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BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 North Robert Street
St. Paul, Minnesota 55101

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 Seventh Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of Competitive Resource Acquisition Proposal and Certificate of Need	**MPUC Docket No. E-002/CN-12-1240** **OAH Docket No. 8-2500-0760**

REBUTTAL TESTIMONY
OF
RON NORMAN

Filed on Behalf of
Invenergy Thermal Development LLC

October 18, 2013

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Rebuttal Testimony of Ron Norman

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

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ron Norman. My business address is 10 Canal Park, 4th Floor, Cambridge, Massachusetts 02141.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by PA Consulting Group. My job title is Member of PA's Management Group.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of Invenergy Thermal Development, LLC ("Invenergy"). Invenergy has two proposals for new peaking generation under consideration in this proceeding: The Cannon Falls Peaking Expansion ("Cannon Falls Expansion") and Hampton Energy Center ("Hampton") proposals.

Q. HAVE YOU INCLUDED A DESCRIPTION OF YOUR QUALIFICATIONS, DUTIES, AND RESPONSIBILITIES?

A. Yes. A description of my qualifications, duties, and responsibilities is included as **Exhibit RN-1**.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide rebuttal testimony to direct testimonies submitted in support of alternative resource proposals currently before Xcel Energy

("Xcel" or the "Company") and the Minnesota Public Utilities Commission (the "Commission") as part of the 12-1240 Docket. In particular, I have been asked by Invenergy to analyze and provide rebuttal testimony related to the direct testimonies offered by (1) Calpine witnesses Mr. Paul Hibbard and Mr. Todd Thornton; (2) Minnesota Department of Commerce (the "Department") Division of Energy Resources witnesses Dr. Steve Rakow and Mr. Sachin Shah; and (3) Xcel witness Mr. Steven Wishart.

Q. DO YOU HAVE CONCERNS WITH THE CURRENTLY SUBMITTED DIRECT TESTIMONIES, AND WHY?

A. Yes. Currently offered testimonies, to varying degrees, are insufficient to identify the best resource alternative for the Xcel system.

To reach this conclusion, I have evaluated these direct testimonies within the relatively broad evaluation framework established by the Commission for this proceeding:

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

this process tracks the framework of the Certificate of Need process under Minn. Stat. § 216B.243.[1]

Within a resource acquisition proceeding where a clear economic winner emerges among competing resource proposals, the simple "least-cost" option may suffice when determining the type of resource needed on the system, especially when comparing "like" technology proposals. However, the Commission is not presented with such a clear-cut situation in this proceeding:

- For example, Xcel witness Wishart's direct testimony is largely indifferent when it comes to deciding between competing Calpine combined cycle and Invenergy peaking proposals.[2] On the other hand, Department witness Rakow advocates for the Calpine combined cycle proposal under most scenarios, but also notes that "depending on the Commission's goal in this proceeding, several options are available…Thus, the exact ranking [of the proposals and combinations of

[1] *Notice and Order for Hearing,* June 21, 2013, at Page 5.
[2] Xcel witness Wishart implies that the "indifferent" nature of the Strategist results between competing peaking capacity (primarily, Invenergy's Cannon Falls project) and combined cycle capacity (Calpine's Mankato Expansion) proposals can ultimately be "solved" for the benefit of Xcel customers through future bilateral contract negotiations between Xcel and Invenergy and/or Xcel and Calpine. However, in such a scenario, it is unclear how the Commission can be assured of achieving a lowest cost-lowest risk outcome for Xcel customers (or, further, that having Xcel negotiate between a peaking and combined cycle proposal is more appropriate from the perspective of an Xcel customer than are negotiations between competing peaking proposals).
[2] See Direct Testimony of Dr. Steve Rakow on Behalf of the Department of Energy Resources of the Minnesota Department of Commerce, Minnesota Public Utilities Commission Docket Number E002/CN-12-1240, September 27, 2013, at page 40.

proposals] would depend upon which contingencies are of greatest concern."[3] In contrast, Calpine witnesses Hibbard and Thornton assert that a combined cycle (and, thus, the Mankato Expansion) is almost always the ideal addition to a system.

Further complicating the matter, unlike the testimony offered by Invenergy witnesses Mr. Shield and Mr. Ewan, the direct testimonies of Xcel, the Department and Calpine fail to adequately address the broad evaluation approach implied by the Commission's Order. As a result, my concerns include (1) overstating the need for Energy Resources on the Xcel system; (2) insufficiently analyzing the need for Capacity Resources on the Xcel system;[4] (3) using economic approaches that are flawed and skew the results; and (4) not leveraging input assumption and modeling refinements to enhance Strategist modeling results.

While likely stating the obvious, without proper due diligence analyzing the implications of these inadequacies, the Commission may be led into selecting, at best, an inappropriate and, at worst, riskier and ultimately more costly type of generation for Xcel's customers.

Q. HOW IS YOUR REBUTTAL TESTIMONY ORGANIZED?

A. The body of my testimony is structured into four subsequent sections.

[3] See Direct Testimony of Dr. Steve Rakow on Behalf of the Department of Energy Resources of the Minnesota Department of Commerce, Minnesota Public Utilities Commission Docket Number E002/CN-12-1240, September 27, 2013, at page 40.

[4] For purposes of this testimony, I define "Capacity Resources" as dispatchable (i.e., controllable) thermal peaking resources (e.g., natural gas-fired General Electric 7FA or equivalent technology), and "Energy Resources" as baseload (e.g., coal-fired and hydroelectric) and intermediate (e.g., natural gas-fired combined cycle) resources.

- The non-Strategist modeling alternative economic approach offered in Calpine's direct testimony is flawed and misleading;
- The direct testimonies of Xcel, the Department and Calpine insufficiently analyze the need for Capacity Resources on the Xcel system;
- These same direct testimonies overstate the need for Energy Resources on the Xcel system; and
- Xcel's and the Department's Strategist results as presented in their direct testimonies are useful, but may benefit from some refinements.

Within each of these sections I directly address and rebut various conclusions and analyses offered by Mr. Hibbard, Dr. Rakow, Mr. Shah and Mr. Wishart in their respective direct testimonies.

II. THE NON-STRATEGIST MODELING ALTERNATIVE ECONOMIC APPROACH OFFERED IN CALPINE'S DIRECT TESTIMONY IS FLAWED AND MISLEADING.

Q. CAN YOU PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY AS IT RELATES TO THE ECONOMIC ANALYSIS AND ARGUMENTS OFFERED BY CALPINE WITNESS HIBBARD?

A. I have two primary findings with regards to the direct testimony offered by Calpine witness Hibbard.

1. Calpine witness Hibbard's Levelized Cost of Electricity ("LCOE") analysis is overly simplistic, fundamentally flawed, and produces results that are generally

skewed to favor resource units with lower heat rates and higher capacity factors, such as a combined cycle, while eschewing the real risks to (and impacts on) Minnesota customer rates and the broader Xcel system.

2. Based on direct testimony currently offered by Calpine witness Hibbard, combined with the rebuttal testimony I offer in Section IV of this testimony (which concludes that there is limited need for Energy Resources on the Xcel system, and that the economic benefits of additional combined cycles on the Xcel system are limited, at best), it is unclear how Xcel customers will benefit economically from the selection of a combined cycle (e.g., intermediate) resource over competing combustion turbine (e.g., peaking) resource.

