STATE OF MINNESOTA

OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION

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

OAH DOCKET NO. 8-2500-30760, MPUC DOCKET NO. E002/CN-12-1240

DIRECT TESTIMONY

OF

GLEN SKARBAKKA

VICE PRESIDENT OF TRANSMISSION

GERONIMO WIND ENERGY, LLC D/B/A GERONIMO ENERGY, LLC

ON BEHALF OF

GERONIMO ENERGY, LLC

SEPTEMBER 27, 2013

Exhibit ___

DIRECT TESTIMONY OF GLEN SKARBAKKA

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SCHEDULES

I. INTRODUCTION AND QUALIFICATIONS

Q: Please state your name and occupation.

A: My name is Glen A. Skarbakka. I am the Vice President of Transmission of Geronimo Wind Energy, LLC d/b/a Geronimo Energy, LLC, a Minnesota limited liability company ("Geronimo").

Q: Please summarize your educational background and professional experience.

A: In 1979, I received a Master of Science in Electrical Engineering from the University of Minnesota. In 1989, I received an MBA from the Carlson School of Business at the University of Minnesota, and in 2001, I received a JD from the William Mitchell College of Law. From 1979-1998, I was employed at United Power Association and worked in various areas including transmission system engineering, transmission planning, power supply development, and resource development before becoming the Vice President of Transmission Services. I served as a consultant to Great River Energy during my time in law school (1998-2001), and following law school, from 2001-2006, I was a principal at Skarbakka PLLC. From 2006-2009, I managed resource planning at Great River Energy, and then from 2009-2012, I served as Director of Transmission Origination at Iberdrola Renewables.

I joined Geronimo in 2012 and currently serve as Vice President of Transmission. My resume is attached as Schedule GAS-1.

Q: Were you involved in preparing Geronimo's April 15, 2013 Distributed Solar Energy Proposal?

A: Yes, I assisted with the interconnection- and delivery-related components of the Distributed Solar Energy Proposal.

Q: What is the purpose of your testimony in this proceeding?

A: The purpose of my testimony is to adopt the interconnection- and delivery-related content of the Distributed Solar Energy Proposal, including Section 8.0 (Transmission and Delivery). My testimony provides information regarding Geronimo's site-selection process, attributes of the sites, benefits of distributed generation, and the interconnection process.

II. ATTRIBUTES OF SELECTED SITES

Q: Please provide a general description of the sizes and locations of Geronimo's proposed solar facilities.

A: Geronimo's proposed solar facilities will be located at approximately 20 sites in close proximity to Xcel Energy substations dispersed across Xcel Energy's service territory. Collectively, Geronimo refers to these areas as "Distributed Energy Generation Zones" because the solar facilities are located and interconnected at separate, individual sites rather than at a single, large site. The solar facilities at each site range in size from 2 MW to 10 MW. Table 1 below summarizes nominal generation characteristics by Distributed Energy Generation Zone.

Table 1: Nominal Generation Characteristics by Site

DEGZ #	Location	Interconnection	MW - AC[1]	MW - DC	MWh/year
1.	Albany	TBD	10	13	20,078
2.	Annandale	TBD	2.5	3.25	5,013
3.	Atwater	TBD	4	5.2	8,018
4.	Chisago County	TBD	7.5	9.75	14,785
5.	Dodge Center	TBD	6.5	8.45	12,765
6.	Eastwood	13.8	5.5	7.15	10,469

[1] The aggregate nameplate capacity of the Distributed Energy Generation Zones shown on this table exceeds the proposed 100 MW (AC) size of the Project because the table lists all primary and alternate sites. The final size of the Project will be consistent with the 100 MW (AC) proposed size unless modified by the Commission.

7.	Fiesta City	12.47	2.5	3.25	5,197
8.	Hastings	12.47	5	6.5	9,837
9.	Lake Emily	13.8	2	2.6	3,999
10.	Lake Pulaski	34.5	8.5	11.05	16,746
11.	Lawrence Creek	12.47	4	5.2	7,637
12.	Lester Prairie	TBD	3.5	4.55	6,891
13.	Mayhew Lake	TBD	4	5.2	8,028
14.	Montrose	TBD	3	3.9	5,909
15.	Paynesville	TBD	10	13	20,061
16.	Pine Island	TBD	2.5	3.25	5,010
17.	Pipestone	23.9	2	2.6	4,147
18.	Scandia	TBD	2.5	3.25	4,926
19.	Waseca	23.9	10	13	19,643
20.	West Faribault	TBD	2.5	3.25	4,926
21.	West Waconia	13.8	8.5	11.05	16,729
22.	Wyoming	TBD	3.5	4.55	6,770
23.	Zumbrota	12.47	3.5	4.55	6,878
		Totals	**113.5**	**147.55**	**224,462**

Q: Why did Geronimo select distributed sites for its solar facilities?

