BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

In the Matter of the Transmission Permit for the Big Stone South to Ellendale Project	EL13-028

DIRECT TESTIMONY OF JASON WEIERS

BACKGROUND OF WITNESS

Q. State your name, your employer, and your business address.

A. My name is Jason Weiers. I work for Otter Tail Power Company ("OTP"), and my business address is 215 South Cascade Street, Fergus Falls, MN 56537.

Q. What is your current position with OTP?

A. Manager, Delivery Planning.

Q. What are your duties and responsibilities in that position?

A. I am responsible for managing an employee group involved in administering various transmission contracts with neighboring utilities, supporting regulatory related activities, transmission planning responsibilities, transmission project development, and capital budget development for OTP.

Q. What is your educational background?

A. I received a Bachelor of Science degree in electrical engineering with an emphasis in power from North Dakota State University in May of 2000. I have also taken courses and attended conferences throughout my career related to engineering practices, project management, public speaking, finance, and managing people.

Q. Have you been employed by OTP since you graduated in May of 2000?

A. Yes.

Q. What other positions have you held at OTP, and what were you duties and responsibilities in those positions?

A. Before being promoted to manager in 2013, I held the title of Supervisor, Delivery Studies. I was in that position from 2008 until 2013. In that position, I supervised an employee group involved in the traditional transmission planning processes of a transmission owning

utility. My activities included: overseeing the building of transmission system models; performing transmission studies, coordinating with neighboring utilities; ensuring compliance with North American Electric Reliability Corporation (NERC) reliability standards related to transmission planning; and various other activities.

Before 2008, I worked as a Transmission and Distribution Studies Engineer at OTP. In that position, I engaged in technical studies resulting in several high voltage transmission and generation projects that have been built or are still being developed, including large scale transmission projects currently being pursued through the CapX 2020 initiative. The CapX 2020 initiative is a joint effort of 11 transmission owning utilities in Minnesota and the surrounding region to expand the electric transmission grid to ensure continued reliable and affordable service.

Q. Do you hold any professional designations?

A. I am a registered professional engineer in the State of Minnesota and a member of the Red River Valley chapter of the Institute of Electrical and Electronic Engineers (IEEE).

Q. Have you worked on any groups relating to electrical power planning and transmission?

A. Through my career at OTP, I have served on the Mid-Continent Area Power Pool (MAPP) Planning Standards Development Working Group (PSDWG) and as a MAPP representative on the North American Electric Reliability Corporation (NERC) Interconnection Dynamics Working Group (IDWG). I am currently the chair of the Midwest Reliability Organization (MRO) Transmission Assessment Subcommittee (TAS) and one of three Midcontinent Independent System Operator (MISO) elected representatives on the Transmission Owner (TO) / Transmission Developer (TD) sector of the Eastern Interconnection Planning

Collaborative (EIPC). I also serve as a member of the Technical Review Committee (TRC) involved in the Minnesota Renewable Integration Transmission Study (MRITS).

Q. Do you have any prior experience as an expert witness?

A. Yes. In 2006, I served as an expert witness for the Big Stone II project in Minnesota docket number CN-05-619 (Certificate of Need Application) and Minnesota docket number TR-05-1275 (Route Permit Application). These dockets were related to adding transmission in Minnesota to support a second coal-fired generator at the existing Big Stone Plant near Big Stone, South Dakota. The purpose of my involvement in these dockets was to describe the need for the transmission project, outline the study requirements under the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff ("MISO Tariff"), and explain the results of various transmission studies performed for the project.

I also was an expert witness for the Bemidji to Grand Rapids 230 kV project through Minnesota docket number CN-07-1222 (Certificate of Need Application) and Minnesota docket number TL-07-1327 (Route Permit Application). These dockets were related to adding a new, 70-mile 230 kV line from Bemidji, MN to Grand Rapids, MN to maintain reliability in the Red River Valley, which is an expansive area centered along the North Dakota/Minnesota state border. My involvement in these dockets was again to establish the need for the transmission project, which was identified through various local and regional transmission studies and confirmed by MISO as being needed for reliability purposes.

Q. What is the purpose of your testimony in this matter?

A. The purpose of my testimony is to discuss and demonstrate that the Big Stone South to Ellendale 345 kV Transmission Project ("Project") is necessary to serve a public use. I will

also discuss why the Project represents a reasonable relationship to an overall plan of transmitting electricity in the public interest.

As the primary OTP representative participating in the MISO transmission studies leading to MISO's recommendation and approval of the Multi-Value Project (MVP) portfolio in December of 2011, my testimony describes the studies that show the need for the Project. In addition, I will also explain the consequences of not building this Project or delaying the in-service date of the Project. Through the course of describing these aspects, I will also provide some background information about MISO and its responsibilities within the Midwest.

Q. What experience do you have in determining need and demand for electric transmission projects?

A. I have approximately 14 years of experience in performing or overseeing transmission planning activities at OTP. Through the course of my experience, I have been involved in several transmission studies leading to the recommendation, approval, and construction of numerous transmission projects. These projects ensure adherence with applicable NERC Reliability Standards, Federal Energy Regulatory Commission (FERC) orders, and applicable state mandates. Through the course of my activities related to planning for new transmission projects, extensive coordination occurs across several neighboring utilities and MISO.

BACKGROUND OF MISO

Q. What is MISO?

A. 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 a Regional Transmission Organization, MISO, among several other duties, assures consumers of nondiscriminatory, open access to the transmission facilities of its members.

Q. What is Figure 1 below?

A. This is a map showing the MISO area, which includes the Midwest region and most of South Dakota.

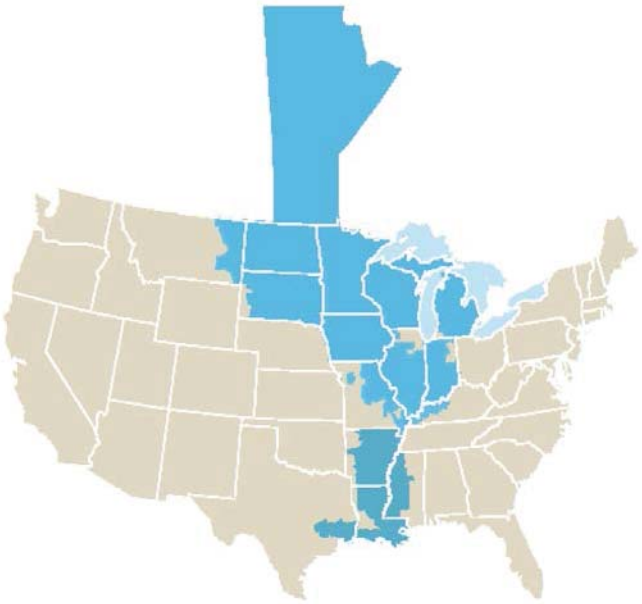

Figure 1 – MISO Region

Q. What are MISO's responsibilities?

A. As an RTO, MISO is responsible for planning the transmission systems of its member Transmission Owners (TOs). Each year, MISO undertakes the development of the MISO Transmission Expansion Plan (MTEP) in collaboration with Transmission Owners and multiple other stakeholders.