Q. CAN YOU EXPLAIN THE FLAWS IN CALPINE WITNESS HIBBARD'S LCOE ANALYSIS?

A. Yes. The LCOE methodology is skewed towards selecting the most "efficient" resources on a standalone basis over considering full costs of the system.[5] This results in favoring the lowest cost standalone resource on a per MWh basis, while ignoring broader system impacts and costs.

[5] Within my testimony, I define a "system" approach as one that analyzes the total system impacts of a resource proposal (or combination of proposals), inclusive of the potential for the re-dispatch of existing resources on the system. (Note that using a model like Strategist is one way to take a "system" approach). In contrast, I define a "standalone" approach as one that accounts only for costs (and impacts) related to a singular proposal (or combination of proposals), and which does not account for impacts to the broader system.

For example, Calpine's Mankato Expansion proposal appears to be the lowest cost proposal, by a significant margin, in Mr. Hibbard's direct testimony. However, I have created two examples using a similar LCOE approach that may help to illustrate some of the fallacies, including the potential for perverse outcomes, associated with Mr. Hibbard's LCOE approach.

Example #1: Mr. Hibbard only compares alternative thermal proposals in his LCOE analysis. However, I recreated his LCOE analysis,[6] and included the Geronimo solar proposal. **Trade Secret Figure RN-1** clearly illustrates that a more efficient unit – in this case a solar unit with no fuel cost – appears more cost-effective utilizing the LCOE methodology. However, as seen in the Strategist results offered by Xcel witness Wishart and Department witness Rakow, when system impacts are taken into account, the solar proposal is among the least cost-effective proposals. [**TRADE SECRET INFORMATION BEGINS**

[6] I did not have access to Mr. Hibbard's work papers, however, my recreation of his LCOE analysis results in figures within 5% of the figures reported in Mr. Hibbard's direct testimony.

TRADE SECRET INFORMATION ENDS]

Example #2: The LCOE analysis, which relies on calculating costs on a per MWh basis, effectively skews results toward higher-capacity factor resource additions with limited regard to overall costs to ratepayers. As such, the LCOE analysis ignores the fact that combined cycle and peaking resources are used in fundamentally different ways on the system (which can generally be observed in underlying differences in peaking versus combined cycle capacity factors). By way of example, I have again essentially re-created Hibbard's LCOE analysis in **Trade Secret Figure RN-2**, which illustrates the implied increase in capacity payments that the Mankato Expansion proposal could absorb, utilizing

Mr. Hibbard's LCOE analysis, and still breakeven with Invenergy's Cannon Falls proposal. As can be seen in the figure, capacity payments under the Mankato Expansion proposal could effectively more than triple, yet still be viewed as more economic under Mr. Hibbard's LCOE approach, largely due to the higher capacity factor assumed at the Mankato Expansion vis-à-vis the Cannon Falls proposal. **[TRADE SECRET INFORMATION BEGINS**

TRADE SECRET INFORMATION ENDS]

III. THE DIRECT TESTIMONIES OF XCEL, THE DEPARTMENT AND CALPINE INSUFFICIENTLY ANALYZE THE NEED FOR CAPACITY RESOURCES ON THE XCEL SYSTEM.

Q. WHICH CURRENTLY OFFERED DIRECT TESTIMONIES INSUFFICIENTLY ANALYZE THE NEED FOR CAPACITY RESOURCES ON THE XCEL SYSTEM, AND WHY DOES THIS CONCERN YOU?

A. In this section of my testimony, I primarily focus on and respond to testimony offered by Calpine witness Hibbard that address Mr. Hibbard's analysis understating the need for Capacity Resources (e.g., peaking resources) on the Xcel system. The result of this understatement is to skew Mr. Hibbard's results favorably toward Calpine's Mankato Expansion. In addition to Mr. Hibbard's testimony, I respond to direct testimony filed by Department witness Shah that questions (but does not answer) whether the shape of load is changing on the Xcel system (and, thus, the relative need for Capacity Resources versus Energy Resources), and which may ultimately understate the need for Capacity Resources (e.g., peaking resources) in Department witness Rakow's testimony.

Q. DOES THE XCEL SYSTEM HAVE A NEED FOR CAPACITY RESOURCES ON ITS SYSTEM IN THE 2017-2019 TIMEFRAME?

A. Yes, in my opinion, the Xcel system does have a clear need for Capacity Resources (e.g., peaking resources) within the 2017-2019 timeframe, for two reasons:

1. Load factor on the Xcel system is declining;

2. Intermittent wind generation saturation is increasing on the Xcel system, while Capacity Resource concentration (e.g., peaking resources) lags peer systems; and

Interestingly, my opinion is consistent with other experts in this docket.

Q. CAN YOU EXPLAIN YOUR OBSERVATION REGARDING THE DECLINING LOAD FACTOR ON THE XCEL SYSTEM?

A. Yes. And the direct testimony provided by Department witness Shah underscores the importance of this issue, which Invenergy also discussed in its direct testimony.

An electrical system's load factor measures the uniformity of load across time. In general, a high load factor is indicative of a system in which electric demand is relatively stable throughout days, months, and seasons; conversely, a low load factor is indicative of a system in which electric demand fluctuates throughout days, months, and seasons. All else equal, a lower load factor indicates a system where many supply resources will sit idle a greater amount of time until higher load conditions occur, and thus, indicates a system that needs relatively more Capacity Resources than Energy Resources.

- Annual system load factors across the U.S. have been on a downward trajectory since approximately 2004, falling from approximately 59% in 2004 to approximately 54% in 2012.

- The Xcel system has followed a similar (albeit, somewhat delayed) trajectory, with annual system load factors falling steadily from 2008 to 2011.[7]

In order to put these percentage point declines into perspective, the implied impact on Xcel system Capacity Resource needs can be derived on a MW basis. As seen in **Figure RN-3**, a one (1) percentage point decline in July[8] load factor on the Xcel system, holding average energy demand constant, equates to an approximate 150 MW relative increase in implied Capacity Resource needs on the Xcel system.

- As noted previously, Xcel system load factors declined approximately three (3) percentage points between 2004 and 2011; based on the aforementioned MW-basis conversion methodology, this equates to an approximately 450 MW increase in Capacity Resource needs (vis-à-vis Energy Resources), all else equal, over this seven year period.

[7] 2012 historical data not provided by Xcel.
[8] July is typically the peak energy and demand month on the Xcel system, and is forecasted by Xcel to be the peak energy and demand month on the system going forward.

Figure RN-3: Impact of One (1) Percentage Point Decrease in July Load Factor on Xcel System

Row		Units	Formula [Source]	Result
A	Jul'14 NSP Total System Native Requirements	MWh	['14 Budget]	4,326,814
B	Jul'14 NSP Total System Average Load	MW	A / Hours in July	5,816
C	Jul'14 NSP Total System Peak Load	MW	['14 Budget]	9,203
D	Jul'14 Load Factor	%	B / C	63.2%
E	Jul'14 Load Factor - 1 Percentage Point Reduction	%	D - 1%	62.2%
F	Jul'14 Implied Increase in Peaking Needs	MW	(B / E) - C	148

Sources: Analysis utilizing data from Xcel Total System 2014 Budget forecast.

