

215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpco.com



June 27, 2014

Mr. Darrell Nitschke
Director of Administration/Executive Secretary
North Dakota Public Service Commission
State Capitol
600 East Boulevard, Dept. 408
Bismarck, ND 58505-0408

RE: OTTER TAIL POWER COMPANY'S TEN-YEAR PLAN – JUNE 2014

Dear Mr. Nitschke:

Enclosed are an original and ten (10) copies of Otter Tail Power Company's North Dakota Ten-Year Plan in accordance with North Dakota Century Code 49-22-04. A copy of the plan is being filed pursuant to Article 69-06-02-02 of the North Dakota Administrative Code with the County Auditor of each county in which any part of a site or corridor is proposed to be located. Notice of the filing of the plan is being sent to each agency and officer as designated in Article 69-06-01-05.

Should you have any questions, please feel free to contact me at kkaseman@otpco.com or 218-739-8693.

Very truly yours,

A handwritten signature in blue ink that reads "Kerry Kaseman". The signature is written in a cursive, flowing style.

Kerry Kaseman
Senior Resource Planner

pmm

Enclosures

By electronic filing and U.S. mail

c: Cass County Auditor – Michael Montplaisir
Dickey County Auditor – Beverly Kuska
Mountrail County Auditor – Joan Hollekim
Pierce County Auditor – Karin Fursather
Sargent County Auditor – Sherry Hosford
Stutsman County Auditor – Casey Bradley

1 **PU-14-501** Filed: 6/27/2014 Pages: 24
2014 Ten Year Plan

215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpco.com



NOTICE OF FILING

June 27, 2014

RE: OTTER TAIL POWER COMPANY'S TEN-YEAR PLAN – JUNE 2014

In accordance with the rules and regulations of the North Dakota Public Service Commission governing the siting of energy conversion and transmission facilities pursuant to NDCC 49-22-04, Otter Tail Power Company hereby gives notice that on June 27, 2014, they filed their Ten-Year Plan with the North Dakota Public Service Commission. This Notice of Filing is being sent to the agencies and officers designated in Article 69-06-01-05 of the North Dakota Administrative Code.

NORTH DAKOTA TEN-YEAR PLAN



**Report RP14-5
Resource Planning
June 2014
By: Kerry Kaseman**

TABLE OF CONTENTS

INTRODUCTION	4
SECTION A: EXISTING ENERGY CONVERSION FACILITIES	5
SECTION B: ENERGY CONVERSION FACILITIES UNDER CONSTRUCTION	6
SECTION C: PROPOSED ENERGY CONVERSION FACILITIES ON WHICH CONSTRUCTION IS INTENDED WITHIN THE ENSUING FIVE YEARS	6
SECTION D: PROPOSED ENERGY CONVERSION FACILITIES DURING THE NEXT TEN-YEAR TIME PERIOD	6
SECTION E: EXISTING TRANSMISSION FACILITIES (ELECTRIC)	6
SECTION F: EXISTING TRANSMISSION FACILITIES (PIPELINE)	6
SECTION G: PROPOSED TRANSMISSION FACILITIES ON WHICH CONSTRUCTION IS INTENDED WITHIN THE ENSUING FIVE YEARS	7
TRANSMISSION PROJECTS RELATED TO RELIABILITY CONCERNS	7
TRANSMISSION PROJECTS RELATED TO GENERATOR INTERCONNECTION REQUESTS.....	11
SECTION H: PROPOSED TRANSMISSION FACILITIES ON WHICH CONSTRUCTION IS INTENDED WITHIN THE ENSUING FIVE YEARS (PIPELINE)	13
SECTION I: PROPOSED TRANSMISSION FACILITIES DURING THE NEXT TEN- YEAR TIME PERIOD (ELECTRIC AND PIPELINE)	13
SECTION J: REGIONAL COORDINATION	13
REGIONAL COORDINATION THROUGH THE MISO PROCESS	13
REGIONAL COORDINATION WITH NON-MISO TRANSMISSION OWNERS.....	14
SECTION K: ENVIRONMENTAL INFORMATION	15
AIR QUALITY	15
GREENHOUSE GASES	16
WATER QUALITY	16
SOLID WASTE	16
SECTION L: PROJECTED DEMAND FOR SERVICE	17
HISTORICAL GROWTH AND LONG RANGE FORECAST	17
DEMAND RESPONSE CAPABILITY	19
OPERATIONAL IMPROVEMENTS TO GENERATION FACILITIES	20
DESCRIPTION OF GENERATION FACILITIES.....	21

