

MPUC DOCKET No. E002/CN-12-1240; OAH DOCKET No. 08-2500-307-60

STATE OF MINNESOTA  
OFFICE OF ADMINISTRATIVE HEARINGS  
FOR THE PUBLIC UTILITIES COMMISSION

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

GERONIMO ENERGY, LLC'S  
POST-HEARING BRIEF

NOVEMBER 22, 2013

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**I. SUMMARY**

The Minnesota Public Utilities Commission (“Commission”) has an important opportunity in this docket to advance Minnesota’s legislative objectives of creating a cleaner, more renewable generation resource mix. The record unequivocally supports selection of the Distributed Solar Energy Proposal (the “Solar Proposal”) submitted by Geronimo Wind Energy, LLC, d/b/a Geronimo Energy, LLC (“Geronimo”) as the best resource to meet Northern States Power Company’s d/b/a Xcel Energy (“Xcel”) need. The Solar Proposal is the least cost resource. It provides reliable, proven capacity during Xcel’s peak demand periods. And, the Solar Proposal is the only alternative that meets each of the certificate of need decision criteria, including Minnesota’s strong preferences for distributed, renewable and solar generation resources.

Minnesota law requires that the Commission select renewable resources over nonrenewable resources when it is in the public interest to do so. Based on this record, the Commission must first select the Solar Proposal, because it is the least cost resource, reliably delivers needed capacity *and* meets Minnesota’s preferences for low-emission, renewable and distributed generation. If the Commission determines that it is prudent to add additional

generation beyond the 71 MW of accredited capacity provided by the Solar Proposal, only then should it consider which of the remaining alternatives should also be selected.

This initial post-hearing brief: (1) describes the technical, economic and environmental attributes of Geronimo's Solar Proposal; (2) discusses how the Solar Proposal complies with each of the certificate of need decision criteria; (3) refutes Xcel's and the Minnesota Department of Commerce, Division of Energy Resources' (the "Department") resource recommendations; and (4) supports a determination that selection of the Solar Proposal is in the public interest.

If Minnesota is to truly move forward with its legislative goals to lower greenhouse gas emissions and acquire 100% of its energy from renewable resources in the future, then renewable resources must be selected through long-term resource acquisition proceedings such as this one, particularly where, as here, they are shown to be the least cost resource and a reliable means of meeting the identified need. Geronimo respectfully requests that the Administrative Law Judge ("ALJ") recommend, and the Commission find, that Geronimo's Solar Proposal is the most reasonable and prudent alternative for meeting Xcel's need for additional capacity in 2017-2019.

## **II. THE FACTS**

### **A. THE RESOURCES SELECTED IN THIS PROCEEDING MUST ADDRESS A WIDE RANGE OF POTENTIAL CAPACITY NEEDS.**

When the Commission approved Xcel's 2011-2025 Integrated Resource Plan ("IRP") and established this competitive resource acquisition proceeding, the Commission found that Xcel needed "an additional 150 MW in 2017, increasing up to 500 MW by 2019."<sup>1</sup> The Commission encouraged solicitation of a "broad range"<sup>2</sup> of proposals and specifically declined requests to

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<sup>1</sup> *Commission's 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) ("March 5, 2013 Commission Order"), at 7.

<sup>2</sup> *Id.* at 6.

narrow potential resource options by updating Xcel's forecast or specifically identifying Xcel's capacity needs in each year of the period in question.<sup>3</sup> The Commission stated that choices regarding when and how much capacity to add would be "made in the context of the resource acquisition docket, based on the proposals and the evidence adduced in that docket."<sup>4</sup>

Both the Department and Xcel identified a variety of potential need scenarios.<sup>5</sup> Xcel provided a spring 2013 updated sales forecast showing decreased demand and also discussed, at length, the impact that the Midcontinent Independent System Operator's ("MISO") changes in reserve margin requirements would have on Xcel's future needs.<sup>6</sup> Xcel and the Department also noted that Xcel's compliance with Minnesota's newly-adopted Solar Energy Standard ("SES"), Minnesota Statute Section 216B.1691, subd. 2f (2013), will decrease Xcel's need for capacity from other resources.<sup>7</sup> Given these changes, Xcel's need for additional capacity could range from as little as 26 megawatts ("MW") to up to 443 MW in 2019.<sup>8</sup> The resources selected in this docket must be flexible enough to address this wide range of capacity needs.

**B. XCEL'S REQUEST FOR PROPOSALS GENERATED FIVE DISTINCT BID ALTERNATIVES.**

Following the Commission's January 30, 2013 order, Xcel issued notice of a request for proposals ("RFP") soliciting proposals to meet the need identified in its 2011-2025 IRP. In response, five bidders, including Xcel, submitted competitive resource proposals on April 15, 2013. These bids included:

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<sup>3</sup> *Id.* at 5-6.

<sup>4</sup> *Id.* at 6.

<sup>5</sup> Ex. 83 at 22-27 (Rakow Direct); Ex. 46 at 4-11 (Wishart Direct). Unless specifically noted as trade secret, all exhibit references are to the public version of the associated document.

<sup>6</sup> Ex. 46 at 7-11 (Wishart Direct).

<sup>7</sup> Ex. 46 at 7-8 (Wishart Direct); Ex. 83 at 19 (Rakow Direct).

<sup>8</sup> Ex. 46 at 7, 10 (Wishart Direct).

- Xcel’s proposal for three new 215 MW combustion turbine natural gas plants, including Black Dog Unit 6 in Burnsville, Minnesota and the Red River Valley Units 1 and 2 near Hankinson, North Dakota;<sup>9</sup>
- Calpine Corporation’s (“Calpine”) 345 MW combined cycle gas plant at its existing Mankato Energy Center (the “Mankato facility”);<sup>10</sup>
- Invenergy Thermal Development LLC’s (“Invenergy”) proposals for three 179 MW combustion turbine natural gas plants, including a 179 MW plant in Cannon Falls, MN (“Cannon Falls”) and two 179 MW plants near Hampton in Dakota County, Minnesota (the “Hampton Energy Center”);<sup>11</sup>
- Great River Energy’s (“GRE”) market capacity bid for 100 MW or 200 MW in the 2017-2019 timeframe;<sup>12</sup> and
- Geronimo’s proposal for an up to 100 MW alternating current (“AC”) nameplate capacity solar energy facility located on approximately 20 sites distributed across Xcel’s service territory.<sup>13</sup>

On June 21, 2013, the Commission issued an order accepting each proposal as complete and directing the ALJ to conduct a contested case proceeding to determine the most reasonable and prudent resource for meeting Xcel’s need.<sup>14</sup> The Commission also requested that the Minnesota Department of Commerce, Energy Environmental Review and Analysis (“EERA”) Staff<sup>15</sup> prepare an Environmental Report comparing the environmental impacts of each proposal and a no-build alternative.<sup>16</sup>

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<sup>9</sup> Ex. 1 (Xcel’s Proposal).

<sup>10</sup> Ex. 8 (Calpine’s Proposal).

<sup>11</sup> Ex. 24 (Invenergy’s Proposal).

<sup>12</sup> Ex. 19 (GRE’s Proposal) and Ex. 46 at 19 (Wishart Direct).

<sup>13</sup> Ex. 13 (Geronimo’s Distributed Solar Energy Proposal).

<sup>14</sup> Notice and Order for Hearing, *In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of a Competitive Resource Acquisition Process and Certificate of Need*, Docket No. E002/CN-12-1240 (June 21, 2013) (“Notice and Order for Hearing”), at 9-10.

<sup>15</sup> EERA Staff was formerly referred to as Energy Facility Permitting (“EFP”) Staff.

<sup>16</sup> *Id.* at 7-10.

**C. GERONIMO'S SOLAR PROPOSAL DELIVERS A RELIABLE, RENEWABLE CAPACITY RESOURCE.**

Geronimo's Solar Proposal includes construction of up to 130 MW direct current ("DC") nameplate capacity (equivalent to 100 MW AC) of solar generation equipment at approximately 20 sites located across Xcel's service territory.<sup>17</sup> Geronimo will use nominal 300 watt solar photovoltaic ("PV") modules mounted on linear axis tracking systems with centralized inverters.<sup>18</sup> These PV modules produce electricity from sunlight, without combusting fossil fuels and without emissions or waste products of any kind.<sup>19</sup> Each distributed site will be sized between 2 MW and 10 MW and will have separate interconnection facilities.<sup>20</sup> Geronimo has proposed a December 2016 commercial operation date for the project to ensure that it can qualify for the existing federal investment tax credits and be in-service prior to Xcel's 2017 summer resource needs.<sup>21</sup>

Geronimo designed the Solar Proposal to maximize its reliability as a capacity resource. There are three distinct design characteristics that maximize the project's energy production over peak demand periods. First, the tracking system technology 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. This adjustment significantly increases the amount of solar energy produced by the panels relative to fixed system solar panels where the tilt does not change.<sup>22</sup> Second, the Solar Proposal has been designed with a DC to AC ratio of 1.3 MW of solar modules to 1 MW of inverter nameplate capacity.<sup>23</sup> This DC to AC ratio exceeds the rating of typical residential solar

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<sup>17</sup> Ex. 57 at 3 (Engelking Direct); Ex. 61 at 3 (Beach Rebuttal).