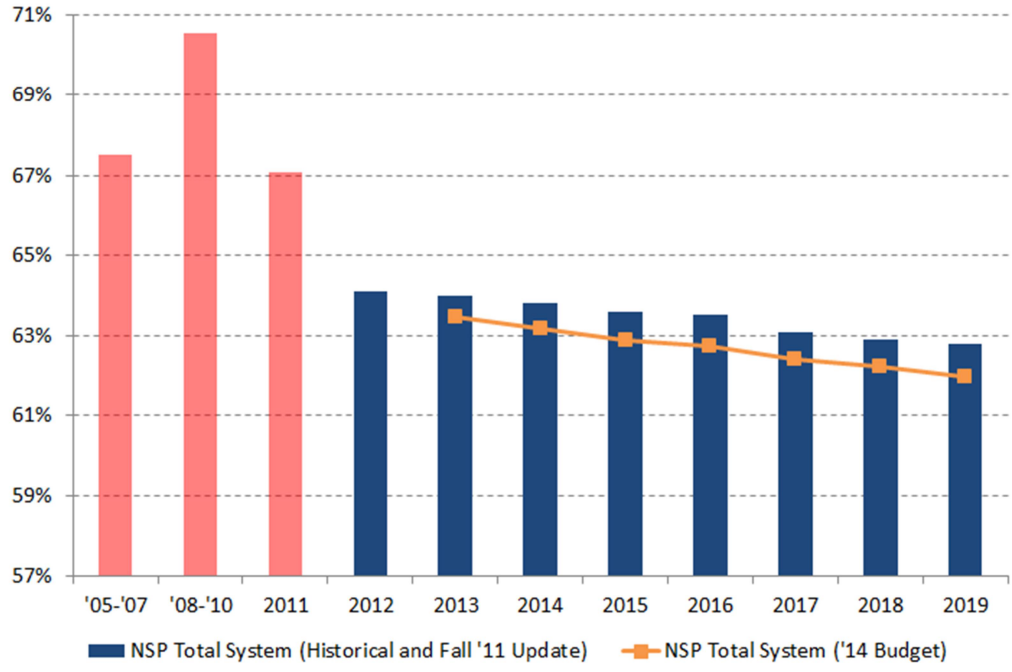
In addition to historical year-over-year declines in system load factor on the Xcel system, recent Xcel revisions to energy growth forecasts have declined more rapidly than revised forecasts of peak load growth. Moreover, forecasted load factors on the Xce1 system are projected to remain low relative to history. All else equal, these trends further exacerbate the need for incremental Capacity Resources on the Xcel system to balance intermittent supply and demand. See **Figure RN-4** for a comparison of July[9] historical versus forecasted load factors on the Xcel system.

- It is important to note that Xcel's projections of load factor have fallen approximately one (1) percentage point between Xcel's Fall 2011 and 2014 Budget forecasts, indicating Xcel's view of a more intermittent supply and

[9] As noted previously, July is typically the peak energy and demand month on the Xcel system, and is forecasted by Xcel to be the peak energy and demand month on the system going forward. As such, July can generally be viewed as the "tightest" month on the Xcel System, and thus, generally speaking, creating the greatest need for system capacity.

demand mix going forward than prior forecasts envisioned. As noted above, a one (1) percentage point decrease in load factor, all else equal, equates to the need for approximately 150 MW of relative incremental Capacity Resources on the Xcel system.

Figure RN-4: July Historical versus Forecasted
Xcel System Load Factor



Sources: Analysis utilizing data from NSP competitive acquisition proposal and NSP 2014 Budget.

Q. HAVE OTHER WITNESSES SUBMITTING DIRECT TESTIMONY MADE SIMILAR OBSERVATIONS, AND WHAT WAS THE IMPLICATION OF THESE OBSERVATIONS ON THEIR FINDINGS?

A. Yes. Department witness Shah, in his direct testimony, acknowledges that the Xcel system may be changing when he states "these changes in peak and energy forecasts, together, mean that Xcel predicts a significant change in the overall load factor of its system. Specifically, Xcel's prediction that customers will use less energy overall while making higher demands on Xcel's peak means that Xcel expects that its load factor will decrease significantly over time, with customers demanding ever more from Xcel's peak while using less energy overall."[10,11] However, Mr. Shah's testimony does not posit potential ways to address and analyze those potential changes, including the validity thereof, on a going-forward basis. Importantly it is unclear how, or if, these observations were incorporated in Department witness Rakow's Strategist modeling and direct testimony submission.

[10] See Direct Testimony of Sachin Shah, Minnesota Public Utilities Commission Docket Number E-002/CN-12-1240, September 27, 2013, at page 10.

[11] In Mr. Shah's testimony, he seems to question whether or not the nature of load on the Xcel system is changing to the full extent that is implied by Xcel's recent load forecast updates. This is certainly a valid question, however, I am simply trying to point out that the answer to this question is not fully vetted within Mr. Shah's testimony or within the direct testimonies submitted by the Department, Xcel or Calpine. As such, this may call into question the various "economic answers" offered by other submitted direct testimonies.

Q. DO YOU AGREE WITH CALPINE WITNESS HIBBARD'S ASSESSMENT THAT COMBINED CYCLE GENERATION IS PREFERABLE OVER COMBUSTION TURBINE GENERATION IN ADDRESSING THE VARIABILITY OF WIND GENERATION ON THE XCEL SYSTEM AS WIND PENETRATION LEVELS INCREASE?

A. No. There are, at least, two primary concerns I have related to the integration wind on a system such as Xcel's, and the thermal resources need to manage the intermittency of these resources that demonstrate why combined cycle generation is a less preferable resource to fit this purpose.

1. The first concern, as Mr. Hibbard's correctly points out, is the need to manage for the variability of wind on a continual basis. Mr. Hibbard argues that "the cost and environmental impact of using ***only*** CT capacity to balance renewable generation would be counterproductive" (***emphasis added***).[12] However, no one in this docket has suggested that ***only*** combustion turbine capacity be used to balance wind renewable generation. What Mr. Hibbard fails to account for – as I discuss, primarily, in Section IV – is the current underutilization of combined cycles on the Xcel system. Given the volume of underutilized combined cycles, Xcel likely has sufficient resources to balance wind generation on a continual basis without the addition of the Mankato Expansion proposal.

[12] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 32.