LIST OF FIGURES

Figure 1: ND Section of Proposed 345 kV line from Fargo, ND area to Monticello Area.....10

LIST OF TABLES

Table 1: Historical Unmanaged Annual Peak Demands (MW)..... 17
Table 2: Forecasted Unmanaged Winter Peak Demands (MW)..... 18
Table 3: Forecasted Unmanaged Summer Peak Demands (MW) 18

INTRODUCTION

In accordance with the rules and regulations of the North Dakota Public Service Commission (Commission) governing the siting of energy conversion and transmission facilities pursuant to Chapter 49-22 of the North Dakota Century Code, Otter Tail Power Company (Otter Tail or the Company), hereby files this Ten-Year Plan.

Ten copies of this Ten-Year Plan are being filed with the Commission. Notices of the filing of this report have been given to those agencies and officers designated in Article 69-06-01-05 of the Administrative Code. A copy of the plan is being filed pursuant to Article 69-06-02-02 of the North Dakota Administrative Code with the County Auditor of each county in which any part of a site or corridor is proposed to be located.

SECTION A: Existing Energy Conversion Facilities

1. Otter Tail owns 35 percent of the 427 MW rated (Net Dependable Capacity) Coyote power generating station. Otter Tail is the operating agent and provides the filing of the appropriate federal forms. Other co-owners include Northern Municipal Power Agency (Minnkota Power Cooperative (MPC) acts as the agent for Northern Municipal Power Agency), Montana Dakota Utilities (MDU), and Northwestern Energy (NWE). The Coyote facility was commissioned for commercial operation May 1, 1981.
2. Otter Tail owns 100 percent of two combustion turbines located at Jamestown, North Dakota. These combustion turbines have a combined Net Dependable Capacity rating of 41 MW. These facilities were commissioned for commercial operation in 1976 and 1978.
3. Otter Tail is contracted to receive energy from a customer owned waste sunflower hull fired cogeneration facility in Enderlin, North Dakota. No energy was received in 2013 from this facility.
4. Otter Tail purchases energy from a number of customer owned wind and solar powered generating facilities in North Dakota. These facilities have a combined capacity rating of approximately 3.3 MW and delivered 3,967 MWh of energy to Otter Tail in 2013.
5. Otter Tail purchases energy from the 21,000 kW FPL Energy ND Wind II (a wind farm owned by NextEra Energy) that delivered 43,658 MWh to Otter Tail in 2013.
6. Otter Tail purchased the output of 19,500 kW of wind turbines from Langdon Wind, LLC that delivered 71,955 MWh in 2012.
7. Otter Tail purchases peaking capacity from two customer-owned diesel generators with a total nameplate capacity of 3,600 kW.
8. Otter Tail owns 40.5 MW of the Langdon Wind Energy Center located 6-12 miles south of Langdon, North Dakota. The portion owned by Otter Tail began commercial operation in January 2008.
9. Otter Tail owns 48 MW of the Ashtabula Wind Energy Center located in Barnes County. The portion owned by Otter Tail began commercial operation in December 2008.
10. Otter Tail owns 49.5 MW of the Luverne Wind Energy Center located in Steele County. The portion owned by Otter Tail began commercial operation in August 2009.
11. Otter Tail began purchasing energy from the 62,400 kW Ashtabula Wind III (a wind farm owned by NextEra Energy) in October 2013 that delivered 60,763 MWh to Otter Tail in 2013.
12. No unit retirements of Otter Tail facilities in North Dakota are planned within the next ten years.