Furthermore, MISO is the NERC registered Planning Coordinator for its member Transmission Owners, 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 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.

Q. What experience do you have in working with MISO?

A. Before my current position, I was the primary planning contact for OTP with MISO for a period of over 10 years. I participated in MISO's planning efforts each year and provided feedback and suggestions pertaining to the planning of the OTP transmission system.

Specific to the Project, I have participated directly in the planning of the MVP portfolio that was approved by MISO in December 2011.

Q. Are MDU and OTP members of MISO?

A. Yes. MDU and OTP are both transmission-owning members of MISO. Since both OTP and MDU own transmission that is planned and operated by MISO, they are classified as Transmission Owners within MISO.

Q. What is the significance of being a Transmission Owner within MISO?

A. As Transmission Owners within MISO, both OTP and MDU are signatories 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"). The Transmission Owners Agreement is the foundational agreement that founded MISO and, among other things, provides for TOs to transfer functional control of their transmission facilities to the independent Transmission Provider (MISO) and obligates TOs to construct specific transmission projects that MISO has identified as needed to address a specific transmission issue(s), which the MISO Board of Directors has approved in the MTEP.

Q. How is MISO governed?

A. MISO is governed by an independent, eight-member Board of Directors. The Board of Directors is comprised of seven independent directors elected by the membership, plus MISO's president.

Q. Who are members of MISO?

A. Members of MISO include 48 Transmission Owners with $20 billion in transmission assets under MISO's functional control plus 96 non-transmission owning members.

Members across MISO are classified into a broad list of stakeholder groups called sectors. Members join one of nine sectors for representation and voting purposes at various stakeholder meetings conducted by MISO. The sectors present within MISO include:

1. Transmission Owners
2. Independent Power Producers and Exempt Wholesale Generators
3. Power Marketers and Brokers
4. Municipals, Cooperatives, and Transmission Dependent Utilities
5. Public Consumers
6. State Regulatory Authorities
7. Environmental and Other stakeholder group
8. Eligible End Use Customers
9. Coordination Members

Q. Is this a voluntary organization?

A. Yes, although OTP and MDU joined MISO as a result of FERC Order No. 2000 issued in 1999, which strongly encouraged all regulated utilities to join a Regional Transmission Organization.

Q. Other than performing studies, what does MISO do?

A. Among many other responsibilities, MISO is the NERC registered Reliability Coordinator for its footprint, providing real-time operational monitoring and control of the transmission system of its member TOs.

MISO also operates a real-time and day-ahead locational marginal price based energy and ancillary services market in which each market participant's offer to supply energy is matched to demand and is cleared to be dispatched in the market based on a security constrained economic dispatch process.

Q. Are you familiar with how MISO conducts studies of projects authorized by MISO?

A. Yes. MISO's transmission planning process is based on an annual cycle that is referred to as the MTEP process. The MTEP process adheres to the nine planning principles outlined in FERC Order No. 890.[1] These planning principles result in an open and transparent regional planning process which results in recommendations for transmission expansion that are included in the MTEP report. Recent FERC Order No. 1000 furthered the planning principles outlined in FERC Order No. 890 and included requirements to plan for public policy requirements and for coordinated inter-regional planning and cost allocation.[2]

Consistent with these planning principles, the objectives of the MTEP process are (i) to identify transmission system expansions that will ensure the reliability of the transmission system that is under the operational and planning control of MISO, (ii) to identify transmission

[1] *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241, *order on reh'g*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009), *order on clarification*, Order No. 890-D, 129 FERC ¶ 61,126 (2009).

[2] *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, Order No. 1000, 136 FERC ¶ 66,051 (2011), *order on reh'g*, Order No. 1000-A, 139 FERC ¶ 61,132 (2012), *order on reh'g and clarification*, Order No. 1000-B, 141 FERC ¶ 61,044 (2012).

expansion that is critically needed to support the reliable and competitive supply of electric power, and (iii) to identify transmission expansion that is necessary to support energy policy mandates in effect within the MISO footprint.

The MTEP process is performed in a manner that ensures that the regional planning process is open, transparent, and coordinated. Once a project is deemed necessary for a public use and thoroughly evaluated against available alternatives through MISO's MTEP process, it is submitted for approval to the MISO Board of Directors.

Q. Is the process MISO uses to conduct its studies available in publicly filed documents?

A. Yes it is. Attachment FF to the MISO Tariff describes the process in which MISO conducts studies.

Q. What is Exhibit 10?

A. Attachment FF to the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff I described above.

Q. Is this document publicly available?

A. Yes, The MISO Tariff can be accessed from the following internet link: https://www.misoenergy.org/Library/Tariff/Pages/Tariff.aspx.

Q. What is the planning process employed by MISO to develop the MTEP?

A. MISO uses a "bottom-up, top down" approach in developing the MTEP. The "bottom-up" portion relies on the ongoing responsibilities of the individual TOs to continuously review and plan to reliably and efficiently meet the needs of their local transmission systems. MISO then reviews these local planning activities with stakeholders and performs a "top down" review of the adequacy of, and appropriateness of, the local plans in a coordinated fashion with

all other local plans to most efficiently ensure that all of the needs are cost effectively met. In addition, MISO considers, together with stakeholders, opportunities for improvements and expansions that would reduce consumer costs by providing access to low cost resources that are consistent with and required by evolving legislative energy policies.

Q. What factors does MISO study when planning a new transmission project during the MTEP?

A. There are numerous factors evaluated when planning a transmission project, however, two considerations are crucial. First, the security of the transmission system must be maintained. That is, the transmission system must be able to withstand contingencies (generation and/or transmission facility outages) without interruption of service to load. This is achieved, in part, by assuring that contingencies do not lead to cascading loss of other generator or transmission facilities. Second, the transmission system must be adequately planned to be able to accommodate load growth and/or changes in load and load growth patterns, as well as changes in generation and generation dispatch patterns without causing equipment to operate outside of its design capability. Additional factors include addressing transmission constraints that limit market efficiency and provide transmission expansions that enable public policy mandates to be achieved.

Q. What must be considered in planning, operating and maintaining an adequate, efficient and reliable transmission system?

