BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. EL18-053

In the Matter of the Application of Deuel Harvest Wind Energy LLC for a Permit of a Wind Energy Facility and a 345-kV Transmission Line in Deuel County

Direct Testimony and Supporting Exhibits of Dean Pawlowski On Behalf of Otter Tail Power Company March 14, 2019

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ATTACHMENTS

Attachment A – Public Version of the GIA filed in FERC Docket No. ER19-1067

1 I. INTRODUCTION, QUALIFICATIONS AND BACKGROUND

2 Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Dean Pawlowski. I am employed by Otter Tail Power Company (Otter Tail or the Company) as its Principal Engineer, Delivery Planning, which is part of the Asset Management function at Otter Tail. In that capacity, among other job responsibilities, I help oversee the Midcontinent Independent System Operator, Inc. (MISO) interconnection, planning and study process, and assist generators and other utilities in interconnecting to both our transmission and distribution electrical systems. My business address is Otter Tail Power Company, 215 South Cascade Street, Fergus Falls, Minnesota 56537.

11 Q. ON WHOSE BEHALF WAS THIS TESTIMONY PREPARED?

12 A. This testimony was prepared on behalf of Otter Tail Power Company. The South Dakota
13 Utilities Commission (Commission) approved Otter Tail as an intervenor with party status
14 in this proceeding by its Order Granting Party Status issued February 5, 2019.

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Q. PLEASE DESCRIBE OTTER TAIL.

Otter Tail provides retail electric service to approximately 132,100 customers, including approximately 11,700 in South Dakota, 61,700 in Minnesota, and 58,800 in North Dakota. Otter Tail serves over 450 communities and rural areas in northeastern South Dakota, western Minnesota and the eastern two-thirds of North Dakota. In South Dakota, Otter Tail serves 54 communities. Our 70,000 square-mile service territory is roughly the size of Wisconsin. In South Dakota, Otter Tail is the operator and majority owner of the Big Stone Power Plant, located near Big Stone, South Dakota and is approximately a 50 percent owner in the BSSB and Big Stone South-to-Ellendale 345-kV transmission projects. Otter Tail is also developing and planning to construct a 250 MW natural gas generation project near Astoria, South Dakota (the Astoria Station Project).

Otter Tail is headquartered in Fergus Falls, Minnesota and is a subsidiary of Otter Tail Corporation, which has its headquarters in Fargo, North Dakota. Otter Tail Power Company's mission is: "To produce and deliver electricity as reliably, economically, and

environmentally responsibly as possible to the balanced benefit of customers, shareholders, and employees and to improve the quality of life in the areas in which we do business."

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have a Bachelor of Science degree in Mechanical Engineering from University of North Dakota (1998), a Master of Business Administration from North Dakota State University (2006), and a Master of Art degree in Ministry from St. John's University – Collegeville, Minnesota (2018).

I have worked for Otter Tail since May of 1991, in several generation-, transmission- and distribution-related roles. I spent over ten years as a Plant Engineer at some of Otter Tail's key generation facilities, including seven years at the Big Stone Plant, followed by several years in capital budgeting. I was then the Project Manager, Big Stone Transmission – Delivery Planning from 2005-2010. I have been in my current role as Principal Engineer – Delivery Planning since 2010, where, as I noted above, my current job responsibilities include being the Principal Engineer for the interconnection of generation, transmission, and load facilities to Otter Tail's transmission and distribution electrical systems. In that capacity, I negotiate ownership contracts with other regional utilities, and assist in development of key transmission projects. I am also heavily involved in managing distributed generation interconnection and policy, as well as the Company's major transmission projects and related contract management.

Q. ARE YOU A MAIN POINT OF CONTACT FOR GENERATION FACILITIES SEEKING INTERCONNECTION WITH THE OTTER TAIL TRANSMISSION SYSTEM?