2. The second concern, which Mr. Hibbard does not account for in his analysis, is extreme and unexpected drop-offs in wind generation known as "wind ramp down events." In contrast to the relatively minor continual fluctuations related to balancing wind, wind ramp down events can pose significant threats to reliability and are typically managed through flexible peaking capacity resources. For example, in 2012, Xcel's subsidiary Public Service Company of Colorado (PSCo)[13] experienced an unexpected wind ramp down event of nearly 800 MW within 30 minutes.[14]

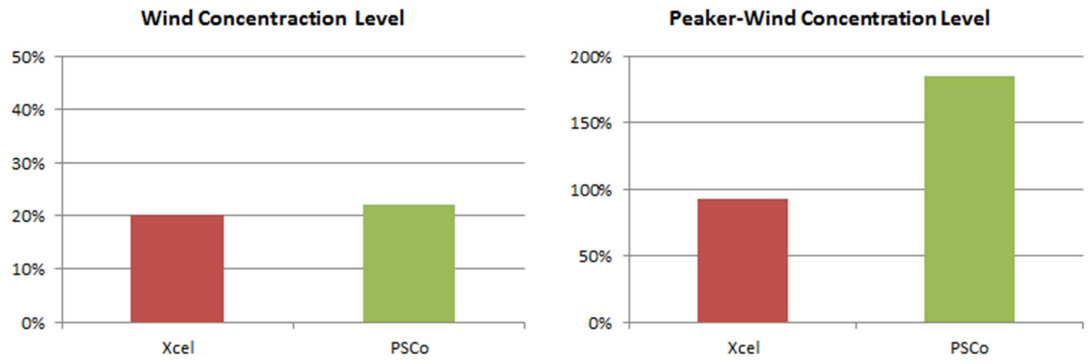
Q. CAN YOU EXPLAIN IN MORE DETAIL WHY THE XCEL SYSTEM HAS A PEAKING NEED IN RELATION TO WIND VARIABILITY AND RAMP DOWN EVENTS?

A. Yes. Comparing the Xcel system with PSCo, another subsidiary of Xcel with similar wind concentration as a percentage of peak demand ("Wind Concentration Level"[15]), shows that Xcel has relatively less peaking capacity that can be used to address extreme fluctuations in intermittent generation ("Peaker-Wind Concentration Level"[16]). As demonstrated in **Figure RN-5**, PSCo has nearly twice as much peaking capacity as wind

[13] PSCo is Public Service Company of Colorado, a subsidiary of Xcel Energy.
[14] See Cross Examination of Drake Bartlett Reporter's Transcript Volume 3, Colorado Public Utilities Commission Docket No. 11A-869E, November 1, 2012, at page 144.
[15] For clarity, PA defines a region's (or market's) Wind Concentration Level as Total Nameplate Installed Wind Capacity divided by System Peak Demand.
[16] For clarity, PA defines a region's (or market's) Peaker-Wind Concentration Level as Peaking Capacity (excluding steam-gas generation) divided by Total Nameplate Installed Wind Capacity

capacity. In contrast, Xcel has less peaking capacity than wind capacity, which, in a major loss of wind generation, may pose a risk to reliability.

Figure RN-5: 2012 Wind Concentration Metrics



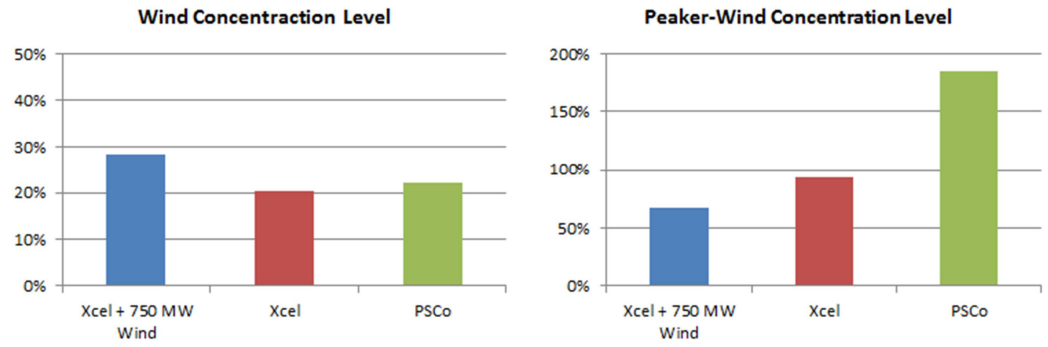
Sources: Analysis utilizing data from Ventyx Energy Velocity and Xcel's 2010 IRP.

In addition to currently high wind and low peaker penetration on the Xcel system, forecasted increases in wind penetration will further support the need for peaking resources on the Xcel system. It is worth noting that, compared to other regions in the U.S., the Xcel system already has among the highest Wind Concentration Levels, and will be the highest, by a significant margin, when the 750 MW of incremental wind capacity is added to the system from Dockets 13-603 and 13-716. See **Figure RN-6**.

- Xcel's current Wind Concentration Level is approximately 20% versus approximately 22% in the PSCo region; assuming the addition of 750 MW of nameplate wind capacity on the Xcel system, Xcel's Wind Concentration Level would increase to approximately 28%.

- Xcel's current peaking capacity is approximately 93% of wind capacity (i.e., 0.93 MW of peaking capacity for every 1 MW of nameplate wind capacity) versus approximately 186% in the PSCo region (i.e., 1.86 MW of peaking capacity for every 1 MW of nameplate wind capacity); assuming the addition of 750 MW of nameplate wind capacity to the Xcel System, Xcel's peaking capacity would decrease to approximately 67% of wind capacity (i.e., 0.67 MW of peaking capacity for every 1 MW of nameplate wind capacity).

Figure RN-6: 2012 Wind Concentration Metrics



Sources: Analysis utilizing data from Ventyx Energy Velocity and Xcel's 2010 IRP.

Q. WHAT DOES YOUR ANALYSIS TELL YOU ABOUT THE APPROPRIATE TYPE OF RESOURCE NEEDED ON THE XCEL SYSTEM TO FACILITATE THE INTEGRATION OF INCREASING WIND RESOURCE PENETRATION?

A. In contrast to Mr. Hibbard's assessment, when considering Xcel's system-wide current and expected high concentration of intermittent wind generation, Capacity Resources in

the form of peaking generation, are expected to be the preferred type of generation to help Xcel meet its wind integration and reliability objectives.

Q. IS YOUR IDENTIFICATION OF A PEAKING CAPACITY NEED ON THE XCEL SYSTEM CONSISTENT WITH OTHER EXPERTS IN THE DOCKET?

A. Yes. In particular, the 12-1240 Docket filings made by Xcel and Calpine both acknowledge that at least some peaking capacity will be needed on the Xcel system by, at least, the 2019 timeframe.

- Xcel analyses, since at least the 2010 IRP filing, have indicated an increasing preference for peaking capacity within the 2017-2019 capacity procurement window.
    - In Xcel's December 2011 Motion to Withdraw the Certificate of Need ("CON") for the Black Dog Repowering Project natural gas-fired combined cycle, Xcel argued that a combined cycle addition was not in the best interest of Xcel ratepayers due, primarily, to lower expectations of load (energy) growth going forward.
    - Xcel's competitive acquisition proposal implies peaking capacity is more appropriate in the near-to-medium term than are combined cycle resources when (1) proposing only peaking capacity within this resource acquisition

proceeding;[17] and (2) positing within the proposal that the Red River peaking addition will be constructed such that it can be converted to a combined cycle facility in the future.[18]

- Calpine's competitive acquisition proposal acknowledges that its proposal alone will not be sufficient; aside from the fact that the proposed Mankato Expansion proposal is not large enough to fill the 500 MW capacity gap, Calpine also acknowledges that the Xcel system needs peaking resources.

