

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

<i>In the Matter of the Petition</i>)	
<i>Northern States Power Company</i>)	MPUC Docket No. E-002/CN-12-1240
<i>to Initiate a Competitive</i>)	OAH Docket No. 8-2500-30760
<i>Resource Acquisition Process</i>)	

**REPLY TO EXCEPTIONS
OF CALPINE CORPORATION**

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OF CALPINE CORPORATION**

Pursuant to the Minnesota Public Utilities Commission’s (“Commission”) January 3, 2014 Notice, Calpine Corporation and its affiliate Mankato Energy Center, LLC (“Calpine”) hereby respectfully submit their Reply to Exceptions to the Administrative Law Judge’s (“ALJ”) December 31, 2013 Findings of Fact, Conclusions of Law and Recommendation (“Recommendation”) filed in the above-referenced proceeding. Calpine limits its Reply to address certain Exceptions taken by Invenergy Thermal Development, LLC (“Invenergy”) that erroneously suggest that the record developed in this proceeding supports the selection of its proposed combustion turbine (“CT”) at Cannon Falls rather than Calpine’s combined cycle Expansion Proposal.¹

As discussed below, Invenergy’s arguments are without merit. The separate Strategist analyses performed by Xcel and the Department demonstrate that Calpine’s Expansion, combined with Xcel’s Black Dog project, represents the most cost-effective option for ratepayers under a wide range of modeling assumptions. Moreover, these results are based predominantly

¹ Calpine’s decision to limit its Reply to address discrete Invenergy arguments related to the merits of CT versus combined cycle capacity should not be viewed as acquiescence to, or agreement with, other arguments or theories advanced by Invenergy or other parties to this proceeding. Calpine’s positions on the threshold issues raised in this proceeding are set forth in detail in its briefs filed in this proceeding and its January 21, 2014 Exceptions.

on the long-term costs to consumers, *i.e.*, the present value of societal costs (“PVSC”), which is the primary comparative output of the Strategist model.

In Calpine’s view, while the Strategist-determined PVSC is certainly an important metric, it fails to fully capture important non-price attributes of combined-cycle generation, such as superior environmental performance and the ability, as an intermediate resource, to act as a hedge against future market uncertainty. Therefore, even though Strategist determined that Invenenergy is a close second from the perspective of PVSC, combined-cycle generation provides even more value when non-price factors are taken into consideration. These non-price benefits include superior environmental performance, more efficient utilization of natural gas, and a far greater ability to respond to Xcel’s changing resource mix needs and Minnesota’s long-term energy and environmental policy goals.

These important attributes are fundamental to ensuring a cost-effective, reliable and environmentally responsible energy future for Minnesota. Indeed, the record in this proceeding shows that Xcel now has a unique opportunity to acquire higher-value combined-cycle capacity at a cost (*i.e.*, PVSC) roughly equal to if not less than the cost of Invenenergy’s combustion turbine peaking unit. In addition, a combination that includes Calpine’s combined-cycle expansion and Xcel’s Black Dog peaking unit would be a more diverse, and therefore less risky, outcome than the “all your eggs in one basket” approach that Invenenergy recommends.

I. REPLY TO EXCEPTIONS

Calpine files this brief Reply to the Exceptions taken by Invenenergy that purport to show that Xcel requires peaking capacity rather than combined cycle capacity offered by Calpine. Specifically, Invenenergy alleges that the ALJ’s Recommendation should include determinations that (1) Xcel’s existing combined cycle capacity is underutilized and Calpine’s Expansion will

impose higher capacity costs on Xcel ratepayers;² (2) Xcel's system requires additional peaking (rather than combined cycle) capacity to respond to reliability issues resulting from the integration of intermediate wind resources;³ (3) Xcel is experiencing declining load factors and requires only peaking resources;⁴ and (4) Calpine's Expansion will not serve as a viable hedge against future baseload resource retirements.⁵ As demonstrated in Calpine's Briefs filed in this proceeding and set forth below, these arguments are simply not supported by the record.