SECTION B: Energy Conversion Facilities Under Construction

None.

SECTION C: Proposed Energy Conversion Facilities on Which Construction Is Intended Within the Ensuing Five Years

The 2013 Otter Tail preferred resource plan does not include any generation additions in the next 5 years. However, Otter Tail continues to evaluate potential generation alternatives that could prove to be cost competitive and potentially added within the 5-year time frame.

SECTION D: Proposed Energy Conversion Facilities during the Next Ten-Year Time Period

The 2013 Otter Tail preferred resource plan includes the addition of approximately 200 MW of nameplate natural gas-fired simple cycle combustion turbine capacity by 2021. Some or all of these resources may be located in North Dakota.

SECTION E: Existing Transmission Facilities (Electric)

In-service dates for existing transmission facilities, located entirely within or partially in North Dakota, and owned (or jointly owned) by Otter Tail and operated above 115 kV include:

<u>Transmission Line</u>	<u>In-Service Date</u>
Wahpeton – Fergus Falls 230 kV	1967
Hankinson – Wahpeton 230 kV	1967
Forman – Hankinson 230 kV	1967
Ellendale – Oakes – Forman 230 kV	1967
West Fargo (Sheyenne) – Audubon 230 kV	1969
Drayton – Grand Forks (Prairie) 230 kV	1970
Big Stone – Browns Valley – Hankinson 230 kV	1974
Center – Jamestown 345 kV	1980
Underwood – Harvey 230 kV	1986
Harvey – Balta – Rugby 230 kV	2002
Luverne – Pillsbury 230 kV	2009

No transmission facilities rated above 115 kV are scheduled for retirement within the next ten years.

SECTION F: Existing Transmission Facilities (Pipeline)

None.

SECTION G: Proposed Transmission Facilities on Which Construction Is Intended Within the Ensuing Five Years

Due to generation interconnection projects proposed on the Otter Tail system within various stages of the Mid-Continent Independent System Operator, Inc. (MISO) interconnection process, Otter Tail anticipates that upgrades to existing transmission lines in North Dakota may be required to reliably interconnect future projects. In consideration of the uncertainty of future projects in the region, it is possible that operating guides and/or special protection schemes could be implemented as a short-term interim solution in lieu of actual transmission upgrades until other future projects are confirmed and a regional transmission plan is formulated and energized. This regional plan would be coordinated with the local utilities and the MISO.

Transmission Projects Related to Reliability Concerns

Casselton – Buffalo 115 kV Line

The Casselton – Buffalo 115 kV project was approved as a Baseline Reliability Project (BRP) within Appendix A of the 2011 MISO Transmission Expansion Plan (MTEP11) by the MISO Board of Directors in December of 2011 under project 3481 (facility numbers 6432, 6433, and 6434). The project involves the construction of 16 miles of 115 kV line, upgrades to existing 115 kV line, and substation modifications at Buffalo.

Transmission planning studies performed by Otter Tail have identified this project as the preferred plan for serving the increased load in eastern North Dakota. MISO confirmed the results of the Otter Tail studies through the MTEP11 process and designated this project as a Baseline Reliability Project with regional cost sharing. Along with the Casselton – Buffalo 115 kV line, other underlying upgrades required on the transmission system include replacement of the Buffalo 345/115/41.6 kV transformer and reconductoring a portion of the Mapleton – Sheyenne 115 kV line. These underlying upgrades have been included in the MISO approval for this project. In addition to the regional reliability benefits offered to eastern North Dakota, this project will also directly benefit the Casselton area and provide back-up service to the Tharaldson Ethanol Plant.

The Buffalo to Casselton 115 kV line was put into service in December of 2013. The Buffalo 345/115/41.6 kV transformer replacement is scheduled to be completed in 2015 and the Mapleton – Sheyenne 115 kV line reconductor is scheduled to be completed by the end of 2014.