<sup>18</sup> Ex. 60 at 2 (Beach Direct).

<sup>19</sup> *Id.* at 3.

<sup>20</sup> Ex. 57 at 3-4 (Engelking Direct).

<sup>21</sup> *Id.* at 7.

<sup>22</sup> Ex. 60 at 5 (Beach Direct).

<sup>23</sup> Ex. 61 at 3 (Beach Rebuttal).

units and increases the relative reliability and accredited capacity of the Solar Proposal.<sup>24</sup> Finally, the distributed nature of the Solar Proposal increases its reliability and decreases the variability of project output relative to projects located at a single site by decreasing the impact of partly cloudy days, transmission constraints and equipment outages.<sup>25</sup>

**D. THE SOLAR PROPOSAL PROVIDES 71 MW OF ACCREDITED CAPACITY TO MEET XCEL'S NEED.**

MISO recognizes that solar can be utilized as a capacity resource and has a methodology for calculating the accredited capacity for what it terms “non-wind variable generation.”<sup>26</sup> MISO’s accredited capacity calculation reflects the ability of a solar resource to reliably contribute to meeting peak customer demand.<sup>27</sup> When calculating accredited capacity, MISO looks at the most recent consecutive 3-year historical average output of resources for the hours ending 1500-1700 Eastern Standard Time in the summer months of June, July and August.<sup>28</sup> Using this methodology, the Solar Proposal will deliver 71 MW of accredited capacity to Xcel.<sup>29</sup>

**E. THE SOLAR PROPOSAL PROVIDES ADDITIONAL BENEFITS BEYOND ACCREDITED CAPACITY.**

The Solar Proposal also provides Xcel with the renewable attributes of the solar energy produced, including solar renewable energy credits (“S-RECs”), emissions and environmental benefits, and as a distributed project, will avoid transmission line losses, system peak capacity losses and transmission capacity costs.

Because the Solar Proposal generates electricity from sunlight, a renewable resource under Minnesota law, the energy produced by the project can be used by Xcel or other utilities to

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<sup>24</sup> *Id.* at 3-4.

<sup>25</sup> Ex. 60 at 5 (Beach Direct); Ex. 62 at 4 (Skarbakka Direct).

<sup>26</sup> Ex. 60 at 10 (Beach Direct).

<sup>27</sup> Ex. 46 at 6 (Wishart Direct).

<sup>28</sup> Ex. 60 at 10 (Beach Direct).

<sup>29</sup> Ex. 57 at 2-3 (Engelking Direct).

fulfill Minnesota's newly-adopted SES.<sup>30</sup> The project's S-RECS have an independent value within the market, in addition to the electricity produced. In other states, recent S-REC values vary from \$13/S-REC to over \$200/S-REC.<sup>31</sup>

The Solar Proposal also provides Xcel with environmental benefits. Carbon dioxide ("CO<sub>2</sub>") and criteria pollutants, which include sulfur dioxide ("SO<sub>2</sub>"), nitrogen dioxide ("NO<sub>2</sub>"), carbon monoxide ("CO"), lead ("Pb"), and particulate matter ("PM"), are produced as a result of the combustion of natural gas and are known to cause human or environmental health impacts.<sup>32</sup>

As stated in EERA Staff's Environmental Report:

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.<sup>33</sup>

In contrast to the combustion of natural gas, construction and operation of the Solar Proposal will not generate any CO<sub>2</sub> or criteria pollutants.<sup>34</sup> Further, the project will produce zero emissions of hazardous air pollutants ("HAPs") or volatile organic compounds ("VOCs"), which are both pollutant categories known or suspected of causing cancer and other serious health effects.<sup>35</sup>

Tables 1 and 2 provide comparisons of the air emissions of the above-noted pollutants produced by the five bid alternatives proposed in this proceeding.

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<sup>30</sup> Minn. Stat. § 216B.1691, subd. 2f (2013).

<sup>31</sup> Ex. 59 at 18 (Engelking Rebuttal).

<sup>32</sup> Ex. 38 at 34 (Environmental Report).

<sup>33</sup> *Id.*

<sup>34</sup> *Id.* at 38.

<sup>35</sup> *Id.* at 39.

**Table 1: Comparison of Annual CO<sub>2</sub> and Criteria Pollutant Emissions (tons/year)<sup>36</sup>**

Pollutant	Black Dog Unit 6	Red River Valley		Mankato Facility	Cannon Falls (Natural Gas)	Hampton Energy Center (Natural Gas)	Solar Proposal	GRE Market Capacity (No Associated Energy)
		1 Unit	2 Units					
SO <sub>2</sub>	1	1	2	5	30	61	0	N/A
NO <sub>x</sub>	43	43	86	115	108	215	0	N/A
PM <sub>10</sub>	9	9	18	96	33	66	0	N/A
PM <sub>2.5</sub>	9	9	18	96	24	47	0	N/A
Pb	83	83	166	113	53	107	0	N/A
CO	0	0	0	0	0	0	0	N/A
CO <sub>2</sub>	108,400	108,400	216,800	1,476,940	379,908	759,817	0	N/A

**Table 2: Comparison of HAP and VOC Potential Emissions<sup>37</sup>**

	Black Dog Unit 6	Red River Valley		Mankato	Cannon Falls	Hampton	Solar Proposal	GRE Market Capacity (No Associated Energy)
		1 Unit	2 Units					
Any Single HAP (tons/year)	0.65	0.65	1.30	4.5	4.6	9.1	0	N/A
All HAPs (tons/year)	0.95	0.95	1.90	9.7	5.8	11.7	0	N/A
Mercury (Hg)	0	0	0	0	0	0	0	N/A
VOCs (tons/year)	9	9	18	55.1	6.5	13.0	0	N/A
VOC (lb/hr)	6	6	12	12.6	3.1- 7.3 <sup>a</sup>	6.2 – 14.6 <sup>a</sup>	0	N/A

Because the Solar Proposal will not produce air emissions, Geronimo estimates that by offsetting other market electricity, the Solar Proposal will result in the air pollutant reductions shown in Table 3:

**Table 3: Estimated Avoided Pollutants<sup>38</sup>**

Pollutant	Tons/Year
CO <sub>2</sub>	(94,133.00)
CO	(115.98)
NO <sub>x</sub>	(63.26)
PM <sub>10</sub>	(27.08)
VOC	(3.44)
SO <sub>2</sub>	(10.48)

<sup>36</sup> See Tables 3-7 of Ex. 38 at 35-40 (Environmental Report).

<sup>37</sup> See Table 8 of Ex. 38 at 40 (Environmental Report).

<sup>38</sup> Ex. 13 at 24 (Distributed Solar Energy Proposal).

Further, the distributed nature of the project provides a number of benefits to Xcel's overall transmission system. First, by locating the distributed sites in close proximity to load centers, the Solar Proposal will reduce transmission line losses that occur whenever energy is transmitted across the wires and transformers of an electric system.<sup>39</sup> Based on an Xcel table showing Minnesota state demand loss factors by voltage level,<sup>40</sup> Geronimo calculated that the project will result in a four percent reduction in transmission line losses, resulting in a present value of societal cost ("PVSC") savings of approximately \$9 million.<sup>41</sup> Second, by selecting sites that will be interconnected on the distribution system, the Solar Proposal reduces the peak loading on Xcel's transmission system, making more existing transmission capacity available to meet future needs and allowing Xcel to avoid capacity-related costs otherwise needed to expand its transmission system.<sup>42</sup> Using MISO's rate for network integration service on Xcel's system, the avoided transmission capacity benefits associated with its Solar Proposal equal approximately \$3.24 million per year.<sup>43</sup> These savings reduce the PVSC for the project by \$33 million.<sup>44</sup> These avoided transmission line loss and capacity costs are recognized by the Legislature as values of distributed solar facilities.<sup>45</sup>

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<sup>39</sup> Ex. 62 at 4 (Skarbakka Direct).

<sup>40</sup> Ex. 13 at 31 & n.16 (Distributed Solar Energy Proposal).

<sup>41</sup> Ex. 61 at 7 (Beach Rebuttal).

<sup>42</sup> *Id.* at 8.

<sup>43</sup> Ex. 61 at 9 (Beach Rebuttal).

<sup>44</sup> Ex. 59 at 20 (Engelking Rebuttal).

<sup>45</sup> Minn. Stat. §216B.164, subd. 10(f) (2013).