A. A transmission system must have capacity sufficient to meet projected power flow patterns while maintaining adequate voltage levels, loading levels, and system stability. This requires an engineering evaluation of the system as a whole, as well as an evaluation of critical individual system components (transformers, lines), under both normal and contingency

conditions (conditions where one or more system components are out of service). Power system simulation models are developed for use in these analyses. Projected peak power flows for each major component are checked to ensure that rated capacities are not exceeded. Voltage levels are also checked to ensure that voltage levels are maintained above the minimum level required for safe operation of the system.

Q. Why is it necessary to provide adequate capacity to meet projected power flows?

A. Overloaded equipment threatens the system's ability to continue to provide adequate and reliable service to its customers. Overloaded equipment can fail and cause brownouts and blackouts (which, for major transmission components, can be widespread and extended) as well as potentially dangerous conditions. In addition, overloads reduce the service life of equipment and tend to increase the probability of component failure in the future.

Q. Why is it necessary to ensure that voltage levels are maintained?

A. Transmission voltages must be maintained within specified criteria both to ensure that adequate customer voltage is maintained and to ensure that voltage-sensitive equipment operates properly, such as motors and compressors.

Q. Why is it necessary to ensure that system stability is maintained?

A. Certain conditions could cause a generating unit to lose synchronism with the rest of the system or cause system voltages to decline rapidly in an uncontrolled manner. These severe contingencies, while unlikely, must be tested to ensure that the transmission system is strong enough to prevent their occurrence, or that in such instances protective systems act to regain control of the system, either by rapid tripping of the out-of-step generator, or by controlled shedding of load to arrest voltage decline. Without these measures in place, such disturbances

could affect the secure operation of wide areas of the interconnected transmission systems of the state or of the nation, depending on the severity of the disturbance.

Q. Why are contingency conditions as well as normal operating conditions studied?

A. Generating units and major transmission system components cannot be assumed to be in operation all of the time. In addition to scheduled maintenance outages, unscheduled outages can occur. Therefore, reliability must be maintained for an appropriate range of possible system failures. For example, the transmission system must, at a minimum, continue to operate adequately with any single line or transformer in an area out of service.

Q. What are the standards that govern planning practices used by MISO and TOs to ensure reliable transmission performance?

A. The transmission system is planned in compliance with NERC, regional entity, and the transmission owning members' local planning standards. In addition, planning practices are dictated by FERC Order Nos. 890 and 1000. MISO implements these practices through its governing and informational documents, including Attachment FF to MISO's Tariff, the TOA, and MISO's Transmission Planning Business Practices Manual (BPM).

Q. Can you briefly summarize the scope of the FERC planning practices?

As mentioned earlier, FERC Order No. 890 is primarily concerned with ensuring that transmission planning takes place in an open and transparent manner where stakeholders to the planning process are engaged in, and have opportunities to provide input and comment on the development of local transmission plans as well as regional transmission plans. The planning process also addresses economic and regulatory policy considerations in addition to the NERC

standards for reliability. There are also requirements aimed at ensuring coordination with neighboring planning regions and proper cost allocation through FERC Order No. 1000.

Q. What is the NERC transmission planning standard and what does it require?

A. The NERC transmission planning standard (TPL) is applicable to transmission planning and governs planning requirements to ensure reliable transmission system performance. The standard addresses system performance under normal (no contingency) conditions; following events resulting in the loss of a single transmission element (single contingency); following events resulting in loss of multiple elements (multiple contingency); and following more extreme events that result in loss of many transmission elements, such as entire generating stations or substations or multiple transmission lines in a common right-of-way.

Q. What are the associated system performance requirements for contingency events prescribed under the NERC transmission planning standard?

A. For all but the extreme events, the NERC transmission planning standard requires that system stability be maintained and that no cascading outages occur for the prescribed contingency events. Furthermore, facilities must remain at all times within applicable loading and voltage criteria during normal conditions, following single contingency events and following multiple contingency events.

DEMAND FOR THE PROJECT

Q. Are you familiar with the facility sought to be constructed in the Application?

A. Yes. The Project involves approximately 160-170 miles of new single circuit 345 kV transmission line from a new 345 kV substation located near Ellendale, North Dakota to a new Big Stone South substation located near Big Stone City, South Dakota.

Q. Did you assist in drafting any sections in the Application?

A. Yes. I assisted in drafting various sections of the Application primarily related to demand and purpose of the Project, which are addressed in Sections 4 and 6 of the Application.

Q. Did MISO approve the Project described in the Application?

A. Yes.

Q. When?

A. The Project was approved by the MISO Board of Directors on December 8, 2011 as part of the 2011 MISO Transmission Expansion Plan.

Q. What is the significance of MISO's approval?

In accordance with the Transmission Owners Agreement (TOA), approval of the MTEP by the MISO Board of Directors certifies the MTEP as MISO's transmission expansion plan for meeting the transmission needs of the MISO footprint. As such, OTP and MDU have been directed to timely construct the Project by MISO based on portions of the TOA.

Q. Is the Project part of MISO's MVP portfolio?

A. Yes.

Q. What is MISO's MVP portfolio?

A. The MVP portfolio is a group of seventeen transmission projects distributed across the MISO footprint that enables the reliable delivery of the aggregate of current state Renewable Portfolio Standards (RPS) within MISO and provides for economic benefits in excess of the portfolio costs primarily by reducing production costs. Each project within the MVP portfolio approved by the MISO Board of Directors was evaluated as part of the portfolio of MVPs and determined to be a necessary component of the portfolio that provides benefits that span broadly across the MISO footprint.

Q. What is an MVP under the MISO Tariff and what criteria must be met for a transmission project to be classified as an MVP?

A. An MVP is a type of transmission project developed by MISO and stakeholders and accepted by the Federal Energy Regulatory Commission (FERC). An MVP is a transmission project that must be: i) evaluated as part of a portfolio of MVPs whose benefits are spread broadly across the MISO footprint and ii) meets at least one of the following criteria:

- Criterion 1: A Multi-Value Project must be developed through the transmission expansion planning process for the purpose of enabling the Transmission System to reliably and economically deliver energy in support of documented energy policy mandates or laws that have been enacted or adopted through state or federal legislation or regulatory requirements that directly or indirectly govern the minimum or maximum amount of energy that can be generated by specific types of generation. The MVP must be shown to enable the transmission system to deliver such energy in a manner that is more reliable and/or more economic than it otherwise would be without the transmission upgrade.

- Criterion 2: A Multi-Value Project must provide multiple types of economic value across multiple pricing zones with a Total MVP Benefit-to-Cost ratio of 1.0 or higher where the Total MVP Benefit-to-Cost ratio is described in Section II.C.7 of Attachment FF to the MISO tariff, which is Exhibit 10. The reduction of production costs and the associated reduction of LMPs resulting from a transmission congestion relief project are not additive and are considered a single type of economic value.

