow Direct).

160 *Id.*

161 *Id.*

162 *Id.* At 14-15.

163 *Id.*

164. Xcel Energy provided a spreadsheet that corrected the base year revenue requirements (capital cost) inputs for its proposals. Dr. Rakow revised ~~Xcel's~~Xcel Energy's calculations for Black Dog Unit 6 assuming a 2018 in-service date as well as Black Dog Unit 6 assuming a 2019 in-service date. He then used the revised results for the base year revenue requirements for Black Dog Unit 6 and Red River Units 1 and 2.[164]

## XV. Strategist Model and the Forecasts of Future Needs

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.[165]

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

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

168. In its spring 2013 forecast, Xcel Energy predicts that its customers will use less energy and capacity in the initial years compared to the fall 2011 forecast. In future years, Xcel Energy predicts that customers will continue to use less energy while making higher demands on ~~Xcel's~~Xcel Energy's peak compared to the fall 2011 forecast.[168]

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

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

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 Energy in its 2010 IRP and a new reserve ratio to be used by MISO for its peak.[171]

[164] *Id.* At 15.

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

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

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

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

[169] *Id.* at 10.

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

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

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

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

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

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 Energy in its most recent resource plan.[175]

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~~Xcel Energy's forecast of its demand at the time of (or coincident with) the MISO system peak.[176]

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

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

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

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

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

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

[175] *Id.* at 22.

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

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

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

management (DSM) measures will reduce ~~Xcel's~~Xcel Energy's non-coincident peak demand. ~~Xcel's~~Xcel Energy's Saver's Switch air conditioning interruption program, for example, can reduce hour-by-hour demand for energy by approximately 100 MW.[179]

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

181. 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.[181]

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

183. The minimum quantity was also more than 11 times ~~Xcel's~~Xcel Energy's most-recent projection of need for 2019 – 26 MW.[183]

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

## XVI. Strategist Base Case Development

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

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

b. Eliminated the optional wind expansion units.

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

[180] *Id.*

[181] Ex. 46 at ~~25~~23-~~27~~26 (Wishart Direct); Ex. 83 at 26, 29-31 (Rakow Direct); Ex. 86 at 3 (Rakow Rebuttal).

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

[183] *Id.* at 10.

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

c. Re-established ~~Xcel's~~Xcel Energy's "hard wired" or "forced" wind expansion units for the years 2012 and beyond to ensure that the existing renewable energy standard (RES) is met in Strategist.

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

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

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

g. Updated the inputs for ~~Xcel's~~Xcel Energy's Prairie Island units, largely removing the capacity attributable to the extended power uprate (Docket No. E002/CN-08-509) per ~~Xcel's~~Xcel Energy's 2013 database.

h. Updated the wholesale market price inputs per ~~Xcel's~~Xcel Energy's 2013 database.

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

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

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

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~~Xcel Energy's 2013 database.

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

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

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

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

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

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

## XVII. Using Generic Credits to Equalize Proposals for Evaluation

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.[187]

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

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

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

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 than an offeror's proposal price, adding these expensive units to the model works to

[185] Ex. 83 at 17-19 (Rakow Direct); see also, Ex. 84 SR-2 (Rakow Direct Attachments); *Order Declining to Extend Certificate of Need, Finding Statutory Violation, Requiring Further Filings, and Giving Notice of Intent to Revoke Site Permit* in Docket Nos. IP6701/CN-09-1186, IP6701/WS-08-1233, IP6701/M-09 1349, and IP6701/M-09-1350 (July 26, 2013).

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

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

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

[189] *Id.*

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

the disadvantage of the smaller packages. Larger proposals will tend to look cheaper in a Strategist modeling of outcomes than smaller packages that include generic units.[191]

192. The generic gas unit price that Xcel Energy developed was higher than the prices of the gas ~~plants bid~~plant bids 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.[192]

193. The generic solar unit price that Xcel Energy 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.[193]

## 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.[194]

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

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

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

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."[198]

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

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

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

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

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

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

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

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

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

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.[200]

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

202. Xcel Energy proposes to pass extra costs on to ratepayers through a rider to its tariff.[202]

203. To the extent that ~~Xcel's~~Xcel Energy's proposal permits it to avoid submitting firm pricing for interconnection costs, it is prejudicial to ratepayers and other offerors.[203]

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.[204]

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.[205]

206. 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~~Xcel Energy's or the Department's models.[206]

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~~Xcel Energy's transmission system. These reductions make existing transmission capacity available to meet future needs and permit Xcel Energy to avoid costs to expand its transmission system.[207]

199 Ex. 83 at 7 (Rakow Direct).

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

[201] *Id*.