Q. DO YOU HAVE ANY CONCLUSIONS TO OFFER FOR THIS SECTION OF YOUR REBUTTAL TESTIMONY?

A. Yes. The current analyses presented in parties' direct testimonies fail to provide a full picture. For example, the lowest-cost outcomes in the Department's Strategist modeling, on which Dr. Rakow's recommendations for a combined cycle are based, demonstrate an increasing preference towards peaking generation with both (1) increasing volumes of wind generation on Xcel's system and (2) lower load growth projections. This general trend is supported by previous Department Strategist modeling, where the Department

[17] This is important as Xcel is in arguably a strong position to understand going-forward customer needs on their own system, and the Company proposed only self-build peaking options within this resource acquisition proceeding, and it is plausible that the Company took this route because it does not see the need for combined cycle capacity within the 2017-2019 period; as discussed above, this observation is also consistent with recent moves by Xcel to withdraw the CON for the Black Dog Repowering Project.

[18] This is important as Xcel is in arguably a strong position to understand its system, and this commentary implies that Xcel only foresees the need for (and benefit to customers of) peaking capacity in the near-term and, consequently, the benefits of combined cycle generation later in the study period.

found that the need for combined cycle generation was typically delayed by the addition of large amounts of wind generation.[19]

This finding is consistent with Mr. Wishart's direct testimony. Mr. Wishart's Strategist modeling includes 750 MW of incremental wind capacity additions, an updated spring 2013 load forecast, and a solar accreditation factor of 42%. When Dr. Rakow makes similar assumptions in his Master Scenarios 24 and 25 (600/800 MW of incremental wind additions respectively, the updated spring 2013 load forecast, and a solar accreditation factor of 50%), the costs difference between portfolios with only combustion turbine additions and both combustion turbines and combined cycle generation narrow.

If the 750 MW of incremental wind capacity is added to the system from Dockets 13-603 and 13-716 and load growth is consistent with current forecasts, Mr. Wishart and Dr. Rakow's analysis should lead to the same conclusion of Mr. Wishart—that peaking generation may be preferable on the Xcel system.

[19] See Department of Commerce Letter In the Matter of Application of Northern States Power Company for Certificate of Need for the Black Dog Generating Plant Repowering Project, Minnesota Public Utilities Commission Docket Number E002/CN-11-184, March 1, 2013, at page 2.

IV. THESE SAME DIRECT TESTIMONIES OVERSTATE THE NEED FOR ENERGY RESOURCES ON THE XCEL SYSTEM.

Q. WHICH DIRECT TESTIMONIES OVERSTATE THE NEED FOR ENERGY RESOURCES ON THE XCEL SYSTEM, AND WHY DOES THIS CONCERN YOU?

A. Within this section of my testimony, I primarily focus on testimony offered by Calpine witness Hibbard that leads to Mr. Hibbard's analysis overstating the need for Energy Resources (e.g., combined cycle resources) on the Xcel system. This overstatement skews Mr. Hibbard's results favorably toward Calpine's Mankato Expansion.

Q. DOES XCEL HAVE A NEED FOR ENERGY RESOURCES ON ITS SYSTEM WITHIN THE 2017-2019 TIMEFRAME?

A. No, the Xcel system does not have a need for Energy Resources (e.g., combined cycle resources) within the 2017-2019 timeframe, for three (3) reasons:

1. Xcel's Minnesota coal-fired assets[20] are likely to continue providing baseload resources on the Xcel system through the 2017-2019 timeframe and beyond;
2. It is unlikely that combined cycle facilities on the Xcel system will economically displace Xcel's Minnesota assets that traditionally operate in a baseload mode; and
3. Xcel's currently owned and contracted combined cycle fleet is underutilized.

[20] Throughout my testimony, references to "Xcel's Minnesota coal-fired assets" or "Xcel's Minnesota coal-fired facilities" exclude Black Dog 3-4, which will be retired prior to the identified 2017-2019 capacity need.

Q. PLEASE EXPAND ON YOUR FIRST POINT.

A. In Calpine witness Hibbard's direct testimony, Mr. Hibbard posits that one risk to the Xcel system is that "the potential retirement of long-standing baseload resources in addition to unforeseen market-related or operational problems may require substitution with capacity that can play a similar baseload and/or intermediate role",[21] the result of which will implicitly create the need for combined cycle resources (such as the Mankato Expansion) on the Xcel system. Assuming that Mr. Hibbard defines "long-standing baseload resources" as Xcel's Minnesota coal-fired resources, this retirement scenario (and, therefore, the incremental need for Energy Resources on the Xcel system) appears highly unlikely.[22]

Xcel's own Life Cycle Management Study of Sherco, which Calpine witness Hibbard also references, found the long-term economics of the Sherco facility are favorable (relative to alternative generation resource options) under a wide variety of analyzed scenarios. Importantly, Xcel concluded that, even with the cost of the addition of selective catalytic reduction ("SCR") technology, the "continued operation of Sherco 1 and 2 is clearly the most cost-effective option" and that "only a significantly lower forecast of natural gas prices or a much higher forecast of coal prices calls that conclusion into question." Moreover, even

[21] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 36.
[22] Of Xcel's two operational coal facilities during the resource acquisition period, I selected Sherco 1-2 for this analysis as it was the subject of a recent life-cycle (retirement) analysis by Xcel.

when applying the Commission's proxy values for carbon emissions, "there is very little cost difference over the long term between continued operation and some of the replacement scenarios."[23]

In other words, even under Mr. Hibbard's somewhat aggressive future environmental assumptions (i.e., the need to install SCR technology and/or the implementation of carbon regulations), alternatives to using Xcel's Minnesota coal-fired resources as baseload resources is breakeven, at best.

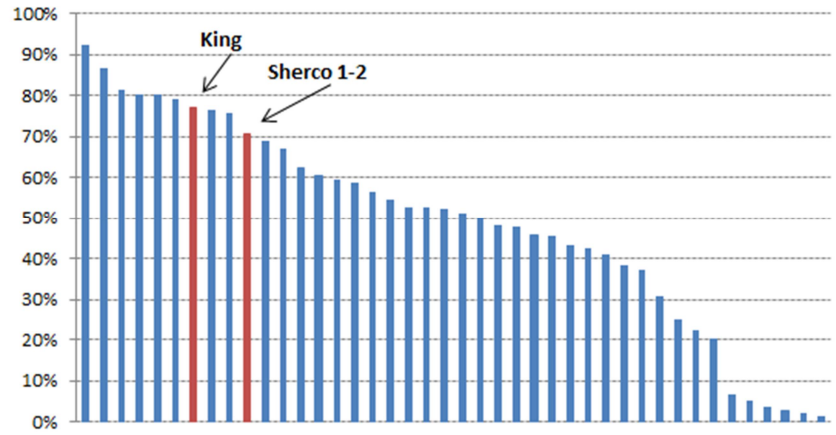
Q. WHY IS IT UNLIKELY THAT COMBINED CYCLE FACILITIES ON THE XCEL SYSTEM WILL ECONOMICALLY DISPLACE XCEL'S BASELOAD ASSETS?

A. Xcel's Minnesota baseload assets are relatively low variable cost dispatch resources on the Xcel system, and the favorable economics of these facilities have made them relatively immune to recently observed low natural gas price pressures faced by other MISO[24] and U.S. coal-fired generators. This was especially evident during 2012 – a year of historically low natural gas prices that, in many cases, resulted in combined cycles supplanting coal-fired resources as more economical baseload assets.