Jamestown Area Voltage Control

Recent transmission planning studies for both the Center – Grand Forks 345 kV project (Minnkota Power Cooperative) and the CapX Fargo – Monticello 345 kV project have shown voltage control concerns in the Jamestown area. Coordinated transmission planning studies among the regional utilities has led to the recommendation of a reactive power plan to meet the reliability requirements once both of these projects are placed into service.

Minnkota Power Cooperative has performed a study that has recommended that the existing transformers along the existing Coyote – Center – Jamestown – Buffalo – Maple River 345 kV line should have their taps adjusted to increase the voltage profile of the 345 kV line. This tap change was agreed to by Otter Tail and MPC and field personnel made the recommended changes in early May 2012. To date, the voltages along the 345 kV line have performed as expected.

These transformer tap changes were included in the reactive power studies that were completed for the Fargo – Monticello 345 kV project. Through these reactive power studies for the Fargo – Monticello project, additional voltage control devices were recommended at the Jamestown substation. Otter Tail is planning to proceed with the installation of a new 25 MVAR capacitor bank and a 25 MVAR reactor on the 115 kV bus at the Jamestown substation in the fall of 2014. The reactor will help reduce voltages during light load situations, while the capacitor bank will help increase voltages during peak load situations.

This reactive power equipment at Jamestown is just a portion of the overall plan for maintaining voltages at acceptable levels. In addition, reactors are being planned at other locations on the system along the new Fargo – Monticello 345 kV line as well as at the Center substation, as part of MPC's Center – Grand Forks 345 kV line. In total, this reactive equipment is expected to maintain voltages within acceptable levels throughout the region.

Oakes Area Transmission Improvements

Transmission planning studies have shown reliability concerns for the existing transmission system to serve the load in an area around Oakes, North Dakota during critical contingencies. Load in this area has shown sustained growth over the past 10 years. Otter Tail has collaborated with Central Power Electric Cooperative (CPEC) to develop the preferred transmission plan for serving the joint load in this area. The recommended plan involves the following key components:

- 230/41.6 kV Transformer
- About 8 Miles of 41.6 kV Transmission Line
- 4 – 230 kV Circuit Breakers
- 4 – 41.6 kV Circuit Breakers

In addition to improving the adequacy of the transmission system, this project will also add sectionalizing capability along the existing Ellendale – Hankinson 230 kV line and will help minimize momentary and sustained interruptions to the Oakes and Forman area customers. The Ellendale – Oakes – Forman – Hankinson 230 kV line is a portion of one of the few east-west 230 kV paths connecting low-cost generation resources from western North Dakota to Minnesota and South Dakota.

This project has been approved as an Appendix A project by the MISO Board of Directors in the MTEP12 efforts. The Oakes area transmission project is referenced in MTEP project 3658, facility numbers 6817, 6818, and 6819.

NERC Facility Ratings Alert

In October of 2010, NERC issued a recommendation to the industry to identify discrepancies between design and actual field conditions of transmission lines. This recommendation stemmed from an unnamed utility's over-head line contacting vegetation within a right-of-way due to insufficient clearance. The recommendation included requirements for transmission owners to prioritize their transmission facilities and complete an evaluation of their lines within various time frames depending on their priority. After Otter Tail's assessment of their facilities, it was determined that most of Otter Tail's lines fall into the "low" priority category and was verified with field calculations at the end of 2013.

Otter Tail is currently assessing mitigation options for its line ratings. The mitigation plan for all of Otter Tail's lines is expected to be complete by the end of 2014. Based on Otter Tail's experience with this effort so far, it is expected that mitigations (structure modifications and/or replacements, adding insulated guy wires, etc.) will be required to increase clearances along various transmission facilities throughout the Otter Tail service territory.