A: From an interconnection perspective, smaller distributed sites, in contrast to one large project site, minimize the need for additional distribution and transmission infrastructure and efficiently use existing distribution and transmission infrastructure. By constructing the solar facilities sequentially in a single timeframe, Geronimo can achieve many of the economies of scale of a large site while reducing the need for potentially costly distribution or transmission infrastructure upgrades. Additionally, distributed solar facilities provide for a high level of reliability through their geographic diversity and can cause a reduction in losses on the transmission system when the facilities are located in close proximity to load centers.

Q: Please explain what you mean by "reliability".

A: I am using the term "reliability" in a conventional sense – a reliable system is one that can be counted upon to be available and operational most of the time.

Q: Please explain how distributed solar facilities provide for a high level of reliability.

A: Distributed solar facilities greatly reduce the impact of individual transmission equipment failures and limitations. Outages of individual transmission lines, distribution lines, or a solar facility component will, in nearly all cases, reduce the output from only a single solar facility, not the entire project or even large parts of it. This is in contrast to what is sometimes called the "single shaft risk" of a large generator in which failures of certain components can result in unavailability of all or major parts of the entire plant.

Q: When you say that distributed solar facilities can result in a "reduction in losses", what do you mean by "losses"?

A: I am referring to electric system energy losses. These losses are largely caused by resistance, which can be thought of as similar to friction, and occur whenever energy is transmitted across the wires and transformers that comprise an electric system.

Q: Please discuss how distributed sites result in reductions in losses.

A: In an electric system, the greater the distance that energy must travel from the generating facility to load, the more resistance that energy encounters and the higher the resulting losses. By distributing its solar facilities so that each is in close proximity to a load center, Geronimo will displace energy that would otherwise be supplied by more distant generators, thereby reducing losses.

Q: Why did Geronimo select the locations identified in Table 1?

A: Geronimo selected these locations because they are near substations that are generally associated with strong, existing transmission and distribution infrastructure. By interconnecting generating facilities near strong transmission and distribution

infrastructure, it is less likely that the new generator interconnections will require costly transmission or distribution facility upgrades.

Q: Does Geronimo consider the solar-facility sizes reflected on Table 1 to be final?

No. Geronimo's initial facility sizing is being used as a starting point to evaluate the sites. Each solar facility's impacts on the distribution and transmission system will be individually evaluated during the interconnection process, which is discussed further below. Once all applicable interconnection studies have been completed, the ultimate size of each facility will be reevaluated to ensure that the facilities are appropriately sized in order to efficiently use existing distribution and transmission infrastructure and to minimize the risk of curtailment.

Q: If energy is curtailed, would Xcel Energy be required to pay Geronimo for the curtailed energy?

A: In Attachment J to Geronimo's April 15, 2013 Distributed Solar Energy Proposal, Geronimo included a form of Solar Energy Power Purchase Agreement (PPA), which includes terms addressing curtailed energy and the allocation of payment responsibility for such curtailed energy. Generally, the PPA terms proposed by Geronimo provide that energy curtailed for system emergency or due to Geronimo's failure to maintain any legally required permit, consent, license, approval, or authorization from a governmental authority would be non-compensable, and energy curtailed for economic or other discretionary reasons by Xcel Energy would be compensable. Xcel Energy's payment responsibility for curtailed energy will depend upon the final form of PPA between Xcel Energy and Geronimo, which will be subject to such other changes as Geronimo and Xcel Energy may agree to during the bi-lateral PPA negotiations.

III. INTERCONNECTION PROCESS

Q: Please generally describe the proposed points of interconnection for Geronimo's distributed solar facilities.

A: All of Geronimo's proposed points of interconnection are on Xcel Energy's distribution system. Table 1 above provides the size and expected voltage for each of Geronimo's proposed points of interconnection.

Q: Does each solar facility location have a separate point of interconnection from the other solar facility locations?

A: Yes.

Q: Please explain the interconnection process that Geronimo is using to interconnect to Xcel Energy's distribution system.

A: Geronimo is using the interconnection process outlined in Section 10 of Xcel Energy's Minnesota Electric Rate Book. See Schedule GAS-2 for a flow chart describing Xcel Energy's distributed generation interconnection process.