**F. GERONIMO’S POWER PURCHASE AGREEMENT HAS A DEFINED PRICE AND MINIMAL RISKS TO XCEL’S RATEPAYERS.**

Geronimo proposes selling the capacity, energy and environmental attributes (including S-RECS) to Xcel through a twenty-year power purchase agreement (“PPA”).<sup>46</sup> Geronimo offers two different pricing proposals, one which includes a fixed monthly payment per kilowatt (“kW”) for capacity and an energy payment for all energy generated by the project.<sup>47</sup> The second pricing proposal is an energy-only payment that bundles all capacity, energy and environmental attributes into a \$/MWh price.<sup>48</sup> Under both pricing scenarios, Geronimo bears all interconnection and any network upgrade costs associated with the project.<sup>49</sup> Because the project uses sunlight to generate electricity, there are no fuel costs associated with the Solar Proposal.<sup>50</sup> The Solar Proposal is not subject to future fuel cost uncertainty or environmental compliance costs.<sup>51</sup> Instead, the Solar Proposal, with its known 20-year price, can serve as a hedge for Xcel against future fuel price volatility and help it comply with future environmental regulations.

**III. ARGUMENT**

**A. THE CERTIFICATE OF NEED DECISION CRITERIA MUST BE USED TO SELECT THE BEST RESOURCES IN THIS DOCKET.**

The “ultimate issue” in this proceeding 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.”<sup>52</sup> The Commission established a specific framework – referred to as the “Track 2” process – for selecting resources in cases like this where Xcel has proposed a self-

<sup>46</sup> Ex. 13 at 19 (Distributed Solar Energy Proposal).

<sup>47</sup> Ex. 57 at 5 (Engelking Direct).

<sup>48</sup> *Id.* at 5.

<sup>49</sup> Ex. 62 at 10-11 (Skarbakka Direct).

<sup>50</sup> Ex. 13 at 19 (Distributed Solar Energy Proposal).

<sup>51</sup> *Id.* at 35-36.

<sup>52</sup> Notice and Order for Hearing, at 5.

build alternative to meet a need identified in its IRP.<sup>53</sup> This Track 2 process is a certificate-of-need-like process, following the data requirements, process and decision criteria standards established under Minnesota Statutes Section 216B.243.<sup>54</sup> In its Order creating this process, the Commission stated, “[c]ertificate of need filing requirements *and decision criteria* are clear, comprehensive, directly relevant to resource procurement, and easily transferable to the resource procurement process.”<sup>55</sup>

A review of the record in this proceeding makes clear that all of the certificate of need requirements are intended to apply. For example:

1. Each bidder submitted all of the applicable data required in the certificate of need application data requirements in Minnesota Rules parts 7849.0240, 7849.0250, and 7849.0270 through 7849.0300.<sup>56</sup>
2. The Department reviewed each bid for completeness based on the applicable data requirements in Minnesota Rules Chapter 7849.<sup>57</sup>
3. The Commission requested that EERA Staff prepare an Environmental Report consistent with relevant portions of Minnesota Rules parts 7849.1400 and 7849.1500.<sup>58</sup>
4. Various witnesses provided testimony supporting how their respective bid complies with the certificate of need decision criteria.<sup>59</sup>

While Xcel and the Department advocate for selection of resources based solely on the outcome of their respective Strategist model results, the ALJ and Commission are required to take a comprehensive review of record and apply each of the certificate of need criteria to select

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<sup>53</sup> *Commission’s Order Establishing Resource Acquisition Process, Establishing Bidding Process Under Minn. Stat. § 216B.2422, subd. 5, and Requiring Compliance Filing*, Docket No. E-002/RP-04-1752 (May 31, 2006) (“May 31, 2006 Commission Order”), at 6-7.

<sup>54</sup> *Id.*

<sup>55</sup> *Id.* (emphasis added).

<sup>56</sup> See Ex. 1 (Xcel’s Proposal); Ex. 8 (Calpine’s Proposal); Ex. 24 (Invenergy’s Proposal); Ex. 19 (GRE’s Proposal); Ex. 13 (Geronimo’s Distributed Solar Energy Proposal).

<sup>57</sup> Department Comments, *In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of a Competitive Resource Acquisition Process and Certificate of Need*, Docket No. E002/CN-12-1240 (May 3, 2013), at 2.

<sup>58</sup> Notice and Order for Hearing, at 7-10.

<sup>59</sup> See, e.g., Ex. 57 at 7-10 (Engelking Direct); Ex. 65 at 22-33 (Ewan Direct).

the most reasonable and prudent resource to meet Xcel's need. The relevant criteria are found in Minnesota Statutes Section 216B.243; Minnesota Rules part 7849.0120; Minnesota Statutes Section 216B.2422, subd. 4; and Minnesota Statutes Section 216B.2426.

Thus, to make a decision regarding the "ultimate issue" in this case, the ALJ and Commission must apply the certificate of need decision criteria established under Minnesota law.

**B. THE SOLAR PROPOSAL MEETS ALL APPLICABLE CERTIFICATE OF NEED CRITERIA.**

Pursuant to the certificate of need decision criteria, the Commission must find that the proposed facility adequately, reliably and efficiently meets the need, is the most reasonable and prudent alternative, provides benefits to society in a manner compatible with protecting the natural and socioeconomic environment, and complies with relevant federal and state policies and regulations.<sup>60</sup> As discussed in the following sections, the Solar Proposal meets each of these factors.

**1. THE SOLAR PROPOSAL ADEQUATELY, RELIABLY, AND EFFICIENTLY MEETS XCEL'S NEEDS.**

This docket was established to find the best resources to meet Xcel's need for an additional 150 MW in 2017, increasing to up to 500 MW in 2019.<sup>61</sup> Xcel identified that its future capacity needs may be changing due to: (1) lower overall demand in its 2013 spring forecast, (2) additional accredited capacity of 40-72 MW from solar resources added to meet the SES, and (3) MISO's new reserve margin requirements.<sup>62</sup> After accounting for these changes, Xcel's remaining capacity need appears to range from as low as 26 MW to as high as 443 MW.<sup>63</sup> The resources selected to fill this shortfall must provide capacity during Xcel's summer peak

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<sup>60</sup> Minn. R. part 7849.0120 (2009).

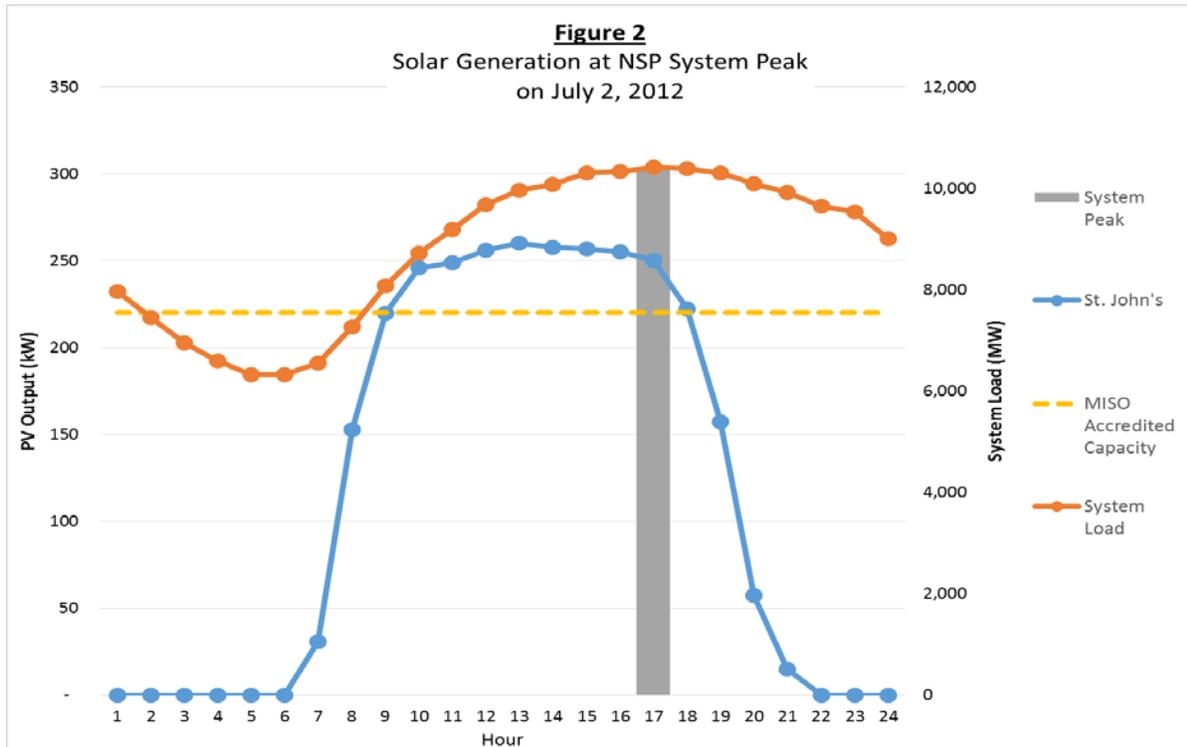
<sup>61</sup> March 5, 2013 Commission Order, at 7.

<sup>62</sup> Ex. 46 at 5-7 (Wishart Direct).

<sup>63</sup> *Id.* at 7, 10.