[23] See Life Cycle Management Study for Sherburne County (Sherco) Generating Station Units 1 and 2, Minnesota Public Utilities Commission Docket Number E002/RP-13-368, July 1, 2013, at page 1-2.
[24] Midcontinent Independent System Operator.

Despite the low gas price pressures during 2012, Xcel's Sherburne County Generating Station 1-2 ("Sherco 1-2")[25] and Allen S. King ("King") were (1) among the top-performing (from a capacity factor perspective) assets within MISO; and (2) showed substantially lower degradation in capacity factor over the 2010-2012 period than was witnessed elsewhere in the MISO or broader U.S., despite significant declines in natural gas prices. See **Figures RN-7** and **RN-8**.

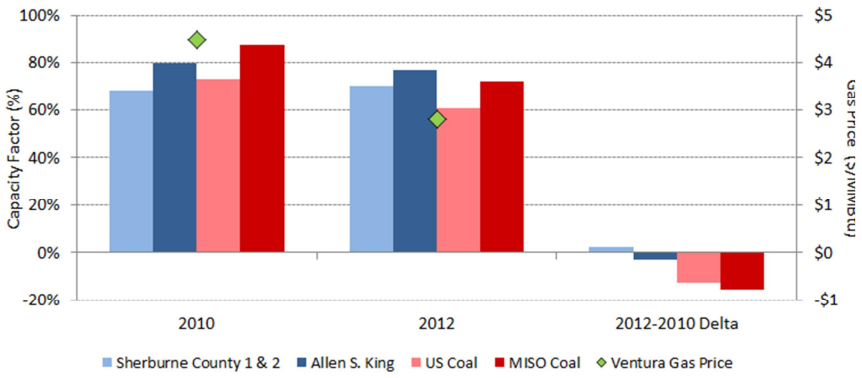
Figure RN-7: MISO Coal-Fired Capacity Factors (2012)



Source: Ventyx Energy Velocity Suite

[25] Sherburne County Generating Station 3 is excluded from figures due to extended outage at the facility for emergency repairs.

Figure RN-8: 2012 vs. 2010 Coal-Fired Capacity Factors



Source: Ventyx Energy Velocity Suite

Moreover, it is unlikely that these relative dispatch dynamics will change going forward. For example, projected dispatch costs for Calpine's Mankato Expansion proposal under baseline[26] expectations, during the 2017-2019 period, are projected to be **[BEGIN TRADE SECRET INFORMATION END TRADE SECRET INFORMATION]** than expected variable dispatch costs for Xcel's coal-fired Sherco 1-2[27] – with the vast majority of this difference driven by differences in expected commodity (e.g., natural gas and coal) costs at the facilities.

[26] See Life Cycle Management Study for Sherburne County (Sherco) Generating Station Units 1 and 2, Minnesota Public Utilities Commission Docket Number E002/RP-13-368, July 1, 2013. And, Direct Testimony and Schedules of Steven W. Wishart on Behalf of Xcel Energy, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013

[27] I chose to compare Sherco 1-2 given the recent life cycle analysis completed on the facility, which provided forecasted estimates for fuel costs and variable operating & maintenance costs. King variable dispatch costs would not be expected to be significantly different than Sherco 1-2 (i.e., the takeaways I posit would be unlikely to change).

Q. CAN YOU EXPLAIN YOUR OBSERVATION THAT XCEL'S CURRENTLY OWNED AND CONTRACTED COMBINED CYCLE FLEET IS UNDERUTILIZED, AND THE IMPLICATIONS?

A. Yes. In Calpine witness Hibbard's direct testimony, Mr. Hibbard states that "…the selection of CC technology rather than or at least in addition to CT technology provides a hedge against the risk that increasingly stringent control requirements lead to greater than expected retirements of baseload coal-fired capacity since CC capacity can operate in baseload and intermediate role…"[28] Mr. Hibbard's statement implies that there is a need for combined cycle resources, over and above those combined cycles currently owned or contracted by Xcel, to hedge against future unexpected energy needs on the Xcel system. However, as Invenergy discussed in its direct testimony, Xcel's existing fleet of combined cycle plants is underutilized, and could adequately fill unanticipated energy needs, as discussed in Mr. Ewan's Direct Testimony and as illustrated below.

Xcel has already made significant investments in self-owned and contracted combined cycle generation over the past few years, which are only lightly utilized relative to peers. Xcel itself has made this point within the 12-1240 Docket. As summarized by the MPUC Staff:

> Xcel explained that, when [Xcel] looks at the operation of its system in 2017-2019, the resources to be added likely will not operate many hours. Thus, ***a combustion turbine peaking resource may meet that need most***

[28] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 25-26.

> ***cost-effectively***…Over the last several years, Xcel has invested in more than 1,000 MW of combined cycle capacity (i.e., roughly 500 MW at High Bridge and 500 MW at Riverside). According to Xcel, 'the capacity factor of those two plants today is roughly 20 percent.' Xcel's Strategist modeling configured the units to operate at 30 percent into 2018. Thus, according to [Xcel], '***there is a huge amount of available production capacity on [Xcel's] system***' if the High Bridge and Riverside facilities were to operate at the 30 percent assumed in Strategist. Moreover, 'they can operate at 70-80 percent,' so ***Xcel does not believe another combined cycle addition benefits the system at this time. [Emphasis added.]***[29]

This observation has important implications for the Xcel system. In short, to the extent energy needs on the Xcel system do materialize faster than currently anticipated (i.e., energy growth rates expand more quickly than currently anticipated; and/or Xcel-owned coal-fired assets unexpectedly retire), Xcel already has self-owned and contracted combined cycles on its system that are significantly underutilized and that can be more heavily utilized at a lower incremental cost to Minnesota ratepayers than through contracting for the (entire cost) of a new combined cycle power plant. In short, because of the incremental "capital investment" component of a contract with a new combined cycle plant like the Mankato Expansion, the cost to ratepayers of a contract with a new combined cycle plant would surely be higher than the "incremental" cost associated with operating existing self-owned and contracted facilities at a higher capacity factor.

To put this observation in perspective, consider the hypothetical ability of Xcel's existing owned and contracted combined cycles to absorb unanticipated energy needs on the Xcel

[29] See Minnesota Public Utilities Commission Staff Briefing Papers, Minnesota Public Utilities Commission Docket Number E002/RP-10-825, February 20, 2013, at page 5.

system.[30] In particular, assume a hypothetical scenario that envisions a combination of (1) Xcel's existing owned and contracted combined cycles absorbing all load growth on the Xcel system through 2019; (2) the unanticipated retirement of ~500 MW of coal-fired capacity on the Xcel system; and (3) Xcel's existing owned and contracted combined cycles absorbing all of the lost generation from the 500 MW of unexpectedly retired coal-fired capacity. In addition, to further "stress test" this hypothetical scenario, assume that the "baseline" capacity factors for the existing combined cycle facilities (e.g., the capacity factor floor from which generation at the combined cycles could increase) were at July 2012 levels – i.e., at historical capacity factor monthly average highs on the Xcel system for combined cycle resources.