Parshall Area Upgrade

Western North Dakota is experiencing a large amount of load growth due to the exploration of oil drilling and recovery. Most of this load growth is occurring on the transmission system owned, operated, and maintained by load serving cooperatives in western North Dakota, which receive their transmission service and generation capacity from Western Area Power Administration (WAPA) and/or Basin Electric Power Cooperative (BEPC). As a result of this load growth, an extensive system of existing 41.6 kV and 69 kV lines in western North Dakota are planning to be upgraded to 115 kV in order to increase the load serving capability of the transmission system. The upgrade of the existing 69 kV system to 115 kV impacts an existing 69/41.6 kV connection between Otter Tail and Mountrail – Williams Electric Cooperative (MWEC) near Parshall, North Dakota. After detailed studies of the transmission system in this area, with the consideration of different transmission alternatives, Otter Tail prefers to re-establish a connection near Parshall by installing a new 25/41.6 kV transformer. This new 25/41.6 kV connection at Parshall will allow a back-up source to this area in the event the primary source to the 41.6 kV system (Max 115/41.6 kV transformer) is out of service. Otter Tail will be working on an interconnection agreement with MWEC and WAPA in order to install a new 25/41.6 kV transformer. Otter Tail is expecting that the project will be completed in the 2015 timeframe.

The Parshall 25/41.6 kV transformer project was submitted by OTP and approved by MISO as an Appendix A project during the 2013 MISO Transmission Expansion Planning (MTEP13) efforts.

CapX Transmission Initiative

Otter Tail is a participant in the CapX 2020 effort that is currently involved in four different transmission lines referred to as the CapX Group 1 projects. These projects include:

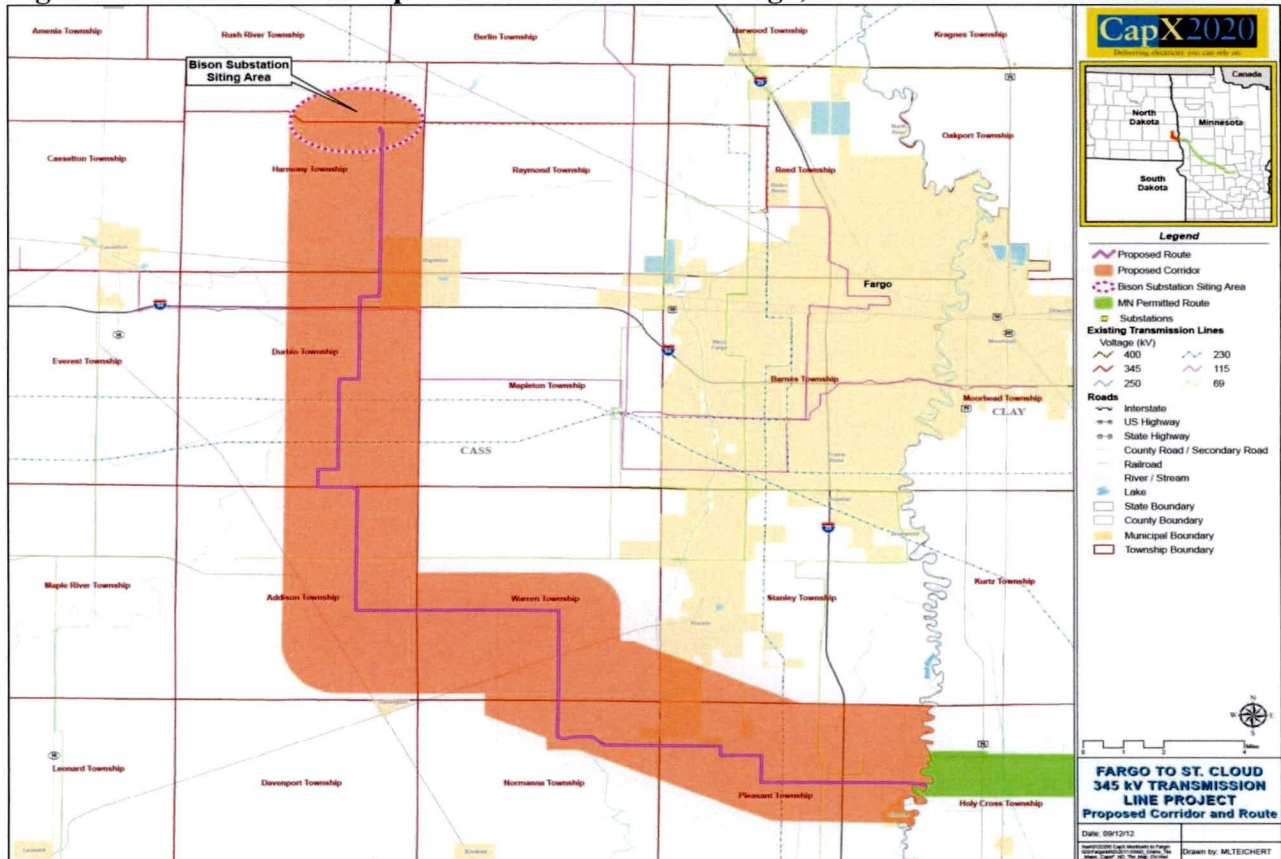
- Brookings County – Hampton 345 kV Line (approximately 200 miles)
- Fargo – Monticello 345 kV Line (approximately 250 miles)
- Hampton – Rochester – Lacrosse 345 kV Line (approximately 150 miles)
- Bemidji – Grand Rapids 230 kV Line (approximately 70 miles)