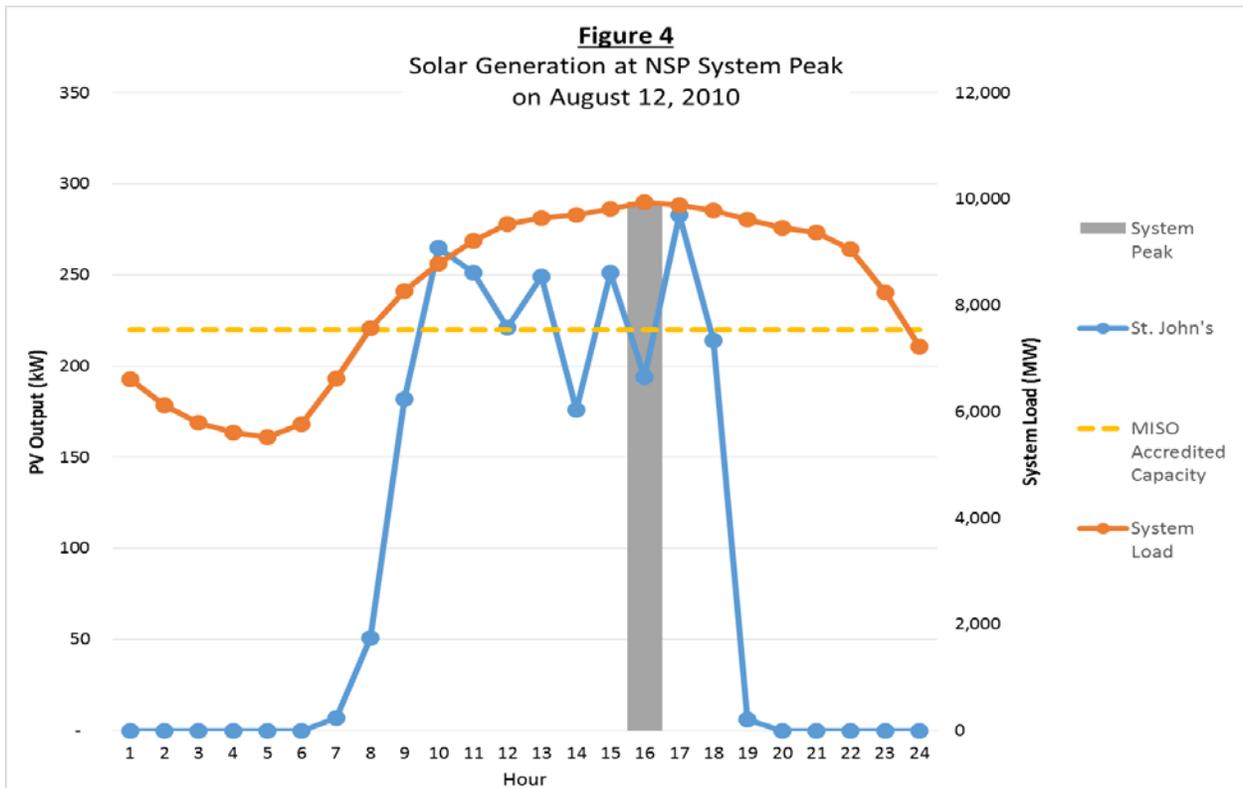
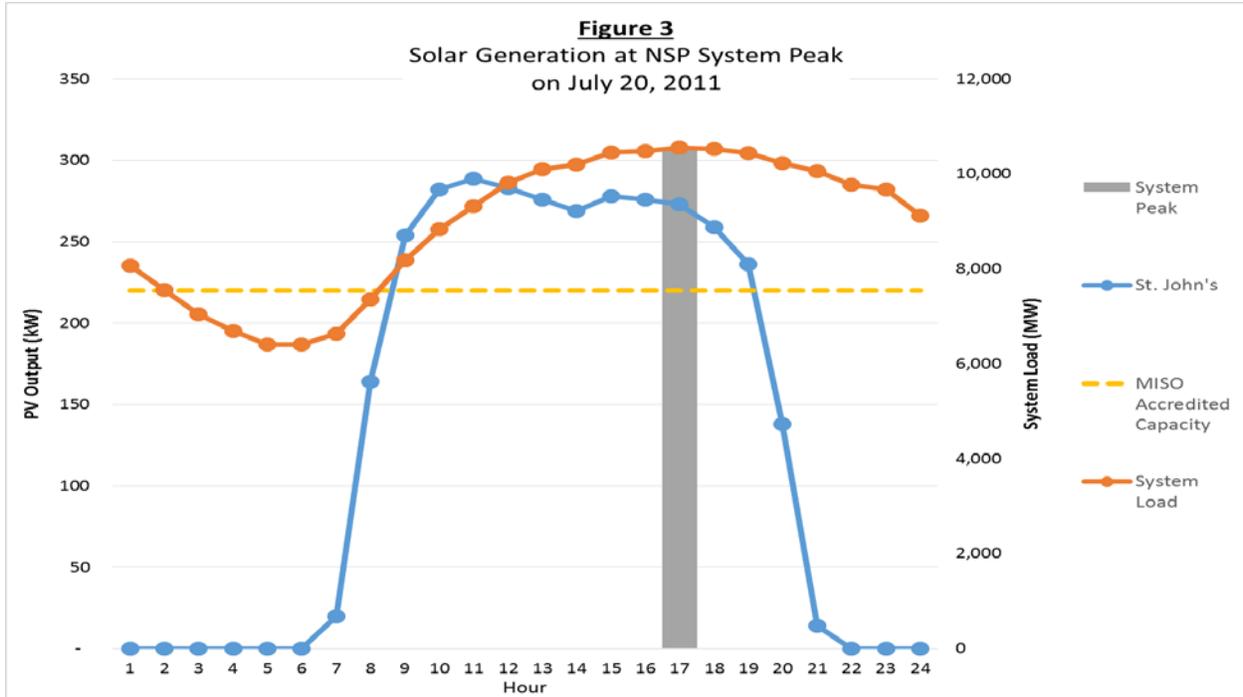
demand periods. Xcel went so far as to say that, even if a resource is not available at all from the winter months of November to February, the resource could still adequately meet Xcel’s needs if available during the summer months.<sup>64</sup>

The size, type and timing of the Solar Proposal make it the superior resource for meeting Xcel’s identified need. The Solar Proposal’s generation is highest on the sunny summer days when Xcel experiences its peak demand. To illustrate this point, Figures 2 to 4 from Geronimo witness Mr. R. Thomas Beach’s direct testimony show the solar output of St. John’s Solar Farm, a Minnesota solar generation plant on Xcel’s system, during Xcel’s annual peak system demand in 2010-2012.<sup>65</sup> These figures provide compelling illustrations of the ability of the Solar Proposal, which uses solar technology similar to the St. John’s Solar Farm, to meet Xcel’s peak demand needs.



<sup>64</sup> Ex.48 at 20-21 (Wishart Rebuttal).

<sup>65</sup> Ex. 60 at 12-13, 15-16 (Beach Direct).



Moreover, as discussed above, the Solar Proposal is specifically designed as a capacity resource and includes a number of features – such as tracking system technology, appropriately-

sized modules to inverters, and distributed sites – to ensure that the project reliably delivers Xcel’s needed capacity.<sup>66</sup> According to MISO’s existing policies for calculating accredited capacity for solar facilities, the Solar Proposal will provide 71 MW of capacity to meet Xcel’s needs. The Solar Proposal will be in-service by December 2016, ensuring that it will be available to meet Xcel’s summer 2017 capacity needs.<sup>67</sup>

Xcel acknowledged that the Solar Proposal can meet a portion of its capacity needs and also satisfy a portion of its SES requirements.<sup>68</sup> No one has disputed the technical ability of the Solar Proposal to meet these needs. And, using the Solar Proposal to fulfill both Xcel’s capacity and SES requirements meets Xcel’s identified needs under all forecast and resource scenarios. In fact, if Xcel’s capacity shortfall is only 26 MW, Geronimo’s Solar Proposal could meet Xcel’s entire need during the 2017-2019 timeframe.

Minnesota law requires that the Commission select renewable resources over nonrenewable resources when it is in the public interest to do so. Based on this record, the Commission must select the Solar Proposal first, because it is the least cost resource, reliably delivers needed capacity *and* meets Minnesota’s preferences for low-emission, renewable and distributed generation. If the Commission determines that it is prudent to add additional generation beyond the 71 MW of accredited capacity provided the Solar Proposal, only then should it consider which of the remaining alternatives should also be selected.

## **2. THE SOLAR PROPOSAL IS THE MOST COST EFFECTIVE ALTERNATIVE.**

Three economic analyses were presented in this record, a levelized cost of electricity (“LCOE”) analysis and two different Strategist models. Given the multiple facets of the various

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<sup>66</sup> See *supra* pp. 5-6.

<sup>67</sup> Ex. 57 at 7 (Engelking Direct).