A. INVENERGY'S ARGUMENT THAT CALPINE'S COMBINED-CYCLE CAPACITY WILL IMPOSE HIGHER COSTS ON CONSUMERS IGNORES THE ECONOMIC MODELING IN THIS PROCEEDING.

In its Exceptions, Invenergy argues that Xcel's existing combined cycle capacity is underutilized and that selecting Calpine's Expansion would result in imposing higher capacity costs onto Xcel ratepayers.⁶ According to Invenergy, "[c]omparing the capacity pricing offered by Invenergy with that offered by Calpine demonstrates that the Calpine proposal, if accepted, would impose substantially higher capacity payments on Xcel ratepayers."⁷ Such claims both mischaracterize current and future Xcel system conditions and ignore the fact that asset utilization is specifically and explicitly incorporated in the modeling of ratepayer impacts.⁸

As set forth in Calpine's Exceptions,⁹ the value to ratepayers of combined cycle versus CT capacity varies significantly based upon how often the resources are expected to be called on

² Invenergy Exceptions, Exhibit A at p. 3.

³ *Id.* at pp. 13-14.

⁴ *Id.* at p. 19.

⁵ *Id.* at p 5.

⁶ *Id.* at p. 3.

⁷ Invenergy Exceptions, Exhibit A at p. 3.

⁸ Exhibit No. 53, Rebuttal Testimony Paul J. Hibbard at p. 13, line 12-14 ("Hibbard Rebuttal").

⁹ In its Exceptions, Calpine outlined in detail how asset utilization impacts the economics of the gas-fired resources proposed in this proceeding. Even under scenarios using conservative assumptions regarding the expected utilization of Calpine's Expansion, the evidence still shows that Calpine's Expansion is the most economic resource. *See* Calpine Exceptions at pp. 19-22.

to run, which is expressed as the resource's average annual capacity factor ("CF").¹⁰ Invenergy, however, did not undertake any substantive analysis to determine likely CFs of any resources proposed in this proceeding. Calpine, the Department and Xcel did undertake such analysis and all concluded that Calpine's Expansion will be dispatched significantly more often than CT resources proposed in this proceeding because of its efficiency advantage.¹¹ Indeed, the ALJ appropriately found that Calpine's proposed Expansion "would operate as an intermediate type resource with capacity factors in the 20 to 30 percent range,"¹² whereas Xcel Witness Steve Wishart testified that his current expectation is that Black Dog 6 (and Invenergy's proposed Cannon Falls CT) would have around a 5% CF.¹³

Importantly, Witness Paul J. Hibbard demonstrated that Calpine's Expansion Proposal is the least expensive option among the thermal energy resources offered in this procurement by Xcel, Calpine, and Invenergy based on the levelized cost of electricity ("LCOE") as seen from the perspective of Xcel's ratepayers.¹⁴ As explained in detail in Calpine's Exceptions, Mr. Hibbard's LCOE analysis used conservative assumptions regarding asset utilization, which were consistent with the operation of existing combined cycle resources on Xcel's system (High Bridge and Riverside) with similar efficiency advantages.¹⁵

Similarly, the Department and Xcel's Strategist analyses, which analyzed the PVSC of different combinations of bids, similarly support the selection of Calpine's Expansion. As both

¹⁰ Exhibit No. 51, Direct Testimony of Paul J. Hibbard at p. 18, lines 7-9 ("Hibbard Direct").

¹¹ See e.g., Xcel Witness Steve Wishart's testimony that Calpine's clear "efficiency advantage" as a combined cycle resource must be factored into an economic analysis. Exhibit No. 44, Direct Testimony of Steve Wishart at p. 17, lines 5-15 ("Wishart Direct").

¹² Recommendation at p. 16, Finding 93.

¹³ Wishart Direct at p. 13, lines 10-11; see also Hearing Transcript, Volume 1 (October 22, 2013) at p. 93, line 16 through p. 94, line 4 (stating "my expectation is still that any peaking resource should be around 5 percent.").