[202] Ex. 82 at 1-3 (Shaw Rebuttal).

[203] *Id*.

[204] Ex. 62 at 4 (Skarbakka Direct).

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

206 Ex. 46 at 35 (Wishart Direct).

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

208. Using MISO's rate for network integration service on ~~Xcel's~~Xcel Energy's system, the avoided transmission capacity benefits associated with Geronimo's proposal is approximately $3.24 million each year.[208]

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

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

## XIX. The Department's Strategist Analysis

211. Each Bidder completed the Strategist template data form that is available on ~~Xcel's~~Xcel Energy'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.[211]

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.[212]

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 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.[213]

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.[214]

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

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

[209] *Id.* at 7.

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

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

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

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

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

"short list" of the bids or packages that, in his view, warranted more detailed economic analysis during a "second round" of analysis.[215]

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~~Xcel Energy's Black Dog Unit 6, with an in-service date of 2017 and CCC1 — Calpine's Combined Cycle Mankato Energy Center expansion proposal;

2. ICT1— Invenergy Combustion Turbine proposal 1 (Cannon Falls);

3. GPV1— Geronimo Solar proposal, "bundled" pricing;

4. BD619 CCC1 — ~~Xcel's~~Xcel Energy's Black Dog Unit 6, with an in-service date of 2019 and Calpine's CC Mankato Energy Center expansion proposal;

5. ICT1, BD618 — Invenergy Combustion Turbine proposal 1 (Cannon Falls) and Black Dog 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.[216]

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

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

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

220. For the base case in a second round of analysis, the Department used: (a) ~~Xcel's~~Xcel Energy's 2011 forecast of need; (b) a non-coincident peak reliability method; (c)

[215] *Id.* at 5.

[216] *Id.* at 35.

[217] *Id.* at 34.

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

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

the assumed acquisition 800 MW of wind; and (d) an accreditation factor for solar energy solutions of 72 percent.[220]

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

- a statutory mandate on CO2 reduction;
- use of the Commission's high and low CO2 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).[221]

222. Additionally, the Department ran each scenario and contingency a second time with the Commission's CO2 internal cost and externality values removed.[222]

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~~Xcel Energy's Black Dog Unit 6 (and a 2019 in-service date for the Black Dog unit). When combined, these units cover the capacity deficits through 2023; and, if demand is lower than was projected in 2011, perhaps much longer.[223]

224. During a "third round" of Strategist analyses, the Department included assumptions regarding interruptible natural gas supply and flexible in-service dates. The

[220] *Id.* at 36.

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

[222] *Id.* at 37.

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

Department's earlier analyses had assumed the use of firm natural gas supplies for all offerors that proposed a thermal solution.[224]

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

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~~Xcel Energy's Black Dog unit 6.[226]

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.[227]

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

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

## XX. Statutory and Regulatory Requirements for this Proceeding

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

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

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

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

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

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

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

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.[230]

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

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

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

(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.[231]

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

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

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

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

(I) the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.[232]

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."[233]

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

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

[232] Minn. R. 7849.0120.

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

Minnesota's greenhouse gas reduction goals, renewable energy standard, or the solar energy standard.[234]

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.[235]

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

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

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

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

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

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

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.[241]

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

[235] Minn. Stat. § 216B.2426.

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

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

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

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

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

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

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

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

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

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~~Xcel Energy's capacity needs in the summer of 2017.[245]

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

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

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

249. The most efficient solution in this circumstance is to select scalable projects that meet ~~Xcel's~~Xcel Energy'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]

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.[250]

## XXII. The Most Reasonable and Prudent Alternative

[242] Ex. 57 at 9 (Engelking Direct).

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

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

245 Ex. 57 at 7 (Engelking Direct).

246 Ex. 63 at 3 (Selander Direct).

247 Ex. 63 at 3 (Selander Direct).

248 Ex. 63 at 2-3 (Selander Direct); Ex. 64 at 3 (Selander Rebuttal).

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

[250] *Id*.