- Criterion 3: A Multi Value Project must address at least one Transmission Issue associated with a projected violation of a NERC or Regional Entity standard and at least one economic-based Transmission Issue that provides economic value across multiple pricing zones. The project must generate total financially quantifiable benefits, including quantifiable reliability benefits, in excess of the total project costs based on the definition of financial benefits and Project Costs provided in Section II.C.7 of Attachment FF, which is Exhibit 10.

Q. What projects have been approved as part of the MTEP11 MVP Portfolio and where are they located?

A. The facilities associated with this Project are an integral part of a larger set of Multi-Value Project (MVP) transmission line expansions across MISO. The 2011 MVP Portfolio and

its 17 projects are shown in Figure 2 and listed in Table 1. As shown below, the Big Stone South to Ellendale 345 kV Project is referred to as MVP-6.

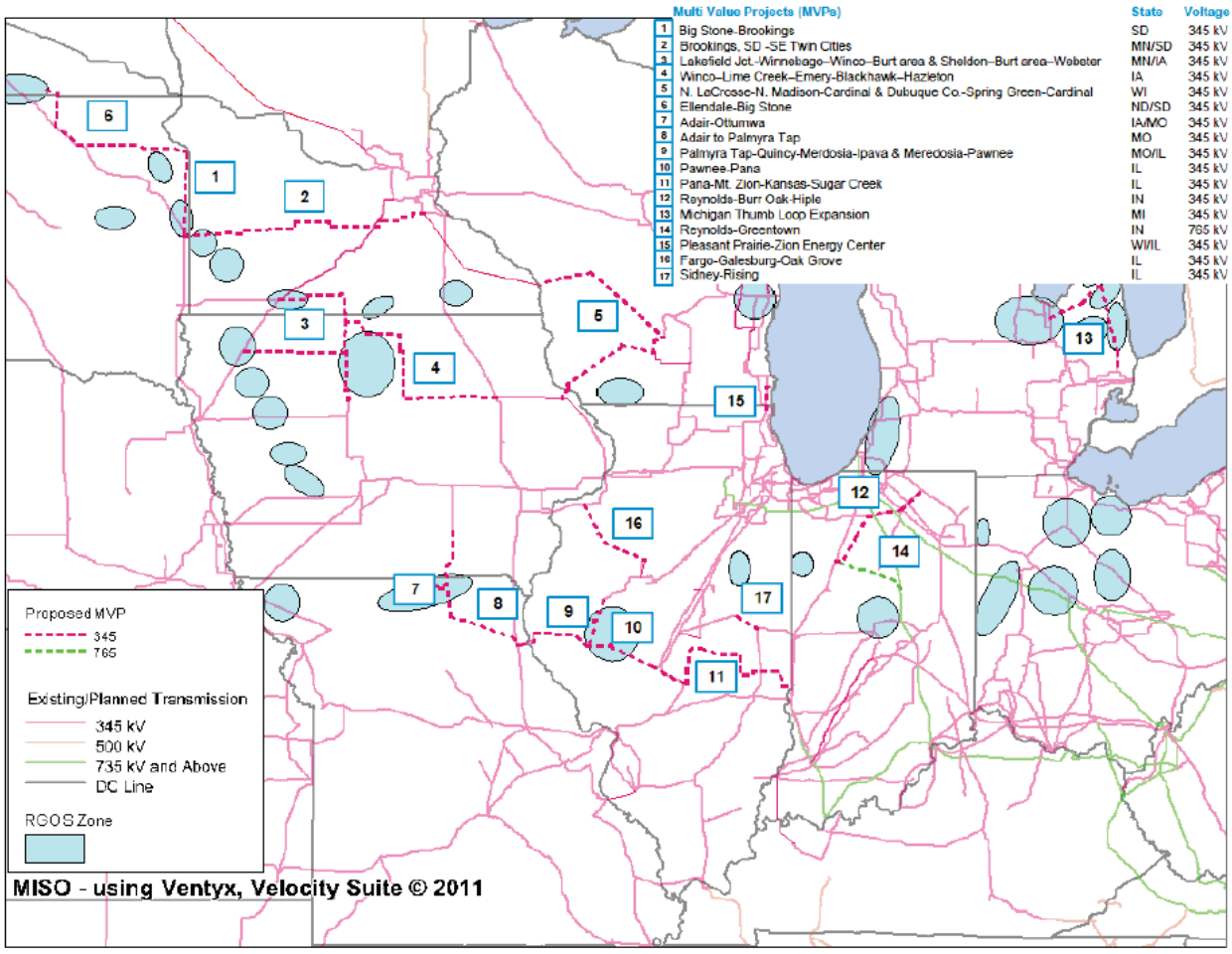

Figure 2 – MISO 2011 MVP Portfolio from MVP Report

The 17 projects comprising the MISO 2011 MVP Portfolio are listed below in Table 1.

	Project	State	Voltage (kV)
1	Big Stone – Brookings	SD	345
2	Brookings, SD – SE Twin Cities	MN/SD	345
3	Lakefield Jct. – Winnebago – Winco – Burt area & Sheldon – Burt area – Webster	MN/IA	345
4	Winco – Lime Creek – Emery – Black Hawk – Hazleton	IA	345
5	N. LaCrosse – N. Madison – Cardinal & Dubuque Co. – Spring Green – Cardinal	WI	345
6	Ellendale – Big Stone	ND/SD	345
7	Adair – Ottumwa	IA/MO	345
8	Adair – Palmyra Tap	MO/IL	345
9	Palmyra – Quincy – Meredosia – Ipava & Meredosia – Pawnee	IL	345
10	Pawnee – Pana	IL	345
11	Pana – Mt. Zion – Kansas – Sugar Creek	IL/IN	345
12	Reynolds – Burr Oak – Hiple	IN	345
13	Michigan Thumb Loop Expansion	MI	345
14	Reynolds – Greentown	IN	765
15	Pleasant Prairie – Zion Energy Center	WI/IL	345
16	Fargo – Galesburg – Oak Grove	IL	345
17	Sidney – Rising	IL	345

Table 1 – MISO 2011 MVP Portfolio Projects

References to the Big Stone Substation throughout the MISO MVP study material are synonymous with the Big Stone South Substation. The Big Stone South Substation is actually being constructed as part of MVP-1 (Big Stone – Brookings 345 kV) and is a new substation being constructed near Big Stone City, South Dakota to allow for 345 kV connections into the existing 230 kV transmission system in the Big Stone area. The Big Stone to Brookings 345 kV project, with the associated Big Stone South substation, has been approved by the South Dakota Public Utilities Commission in dockets EL06-002 (which was recertified through docket EL12-063) and EL13-020. The facilities approved through these dockets have been accurately reflected in studies performed by MISO in support of the 2011 MVP portfolio.