<sup>68</sup> Ex. 46 at 18 (Wishart Direct).

proposals bid in this proceeding, it is important that the ALJ and Commission carefully weigh the assumptions and results of each analysis and model to evaluate the relative costs of each alternative. In addition, the parties have identified a number of factors outside of the economic modeling results that may impact the overall cost of electricity from the proposals. When all material assumptions are properly included in the various models, the Solar Proposal provides Xcel the least cost resource.

**(a) THE SOLAR PROPOSAL HAS THE LOWEST LEVELIZED COST OF ELECTRICITY OF THE NEW GENERATION PROPOSALS.**

An LCOE analysis was among the economic analyses conducted by the parties. An LCOE analysis 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.<sup>69</sup> Calpine witness Mr. Paul Hibbard characterized the analysis as an “accessible and useful representation of the ultimate impact to ratepayers.”<sup>70</sup> Mr. Hibbard provided a LCOE analysis comparing the costs of each natural gas plant proposal, but his analysis did not include the Solar Proposal.<sup>71</sup> As shown in Figure 1,<sup>72</sup> when the Solar Proposal is added to Mr. Hibbard’s LCOE analysis, it is clearly the least cost resource:

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<sup>69</sup> Ex. 51 at 6 (Hibbard Trade Secret (“TS”) Direct).

<sup>70</sup> *Id.* at 7.

<sup>71</sup> Ex. 51 at 2 (Hibbard TS Direct); Evidentiary Hr’g Tr. (“Tr.”) vol. 1, at 65:21-24.

<sup>72</sup> Ex. 58 at 15 (Engelking TS Rebuttal).

**Figure 1: Levelized Cost of Electricity**

[TRADE SECRET DATA HAS BEEN EXCISED...]

...TRADE SECRET DATA HAS BEEN EXCISED]

Invenergy witness Mr. Ron Norman also analyzed the Solar Proposal using a LCOE analysis. Mr. Norman similarly concluded that, based on the LCOE analysis, “a solar unit with no fuel cost” is the lowest cost standalone resource on a per MWh basis.<sup>73</sup>

**(b) THE SOLAR PROPOSAL IS PART OF THE LEAST COST PLAN WHEN THE STRATEGIST MODEL RESULTS PROPERLY REFLECT RECOGNIZED BENEFITS OF SOLAR.**

Both Xcel and the Department rely heavily on the Strategist model for support of their recommended resource alternatives. The Strategist model is a resource planning software tool that uses multiple simulations to identify the lowest-cost combinations of resources based on their PVSC.<sup>74</sup> As with any model, the assumptions that are modeled directly impact the results. To fully understand the Strategist results, it is important to understand both the influence that

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<sup>73</sup> Ex. 73 at 6-7 (Norman TS Rebuttal).

<sup>74</sup> Ex. 46 at 19 (Wishart Direct).

these underlying assumptions have on the modeling results and the attributes that are not reflected in the model results. While the Solar Proposal was not included in the least cost plans identified by the Department's or Xcel's Strategist modeling, the Solar Proposal is the least expensive option when all recognized values of solar are reflected in the model results, as shown below.

Xcel identified the bid combinations of (1) Invenergy's Cannon Falls Facility in 2016 and Black Dog Unit 6 in 2018 and (2) Calpine's Mankato Facility in 2017 and Black Dog Unit 6 in 2019 as the lowest cost plans based on its Strategist model results.<sup>75</sup> Mr. Wishart stated that the two plans were separated by an insignificant margin, and therefore, he recommended that all three projects advance to negotiations.<sup>76</sup> The Department initially found that the combination of Calpine's Mankato Facility in 2016 and Black Dog Unit 6 in 2019 was the lowest cost plan but ultimately agreed with Xcel that Invenergy's Cannon Falls Facility should also advance to negotiations based on additional analysis that the Department performed in its rebuttal testimony.<sup>77</sup>

With regard to the Solar Proposal, Xcel stated that the least cost plan including the Solar Proposal consisted of Invenergy's Cannon Falls Facility and the Solar Proposal in 2016, and Black Dog Unit 6 in 2019. These resources are the same as those contained in Xcel's identified least cost plan, except that the addition of the Solar Proposal delays the in-service date of Black Dog Unit 6 by one year.<sup>78</sup> Xcel's calculated PVSC for this bid combination, including the Solar

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<sup>75</sup> *Id.* at 23.

<sup>76</sup> Ex. 46 at 24 (Wishart Direct).

<sup>77</sup> Ex. 83 at 34 (Rakow Direct); Ex. 86 at 21 (Rakow Rebuttal).

<sup>78</sup> Ex. 46 at 33 (Wishart Direct).

Proposal, was \$34 million higher than its least cost plan.<sup>79</sup> As such, Xcel summarily dismissed the Solar Proposal as “high cost.”<sup>80</sup>

Xcel’s and the Department’s Strategist results are unreliable, however, because they fail to include the following important attributes of the Solar Proposal:

- **Transmission Line Losses.** Xcel acknowledges that the Solar Proposal will result in a reduction in transmission losses that are not captured in Xcel or the Department’s models.<sup>81</sup> Under Geronimo’s bundled pricing proposal, this reduces the project’s PVSC by approximately \$9 million.<sup>82</sup>
- **S-REC Value.** Both Xcel and the Department modeled the Solar Proposal *in addition* to Xcel’s obligations to acquire solar energy under the SES.<sup>83</sup> This modeling assumption does not reflect the practical reality that Xcel will use the Solar Proposal to meet its SES obligations and has stated its intent to do so.<sup>84</sup> Even ignoring practical realities and assuming *arguendo* that Xcel would not use the Solar Proposal to meet its SES obligations, both the Department’s and Xcel’s Strategist models still fail in that they do not account for the S-REC value that Xcel will obtain. Based on S-REC values in other states that range from between \$13/S-REC to over \$200/S-REC, Geronimo conservatively estimates that the Solar Proposal will have an S-REC value of between \$5/S-REC and \$20/S-REC, resulting in a PVSC reduction of \$10 and \$38 million annually.<sup>85</sup>

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<sup>79</sup> *Id.* at 33-34.

<sup>80</sup> *Id.* at 33.

<sup>81</sup> *Id.* at 35.

<sup>82</sup> Ex. 61 at 7 (Beach Rebuttal).

<sup>83</sup> Ex. 48 at 25 (Wishart Rebuttal); Ex. 83 at 9-10 (Rakow Direct).

<sup>84</sup> Tr. vol. 1, at 137:4-8.

<sup>85</sup> Ex. 59 at 18-19 (Engelking Rebuttal).

- Avoided Transmission Capacity Costs.** Finally, the Strategist results exclude benefits related to avoided transmission capacity costs. The Minnesota Legislature recognized that distributed solar energy projects have the added benefit of avoiding transmission capacity costs.<sup>86</sup> These cost savings reduce the PVSC for the project by approximately \$33 million.<sup>87</sup>

As shown in Table 4, when Xcel’s Strategist results are properly adjusted to include each of these recognized benefits of distributed solar, the Solar Proposal is clearly the least cost resource.

**Table 4: Adjustments to PVSC Impact of Geronimo Proposal<sup>88</sup>**

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

*Notes:*

*Table 8 of Wishart Direct, Modified by Geronimo*

*Value of SRECs is \$5 flat (low scenario) and \$20 flat (high scenario)*

*Transmission Capacity Value is \$3.80/kw-month, pursuant to MISO's Network Integration Service via MISO's OATT Schedule 9*

*Line losses are based upon Geronimo's Solar Proposal*

<sup>86</sup> Minn. Stat. §216B.164, subd. 10(f) (2013).

<sup>87</sup> Ex. 59 at 18, 20 (Engelking Rebuttal); Ex. 61 at 8-9 (Beach Rebuttal).

<sup>88</sup> See Ex. 59 at 18 (Engelking Rebuttal).

**(c) THE STRATEGIST BASE ASSUMPTIONS STRONGLY FAVOR NATURAL GAS PROPOSALS.**

Both Strategist models were set up using assumptions that strongly favored selection of large natural gas packages. First, both the Department and Xcel only evaluated combinations of plants that exceeded 200 MW of need by 2019.<sup>89</sup> As discussed below, Xcel's assumption that its overall need was at or near 300 MW significantly influenced the bid packages that Strategist selected.

As Mr. Wishart explained, when the Strategist model identifies a shortfall in generation, even a small shortfall of 1 or 2 MW, the model must select the next full plant to meet the need – even if the plant size is far larger than the shortfall.<sup>90</sup> By using its 2013 updated spring forecast and MISO's 2011 reserve margins (despite the fact that MISO's 2013/2014 reserve margins differ significantly from its 2011 requirements), Xcel created a 307 MW need within the model.<sup>91</sup> Xcel then determined that it could break apart the natural gas plant bids submitted in this docket, so the model could select just one of the three plants submitted by Xcel, or Cannon Falls or Hampton Energy Center from Invenenergy's three-plant bid package.<sup>92</sup> The identified need was also just larger than Calpine's Mankato Facility that was modeled with a 278 MW summer capacity.<sup>93</sup> Because no single plant could fill the entire 307 MW need, Xcel was assured that the model would select at least two plants to meet its need.<sup>94</sup>

Next, Xcel included a modeling convention referred to as a "capacity credit" to equalize the size of plants that are larger than the identified need.<sup>95</sup> Specifically, Xcel assumed that all

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<sup>89</sup> Ex. 46 at 25-27 (Wishart Direct); Ex. 83 at 26 (Rakow Direct).