¹⁴ See Calpine Exceptions at pp. 16-23. Invenergy's criticisms of Calpine's LCOE analysis as set forth in Invenergy's Exceptions at pp. 8-9 have been anticipated and addressed in Calpine's Exceptions at p. 17.

¹⁵ See Calpine's Exceptions at p. 20; see also, Hibbard Direct at p. 17, lines 11-17.

Department Witness Dr. Rakow and Xcel Witness Mr. Steve Wishart confirmed at hearing, the utilization of existing resources and the resources proposed in this proceeding are fully accounted for by Xcel¹⁶ and the Department's Strategist modeling.¹⁷ As Mr. Paul Hibbard testified at hearing:

The Strategist dispatch analysis would model each unit at its relative heat rates and variable costs. And so that to the extent a unit is currently operating a low capacity factor, under the same conditions going forward it would continue to do so. And the end result of that being, basically, that the Strategist analysis over time not only accounts for the economic factors that drive the existing units' current utilization, but also accounts for the new units' relative efficiency. So that the results that come out, for example, showing that Mankato is among the best from a ratepayer perspective takes into account that utilization of existing resources with the new resource integrated into the analysis.[¹⁸]

In this respect, the LCOE and PVSC analyses presented in this proceeding represent the costs to Xcel's ratepayers under a wide range of potential capacity factors for competing resources, and a wide range of potential future conditions, fully addressing in an objective manner the impact of asset utilization on ratepayer costs. Therefore, Invenenergy's claim that Calpine's combined cycle Expansion would impose higher costs on Xcel ratepayers is simply unfounded.

¹⁶ Invenenergy also alleges that Xcel's withdrawal of its proposed combined cycle facility at Black Dog indicates that Xcel agrees that peaking, instead of combined cycle, resources should be added to its system. *See* Invenenergy Exceptions at p. 15. This is not the case. In addition to Xcel's own modeling confirming that Calpine's Expansion should move forward to PPA negotiations, Xcel Witness James Alders specifically rejected Invenenergy's theory. At hearing, Mr. Alders stated that the "combined cycle projects that we had developed prior to this were larger in scale and, in particular, that Black Dog proposal for a combined cycle unit to replace both Units 3 and 4, and part of our motivation for withdrawing that application was that we – our system didn't need a unit of that scale." Hearing Transcript, Volume 1 (October 22, 2013) at p. 131, lines 3-11.

¹⁷ Hearing Transcript, Volume 1 (October 22, 2013) at p. 91, line 18 through p. 93, line 11 (Wishart oral testimony), and Hearing Transcript, Volume 2 (October 23, 2013) p. 53, lines 3-25 (Dr. Rakow oral testimony).

¹⁸ Hearing Transcript, Volume 1 (October 22, 2013) at p. 70, line 13 through p. 71, line 2.

B. INVENERGY’S ARGUMENT THAT XCEL REQUIRES ADDITIONAL PEAKING CAPACITY TO SUPPORT WIND INTEGRATION IS WITHOUT MERIT.

In its Exceptions, Invenergy argues that additional peaking capacity is necessary on Xcel’s system to address reliability issues associated with the integration of wind capacity. In particular, Invenergy asserts:

Xcel currently lags far behind its own subsidiary Public Service Company of Colorado (“PSCo”) with respect to the level of Capacity Resources on its system. PSCo has nearly twice as much peaking capacity as wind capacity – capacity that proved beneficial when PSCo experienced an unexpected wind ramp down of nearly 800 MW within 30 minutes last year. In contrast, Xcel’s current peaking capacity fails to even match its existing wind capacity. After the addition of another 750 MW of wind, Xcel’s peaking capacity will decrease to only two-thirds of its wind capacity, leaving it particularly vulnerable to wind ramp down events.^[19]

This claim is unsupported by the record.