Q. Please discuss the relationship of the Project to the MISO 2011 MVP portfolio.

A. The Project not only provides benefits on its own, it also works together with MVP-1 (Big Stone to Brookings 345 kV project) to provide benefits to the MISO region. These two projects work together to transmit renewable energy from South Dakota and North Dakota to major 345 kV transmission substations and load centers. Together, these two projects also address congestion on the transmission system by providing additional pathways for energy to flow in order to avoid local area congestion.

Q. How did the Project become part of the MVP portfolio of projects?

A. In addressing its RTO planning responsibilities, MISO undertook a multi-year planning process aimed at addressing the regional transmission plans necessary to enable state renewable mandates and objectives to be met at the lowest delivered wholesale energy cost. This effort was known as the Regional Generation Outlet Study (RGOS) and was conducted between 2008 and 2010. The RGOS identified indicative transmission options that would provide

sufficient transmission capacity and connectivity needed for the efficient and reliable delivery of new generation capacity to meet the combined renewable portfolio standards and objectives of the MISO region, while providing value across the footprint.

These indicative transmission plans were further consolidated into a proposed MVP portfolio in collaboration with transmission owning MISO members and their representatives, including OTP and MDU, and evaluated for effectiveness during the MVP analysis undertaken by MISO.

Q. What was the overall goal of the MVP analysis undertaken by MISO?

A. The overall goal of the MVP portfolio analysis was to design a transmission portfolio which takes advantage of the linkages between local and regional reliability and economic benefits to promote a competitive and efficient electric market within MISO. To achieve this goal, a Technical Studies Task Force (TSTF), comprised of state regulators, wind power developers, TOs, and participants in MISO's wholesale markets, met with MISO study engineers to guide the MVP study process. The MVP portfolio was designed using reliability and economic analyses, applying several future scenarios to determine the robustness of the designed portfolio under a number of different assumptions.

Q. When was this study and analysis done that supported inclusion of the Project in the MISO 2011 MVP Portfolio?

A. The RGOS study was initiated in 2008 and was concluded in 2010. The MVP study started during 2010 and wrapped up near the end of 2011.

Q. Is the analysis and study contained in the Application?

A. Yes.

Q. Where?

A. Both the RGOS and the MVP study are included within the Application in Appendix B, specifically Appendix B.1 is the MVP study report and Appendix B.3 is the RGOS report.

Additionally, included within Appendix B is Appendix B.2, which is the 2005 MISO Transmission Expansion Plan, and Appendix B.4, which is the 2011 MISO Transmission Expansion Plan. These study reports also include details of all or portions of the Project that have been identified through past MTEP planning cycles.

Q. What did the MISO analysis and study of the Project show as to the demand for this Project?

A. The MVP portfolio analyses evaluated the expected future conditions on the MISO regional transmission grid. The analysis found that the Project will be needed in order to ensure the continued reliable operation of the OTP and MDU transmission systems into the future. In addition, the MVP analyses also show that the MVP portfolio of projects provide additional connectivity across the grid, reducing transmission congestion and enabling access to a broader array of resources for customers across MISO. The transmission projects included in the MISO 2011 MVP portfolio increase market efficiency, competitive generation supply, and provide opportunity for economic benefits to ratepayers well in excess of the MVP portfolio costs. The MVP portfolio, including the Project, represents the best overall solution for delivering these benefits based on the expected future conditions.

Q. Why must this Project be constructed?

A. The construction of the Project will enable OTP and MDU to reliably deliver the energy this area needs today and into the future. The Project improves the reliability of the bulk electric system in the area. Reliability studies performed by MISO for the Project have identified

the following transmission issues are mitigated as a result of the Project during contingencies prescribed in the NERC transmission planning standards:

- Oakes – Ellendale 230 kV Line
- Aberdeen – Ellendale 115 kV Line
- Oakes – Forman 230 kV Line
- Forman 230/115 kV Transformer
- Aberdeen Jct. – Aberdeen 115 kV Line
- Forman 230 kV Bus Tie
- Ellendale 230/115 kV Transformer
- Heskett 230/115 kV Transformer

The construction of the Project will address these loading issues by providing an alternative transmission path for energy to flow during contingencies.

Q. Were alternatives to the Big Stone South to Ellendale 345 kV Project considered in the development of the MVP portfolio?

A. Yes. The Owner's considered both overbuilding and reconductoring existing transmission lines that are located in the siting area.

Q. What does it mean to "overbuild" an existing transmission line?

A. "Overbuilding" an existing transmission line involves constructing a new project along an existing transmission corridor using new structures that accommodate two circuits, the new circuit and the existing circuit, on a common structure.

Q. What does it mean to "reconductor" an existing transmission line?

A. “Reconductoring” an existing transmission line involves replacing the existing conductor along a transmission line with a different conductor, usually larger, to increase the capability of the existing circuit.

Q. Why were the alternatives of overbuilding and reconductoring not pursued for this Project?

A. These alternatives were rejected for the reasons stated in response to data request 2-3 of the Staff’s Second Set of Data Requests, which are attached as Exhibit 3 to the direct testimony of Henry Ford.

Q. Does the MISO MVP analyses consider future wind generation?

A. Yes. With the focus of the MVP study being to develop a transmission plan to meet Renewable Portfolio Standards (RPS) and clean energy goals across the MISO footprint, assumptions surrounding the amount and location of future wind generation were a fundamental building block of this study. Through an extensive stakeholder process, locations were identified as future energy zones that represented the best method to meet renewable energy requirements at the lowest overall system cost. To determine the amount of additional wind generation needed to meet state renewable portfolio standards, data was gathered by entities across MISO to identify the incremental wind generation needed. As a result of this investigation, incremental renewable generation was modeled across the MISO footprint in the identified energy zones. More specifically, approximately 900 MW of additional wind was located in South Dakota in the 2021 timeframe and approximately 1400 MW in the 2026 timeframe within energy zones located in eastern South Dakota.

Q. How were the renewable energy zones used in the MVP studies developed?

A. Energy zone development began during the RGOS referenced previously in my testimony. MISO staff evaluated multiple energy zone configurations possible to meet renewable energy requirements and objectives. Zone selection was based on a number of potential locations developed by MISO utilizing wind data supplied by the National Renewable Energy Laboratory (NREL) of the US Department of Energy. Zone selection involved a great deal of stakeholder interaction, including the involvement of regulatory bodies such as the Upper Midwest Transmission Development Initiative (UMTDI) and various state agencies within the MISO footprint, including the Midwest Governors Association (MGA).