<sup>90</sup> Tr. vol. 1, 105:1-9.

<sup>91</sup> Tr. vol. 1, at 106:19 – 107:9.

<sup>92</sup> Tr. vol. 1, at 105:10 – 106:6.

<sup>93</sup> Ex. 46 at 16 (Wishart Direct).

<sup>94</sup> Tr. vol. 1, at 107:10-13.

<sup>95</sup> Tr. vol. 1, at 115:14-16.

excess capacity had a value of \$5.92/kW-mo.<sup>96</sup> When Xcel compared its two “least cost” plans, it noted that the PVSC of the two plans differed by only \$1.8 million.<sup>97</sup> However, that margin was bolstered by the \$55 million credit Xcel assigned the Black Dog/Calpine plan to equalize the effects between the 358 MW Black Dog/Cannon Falls and 486 MW Black Dog/Calpine bid combinations.<sup>98</sup> When asked, Xcel confirmed that it has no plans to actually sell excess capacity, and that Xcel’s ratepayers would bear the same costs for the Calpine PPA regardless of whether this excess capacity is sold or not.<sup>99</sup> Xcel also acknowledged that it would take an effort similar to that of GRE’s bid in this docket to monetize the excess capacity.<sup>100</sup> Absent such effort, Xcel has the opportunity to sell into MISO’s short term market, where the posted price from MISO’s 2013/2014 planning resource auction was \$0.03/kW-mo., far lower than Xcel’s assigned capacity credit.<sup>101</sup> Xcel’s own sensitivity analysis shows that if the capacity credit value varies by as little as \$1.00, the PVSC differences between the various plans change substantially.<sup>102</sup>

Finally, the pricing Xcel established for “generic units” used in the Strategist models disfavored the Solar Proposal. Both Xcel and the Department used the same base assumptions related to “generic” gas units within the models.<sup>103</sup> Generic units are the plants added in later years of the model to fill identified needs as other plants retire or PPAs terminate. The costs of these generic units are important, because the costs of generic units added by the model are attributed to the overall bid packages selected. Here, Xcel generated the modeled price of

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<sup>96</sup> Ex. 46 at 37 (Wishart Direct).

<sup>97</sup> *Id.* at 23.

<sup>98</sup> *Id.* at 32.

<sup>99</sup> Tr. vol. 1, at 115:13-16 & 114:10 – 115:2.

<sup>100</sup> Tr. vol. 1, at 115:17 – 116:15.

<sup>101</sup> Tr. vol. 1, at 116:8-15; Ex. 59 at 12 (Engelking Rebuttal).

<sup>102</sup> Ex. 46 at 39 (Wishart Direct).

<sup>103</sup> Ex. 59 (Engelking Rebuttal, Schedule EME-3).

generic gas units based on internal information it had regarding plant costs.<sup>104</sup> This modeled generic gas unit price was higher than the price of the gas plants bid in this docket.<sup>105</sup> Thus, each of the gas proposals bid in this proceeding looked better than the generic units.

In contrast, Xcel generated a generic unit cost for solar that was lower than Geronimo's bid price, despite the fact that Xcel admitted it did not have accurate market information upon which to evaluate solar market prices.<sup>106</sup> The result was that the Solar Proposal always looked comparably more expensive than the generic solar energy that Xcel assumed for compliance with the SES. The record does not support use of a lower-than-bid price for generic solar nor does it support use of a higher-than-bid price for generic gas.

When these unfavorable base assumptions are identified alongside the attributes of the Solar Proposal that were not included in the model, it is not surprising that neither the Department's nor Xcel's Strategist results selected the Solar Proposal. However, an understanding of the influence of these base assumptions gives the Commission a sufficient record upon which to fairly review and weigh the results.

**(d) THE SOLAR PROPOSAL PRICE IS DEFINED AND HAS MINIMAL RISK TO RATEPAYERS.**

Geronimo's proposed PPA has a defined price over its twenty-year term.<sup>107</sup> Under its proposed PPA, Geronimo bears the costs of all interconnection and any network upgrade costs associated with the project.<sup>108</sup> Because the project produces no emissions and uses sunlight to

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<sup>104</sup> Tr. vol. 1, at 110:3-14.

<sup>105</sup> Ex. 83 at 30 (Rakow Direct).

<sup>106</sup> Ex. 59 (Engelking Rebuttal, Schedule EME-3); Tr. vol. 1, at 110:15-23; Ex. 46 at 36 (Wishart Direct).

<sup>107</sup> Ex. 13 at 19 (Distributed Solar Energy Proposal).

<sup>108</sup> Ex. 62 at 10-11 (Skarbakka Direct).

generate electricity, it poses few risks related to future environmental regulation and is not subject to future volatility in fuel costs.<sup>109</sup>

In contrast, the costs ratepayers may bear for Xcel's self-build alternatives and the Invenenergy and Calpine natural gas plants are subject to numerous changes and risks that have yet to be resolved in this record. The Commission should not overlook these substantial unknown risks when selecting resources. For example, Xcel's proposal assumes it will recover its actual, rather than estimated cost of construction, with an adjustment to its return on equity ("ROE") as an incentive to deliver the project within budget.<sup>110</sup> The Department, however, objects to Xcel's incentive mechanism, instead proposing that Xcel recover its budgeted costs and keep any savings it is able to achieve.<sup>111</sup> If Xcel's proposed recovery method is selected, the cost that ratepayers will ultimately bear is subject to uncertainty regarding Xcel's construction and operational costs.

All of the proposed gas plants subject Xcel's ratepayers to future risks related to volatility in the natural gas market. As shown in the sensitively analyses provided by the Department and Xcel, both high and low gas scenarios change the relative costs of each of the gas plants.<sup>112</sup> Moreover, as it relates to the Invenenergy proposals, a change from interruptible to firm gas increases the PVSC for the project by \$31 million, just a \$3 million PVSC difference from the unadjusted PVSC cost Xcel assigned to the Solar Proposal.<sup>113</sup> Xcel also noted issues related to the potential use of fuel oil at both facilities.<sup>114</sup>

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<sup>109</sup> Ex. 13 at 19, 35-36 (Distributed Solar Energy Proposal).

<sup>110</sup> Tr. vol. 1, at 136:18 – 137:3.

<sup>111</sup> Ex. 82 at 2 (Shaw Rebuttal).

<sup>112</sup> See, e.g., Ex. 46 at 39 (Wishart Direct); Ex. 83 (Rakow Direct, SR-5A).

<sup>113</sup> Tr. vol. 1, at 97:1-6.

<sup>114</sup> Ex. 46 at 50-52 (Wishart Direct).

In addition, Xcel described a number of financial risks related to the PPA negotiations with Calpine and Invenergy.<sup>115</sup> These risks include issues related to counterparty default, security funds, CO<sub>2</sub> emission costs and allowances, capital lease determinations, and company credit worthiness, among other issues.<sup>116</sup> Xcel did not identify any similar issues related to the Geronimo PPA.

Finally, there are a number of unknown transmission – and pipeline – related cost risks to each of the natural gas proposals. The Department highlighted estimated additional or uncertain interconnection costs for the Calpine and Invenergy facilities that the bidders propose that Xcel and its ratepayers bear.<sup>117</sup> In addition, Xcel questioned the reasonableness and feasibility of **[TRADE SECRET DATA HAS BEEN EXCISED...**

**...TRADE SECRET DATA HAS BEEN EXCISED].**<sup>118</sup>

The clear advantages of the Solar Proposal PPA's defined price and minimal ratepayer risks should be considered when comparing the evaluated price of each proposal.

**(e) FACTORS OTHER THAN PRICE MUST BE CONSIDERED GIVEN THE TIGHT RANGE OF PRICES FOR ALL BID PROPOSALS.**

Xcel's top 25 bid combination plans are separated by PVSC differences of \$34 million or less.<sup>119</sup> This \$34 million difference represents a difference of approximately 0.08% of the \$45.3 billion total system costs.<sup>120</sup> While Xcel used this difference to dismiss the Solar Proposal as too expensive, in a previous regulatory proceeding, it stated that a difference of \$151 million

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<sup>115</sup> Ex. 46 at 46-51 (Wishart Direct).

<sup>116</sup> *Id.*

<sup>117</sup> Ex. 83 at 7 (Rakow Direct); Ex. 82 at 4 (Shaw Rebuttal).

<sup>118</sup> Ex. 44 at 50 (Wishart TS Direct).

<sup>119</sup> *Id.* at 33-35.