Otter Tail is an owner in the Brookings County – Hampton, Fargo – Monticello, and Bemidji – Grand Rapids projects.

A portion of one of the initial projects, a 345 kV transmission line from the Fargo, North Dakota area to the Monticello, Minnesota area is located in North Dakota and is shown in Figure 1. The project participants have received all of the required permits for the Minnesota and North Dakota portion of the project. The current schedule for this project plans to build this new line in sections starting from the south (Monticello, MN) and working towards the northwest (Fargo, ND) with the entire line expected to be in service in early 2015.

As part of the Fargo – Monticello 345 kV project, the project participants are working with Minnkota Power Cooperative to construct a new 345 kV switching station just north of Mapleton called Bison. The new switching station will tap the existing Buffalo – Maple River 345 kV line. The new Bison switch station will need to be energized as part of the final portion of the project from Alexandria to Fargo.

Figure 1: ND Section of Proposed 345 kV line from Fargo, ND area to Monticello Area



Big Stone South – Ellendale 345 kV Line

As part of the MTEP11 approval, the MISO Board of Directors endorsed a portfolio of transmission projects across the MISO footprint called the Multi-Value Projects (MVPs). The MVPs have been identified and recommended to meet public policy requirements within the MISO states through 2026.

The MVP portfolio approved by the MISO Board of Directors includes 18 distinct transmission projects across MISO, with Otter Tail being involved in three of these projects, namely: Brookings – Hampton 345 kV line, Big Stone – Ellendale 345 kV line, and Big Stone – Brookings 345 kV line. The MTEP11 report included a total portfolio cost of these 18 MVPs of approximately \$5.2 Billion.

Otter Tail is working collaboratively with MDU to develop one of the new 345 kV MVP transmission projects that will be from Big Stone South to Ellendale. On May 31, 2013 Otter Tail submitted an application for a Certificate of Public Convenience and Necessity (CPCN) to the North Dakota Public Service Commission for this project. Refer to docket number PU-13-273 for further information related to this project.

The MTEP11 included details about this project by referencing the project under number 2220. Otter Tail and MDU currently expect this project to be completed by the end of 2019.

Transmission Projects Related to Generator Interconnection Requests

Sheyenne – Audubon 230 kV Line

Interconnection studies performed by Minnkota Power Cooperative for the Luverne and Ashtabula wind farms were completed in 2 phases. The first phase of the interconnection studies focused on near-term conditions, which at the time of the studies in 2008 represented the 2010 timeframe. As a result of these studies representing the 2010 timeframe, an upgrade of the Sheyenne – Audubon 230 kV line was identified. In order to allow interconnection of the wind farms in an expedited manner, and to determine the status of other pending projects under development at the time of the interconnection studies, a Facility Construction Agreement (FCA) was drafted allowing temporary wind adjusted rating methodology to be implemented until the Sheyenne to Audubon line was upgraded. The wind adjusted ratings were in place by mid-2009 to prevent this transmission line from overloading during real-time operating conditions. One of these pending projects under development at the time of the interconnection studies was the CapX Fargo – Monticello 345 kV line.