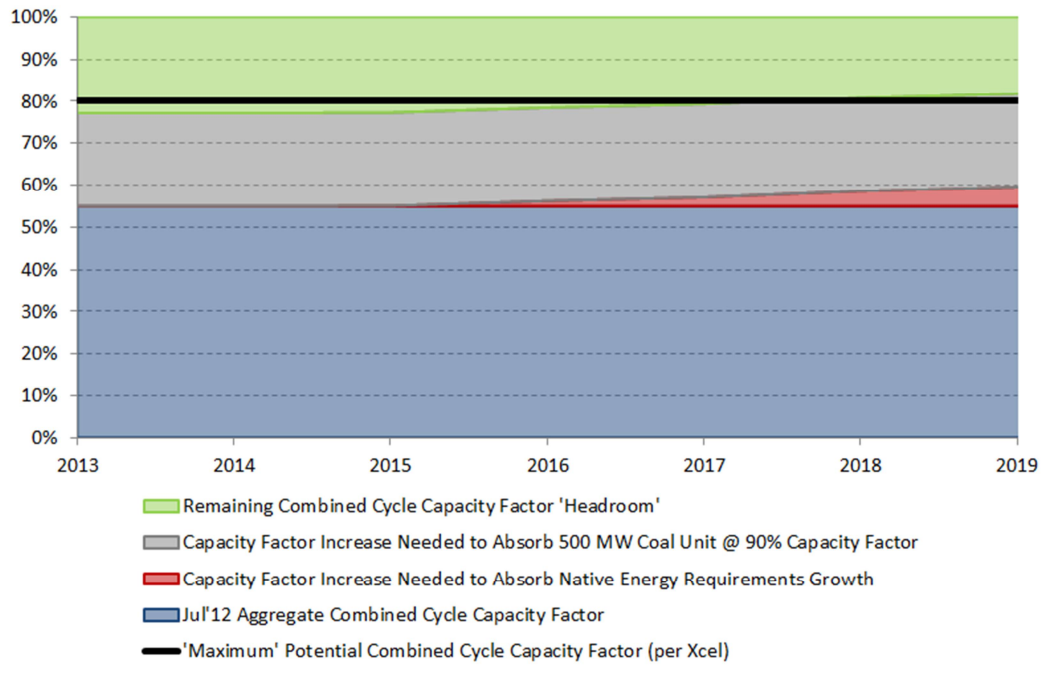
Given the above assumptions, it is possible to analyze the average unutilized generation[31] among Xcel's existing and contracted combined cycle facilities.[32] Importantly, this analysis shows that there is significant generating "headroom" among the existing self-owned and contracted combined cycle facilities, such that (1) all anticipated Xcel energy growth through 2019; plus (2) lost generation from the unanticipated retirement of 500 MW of coal-fired capacity could be absorbed by the existing combined cycle facilities, while remaining under Xcel's referenced combined cycle capacity factor "cap" of 80%. See **Figure RN-9**.

[30] Note that in this hypothetical exercise I did not analyze the economics of the combined cycles' ability to absorb unanticipated needs; rather, this hypothetical exercise analyzes the physical potential of unused combined cycle capacity to do so.

[31] Here, I define "unutilized generation" as (1 minus Period Capacity Factor (%)) x Combined Cycle Capacity x Period Hours).

[32] Xcel owned and contracted combined cycle facilities include High Bridge, Riverside, Mankato and Cottage Grove.

Figure RN-9: Xcel Existing Combined Cycle Capacity "Headroom"



Q. DO YOU HAVE ANY CONCLUSIONS TO OFFER FOR THIS SECTION OF YOUR REBUTTAL TESTIMONY?

A. Yes. Xcel's currently underutilized combined cycle capacity, combined with the observation that Xcel's Minnesota baseload assets are unlikely to retire in the foreseeable future and/or have their baseload status be supplanted on an economic basis by Xcel's combined cycle fleet, it is unlikely that the benefit to Xcel of "hedg[ing] against the

risk"[33] of coal-fired retirements – as advocated in Mr. Hibbard's testimony – outweighs the incremental cost to Xcel ratepayers of acquiring incremental underutilized combined cycle.

Moreover, the combined cycle efficiency benefits, on which much of Mr. Hibbard's LCOE methodology[34] is premised, assumes that, in the 2017-2019 timeframe, the Mankato Expansion proposal will be substituting for less efficient baseload and intermediate resources on the Xcel system (or broader MISO system):

> The addition of low heat rate, high-efficiency CC capacity on Xcel's system would generate significant savings for Xcel's ratepayers (and reductions in emissions) through displacement of less efficient, higher-emitting resources in many hours.[35]

As I have discussed, this substitution effect is unlikely to produce the benefits posited by Mr. Hibbard. In addition, unless Mr. Hibbard is positing that the Mankato Expansion will (1) substitute for peaking capacity on the Xcel system; and/or (2) substitute for MISO wholesale market purchases (unlikely given the currently underutilized combined cycle capacity on the Xcel system); and/or (3) be used by Xcel to engage in speculative MISO wholesale market sales, the Mankato Expansion would be, at best, a breakeven resource

[33] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 25-26.
[34] See Section II for a more fulsome discussion regarding Mr. Hibbard's LCOE methodological approach.
[35] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 18.

proposition, from an efficiency and variable dispatch cost perspective, with existing High Bridge and Riverside combined cycle capacity that Xcel already controls.

In other words, the efficiency (and associated variable cost) benefits of the Mankato Expansion proposal are likely much less than those asserted by Mr. Hibbard, which would be more evident if Mr. Hibbard had used an approach that looks at system, versus standalone, impacts.[36] Put succinctly, the "phantom" variable cost advantages of the Mankato Expansion (vis-à-vis other resources on the Xcel *system*) mask the fact that the capacity payments levied on Xcel's customers would be approximately **[BEGIN TRADE SECRET INFORMATION** [37] **END TRADE SECRET INFORMATION]** if Xcel were to select Calpine's proposal over a competing Capacity Resource (e.g., peaking resource) proposal. And Xcel customers would be left with an incremental underutilized combined cycle resource on a system for which the incremental energy benefits do not exist.

[36] This "system" versus "standalone" methodological approach difference is likely one reason that Strategist results presented by Xcel witness Wishart and Department witness Rakow generally show competing peaking and combined cycle proposals much closer in terms of Xcel system impact versus Calpine witness Hibbard's LCOE approach which posits that the combined cycle proposal (Mankato Expansion) is a far superior option than competing peaker proposals. In other words, Mr. Hibbard exclusion of system-wide impacts skews the apparent results toward the Mankato Expansion proposal, furthering the notion that Mr. Hibbard may be overstating the benefits of the Mankato Expansion under the LCOE approach (which, interestingly, is the opposite of what Mr. Hibbard states would occur if he had utilized a system approach).

[37] (2018 Mankato Expansion capacity price of **[BEGIN TRADE SECRET INFORMATION** **END TRADE SECRET INFORMATION]** divided by 2018 Invenergy Cannon Falls capacity price of **[BEGIN TRADE SECRET INFORMATION** **END TRADE SECRET INFORMATION]**) minus 1.

V. XCEL'S AND THE DEPARTMENT'S STRATEGIST RESULTS AS PRESENTED IN THEIR DIRECT TESTIMONIES ARE USEFUL, BUT MAY BENEFIT FROM SOME REFINEMENTS.