<sup>120</sup> Tr. vol 1, at 146:3-12.

represents a “minor impact on [Xcel’s] net system costs”.<sup>121</sup> Geronimo asserts that, particularly given the values of solar not reflected in Xcel’s PVSC analysis, this tight range of PVSCs actually shows that each of the alternatives are very close in price and that factors other than price will have to be carefully considered.

### **3. THE SOLAR PROPOSAL BENEFITS SOCIETY AND IS COMPATIBLE WITH THE NATURAL AND SOCIOECONOMIC ENVIRONMENTS.**

The Solar Proposal will produce clean, renewable energy that will benefit the local economy by generating income from newly created jobs, local spending, and payments to landowners on whose property solar facilities will be located. As noted above, the Solar Proposal will not produce air emissions, and it will have minimal impacts on the environment.<sup>122</sup> Additionally, the Solar Proposal will not require water for power generation and will not discharge wastewater containing heat or chemicals during operation.<sup>123</sup>

Further, the project will result in numerous socioeconomic benefits. Project development will diversify and strengthen the economic base of the host counties in which the solar facilities will be located.<sup>124</sup> Geronimo expects that approximately 500 jobs will be created during the construction phase of the project.<sup>125</sup> Work crews at each site are expected to range in size between 13 and 40.<sup>126</sup> Additionally, operation and maintenance activities will create up to 10 permanent positions at the facilities.<sup>127</sup> The wages and salaries paid as a result of these jobs will contribute to the total personal income in the region, and at least some of this income will

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<sup>121</sup> Ex. 59 at 13 (Engelking Rebuttal) citing *Petition of Northern States Power Company for Approval of Investments in Two Wind Power Projects: 200 MW Nobles Wind Project and 140 MW Merricourt Wind Project*, Docket No. E002/M-08-1437 (originally filed December 4, 2008, amended February 19, 2009).

<sup>122</sup> Ex. 13 at 21-25 (Distributed Solar Energy Proposal).

<sup>123</sup> *Id.* at 32.

<sup>124</sup> *Id.* at 32-33.

<sup>125</sup> Ex. 38 at 31 (Environmental Report).

<sup>126</sup> *Id.*

<sup>127</sup> *Id.*

circulate throughout the state.<sup>128</sup> Many of Geronimo's expenditures for equipment, operating supplies, and other products and services will benefit businesses located in the host counties and the state, and landowners with solar panels or other project facilities located on their property will receive annual land payments.<sup>129</sup>

**4. THE SOLAR PROPOSAL IS CONSISTENT WITH FEDERAL, STATE AND LOCAL RULES AND POLICIES.**

**(a) THE SOLAR PROPOSAL IS THE ONLY ALTERNATIVE THAT MEETS MINNESOTA'S RENEWABLE AND DISTRIBUTED ENERGY PREFERENCES.**

As a matter of law, the Solar Proposal, as a distributed, renewable alternative, must be selected before nonrenewable resources. The Commission is prohibited from approving a new or refurbished nonrenewable energy facility in an IRP or certificate of need proceeding unless the utility has demonstrated that a renewable energy facility is not in the public interest.<sup>130</sup> The public interest determination must include whether the resource helps the utility achieve Minnesota's greenhouse gas reduction goals, the RES or the SES.<sup>131</sup> In this case, the Solar Proposal is in the public interest not only because it is the least cost resource, but also because it will help Minnesota meet both its greenhouse gas reduction goals and its SES. Compliance with each of these statutes is discussed in the following sections.

Second, the Commission must ensure that opportunities to install distributed generation are considered in all resource planning and certificate of need proceedings.<sup>132</sup> The Solar Proposal has been designed to include approximately 20 different locations across Xcel's service territory that are between 2 MW and 10 MW and each served by separate interconnection

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<sup>128</sup> Ex. 13 at 32-33 (Distributed Solar Energy Proposal).

<sup>129</sup> *Id.*

<sup>130</sup> Minn. Stat. § 216B.2422, subd. 4 (2013).

<sup>131</sup> *Id.*

<sup>132</sup> Minn. Stat. § 216B.2426 (2013); *see also* Minn. Stat. § 216B.243, subd. 3(6) (2013).

facilities.<sup>133</sup> As demonstrated in the record, by distributing the sites across the state, the Solar Proposal is able to more reliably meet Xcel's need for peak energy resources while also avoiding costly transmission interconnection upgrades, reducing transmission line losses and lowering generation and transmission capacity costs.<sup>134</sup>

The Commission is also prohibited from issuing a certificate of need for a nonrenewable facility unless the applicant has demonstrated to the Commission's satisfaction that it has explored the possibility of generating power by means of renewable energy resources and has demonstrated that the alternative selected is less expensive (including environmental costs) than the renewable energy source.<sup>135</sup> The record here indicates that the Solar Proposal, when properly analyzed using either a LCOE or the Strategist model, is the lowest cost resource proposed. For example, when added to Calpine's LCOE analysis, the Solar Proposal has the lowest cost of electricity of any of the new generation resources (even without environmental costs). In addition, when the Strategist modeling results are properly adjusted for recognized values of solar, including S-RECs, transmission line losses, and transmission capacity cost savings, plans that include the Solar Proposal have a lower PVSC than Xcel's identified "least cost" plan. Based on this record, Xcel has not demonstrated that its plans to acquire additional nonrenewable resources are less expensive than plans that include the Solar Proposal.

**(b) THE SOLAR PROPOSAL BEST MEETS THE STATE'S GREENHOUSE GAS REDUCTION GOALS.**

The Solar Proposal best supports Minnesota's goals to reduce greenhouse gas emissions across all emissions-producing sectors "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

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<sup>133</sup> Ex. 57 at 9 (Engelking Direct).

<sup>134</sup> Ex. 62 at 3-4 (Skarbakka Direct); Ex. 61 at 7-10 (Beach Rebuttal).

<sup>135</sup> Minn. Stat. § 216B.243, subd. 3a (2013).

2005 levels by 2050.”<sup>136</sup> The project will not produce greenhouse-gas emissions, and, as previously noted, the Solar Proposal avoids 94,133 tons/year of CO<sub>2</sub> emissions, based on an average system mix at the time the project is expected to generate energy.<sup>137</sup> As a result, the Solar Proposal is consistent with and will help the state to achieve its greenhouse gas emissions reduction goal.

**(c) THE SOLAR PROPOSAL HELPS XCEL MEET THE SOLAR ENERGY STANDARD.**

The 2013 Minnesota Legislature adopted a SES that requires Xcel and other Minnesota utilities to acquire of 1.5% of its retail sales from solar energy by 2020, with a goal to increase this amount to 10% by 2030.<sup>138</sup> This standard is required over and above the renewable energy standard, which requires Xcel to meet 30% of its retail energy needs with renewable energy by 2020.<sup>139</sup>

Xcel stated that if the Commission selects the Solar Proposal, Xcel will use the solar energy produced by the project to meet its requirements under the SES.<sup>140</sup> Xcel forecasts that it will need 455,919 MWh of solar energy annually to meet its solar standard in 2020.<sup>141</sup> Geronimo’s project will provide approximately 200,000 MWh annually and help meet a substantial portion of Xcel’s solar energy need.<sup>142</sup>

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<sup>136</sup> Minn. Stat. § 216H.02, subd. 1 (2013).

<sup>137</sup> Ex. 13 at 24 (Distributed Solar Energy Proposal).

<sup>138</sup> Minn. Stat. § 216B.1691, subd. 2f (2013).

<sup>139</sup> Minn. Stat. § 216B.1691 (2013).

<sup>140</sup> Tr. vol. 1, at 137:4-8.

<sup>141</sup> Ex. 59 at 8 (Engelking Rebuttal) citing *Xcel Energy Comments*, Docket No. E-999/CI-13-542 (August 15, 2013), at 4.

<sup>142</sup> Ex. 57 at 8 (Engelking Direct).

**(d) THE SOLAR PROPOSAL IS CONSISTENT WITH FEDERAL ENERGY AND ENVIRONMENTAL RULES AND POLICIES.**

The Solar Proposal can also assist Xcel in meeting important emerging federal regulations. Notably, the EPA has proposed a Carbon Pollution Standard for New Power Plants.<sup>143</sup> 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 CO<sub>2</sub> emissions.<sup>144</sup> EPA's proposed new source performance standard would set uniform national limits on the amount of carbon pollution new power plants can emit. EPA's proposed standards apply to fossil-fuel-fired boilers, integrated gasification combined cycle ("IGCC") units and stationary combined cycle turbine units that generate electricity for sale and are larger than 25 MW. The proposed standards would require covered units to achieve an emission rate of 1000 pounds of CO<sub>2</sub> per megawatt hour. As discussed by Calpine, while federal regulation of CO<sub>2</sub> and other greenhouse gases may seem remote, in the context of this proceeding, prospective federal regulation of greenhouse gas emissions is directly relevant.<sup>145</sup> The resources selected by the Commission in this proceeding will not be placed in service for several years and are expected to be operational for decades. The selected resources will directly impact Xcel's ability to meet federal air quality requirements and the flexibility available to Xcel in doing so.<sup>146</sup> As an emission-free capacity resource, the Solar Proposal can help Xcel mitigate the regulatory risks associated with new EPA regulations.