At Hearing, Invenergy Witness Mr. Ron Norman agreed with Department witness Dr. Steven Rakow that “MISO’s dispatch includes not only Xcel’s generating units, but the generating units of many utilities in Minnesota and the surrounding states. And that any potential needs regarding load following, adjusting for the output of intermittent resources . . . must be considered in the broader, regional context of MISO rather than Xcel’s system in isolation.”²⁰ Mr. Norman further agreed that because of MISO’s centralized dispatch of generation resources across a broad market footprint, other MISO resources could be used to address the intermittency of wind resources on Xcel’s system.²¹ However, Mr. Norman did not

¹⁹ Invenergy Exceptions, Exhibit A at pp. 13-14.

²⁰ Hearing Transcript, Volume 2 (October 23, 2013) at p. 17, lines 7-16.

²¹ See Hearing Transcript, Volume 2 (October 23, 2013) at p. 18, line 25 through p. 19, line 2 (Mr. Norman stating “I certainly would expect that other resources within MISO could be used to address intermittency of wind resources.”).

conduct any analysis within MISO generally, or Minnesota specifically, to determine the sufficiency of peaking capacity to address reliability issues associated with wind integration.²²

Moreover, Mr. Norman acknowledged that unlike Xcel, its affiliate PSCo is not part of an organized market like MISO where generation resources are centrally dispatched and “in general” must rely on its own or contracted-for generation resources to address reliability concerns associated with wind integration.²³ When faced with these basic facts, Mr. Norman was forced to concede that he is “not necessarily suggesting that there was a strong concern or major concern about the reliability of the Xcel system as a result.”²⁴ Invenergy’s claim that Xcel’s system is “particularly vulnerable to wind ramp down events” because it lacks additional peaking capacity is clearly unsupported.²⁵

C. INVENERGY’S ARGUMENT THAT XCEL REQUIRES PEAKING CAPACITY BECAUSE OF ITS DECLINING LOAD FACTOR IS UNSUPPORTED.

In its Exceptions, Invenergy asserts that “[t]he Department noted that Xcel’s most recent forecast predicts that its load factor will decrease significantly over time, with customers demanding ever more from Xcel’s peak while using less energy overall.”²⁶ According to Invenergy, “[t]he potential need for greater capacity at peak, while requiring less energy overall, suggests that Capacity Resources, not Energy Resources, best fit Xcel’s customers’ needs and best ensure those customers a continued adequate electric supply.”²⁷ What Invenergy fails to

²² See Hearing Transcript, Volume 2 (October 23, 2013) at p. 18, line 19 through p. 20, line 10.

²³ Hearing Transcript, Volume 2 (October 23, 2013) at p. 20, lines 11-25.

²⁴ Hearing Transcript, Volume 2 (October 23, 2013) at p. 20, lines 2-5.

²⁵ It should also be noted that if allowed to operate on interruptible fuel, the record shows Invenergy’s proposed Cannon Falls CT may not be available in the winter months to address any reliability need that arises. As Xcel Witness Wishart noted, “...the fuel tanks at the [Cannon Falls] site are barely sufficient to support the operation of a single turbine. For reliable winter operation the amount of on-site fuel storage would need to be expanded. Invenergy has not included these costs in their bid and has not provided supplemental information on the issue.” Wishart Direct at p. 50, lines 1-5.

²⁶ Invenergy Exceptions, Exhibit A at p. 14.

²⁷ *Id.*

note, however, is that the Department concluded that Xcel had not provided a basis for its prediction regarding a declining load factor.²⁸

Furthermore, Invenergy does not provide any evidence that Xcel's prediction is accurate or will prove to be true over a 20-year life of a PPA that will result from this procurement. While Invenergy Witness Norman observed that Xcel's annual system load factors fell from 2008-2011,²⁹ Mr. Norman conceded that great economic recession experienced over this time frame could have contributed to the declining load factors.³⁰ Again, Invenergy's attempt to argue that peaking rather than combined cycle resources are needed by Xcel is contrary to the weight of the evidence, ignores the fact that the Commission already has ruled on size, type and timing in the context of Xcel's approved Resource Plan, and ignores the fact that two separate Strategist modeling efforts, which fully considered system load factors, support the acquisition of Calpine's Expansion project.