A requirement placed on the approval of the interconnection studies by the MAPP Design Review Subcommittee (DRS) was for the completion of interconnection studies representing out-year conditions. To address this follow-up item for approval of the interconnection studies, Minnkota Power Cooperative performed studies of an out-year timeframe, which at the time of the studies in 2012 represented the 2017 timeframe. An assumption in the studies for the out-year timeframe was the operation of the CapX Fargo – Monticello 345 kV line, which is expected to be energized in 2015. Study results of the out-year timeframe have identified that the previously identified upgrade on the Sheyenne – Audubon 230 kV line is

no longer needed. Analysis had shown that the flow along the Sheyenne – Audubon 230 kV line had reduced to a level below the existing rating of the facility, therefore eliminating the need for the upgrade of this line.

Otter Tail and MISO have amended the FCA to eliminate the requirement for the upgrade of the Sheyenne – Audubon 230 kV line. Otter Tail has abandoned activities on the upgrade of this facility given the amended FCA and has refunded the unused dollars submitted by the interconnection customers related to this upgrade.

Jamestown 345 kV Substation

Otter Tail is currently in Generation Interconnection Agreement (GIA) negotiation with Geronimo Wind for two interconnections to the Otter Tail Jamestown 115 kV bus. These interconnections are designated queue numbers J262 and J263 in MISO interconnection queue. The full system impact study and conclusions can be found on MISO [interactive queue](#) on their website. Otter Tail expects the GIA to be signed in the fall of 2014 and the current schedule for this wind farm is to be commercially operational in the fall of 2015.

Due to the connection of the 200 MWs of wind in total to the Otter Tail Jamestown 115 kV bus, significant upgrades are required to the Jamestown 345/115 kV substation. With the addition of the GRE Spiritwood generator, existing Otter Tail generation at Jamestown, and the new wind farm generation, there is approximately 350 MWs of generation connected at Jamestown. This creates an overload on both of Otter Tail's 345/115/41.6 kV transformers which will need to be replaced. Further, the MISO studies identified reactive needs at Jamestown as well. This will be in the form of 115 and 345 kV cap banks. To accommodate both the new transformers and the reactive devices, Otter Tail is expanding both the 115 kV and 345 kV stations. Once the GIA is signed, Otter Tail will start work on the project and have it completed prior to the generators commercial operation.

The project upgrades as described above is per the most up to date MISO studies. However, MISO is currently doing a restudy of these generators due to withdrawals of higher queued generation in MISOs queue. This may end up reducing the amount of reactive devices needed at Jamestown. It is assumed both the new transformers and substation expansions will be needed regardless.

Rugby Transformer

Studies completed by MISO for interconnection project J290, as designated in the MISO queue, have shown the need for additional transformer capacity at the Otter Tail Rugby substation. J290 is a 150 MW wind farm that will connect to the XEL portion of the Rugby to Glenboro 230 kV line. Otter Tail is currently in Facility Construction Agreement (FCA) negotiations with the customer and expects them to be completed prior to the fall of 2014. The current schedule for the wind farm is to be in service in the fall of 2015.

Prior to the commercial operation of the wind farm, Otter Tail will need to install a second 230/115 kV transformer at Rugby as the existing unit will become overloaded with the addition of the new wind farm. Otter Tail will expand the 230 kV station and install a new transformer. Central Power Electric Cooperative will expand the 115 kV station at Rugby to

accommodate the new transformer since they currently own the 115 kV station. Otter Tail and Central expect this work to be complete prior to the fall of 2015 if agreements are signed as scheduled.

The project upgrades as described above is per the most up to date MISO studies. However, MISO is currently doing a restudy of this generator due to withdrawals of higher queued generation in MISOs queue. It is assumed the new transformer and substation expansions will be needed regardless.