Q: Has Geronimo submitted interconnection requests to Xcel Energy for its proposed interconnections?

A: Yes. Geronimo has submitted 23 interconnection applications to Xcel Energy, one for each of the Distributed Energy Generation Zones. Table 2 below includes the application date for each proposed point of interconnection.

Table 2: Interconnection Application Dates

DEGZ #	Location	Interconnection Application Date
1.	Albany	8/5/2013
2.	Annandale	8/5/2013
3.	Atwater	8/15/2013
4.	Chisago County	8/15/2013

5.	Dodge Center	6/26/2013
6.	Eastwood	8/15/2013
7.	Fiesta City	8/5/2013
8.	Hastings	9/6/2013
9.	Lake Emily	7/17/2013
10.	Lake Pulaski	6/10/2013
11.	Lawrence Creek	9/6/2013
12.	Lester Prairie	8/5/2013
13.	Mayhew Lake	6/26/2013
14.	Montrose	7/17/2013
15.	Paynesville	8/15/2013
16.	Pine Island	8/15/2013
17.	Pipestone	8/15/2013
18.	Scandia	6/26/2013
19.	Waseca	8/5/2013
20.	West Faribault	8/5/2013
21.	West Waconia	9/6/2013
22.	Wyoming	6/10/2013
23.	Zumbrota	6/26/2013

Q: Does Geronimo anticipate submitting any additional interconnection requests to Xcel Energy?

A: As described in Geronimo's Distributed Energy Generation Zones Update and Public Filing, filed with the Commission on September 10, 2013, Geronimo is acquiring alternative sites to provide flexibility in the event that transmission, environmental or other constraints arise prior to construction. If Geronimo proceeds with any of its alternative sites, Geronimo will submit additional interconnection requests for the associated solar facilities.

Q: Please generally describe the status(es) of Geronimo's interconnection requests.

A: Geronimo has completed Step 1 of Xcel Energy's Distributed Generation Interconnection Process for its 23 interconnection requests, which means that Geronimo submitted a completed interconnection application for each and paid the associated application fees.

Xcel Energy has also completed Step 2 for eight of Geronimo's 23 proposed interconnections, in which Xcel Energy approved the proposed interconnection requests, screened the proposed solar generation systems to determine the scope and cost of required engineering studies, and commented on Geronimo's proposed interconnection schedules. Xcel Energy is currently completing Step 2 review of the remaining fifteen interconnection requests.

Q: By what date does Geronimo anticipate that Geronimo and Xcel Energy will have all necessary interconnection agreements and final schedules in place?

A: Geronimo anticipates that Xcel Energy will have commenced the engineering studies for several of Geronimo's 23 proposed interconnections by October 2013. As set forth in Xcel Energy's Minnesota Electric Rate Book, following notification of an applicant's intent to proceed with engineering studies for a proposed interconnection, Xcel Energy has 90 days to complete those studies. Geronimo expects that Xcel Energy will complete the engineering studies in approximately the first or second quarter of 2014. Geronimo expects that interconnection agreements and final schedules will be in place by the second quarter of 2014.

Q: Does Geronimo intend to submit any interconnection requests to MISO? Please explain why or why not.

A: No. Geronimo intends to interconnect each of the solar facilities to distribution facilities, which are not subject to MISO's jurisdiction. The interconnection process for distribution facilities is administered by the owner of the distribution facility, in this case Xcel Energy.

Q: What circumstances would necessitate Geronimo's submittal of an interconnection request to MISO?

A: Geronimo may submit an application to MISO for transmission interconnection service if, based on Xcel Energy's engineering study results, Geronimo deems that interconnection to the transmission network at the proposed project size is more cost effective.

Q: If Geronimo determines that it will make any interconnection requests to MISO, when does it anticipate that such requests will be submitted?

A: Xcel Energy's engineering study results will detail the distribution-level interconnection costs required for the proposed project. These study results will provide Geronimo with the information it needs to determine if a proposed distribution-level interconnection is cost effective and whether to proceed with that distribution-level interconnection or apply for transmission-level interconnection with MISO. As noted above, Geronimo anticipates that the results of Xcel Energy's engineering studies will be complete by the first or second quarter of 2014. Therefore, Geronimo anticipates that it would proceed with any MISO interconnection requests in time for inclusion in MISO's Definitive Planning Phase studies in February 2014 or August 2014, depending upon when Xcel Energy's engineering studies are completed.