Q. What were the final set of energy zones selected for use in the MISO MVP studies and what amount of incremental renewable energy was assumed in energy zones located in the South Dakota and North Dakota?

A. The final set of energy zones selected for use in the MISO MVP planning studies represented a balance between meeting renewable energy needs locally while also taking advantage of higher wind potential areas within the MISO market footprint. The analyses and selection process located wind zones distributed across the region. The renewable energy zone locations used in the MISO 2011 MVP studies are shown in Figure 3.

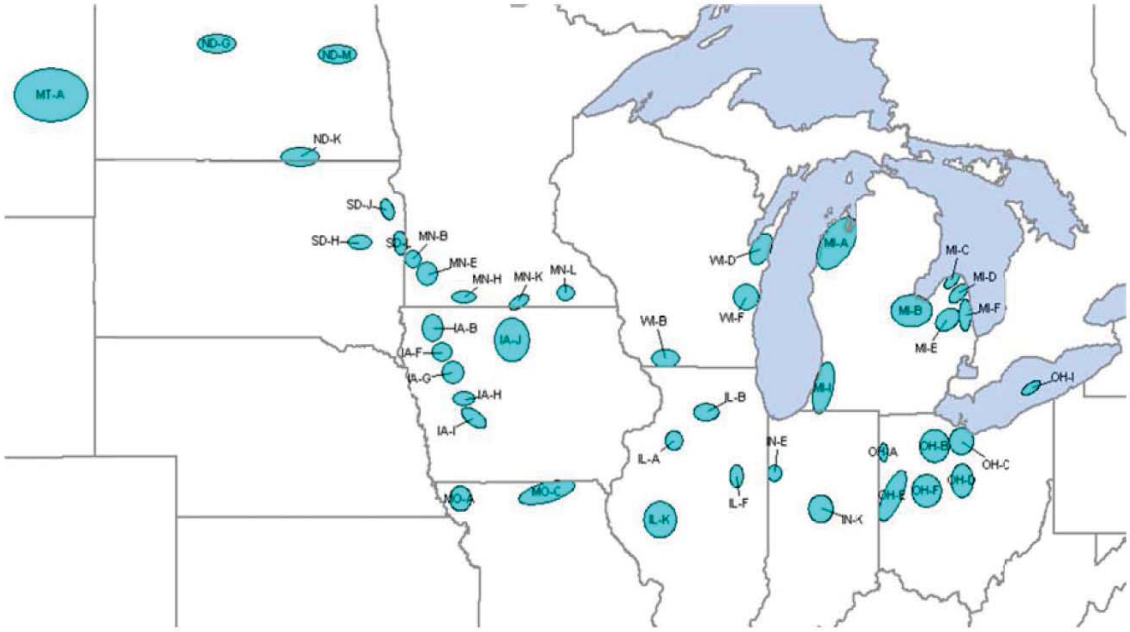

Figure 3 – Renewable Energy Zones in MISO MVP Studies

The amount of incremental renewable energy included in the South Dakota and North Dakota during the MVP studies was approximately 1300 MW in the 2021 timeframe and approximately 2100 MW in the 2026 timeframe, as shown in Table 2, with approximately 900 MW assumed in South Dakota in 2021 and 1400 MW in 2026.

Wind Zone	2021 Incremental Wind (MW)	2026 Incremental Wind (MW)
ND-G	199	313
ND-K	164	259
ND-M	59	94
SD-H	300	474

SD-J	292	461
SD-L	300	474

Table 2 – Incremental Wind Generation in the Dakotas

Q. Do you expect future renewable energy generation development in the South Dakota and North Dakota as a result of this Project?

A. Yes. As mentioned previously, the Project will mitigate transmission issues on the system and increase the capability of the transmission system thereby allowing future opportunities for transmitting energy generated from renewable resource. The Project will be located in the general vicinity of several proposed generation projects that reside in the MISO Generator Interconnection Queue and closely align with the MVP incremental energy zones.

Figure 4 shows the locations of the proposed generation projects that were active in the MISO Generator Interconnection Queue in the South Dakota and North Dakota as well as western Minnesota as of March 17, 2014, the location of MVP Energy Zones (shown as shaded blue ovals on Figure 4), and the approximate location of the Project.