A. Yes. I have been a main point of contact at Otter Tail for approximately ten years. As such, I would also be and have been a main contact person on the generation interconnection and study process for the Applicant's Project. In this role, I am the lead engineer for managing MISO facilities studies (*i.e.*, studies to determine the cost and timing of modifications and upgrades that may be needed to resolve issues on the transmission system so generators can be safely and reliably interconnect the Project to Otter Tails transmission system). As such, I am also the Principal Engineer for Otter Tail addressing key MISO interconnection-

related agreements such as Generation Interconnection Agreements (GIAs) and Facility
Construction Agreements (FCAs).

3 II. PURPOSE AND OVERVIEW OF DIRECT TESTIMONY

4 Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS

PROCEEDING?

My testimony addresses items with the Applicant Deuel Harvest Wind Energy, LLC's (Deuel Harvest Wind or Applicant) plans for its wind generating facility to be located near Gary, South Dakota, known as the Deuel Harvest North Wind Farm (the Project). Deuel Harvest Wind included the Interconnection Switching Station as part of its pending Application for Facility Permits (Application) in this proceeding, notwithstanding that the Interconnection Switching Station will be designed, constructed, owned, operated and maintained by Otter Tail. It is not common for a generation developer to obtain permits for facilities that will be designed, constructed, owned, operated and maintained by a utility that are an integral part of the networked transmission system that serves the needs of customers in the region. Therefore, Otter Tail has concerns about any permits approved by this Commission for the Project that are inclusive of facilities that will be constructed and owned by Otter Tail as part of the regional transmission system. To the extent that the Commission grants a permit for Otter Tail's facilities as part of the Project's permits, Otter Tail needs to ensure that any such permit and conditions for which it is approved are acceptable to Otter Tail.

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Q. HOW WILL YOU PRESENT YOUR TESTIMONY MR. PAWLOWSKI?

I will first address Otter Tail's involvement with the Applicant's Project. I will then discuss the facilities needed to provide an interconnection of the project into the transmission system. Next, I will identify specific concerns Otter Tail has with the transmission- and interconnection-related aspects of the Applicant's proposal. Finally, I offer recommendations for how to help ensure the facilities necessary for the interconnection of the Applicant's Project can be sited, constructed, operated and maintained – for the life of the asset – consistent with Otter Tail's needs and responsibilities, notably establishing a safe and reliable interconnection at a reasonable cost.

1 III. BACKGROUND ON MISO AND OTTER TAIL'S ROLE IN MISO?

2 Q. WHAT IS MISO AND WHAT IS ITS ROLE?

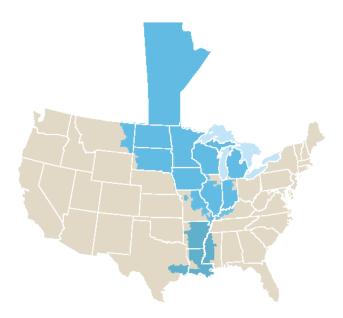
MISO is a not-for-profit, member-based Regional Transmission Organization (RTO) operating across 15 U.S. states and the Canadian province of Manitoba (see Figure 1). As an RTO, MISO, among several other duties, assures consumers of nondiscriminatory, open access to the transmission facilities of its members. MISO works to ensure reliable, least-cost delivery of electricity across its region. In cooperation with stakeholders, MISO manages approximately 65,000 miles of high-voltage transmission and 200,000 megawatts of power-generating resources across its footprint. MISO is also the Tariff Administrator of the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (MISO Tariff).

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Q. WHAT IS MISO'S FOOTPRINT AS AN RTO?

A. Figure 1 below is a map showing the MISO area footprint, which generally encompasses the Midwest region, including most of South Dakota.

Figure 1 – MISO Region



Q. IS OTTER TAIL A MISO MEMBER?

- Yes. Otter Tail is a transmission-owning member of MISO and has integrated into MISO,
 which performs the function of Transmission Provider. Since Otter Tail owns transmission
- 4 that is planned and operated by MISO, Otter Tail is classified as a Transmission Owner
- 5 (T.O.) within MISO.

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Q. WHAT IS THE SIGNIFICANCE, RELATIVE TO THIS PROCEEDING, OF OTTER TAIL BEING A TRANSMISSION OWNER WITHIN MISO?