Q: If Geronimo is required to submit any interconnection requests to MISO, when would Geronimo anticipate that it would have executed interconnection agreements in place?

A: It typically takes about a year to complete the required interconnection studies and execute an interconnection agreement following submittal of an interconnection request.

Q: Please describe the anticipated costs associated with interconnecting Geronimo's solar facilities.

A: The costs of a typical distribution interconnection can range from $75,000 to $500,000.

Q: Please discuss who is responsible for the interconnection costs you have described.

A: All interconnection fees and studies, interconnection facilities, and project-specific upgrades will be paid by Geronimo.

Q: Did Geronimo include interconnection costs in its Distributed Solar Energy Proposal?

A: Yes. Geronimo included all interconnection costs, including reimbursable costs to the utility, in its Distributed Solar Energy Proposal.

IV. INTERCONNECTION FACILITIES AND NETWORK UPGRADES

Q: Please describe the interconnection facilities that Geronimo currently anticipates will be required to interconnect Geronimo's solar facilities?

A: Typical items include monitoring and control telemetry, communications and auxiliary devices, as well as conductor replacement/extensions and metering and associated current transformers and potential transformers. Distribution-interconnected solar facilities will, in most cases, involve building a dedicated distribution feeder to a "recloser" (a type of circuit breaker) within a nearby distribution substation. In other instances, Geronimo's solar facilities will interconnect directly to an existing distribution line. If a transmission-level interconnection becomes necessary, a transformer stepping up to the transmission voltage along with one or more transmission circuit breakers or switches will be constructed.

Q: Who will be responsible for costs associated with required interconnection facilities?

A: As noted above, Geronimo will be responsible for all project-specific interconnection costs and fees, including interconnection facilities.

Q: Does Geronimo currently anticipate that the interconnection of its solar facilities will require network upgrades?

A: No. Because the solar facilities will each be small relative to the load already served by the transmission facilities and will tend to offset that load, it is unlikely that significant network upgrades will be required.

Q: If network upgrades are required to interconnect any of Geronimo's solar facilities, who will be responsible for the associated costs?

A: Geronimo will be responsible for any project-specific, network-upgrade costs.

V. CONCLUSION

Q: Please summarize your testimony.

A: Geronimo's Distributed Solar Energy Proposal, through its distributed generation portfolio, will be reliable, efficient, and will largely avoid costly network upgrades.

Q: Does this conclude your testimony?

A: Yes.

Glen Alan Skarbakka

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PROFESSIONAL EXPERIENCE:

2012+ **Vice President**, Geronimo Energy
Part of renewable energy developer's senior management team with primary responsibility for all transmission-related issues.

2009-12 **Director**, Transmission Origination, Iberdrola Renewables
Responsible for transmission arrangements for renewable energy facilities and related contractual and strategic issues.

2006-09 **Manager,** Resource Planning, Great River Energy
Responsible for resource planning, related regulatory proceedings, power purchase agreements, and merchant-function transmission arrangements and policy.

2001-06 **Principal**, Skarbakka PLLC, *providing energy-related legal and consulting services.*

1998-01 **Consultant** to Great River Energy, *while attending law school.*

1996-98 **Vice President**, Transmission Services, United Power Association
Bottom line responsibility for transmission business unit.

1994-96 **Manager**, Resource Development, United Power Association
Responsible for strategic planning, business development and contracts for power supply and transmission.

1990-94 **Manager**, Power Supply Development, United Power Association
Responsible for power supply strategic planning and business development.

1984-90 **Supervisor**, Transmission Planning, United Power Association
1979-84 **System Engineer**, United Power Association. *DC and AC transmission system engineering.*

ACADEMIC EXPERIENCE

2001 **Juris Doctor**, *magna cum laude*, William Mitchell College of Law. Primary interests: energy, corporate law. Admitted to Minnesota bar.

1989 **MBA (Strategic Management)**, Carlson School of Management, University of Minnesota; included electives in business law, finance, marketing, international business and human resource management.

1986 Graduate studies in power system operations, U. of Minnesota.

1979 **Master of Science In Electrical Engineering** (minor: computer science), U. of Minnesota.

1976 **Bachelor of Electrical Engineering,** *with high distinction*, U. of Minnesota.