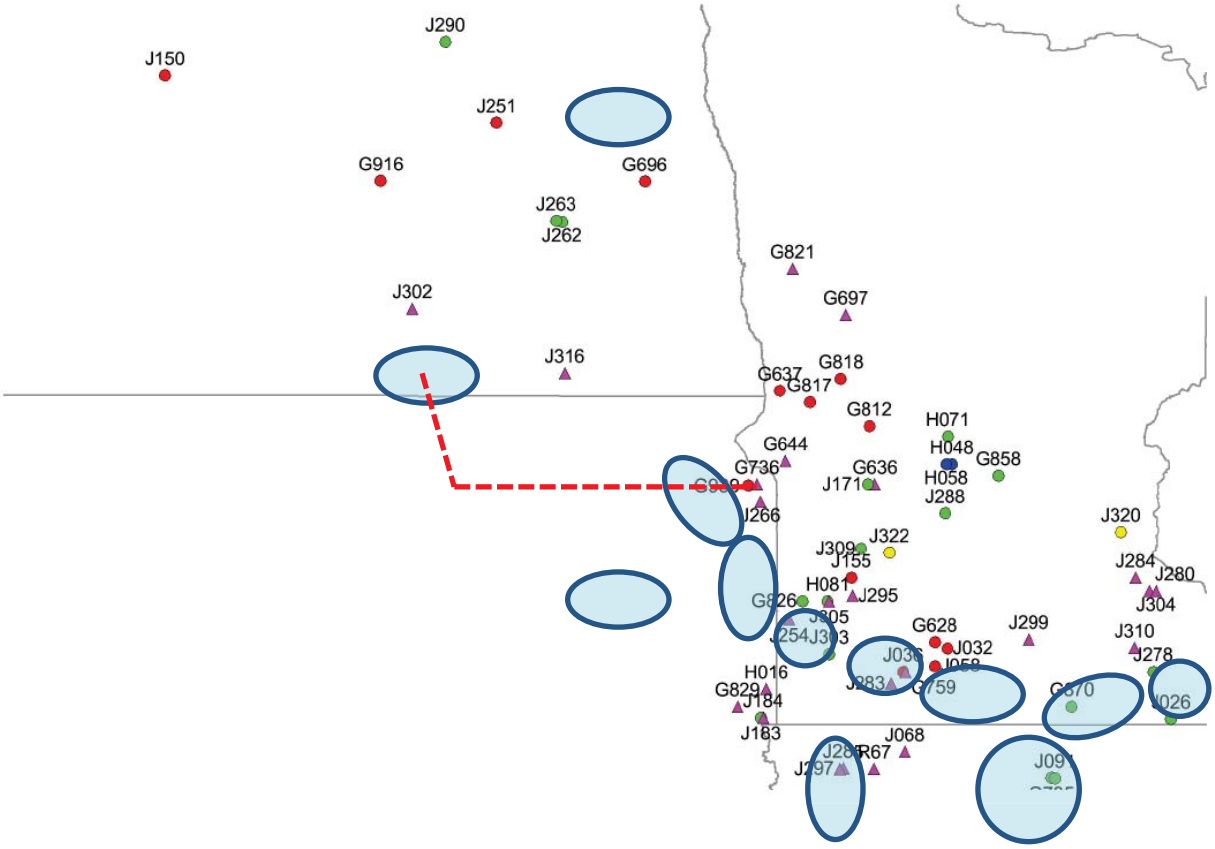

Figure 4 – Big Stone South to Ellendale and Active MISO Generator Interconnection Queue Projects

As shown in Figure 4, several proposed generation projects in the MISO interconnection queue are aligned with the MVP energy zones and are poised to leverage the additional transmission system capability enabled by the Project.

Q. What will be the benefits to South Dakota and the region if the Project is constructed?

A. The MVP portfolio allows for a more efficient dispatch of generating resources, opening wholesale markets to competition and spreading the benefits of low cost generation to South Dakota and throughout the MISO footprint. These benefits were outlined through a series of production cost analyses that captured the economic benefits of the low cost generation

resources that can be reliably delivered with the addition of the MVP transmission. These benefits reflect the savings achieved through the reduction of transmission congestion and through more efficient use of generation resources. The analysis found that the MVP portfolio will produce an estimated $12.4 to $40.9 billion in present value adjusted production cost benefits to the aggregate MISO footprint under existing energy policies, depending on the period over which benefits are calculated, discount rates applied, and assumptions about growth rates of energy and demand. Under additional possible Future Scenarios representing sensitivities to variations in energy policies, this benefit increases to a maximum present value of $91.7 billion.

While congestion-driven production cost benefits were by far the single greatest benefit identified, additional benefits from the new transmission facilities were also identified. These additional benefits included reductions in operating reserve requirements, reduced planning reserve margin requirements, reduced transmission system losses, lower capital costs of renewable resources, and deferrals of transmission investments that would be required for the reliability of the system in the absence of the MVPs. These additional factors contribute between $3.1 billion and $8.2 billion in additional present value benefits above the production cost savings.

When compared to the present value of the revenue requirements for the MVP portfolio, the portfolio produces total benefits of between 1.8 to 3.0 times the costs on a present value basis, under existing policies. When these system-wide benefits were evaluated for their distribution within the MISO footprint, benefits to Local Resource Zone 1 amounted to between 1.6 and 2.9 times the overall portfolio costs to Local Resource Zone 1. Zone 1 is comprised of MISO member companies within Minnesota, South Dakota, North Dakota, and parts of Wisconsin and Montana. (see Figure 5)

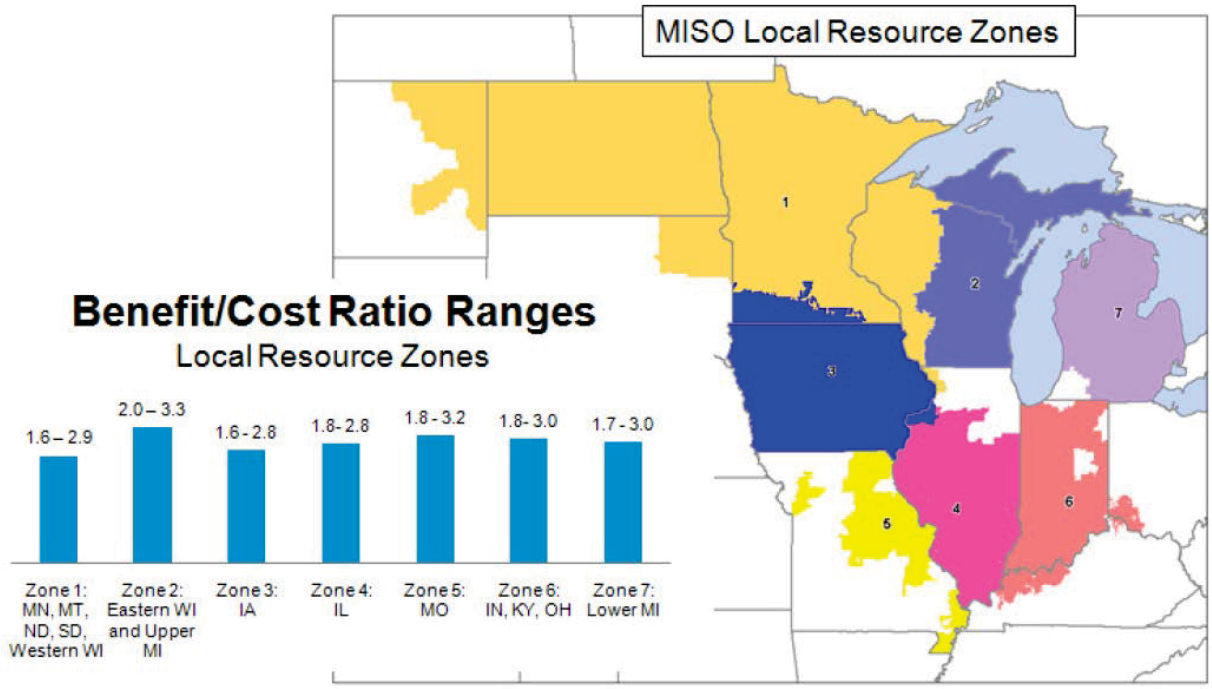

Figure 5 – Benefit-Cost Ratios to Local Resource Zones Across MISO

Q. Were the benefits quantified?

A. Yes.

Q. Where in the studies were the benefits quantified?

A. Included as Appendix B.1 of the Application is the "Multi-Value Project Portfolio – Results and Analysis" report (MVP report). The benefits are discussed on pages 49 through 69 of this report in Section 8, which discusses "Portfolio economic benefits analyses" and Section 9, which includes a description of "Qualitative and Social Benefits" (pages 70 – 79) that are also realized by the MVP portfolio. Benefit-to-Cost ratios calculated for each of the local resource zones across MISO are found in Section 1, which is the Executive Summary (Page 6).

Q. What is the relationship of the Big Stone South to Ellendale 345 kV Project to the present and future economic development of the area?