- 9 A. As T.O. within MISO, Otter Tail is a signatory to the "Agreement of Transmission
- Facilities Owners to Organize the Midwest Independent Transmission System Operator,
- Inc., a Delaware Non-Stock Corporation" (Transmission Owners Agreement or TOA).
- 12 The Transmission Owners Agreement is the foundational agreement of MISO and provides
- for T.O.s to transfer functional control of their transmission facilities to the independent
- 14 Transmission Provider (MISO) and obligates TOs to construct specific transmission
- projects that MISO has identified as needed to address a specific transmission issue(s).

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Q. IS MISO A VOLUNTARY ORGANIZATION?

- 18 A. Yes, Otter Tail joined MISO as a result of FERC Order No. 2000 issued in 1999, which
- strongly encouraged all regulated utilities to join an RTO.

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21 Q. WHAT ARE MISO'S RESPONSIBILITIES?

- 22 A. As an RTO, MISO is responsible for planning the transmission systems of its member
- Transmission Owners. To be compliant with FERC's open access requirements of FERC
- Order Nos. 888 and 889, MISO processes interconnection requests of its transmission
- owning members, including Otter Tail, by performing transmission studies to evaluate the
- impacts of new generation, transmission, and/or load to its member systems.
- Furthermore, MISO is the North America Electric Reliability Corporation (NERC)
- 28 registered Planning Coordinator for its member T.O.s, which includes portions of South
- Dakota, and performs planning functions collaboratively with stakeholders while also
- providing an independent assessment and perspective of the needs of the transmission
- 31 system overall.

Lastly, MISO is responsible for approving transmission service, new generation interconnections, and new transmission interconnections to and within the MISO footprint, and for ensuring that the system is planned to reliably and efficiently provide for existing and forecasted usage of the transmission system.

5 IV. OTTER TAIL'S INVOLVEMENT IN THE APPLICANT'S PROJECT

6 Q. PLEASE DESCRIBE YOUR UNDERSTANDING OF THE PROJECT.

A. Based on the descriptions and specifications presented in Deuel Harvest Wind's Application before the Commission and my knowledge of the Project through the MISO interconnection process, the Project is a wind-powered electric generation facility that, once constructed and energized, would be rated at 300 megawatts (MW) net, with a total installed capacity not to exceed 315 MW of capacity. The Generating Facility is located in Deuel County, SD and will be composed of wind turbine units placed across a 48,730 acres project area with a 34.5-kV collector system and a Collector Substation (also called the Project Substation, which is then to be tied to the Interconnection Switching Station).

Q. HAS MISO EVALUATED THE PROJECT THROUGH ITS INTERCONNECTION PROCESS?

18 A. Yes, MISO has evaluated the Project as MISO Project No. J526 through its interconnection process outlined in Attachment X of its Tariff.

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Q. HOW DOES MISO EVALUATE A PROJECT THROUGH ITS

INTERCONNECTION PROCESS?

The MISO interconnection process identifies needed upgrades and modifications so that a given generation project can interconnect to the grid so as to not impact the reliability of the electrical system. It does this by performing a robust technical analysis of the electrical system. Any upgrades identified by this technical analysis are then encompassed within the various construction agreements that MISO files with FERC (e.g., Generator Interconnection Agreements (GIAs), Facility Construction Agreements (FCAs), *etc....*).

1 Q. WHEN AND HOW DOES OTTER TAIL BECOME INVOLVED?

A. Otter Tail's transmission planners are involved reviewing MISO's models and proposing mitigations to reliability issues and provides planning level estimates to mitigate these reliability issues on our portion of the transmission system. Because the Applicant is interconnecting to an Otter Tail facility, Otter Tail is the designated T.O. under the MISO Tariff for interconnection of the Applicant's Project. Otter Tail performed a Facility Study to determine the costs and schedule to construct the facilities necessary to reliably interconnect the Project to the transmission system.

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10 Q. WHAT HAPPENS WITH THE INFORMATION CONTAINED WITHIN THE 11 FACILITY STUDY?

12 A. Information from the Facility Study gets rolled into the appropriate MISO construction 13 agreement as facilities that must be constructed so that the generator can safely and reliably 14 interconnect to the transmission system. These upgrades must be completed prior to a new 15 generation project being able to reliably operate at full output.