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.[251]

252. Xcel Energy 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 Energy calculates the PVSC for this combination as $34 million higher than its least-cost plan.[252]

253. In this circumstance, a levelized cost of electricity (LCOE) points to a better prediction of costs and impacts to ratepayers.[253]

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.[254]

255. When one accounts for avoided energy costs, avoided capacity costs, avoided transmission costs, the impact of emissions and the cost to Xcel Energy from transmission line losses, the benefits of Geronimo's proposal amounts to a savings of $46 million of net present value of societal costs.[255]

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.[256]

257. On a per MWh basis, a solar unit is also the lowest cost standalone resource.[257]

258. The most reasonable and prudent solution in this circumstance is to select scalable projects that meet ~~Xcel's~~Xcel Energy'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.[258]

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

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

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

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

255 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).

256 Ex. 13 at 19 (Distributed Solar Energy Proposal).

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

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

259. Combining Geronimo's proposal with GRE's proposal, represents the most reasonable and prudent alternative to meet ~~Xcel's~~Xcel Energy's near-term needs.[259]

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.[260]

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.[261]

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.[262]

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

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

265. A reasonable and prudent purchaser of energy resources, for ~~Xcel's~~Xcel Energy's stated needs, would not have relied upon ~~Xcel's~~Xcel Energy's Fall 2011 sales forecast alone.[265]

266. A reasonable and prudent purchaser of energy resources, for ~~Xcel's~~Xcel Energy's stated needs, would not have limited the evaluation to energy plants that produced 300 MW by 2019.[266]

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

[259] *See*, Section XXII.

[260] *Id*.

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

[262] *See*, Section XXII.

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

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

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

[266] 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).

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

## XXIII. Compatibility with Our Socioeconomic and Natural Environments

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.[268]

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."[269]

270. Criteria pollutants include sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), lead (Pb), and particulate matter (PM).[270]

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.[271]

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.[272]

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.[273]

274. By contrast, each of the gas-powered turbines proposed in this proceeding produces criteria pollutants and CO2 during the combustion of natural gas.[274]

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.[275]

[268] Minn. R. 7849.0120 (C).

[269] Ex. 38 at 38 (Environmental Report).

[270] *Id*. at 34.

[271] *Id.*

[272] *Id*. at 39.

[273] Ex. 13 at 24 (Distributed Solar Energy Proposal).

[274] *Id.*, at 2.

[275] *Id.* at 23-25 and 32-33.

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.[276]

277. The wages and salaries from these jobs will contribute to the total personal income in the region and state.[277]

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.[278]

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.[279]

280. GREs emission levels will be the same whether it effects a sale of capacity credits to Xcel Energy or not.[280]

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.[281]

**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.[282]

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

[276] Ex. 38 at 31-33 (Environmental Report).

[277] Ex. 13 at 32-33 (Distributed Solar Energy Proposal).

[278] *Id.*

[279] *See*, Section XXIII.

[280] Ex. 63 at 3 (Selander Direct).

[281] *See*, Section XXIII.

[282] Minn. R. 7849.0120 (D).

emissions of its own, and (based on an average system mix needed to generate energy) avoids 94,133 tons of CO2 emissions each year.[283]

284. If the Commission selects Geronimo's proposal, Xcel Energy will use the solar energy produced by the project to meet its requirements under the SES.[284]

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.[285]

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.[286]

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 fossilfuel-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.[287]

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.[288]

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.

Based on the foregoing Findings of Fact, the ~~Administrative Law Judge~~Commission makes the following:

## CONCLUSIONS OF LAW

1. The Administrative Law Judge and the Commission have jurisdiction over the subject matter of this hearing pursuant to Minn. Stat. §§ 14.50, 14.57 and 216B.2422, subd. 5.

2. The Commission provided appropriate public notice and all procedural requirements of law and rule have been fulfilled.

[283] Minn. Stat. § 216H.02, subd. 1; Ex. 13 at 24 (Distributed Solar Energy Proposal).

[284] Ex. 46 at 18 (Wishart Direct); Hearing Transcript, Vol. 1 at 137:4-8.

[285] Ex. 57 at 8 (Engelking Direct).

[286] 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.

[287] Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).

[288] Ex. 13 at 33-39 (Distributed Solar Energy Proposal).