A. The addition of the Big Stone South to Ellendale 345 kV Project will better enable OTP and MDU to reliably deliver the energy this area needs today and into the future. If approved, the Project will improve the ability to serve present and future economic development in the area. The construction of this Project improves the transmission grid's ability to meet the energy demands of South Dakota residents and businesses now and into the future. Electricity is the foundation of ongoing economic development and prosperity in the country; OTP and MDU are maintaining the strength of that foundation through the proposed construction of this Project.

In addition to the direct benefits of the recommended MVP portfolio, studies have shown the indirect economic benefits of the transmission investment. These indirect benefits result from the impact of investment and jobs in the local economy. The MVP portfolio will enable approximately 900 MW of incremental wind generation resources in South Dakota by the year 2021 and approximately 1,400 MW by the year 2026 according to the MVP studies. This incremental generation will encourage the development of new generation projects in the Dakotas, resulting in the creation of new jobs and associated benefits resulting from the new projects.

Q. Are there other benefits to South Dakota from the Big Stone South to Ellendale 345 kV Project?

A. Yes. In the event that legislation or environmental regulation leads to the retirement of some coal-fired plants, transmission investment through the Big Stone South to Ellendale 345 kV Project provides a robust transmission path that will be available to provide needed support to maintain reliable service regardless of fuel-types for future generation resources.

Q. What assumptions were used in projecting the expected future conditions upon which the MISO need and benefit analyses were based?

A. MISO employed multiple models to project future system conditions and performance. Models were developed representing the transmission system for the year 2021 to evaluate transmission system reliability. The representation of the transmission system in this timeframe was developed by adding transmission upgrades identified in previously approved MISO MTEP regional planning processes to the existing transmission system. Additionally, load forecasts applied in the models were supplied by MISO transmission owners through an annual model building process. Reliability analysis of the transmission system focused on both peak (100%) load and off-peak (70%) load conditions. Lastly, generation included in the MVP modeling efforts were existing generation, committed generation from the MISO generation interconnection process, and generation in renewable energy zones sufficient to meet regional renewable energy mandates.

In addition to reliability analysis, production cost modeling was also performed to analyze production cost savings enabled by the MVP portfolio under several different future scenarios. Production cost models were developed for the years 2021, 2026, and 2031. In arriving at the range of production cost benefits, a variety of assumptions were used for applying discount rates, demand and energy growth rates, and natural gas prices.

Q. Is the construction, operation, and maintenance of the Big Stone South to Ellendale 345 kV Project necessary to serve a public use?

A. Yes. The Big Stone South to Ellendale 345 kV Project is an integral part of the MISO 2011 MVP portfolio. As a result, it facilitates the numerous 2011 MVP portfolio benefits, including meeting energy policy requirements consisting of widespread implementation of renewable portfolio standards across the MISO footprint. The MISO 2011 MVP Portfolio of seventeen 345 kV and 765 kV projects is designed to meet this need that was defined based on

the input from many stakeholders which included participation by the Midwest Governor's Association (MGA), the Upper Midwest Transmission Development Initiative, and the Organization of MISO States (OMS) Cost Allocation and Regional Planning (CARP).

Q, What if the Project is not built as currently designed?

A. When a project is redesigned after the extensive regional planning process, MISO must ensure that the redesigned project will continue to meet the initial needs of the project. This review process should involve engaging MISO stakeholders (and MISO's Board of Directors) to ensure continued transparency surrounding project development and cost allocation. In the worst case scenario, such re-engagement could lead to delays in the completion of an urgently needed project that may take years to construct. In addition, after a project is approved for the regional plan, that project is assumed to be part of the base transmission plan, and incremental system needs are identified relying upon that base transmission plan. While modifications may occur to approved plans, such changes have ripple effects on the identification of necessary projects in subsequent planning studies. These ripple effects can contribute to delays in addressing other transmission system needs leading to increased costs to consumers. For these reasons, modifications to transmission projects subsequent to the collaborative regional planning process should be minimized to the extent possible.

Q. Do current MISO planning studies assume the existence of the Big Stone South to Ellendale 345 kV Project?

A. Yes. The project was approved by MISO in December of 2011. Since that time, regional planning studies conducted by MISO include this project in the base transmission plan.

Q. Is there a time frame that the Project must be constructed?

A. Yes. The expected time frame in which the Project must be constructed is included within the MISO approval by the Board of Directors.

Q. What is the time frame in which the Project must be constructed?

A. The Project was approved by the MISO Board of Directors with an in-service date of December 31, 2019. Therefore, the Project must be energized by the end of 2019.

Q. What are the consequences specific to a delay of building the Big Stone South to Ellendale 345 kV Project?

A. In the context of this Project, if the Project was not constructed as planned, it would result in the inability of the existing transmission system owned by OTP and MDU in southern North Dakota and eastern South Dakota to continue to provide reliable service. The MISO analyses of this Project had identified several 230 kV and 115 kV transmission facilities that will be loaded above safe operating levels in the future without this Project. In addition, the MISO analyses identified economic benefits that would not be able to be adequately realized or distributed without the Project.

In addition, future wind resources in North Dakota and South Dakota could not be successfully or reliably integrated into the MISO transmission system.

Q. Are there benefits to the construction of the Project other than to the transmission system?

A. Yes.

Q. Did someone else testify about those benefits?

A. Yes, Mr. Ford testified about those benefits.

PAYMENT FOR THE PROJECT

Q. Who is going to be paying for the Project?

A. MVP project costs are recovered from MISO transmission customers on an equitable basis based on their pro-rata usage of energy. The methodology is described in Attachment MM of the MISO Tariff.

Q. How will the Project be financed?

A. OTP and MDU will use private financing to obtain the necessary capital to construct the Project. The revenues received from other MISO customers, as well as MDU and OTP customers, will be used to meet OTP and MDU's respective revenue requirements associated with this new transmission investment.

Q. Based upon the results of MISO planning studies as well as Otter Tail and MDU's review outlined in your testimony above, how would you summarize your assessment of the Big Stone South – Ellendale 345 kV Project?

A. The Big Stone South to Ellendale 345 kV Project is a critical component of the MISO 2011 MVP portfolio that is needed for the continued development of a reliable and efficient regional transmission system in the Dakotas and across MISO. It is a part of the MISO 2011 MVP portfolio of projects that involves multiple utilities developing a joint transmission plan to meet the backbone transmission infrastructure needs of a large region for most of the next decade, not just the incremental needs over the next few years. Therefore, the Project is necessary to serve a public use and represents a reasonable relationship to an overall plan of transmitting electricity in the public interest.

Q. Does this complete your direct testimony?

A. Yes, it does.