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17 Q. WHAT TYPE OF CONSTRUCTION AGREEMENT DOES OTTER TAIL HAVE 18 WITH DEUEL HARVEST WIND FOR THE INTERCONNECTION SWITCHING 19 STATION?

A. Otter Tail, Deuel Harvest Wind, and MISO have signed a GIA, which has been filed with the Federal Energy Regulatory Commission (FERC) and docketed as FERC Docket No. ER19-1067.

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Q. WHAT DOES THE GIA SAY REGARDING OTTER TAIL'S

RESPONSIBILITIES FOR THE PROJECT?

- A. The GIA indicates that Otter Tail, as the TO, will design, procure, construct and own the facilities required to interconnect the Project to the Big Stone South to Brookings

 ("BSSB") 345-kV transmission line. In order to carry out its obligations under the GIA,
- Otter Tail must, among other responsibilities, secure land for the construction of the new Interconnection Switching Station. Attachment A hereto is the public version of the GIA

filed in FERC Docket No. ER19-1067 and this GIA and additional filings in that docket are available on FERC's e-Library website under that docket reference.

4 Q. DOES OTTER TAIL HAVE TO BE THE TRANSMISSION OWNER WITHIN THE GIA FOR THIS PROJECT?

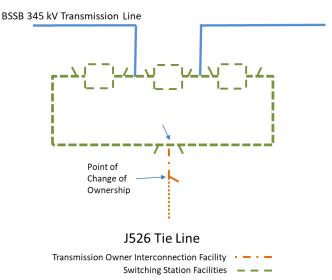
A. As an incumbent owner of the Big Stone South to Brookings 345-kV transmission line, to which the Project is seeking to interconnect with, Otter Tail is the designated T.O. in the GIA. Given the terms of the GIA, Otter Tail is to be the T.O. and thus is the entity that is typically required to design, construct, own, operate and maintain certain critical transmission facilities related to the Project, including in this instance the energy transmission facilities directly addressed in Deuel Harvest Wind's Facility Permits Application for its Project.

13 V. FACILITIES REQUIRED FOR INTERCONNECTION OF THE APPLICANT'S PROJECT

15 Q. WHAT ARE THE FACILITIES THAT ARE NEEDED TO DIRECTLY 16 INTERCONNECT THE PROJECT INTO THE EXISTING TRANSMISSION 17 SYSTEM?

A. In order to directly interconnect the Project with the existing transmission system, Otter Tail will need to construct a three-breaker switching station (Interconnection Switching Station) and modify the existing Big Stone South to Brookings 345-kV transmission line in order to interconnect into the Interconnection Switching Station needed for the Project. Otter Tail's facilities will include the Interconnection Switching Station and what will likely be less than one-half mile of 345-kV transmission line. Otter Tail's site selection process and guidelines would also make it likely such facilities would not cross a public highway. Nor does Otter Tail intend to use or anticipate using eminent domain to acquire any real property rights for its facilities. Figure 2 below shows, in simple terms, the anticipated interconnection of the Project with the three-breaker ring switching station and gen-tie line configuration (subject to a selected site and more specific engineering and layout, *etc.*):





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WHAT IS THE PURPOSE OF THE INTERCONNECTION SWITCHING Q. **STATION?**

A. The Interconnection Switching Station is a substation without a change in voltage, i.e. a substation without a transformer. In this case, Deuel Harvest Wind's generation needs to supply its power into the Interconnection Switching Station. It does this through providing that power through the generator-tie line, which ties the Applicants Collector Substation to the Interconnection Switching Station. The primary function of the Interconnecting Switching Station is to establish a safe, reliable and cost-effective interconnection to the existing transmission system.

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Q. HOW DOES OTTER TAIL DETERMINE IF AN INTERCONNECTING SWITCHING STATION IS SAFE, RELIABLE, AND COST EFFECTIVE?