3. Under the competitive bidding process, it is the Commission's role to select the most reasonable, prudent resources to meet ~~Xcel's~~Xcel Energy's need.

4. The Department of Commerce conducted an appropriate environmental analysis of the proposed projects for the purposes of this proceeding and produced an Environmental Report that satisfies Minnesota Rule 7849.1200

5. The Environmental Report addresses the issues and alternatives raised in scoping to a reasonable extent considering the availability of information and the time 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.

~~4~~7. It is not clear that there are significant capacity needs on ~~Xcel's~~Xcel Energy's system between 2014 and 2018. [289]

~~5~~8. While ~~Xcel's~~Xcel Energy's overall need for additional capacity is uncertain, there is no uncertainty regarding ~~Xcel's~~Xcel Energy's need to add solar energy resources to its system.[290]

~~6~~9. 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.

~~7~~10. The most efficient solution in this circumstance is to select scalable projects that meet ~~Xcel's~~Xcel Energy'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.

~~8~~11. The most reasonable and prudent solution in this circumstance is to select scalable projects that meet ~~Xcel's~~Xcel Energy'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.

~~9~~12. Combining Geronimo's proposal with GRE's proposal represents the most reasonable and prudent alternative to meet ~~Xcel's~~Xcel Energy's near-term needs.

[289] See, Ex. 46 at Table 4 (Wishart Direct).

[290] *See*, Hearing Transcript - Vol. 1 at 149-150.

~~10~~13. Selection of Geronimo's proposal will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including public health.

~~11~~14. 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.

~~12~~15. Selection of Geronimo's proposal is in accord with Minnesota's preferences for low-emission, renewable and distributed generation.

~~13~~16. Among the proposals in this proceeding, Geronimo's solution represents the lowest risks of non-compliance with state and federal policies, rules, and regulations.

~~14~~17. Minn. Stat. § 216B.243, subd. 3(a) prohibits the Commission from issuing a certificate of need for an energy facility that uses nonrenewable fuels unless it can be demonstrated that: (a) the possibility of generating power by means of renewable energy resources was explored, and (b) selection of a renewable energy source to meet the stated need is not in the public interest.

~~15~~18. The hearing record does not establish that selection of a nonrenewable energy source to meet the first 71 MW of need is in the public interest.

~~16~~19. Selection of Geronimo's proposal furthers the public interest.

~~17~~20. If added capacity beyond 71 MW is needed before the end of 2019, selection of GRE's proposal is in the public interest.

~~18~~21. 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~~Xcel Energy's next resource planning process. Assuming a procurement decision is made in early 2017, a natural gas turbine could be constructed and placed into service by late 2018. Similarly, other renewable resources could be placed into service in that same timeframe.

~~Based upon the foregoing Conclusions, and as detailed further in the Memorandum below, the Administrative Law Judge makes the following:~~

## ~~RECOMMENDATION~~ORDER

**IT IS ~~RESPECTFULLY RECOMMENDED~~HEREBY ORDERED** that the Commission:

1. Selects Geronimo's 100 MW (AC) Distributed Solar Proposal as the most reasonable and prudent resource to meet Xcel Energy's capacity needs in the 2017-2019 timeframe.

2. Directs Xcel Energy to file an update with the Commission in the Fall of 2014 and again in the Fall of 2015 providing updated assessments of its system

capacity need, including whether its need supports acquiring capacity from GRE's proposal, and in what amount, before the end of 2019.

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

~~20.~~ ~~Determine if added capacity beyond 71 MW is needed before the end of 2019.~~

~~21~~3. ~~Select~~Selects GRE's proposal if ~~added~~additional capacity beyond 71 MW of accredited capacity is needed before the end of 2019.

~~22~~4. ~~Direct~~Directs Xcel Energy to undertake Purchase Power Agreement negotiations with the selected offerors.

~~23~~5. ~~Conduct~~Orders a second competitive bidding process ~~for Xcel's needs beyond 71 MW that are likely to occur after 2019.~~to commence following a decision in Xcel Energy's next resource plan if the Commission determines Xcel Energy likely needs additional capacity beyond that ordered in this proceeding.

Dated: ~~December 31~~April __, ~~2013~~2014

~~ERIC L. LIPMAN~~
~~Administrative Law Judge~~

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