PROFESSIONAL ACTIVITIES

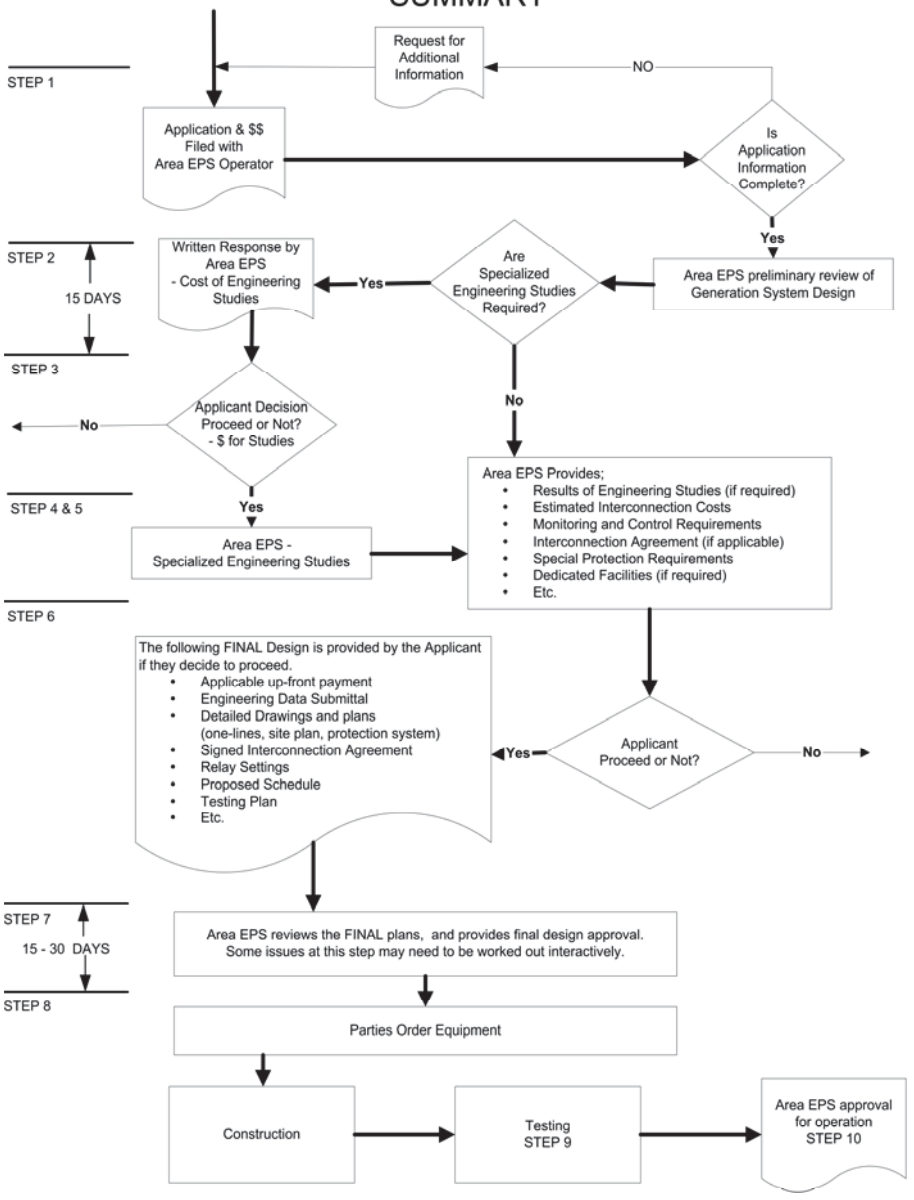
Licensed Attorney and Professional Engineer, Minnesota. Extensive experience in negotiating energy transactions, corporate decision making, energy and transmission related strategy development and implementation, and board/management relationships. Served as an executive-level advisor to corporate and governmental clients. Served as an expert witness and presented testimony, including testimony in the Matter of the Quantification of Environmental Costs Pursuant to Laws of Minnesota 1993 (MPUC Docket No. E-999/CI-93-583), before utility commissions and legislative committees. Served on and led numerous electric industry committees. Member, Institute of Electrical and Electronic Engineers, Energy Bar Association, Minnesota State Bar Association, Hennepin County Bar Association.

Northern States Power Company, a Minnesota corporation
and wholly owned subsidiary of Xcel Energy Inc.
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

DISTRIBUTED GENERATION STANDARD Section No. 10
INTERCONNECTION AND POWER PURCHASE TARIFF (Continued) Original Sheet No. 101

APPENDIX A

DISTRIBUTED GENERATION INTERCONNECTION PROCESS SUMMARY



(Continued on Sheet No. 10-102)

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