When Otter Tail establishes new Interconnection Switching Stations, we go through a siting process that takes into consideration land rights, environmental and cultural/historical sensitivities, reliability, engineering, constructability, land owners, and interconnection customers desires. For example, the site must have adequate land and be of a size sufficient for safe installation of equipment with necessary clearances for electrical safety, and for access to maintain the equipment as well as any necessary water

containment and erosion mitigations. The soil conditions need to be suitable to allow for the structure foundations to be properly embedded; that both the land and the required permits can be secured through reasonable efforts; that there be no major environmental concerns with the site or route (ingress and egress) to the site; and that the final permits operationally permit what Otter Tail needs to safely and reliably interconnect to the transmission system. We realize that no one site will likely be able to completely meet all of these requirements, but we try to find the best site that meets these criteria in a cost-effective manner.

9 VI. CONCERNS WITH APPLICANT'S PERMIT APPLICATION

10 Q. HAVE YOU READ AND ARE YOU FAMILIAR WITH THE PROJECT'S PERMIT 11 APPLICATION IN THIS PROCEEDING?

12 A. Yes, I have reviewed Deuel Harvest Wind's Application (and as I noted above, I am familiar with the MISO GIA for the Project as well).

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15 Q. DO YOU HAVE ANY CONCERNS WITH THE PROJECT'S PERMIT 16 APPLICATION?

17 A. Yes. Deuel Harvest Wind included the Interconnection Switching Station as part of its 18 pending Application for Facility Permits (Application) in this proceeding, notwithstanding 19 the fact that the Interconnection Switching Station will be designed, constructed, owned 20 and maintained by Otter Tail as part of our networked system of transmission assets.

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Q. WHY IS THIS A CONCERN FOR OTTER TAIL?

A. Beyond the fact that it is not common for a generation developer to obtain permits for facilities that will be designed, constructed, owned operated and maintained by a utility,

Otter Tail has concerns about the location and characterization of the Interconnection Switching Station contained within the application.

1 Q. WHAT ARE YOUR SPECIFIC CONCERNS ABOUT THE INTERCONNECTION 2 SWITCHING STATION?

A. The specific location of the Interconnection Switching Station and the size which is described within the application do not make the Applicant's preferred location ideal for Otter Tail. When performing an independent siting evaluation using Otter Tail's siting guidelines for a new Interconnection Switching Station for the Project, Otter Tail has identified alternative sites in the Project area that are expected to be more safe, reliable, and cost effective for Otter Tail to construct the Interconnection Switching Station than the size and location of the one described in the Application.

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Q. HAVE YOU WORKED WITH THE APPLICANT TO DISCUSS THESE ISSUES AND THE IDENTIFICATION OF ALTERNATIVE LOCATIONS FOR THE INTERCONNECTION SWITCHING STATION?

Yes, Otter Tail and the Applicant have had many discussions starting with the MISO studies, and then through the MISO agreements negotiations process. More recently, Otter Tail has worked with the Applicant as we have proceeded through our internal process of evaluating sites for the Interconnection Switching Station. That process has included an evaluation of parcels with a desktop and preliminary field analysis considering Otter Tail's siting guidelines that review a number of factors, such as land rights, environmental, reliability, engineering, construction, land owners, and cost. That was followed by a cooperative series of communications including a face-to-face meeting with representatives of the Applicant to evaluate and take Deuel Harvest Wind's input on various sites and parcels under consideration. Then Otter Tail performed a more robust analysis of each preferred site and contacted landowners of preferred sites to gauge their willingness to having Otter Tail purchase the property. The goal of these analyses and those discussions with Deuel Harvest Wind and landowners have been for the T.O. to identify preferred sites for locating that new 345-kV Interconnection Switching Station along the BSSB 345-kV Line.

Q. HAS OTTER TAIL AND THE APPLICANT REACHED ANY CONCLUSION YET ON A PREFERRED SITE?

A. Otter Tail initially identified several sites through a desktop review. We subsequently narrowed the selection process down to three potentially feasible sites. The Applicant's proposed site is in the general area of one potential site we are continuing to evaluate. I say the general area because we will need additional land and may need to shift aspects of a site in order to accommodate our final layout.

7 Q. DOES THE LOCATION AND RELATED PERMITTING OF THE 8 INTERCONNECTION SWITCHING STATION IMPACT OTHER LOCAL 9 TRANSMISSSION FACILITIES?