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<sup>143</sup> Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22392 (April 13, 2012).

<sup>144</sup> 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.

<sup>145</sup> See Ex. 52 at 25 (Hibbard Direct).

<sup>146</sup> See *id.*

Geronimo is committed to complying with all applicable federal, state and local laws relating to construction and operation of the Solar Proposal. If the Commission selects the Solar Proposal, Geronimo will obtain all required permits prior to construction of the facilities.<sup>147</sup>

**C. THE ALJ IS CHARGED WITH RECOMMENDING THE BEST RESOURCES TO MEET XCEL'S NEEDS BASED ON THIS RECORD.**

In its Notice and Order for Hearing, the Commission requested the ALJ conduct an evidentiary hearing to develop a record regarding the most reasonable and prudent strategy to meet Xcel's needs and to prepare a report recommending a course of action. Once the ALJ's report is issued, Commission will review the record and identify "the resources that are best supported by the record."<sup>148</sup> There are two important elements of this process that should not be overlooked: (1) the Commission will select the most prudent resources; and (2) the resource selection must be supported by the record in this case.

Xcel and the Department have each recommended selection of Black Dog Unit 6 and either Invenergy's Cannon Falls or Calpine's Mankato Energy Facility pending final PPA negotiations.<sup>149</sup> Under Xcel's recommendation, the ALJ and Commission would not have the benefit of knowing the price, in-service date, extent of transmission interconnection costs or other important factors when selecting the best resources.<sup>150</sup> Instead, Xcel would come forward with these details in a final PPA with the resource Xcel has selected and initiate a separate Commission review limited to approval of the PPA.<sup>151</sup> These recommendations are grossly inconsistent with the "Track 2" process established by the Commission for proceedings such as this where Xcel has proposed self-build alternatives.

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<sup>147</sup> Ex. 13 at 38 (Distributed Solar Energy Proposal).

<sup>148</sup> Notice and Order for Hearing, at 3.

<sup>149</sup> Ex. 86 at 21 (Rakow Rebuttal); Ex. 49 at 8 (Alders Direct).

<sup>150</sup> Tr. vol. 1, at 134:8 – 135:22.

<sup>151</sup> Tr. vol. 1, at 135:23 – 136:17.

Early in this competitive acquisition process the Department recognized a need for certainty in price and ratepayer risks. Specifically, the Department stated, “Parties should not expect that ratepayers will pay for any additional costs that are specific to a particular project beyond those included in each bid,” noting that “this approach best ensures the integrity of the competitive process.”<sup>152</sup> Geronimo agrees that it is important that bidders be held to their bids, particularly as it relates to costs and risks that may be borne by ratepayers. Any other result undermines the competitive bid process and gives unfair advantages to those bidders that are allowed to make such changes.

The Commission, too, recognized that this process must remain “fair, predictable and transparent” if it is going to be an effective tool for selecting Xcel’s future resource needs.<sup>153</sup> In establishing the two track process, the Commission stated:

Potential suppliers will not commit the resources necessary to compete effectively, and will not disclose the sensitive information often required to evaluate their competitive proposals, unless they have confidence in the objectivity, good faith, and predictability of the competitive process. In fact, to attract competitive proposals, it may matter less what the rules are – assuming fundamental rationality and basic fairness – than whether all potential players know the rules and know that they will be enforced evenhandedly.<sup>154</sup>

The Track 2 process has been laid out very specifically by the Commission through prior orders. It is imperative to the long-term integrity of this process that the Commission’s established steps be followed – especially the first time<sup>155</sup> the process is used.

Xcel’s recommendation essentially transforms this proceeding from a Track 2 to a Track 1 process, allowing the utility to screen potential resources through the competitive resource acquisition process, then move to private negotiations, outside of the public record, and emerge

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<sup>152</sup> Ex. 79 at 3-4 (Shaw Direct).

<sup>153</sup> May 31, 2006 Commission Order, at 6.

<sup>154</sup> *Id.*

<sup>155</sup> Tr. vol. 2, 49:4-8.

with a final contract that might reflect a different price, in-service date, gas supply and/or interconnection risk once the negotiations conclude. This process may be acceptable under the Track 1 process where Xcel is not also a bidder, but in this Track 2 process, it leaves Xcel with far too much influence over the final bid selection and renders the public vetting process nearly moot. Bidders entering this competitive acquisition process have committed substantial resources and time, which already represents a high hurdle to potential entrants. If the outcome of the contested case process is simply that Xcel gets to choose who to negotiate with and what terms of the original bid are open for renegotiation, the process leaves little incentive for bidders to participate in future proceedings.

In support of its decision that the Commission, rather than Xcel, should make the resource selection in the Track 2 process, the Commission warned against the influence Xcel would otherwise have over the process, stating:

The Company simply – and necessarily – has too much control over resource selection to use the standard process when it is a bidder. It has much more reliable and complete information about its needs than its competitors. It also has superior information about its existing generation portfolio, the configuration of its transmission system, and any synergies that would result from adding different resources to the mix.

All these advantages, combined with a clear and unavoidable conflict of interest, point to a need to use the more stringent, certificate-of-need-like process whenever the Company submits its own proposal in the competitive resource procurement process.<sup>156</sup>

There is a robust record in this proceeding that the ALJ and Commission can rely on to determine the most reasonable and prudent resources available to meet Xcel's need. Geronimo respectfully asserts that it is critical to the long-term viability of the competitive resource acquisition process that the ALJ and Commission make the final resource selection, rather than

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<sup>156</sup> May 31, 2006 Commission Order, at 7.

allow Xcel to declare its own Black Dog proposal as the least cost plan and then proceed to negotiate with multiple bidders to determine the additional resources that are selected.

**D. THE SOLAR PROPOSAL MUST BE EVALUATED IN THIS DOCKET AND SHOULD NOT BE DEFERRED TO A SES RFP.**

Xcel's recommendation that any acquisition of solar energy resources be deferred to a solar-only RFP to meet the SES ignores the Commission's responsibility under the law to consider renewable alternatives in this proceeding. In fact, Xcel's overall strategy regarding the Solar Proposal has been largely to ignore it throughout the contested case. For example, Xcel did not evaluate the Solar Proposal within any of the sensitivity analyses, even though a primary benefit of the Solar Proposal is how it hedges against volatility in future natural gas or carbon prices.<sup>157</sup> Xcel did not evaluate the rate impacts of the proposal.<sup>158</sup> Xcel set up its Strategist model in a manner that made it highly unlikely the Solar Proposal would be selected as a top choice.<sup>159</sup> And, most importantly, Xcel chose not to recognize or analyze the many benefits the Solar Proposal has as a renewable, solar resource.<sup>160</sup> Instead, Xcel has stated that it will acquire solar energy to meet the SES in some yet-to-be-determined RFP.<sup>161</sup>

Geronimo encourages Xcel to move forward with its SES RFP, but doing so does not excuse Xcel from meaningfully evaluating the Solar Proposal to meet its capacity needs here. Since the SES is an energy standard (i.e. 1.5% of Xcel energy must come from solar by 2020), an SES RFP will encourage the lowest-cost energy resources to bid. As explained throughout this brief, the Solar Proposal was specifically designed as a capacity resource, and it is the clear winner over the natural gas capacity proposals in this docket under all updated analyses. Xcel

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<sup>157</sup> Ex. 46 at 39 (Wishart Direct).

<sup>158</sup> Tr. vol.1, at 111:22 – 112:2.

<sup>159</sup> Ex. 59 at 8-9 (Engelking Rebuttal).

<sup>160</sup> *Id.*

<sup>161</sup> Ex. 46 at 36 (Wishart Direct).

has not met its burden to show that the Solar Proposal is not in the public interest as compared to its recommended natural gas resources.

**E. SELECTING THE SOLAR PROPOSAL IS IN THE PUBLIC INTEREST.**

In order for Minnesota to achieve its goal to be the first state in the country to receive 100% of its resources from renewable resources,<sup>162</sup> it is critical that, in proceedings such as this one, the Commission select available renewable resources to meet the identified utility need. The Solar Proposal is the lowest cost 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.

The paradigm for Minnesota utilities has changed. When making long-term generation decisions, renewable energy resources must be fairly evaluated side-by-side with nonrenewable resources. Minnesota law requires more than a cursory evaluation of hypothetical renewable alternatives and evaluation exclusively through renewable-only RFPs. In this case, where 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.

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<sup>162</sup> Minn. Stat. § 3.8852(a) (2013).

**IV. CONCLUSION**

Geronimo respectfully recommends that the ALJ and Commission find that the Solar Proposal is in the public interest and is one of the most reasonable and prudent resources to meet Xcel's identified need in the 2017-2019 timeframe.

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Respectfully submitted,

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