Q. DO YOU HAVE OTHER ISSUES RELATED TO THE SUBMITTED STRATEGIST MODELING CONDUCTED IN THIS DOCKET THAT YOU WOULD LIKE TO BRING TO THE COMMISSION'S ATTENTION?

A. Yes. The Strategist model results, while providing a useful baseline to the Commission, may require additional analysis to reflect combined cycle "cycling" intricacies that are not easily captured in a production cost dispatch model, and which, for example, would change Xcel witness Wishart's current "indifferent" economic results between peaking and combined cycle resources.

There are incremental cycling costs incurred by combined cycle utilization to balance intermittent generation (which will be the case without adequate peaking generation on the system), and which may need to be addressed outside the Strategist model (or other production cost dispatch model architectures). Combined cycles will operate less efficiently when cycling (both existing Xcel-owned and contracted resources as well as future combined cycle additions), and must operate at partial load to adequately balance intermittent resources. Because most production cost models do not account for this well, this leads to the potential to overstate the benefits of combined cycles.

Limitations of Strategist, such as these, have been acknowledged previously by Xcel in its 2010 IRP filing, when it states:

> Strategist does have some limitations. Although it uses hourly information, it is not a chronological model. Hourly patterns for energy demand are rearranged into load duration curves and thermal dispatch simulations are based on these curves. This allows us to quickly simulate several years of operation on our system, but the model loses the ability to capture some operational detail, such as the ramp rates on our generating units. This makes it difficult for us to use the model to evaluate the benefits of quick start combustion turbines relative to our generic combustion turbines. Also, Strategist uses a simplified approach to modeling load and wind patterns. Instead of using an hourly pattern that covers every hour in an entire month, we model a typical week in that month that the model repeats several times to simulate the entire month.[38]

Mr. Hibbard's direct testimony also addresses these Strategist limitations when he states "…the Strategist model may fail to capture operational details that could be important in understanding the relative value of CC versus CT technologies on [Xcel's] system, in particular as the level of variable renewable generation on the [Xcel's] system increases."[39]

In addition to this more general Strategist observation, there are specific items that the Commission may wish to address within the Xcel and Department Strategist modeling before "finalizing" the results:

1. Consider the use of consistent market/system assumptions between Xcel and the Department Strategist, or have Xcel and the Department run an identical market/system sensitivity, which would help facilitate reconciliation of results across parties. Currently, it is difficult to reconcile the rationale (and

[38] See Xcel Energy 2010 Resource Plan, Minnesota Public Utilities Commission Docket Number E002/RP-10-825, August 2, 2010, at page 4-9.
[39] See Direct Testimony of Paul J. Hibbard on Behalf of Calpine Corporation, Minnesota Public Utilities Commission Docket Number E003/CN-12-1240, September 27, 2013, at page 7.

reasonableness) of the differing optimal outcomes between Xcel and the Department.

2. Consider utilizing a more robust approach when deciding which "packages" of proposals warrant further analysis than is evident in the Department's Strategist modeling. Prematurely eliminating certain packages of proposals may inadvertently exclude potentially optimal choices.

3. Consider analyzing results over varying time period lengths. For example, prior Strategist analyses in the docket observed that, generally speaking, combined cycle additions to the system only benefited Xcel customers in the latter part of the study period (i.e., beyond the expiration of a 20-year power purchase agreement).

4. Consider additional analysis regarding the implementation of fixed costs on a variable basis for peaking resources.

5. To the extent only an annual approach is utilized in Strategist, that results may be biased against peaking resources that will primarily operate during the summer versus peaking assets that will be run throughout the year to address the needs of intermittent wind generation. Further, the use of non-weighted annual average gas prices are incorrect from both a commodity and delivery charge perspective (typically, these will be lower in the summer).

6. It is unclear how Xcel or the Department accounted for SG&A fixed costs (e.g., property insurance, human resources, etc.) when evaluating bids, and it would be

preferable that these costs were captured within the Strategist architecture to facilitate an apples-to-apples comparison with Xcel self-build options. To the extent that these costs are considered outside of the model, it leads to the potential for skewed optimization results.

7. In order to avoid "arbitrary" results, the Commission should require bids to be analyzed with similar online flexibility as considered by Xcel for the self-build options (specific degree of flexibility and pricing to be at the discretion of each individual bidder). Failing to do so introduces the possibility for arbitrary modeling results which may not be in the best interest of ratepayers.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Exhibit RN-1: Statement of Qualifications

Ron Norman

I am a Member of PA's Management Group, and Practice Head of its Energy Capital Markets Practice. PA Consulting Group ("PA") is a management, systems, and technology consulting firm. Founded 60 years ago, PA is a leading international management and IT consulting and technology firm. The firm operates in more than 30 countries. The firm provides consulting services in a number of areas, including strategy, market analysis, performance improvement, HR, and IT. Our primary sector expertise is in communications, media and entertainment, defense, energy, financial services, government and public services, healthcare, and manufacturing.

I graduated from the Massachusetts Institute of Technology with a Bachelor of Science in Economics in 1992, and have over 20 years of energy industry experience. I specialize in wholesale electric, natural gas, coal, renewable energy and emission allowance market analysis and price forecasting, and energy asset valuation. I regularly advise leading utilities, power generators, private equity investors and lenders. I have experience with energy infrastructure investment strategy and valuation, development of independent power market expert reports and independent fuel consultant expert reports in support of the acquisition and financing of energy assets.

I have submitted testimony on numerous occasions, including:

- I submitted testimony and appeared before the Colorado Public Utilities Commission ("CPUC"), on behalf of Southwest Generation, related to the need

for flexible and efficient generation as part of Xcel's 2011 Electric Resource Plan CPUC Docket No. 11A-869E.

- I submitted testimony and appeared before the Indiana Utility Regulatory Commission ("IURC"), on behalf of Vectren Energy, related to the impact of the proposed Synthetic Natural Gas Contract on Indiana's retail natural gas customers as part of IURC Cause No. 43976.
- I submitted testimony before the U.S. Bankruptcy Court for the Southern District of New York, on behalf of Calpine Energy Services, regarding the value of several terminated energy supply contracts, as part of Calpine's bankruptcy proceeding, Case No. 05-60222(BRL).
- I submitted testimony to the Federal Energy Regulatory Commission in a matter related to the economic benefits of a proposed new transmission line on behalf of Trans-Elect, Inc. as part of Docket Nos. EC03-30, et al.
- I submitted testimony to the Federal Energy Regulatory Commission and testified in a related technical conference in a matter related to the NYISO's proposed installed capacity demand curve on behalf of Keyspan Ravenswood, LLC as part of Docket No. ER05-428.
- I testified before the Rhode Island Public Utilities Commission regarding the adequacy of renewable energy supplies to meet Rhode Island's Renewable

Energy Standards obligations in 2011, as part of Docket 4052 – Commission Review into the Adequacy of Renewable Energy Supplies.

- I gave deposition testimony in 1999 on behalf of Seminole in "Seminole Electric Cooperative, Inc. v. Mt. Vernon Coal Transfer Co., Case No. IP-3 98-1732-C Y/F (S.D. Indiana)."

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