D. INVENERGY'S ARGUMENT THAT CALPINE'S EXPANSION WILL NOT SERVE AS A HEDGE AGAINST FUTURE RESOURCES RETIREMENTS MISSES THE MARK.

As Calpine notes in its Exceptions, among the thermal resources proposed in this proceeding, only Calpine's proposed combined cycle technology allows the proposed Expansion to operate as an intermediate or baseload resource.³¹ Therefore, in evaluating the merits of adding additional combined cycle capability to Xcel's system, Calpine urged the Commission to consider the potential that a significant quantity of MISO's baseload coal-fired resources may become uneconomic as a result of changes in the dispatch of resources due to low natural gas

²⁸ Hearing Transcript, Volume 2 (October 23, 2013) at p. 33, lines 1-3.

²⁹ Exhibit No. 73, Rebuttal Testimony of Ron Norman at p. 12, lines 1-2 ("Norman Rebuttal").

³⁰ Hearing Transcript, Volume 2 (October 23, 2013) at p. 21, line 19 through p. 22, line 6.

³¹ Calpine Exceptions at pp. 8-11.

costs and/or existing and future environmental requirements that will be relevant within the timeframe of interest in the current proceeding.

In its Exceptions, Invenergy asserts that “[t]he record fails to support the notion that the Xcel system will face heretofore unforeseen retirements of baseload resources in the 2017-2019 time frame of concern in this proceeding. The record instead shows that Xcel’s baseload resources will likely continue providing baseload power through the 2017-2019 time frame and beyond.”³² As Calpine previously noted, however, this proceeding is about securing a long-term generation resource that will provide capacity and energy to Xcel’s customers through at least 2036 – not simply from 2017-2019.³³ Furthermore, contrary to Invenergy’s arguments, even the future of Xcel’s Sherburne County (“Sherco”) generating facility is uncertain as evidenced by the on-going Commission proceedings in Docket No. E002/RP-13-368.

Simply, the record shows that selecting only CT peaking capacity in this proceeding – compared to combined cycle capacity or a mix of CT and combined cycle capacity – would diminish the resilience of Xcel’s resource mix to respond to higher-than-expected load growth and future resource retirements.³⁴ In contrast, the CTs proposed by Xcel and Invenergy are expected to operate only as peaking resources during limited hours each year.³⁵

The ability of Calpine’s Expansion to serve as a hedge against future market uncertainty is an important attribute from a public policy perspective that the Commission should take into consideration in its evaluation of the bids. Selection of Calpine’s Expansion will provide the

³² Invenergy Exceptions, Exhibit A at p. 5.

³³ Both Invenergy and Calpine proposed a 20-year PPA with Xcel beginning as early as 2016 in Invenergy’s case.

³⁴ Hibbard Rebuttal at p. 16, lines 15-17.

³⁵ As Calpine Witness Todd Thornton testified, “[p]eaking units are often selected not because they provide greater value to the market in terms of energy production or operational flexibility, but simply because they typically require a lower capital investment than a combined-cycle unit.” Exhibit No. 55, Direct Testimony of Mr. Todd Thornton at p. 11, lines 17-20 (“Thornton Direct”).

Commission with greater flexibility in making future resource decisions beyond the 2017-2019 timeframe. Nothing in the record or Invenergy's Exceptions refutes this basic fact.

II. CONCLUSION

The record in this proceeding shows that Calpine's Expansion Proposal achieves the goal of installing additional electric generation capacity to help meet customer demand with state-of-the-art, environmentally responsible and cost effective combined cycle technology. Accordingly, the Commission should direct Xcel to enter into PPA negotiations with Calpine to secure the clear benefits of the Calpine Expansion for Xcel's customers.

Dated: January 31, 2014

Respectfully submitted,

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CERTIFICATE OF SERVICE

Catherine M. Wood, certifies that on January 31, 2014 she served true and correct copies of the **Reply to Exceptions of Calpine Corporation** upon the following parties via e-filing and/or U.S. Mail:

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