A. Yes. In the specific case of interconnecting the Applicant's Project, the Big Stone South – Brookings (BSSB) 345-kV transmission line, which is co-owned by Otter Tail and Xcel Energy, needs to be modified (and "in & out tap") such that it interconnects to the Interconnection Switching Station. As the Applicant indicated in their application, there is also a 345-kV generator tie line (gen-tie line) connecting the Deuel Harvest Wind Collector Substation to the Interconnection Switching Station.

Finally, as part of its coordination, Otter Tail not only needs to respect the Applicant's project-specific desires (*i.e.*, design and timeline), we need to also respect, and if necessary accommodate, the presence of other owners of electric facilities in the same area, which includes among others Xcel Energy, the Western Area Power Administration, and East River Electric Power Cooperative, in addition to other electric utilities and wind generation projects in various stages of development.

Q. ARE THERE OTHER LOCAL TRANSMISSION FACILITIES REQUIRED THAT ARE NOT INCLUDED IN THE PROJECT'S PERMIT APPLICATION?

A. Yes. At a minimum, modifications will be needed to the BSSB 345-kV transmission line will be necessary in order to interconnect the Interconnection Switching Station to the existing transmission system. It does not appear, to Otter Tail, that modifications to this 345-kV transmission line are currently included in the Project's permit application. As the final location and design for the Interconnection Switching Station is completed, Otter Tail will have a better understanding of the permits required for the BSSB 345-kV line modifications and any other associated facilities.

VII. CONCLUSION

2 Q. DO YOU HAVE ANY CONCLUDING REMARKS, MR. PAWLOWSKI?

Yes. Otter Tail intervened in this proceeding because of two primary concerns with the Applicant's permit application: (1) the inclusion of facilities that will be designed, constructed, owned operated and maintained by Otter Tail within the Applicant's permit application; and (2) the proposed size, construction siting, and conditions within any permit for the Project's Interconnection Switching Station. These are not mere preferences; the layout and placement of the Interconnection Switching Station vis-à-vis the BSSB 345-kV transmission line can impact the safe and reliable operation of the transmission system along with impacts to on-going operational costs. Part of that process is that the location and footprint of interconnection of a generation project to the grid needs to be acceptable to the operator and owners of the regional transmission system, such that it can be safely and reliably constructed, operated and maintained. Ultimately, Otter Tail is constructing the Interconnection Switching Station and tapping the BSSB line to accommodate the Applicant's Project, and thus to the extent a permit is necessary Otter Tail needs to receive any permit here in this proceeding in its name or separately.

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Q. DOES OTTER TAIL TAKE A POSITION ON THE APPLICATION?

Other than its need for any permit as to the transmission facilities to be Otter Tail's and not the Applicant's, Otter Tail takes no position on the Application at this time. Otter Tail has and will continue to work with the Applicant – as it does with all its customers – to achieve a successful, safe, and reliable interconnection of their Project to the existing transmission system, while also recognizing the priority importance of keeping its obligations as Transmission Owner, to all its customers, and as a retail electricity provider in mind. Therefore, Otter Tail's desire is for the Project's interconnection to be accomplished in a cost effective, safe and reliable manner and if that can be accomplished in a manner that maintains the reliability of the bulk electric system in the area of the Project (and elsewhere), it would not oppose the Application.

1 Q. WHAT WOULD YOU RECOMMEND FOR RESOLVING THE ISSUES YOU RAISE IN YOUR TESTIMONY?

A. If the facility permit is to be granted as part of this proceeding and as part of the Applicant's
Project, Otter Tail needs to have the transmission facilities component be acceptable to
Otter Tail. We are the entity that needs to construct, own, operate and maintain the
transmission facilities that Otter Tail will own, notably the Interconnection Switching
Station. Otter Tail requests that the permit either be separated/bifurcated or, at a minimum,
that Otter Tail be given the opportunity to be heard regarding any conditions imposed on
the facility permit as to the 345-kV Interconnection Switching Station.

- 11 Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY IN THIS
- 12 **PROCEEDING?**
- 13 A. Yes, it does.