Otter Tail continues to see a lot of activity within North Dakota related to increased interests in new wind generation development, large load expansions related to the ag-processing industry and energy transport industry (oil pipelines). As these projects are further developed, it is possible that additional transmission will be required. Further study analysis will be required to determine the optimum transmission plan and will be coordinated through local and regional transmission planning processes in place at MISO.

SECTION H: Proposed Transmission Facilities on Which Construction Is Intended Within the Ensuing Five Years (Pipeline)

None.

SECTION I: Proposed Transmission Facilities during the Next Ten-Year Time Period (Electric and Pipeline)

Otter Tail continues to be actively engaged in regional transmission planning efforts. Through these transmission planning activities, it is hard to predict what future transmission projects will be identified and built in the next 10 years. However, as the transmission system approaches its full capability, and with the numerous proposed generation projects within North Dakota, it is inevitable that additional transmission, as well as upgrades to the existing system, will be required to meet the needs of the system. Otter Tail continues to participate in transmission studies looking at the adequacy of the transmission system throughout North Dakota.

SECTION J: Regional Coordination

Otter Tail conducts transmission planning in a coordinated environment, involving neighboring utilities, load serving entities, state regulatory commissions and members of the public to collaborate in the planning process.

There are several different transmission initiatives underway within the region that are investigating the feasibility of expanding the capability of the transmission grid. Otter Tail continues to actively participate in these efforts to ensure that a reliable and economic transmission system is built across the region in a coordinated manner.

Regional Coordination through the MISO Process

As a transmission-owning member of the MISO, Otter Tail actively participates in various transmission planning efforts, the most significant of which is the annual MISO Transmission

Expansion Planning (“MTEP”) process. The MTEP process involves a variety of planning analyses to determine the performance of the transmission system for a wide variety of conditions. Through the MTEP process, MISO, with input from various stakeholders, evaluates the system for both reliability and economic needs. The MTEP collaborative process is designed to ensure the most efficient and cost-effective or “best fit” transmission expansion plan is developed, while giving consideration to the inputs from all stakeholders.

Local planning of the Otter Tail facilities is primarily coordinated on a sub-regional level. Otter Tail’s locally planned projects are then reviewed by MISO and become part of the MTEP process. Regional coordination through MTEP of local transmission plans results in study efficiencies by keeping a broader group of utilities, states, and stakeholders informed through the transmission planning process to identify the “best fit” transmission plan.

Regional Coordination with non-MISO Transmission Owners

Non-MISO coordination is necessary because the Otter Tail transmission system is highly interconnected with neighboring non-MISO transmission owners. The Otter Tail transmission system is nearly the farthest, most western border of the MISO footprint; therefore, it is interconnected with several transmission-owning utilities that are not members of MISO

Otter Tail participates in the CapX 2020 (Capacity Expansion by 2020) effort, which is a joint initiative of transmission-owning electric utilities in Minnesota and the surrounding region created on the basis of expanding the electric transmission grid to ensure electric reliability for several years into the future. The CapX 2020 utilities (including cooperatives, municipal utilities and investor-owned utilities) collaboratively assess the current transmission system and plan for the necessary future transmission infrastructure investments. This collaborative process and the planning studies performed as part of this effort are coordinated with MISO.

Otter Tail also has Integrated Transmission Agreements (ITA) with Central Power Electric Cooperative, Missouri River Energy Services, Minnkota Power Cooperative, and Great River Energy. These agreements provide for joint use of transmission facilities in common areas of service and require that the utilities jointly plan and coordinate additional facilities required for the common service area. In addition, Otter Tail has agreements for joint use of transmission and interconnection with Xcel Energy, East River Electric Power Cooperative, Montana-Dakota Utilities, Manitoba Hydro, Northwestern Energy, and Western Area Power Administration. These agreements were all precipitated through joint studies and coordination of facilities required to provide high reliability of service at the minimum cost. Facilities proposed and committed to through this local process become part of the MTEP.

As discussed throughout Section J, Otter Tail coordinates extensively with its neighboring utilities to share system plans and identify system enhancements through the MISO, and through local participation in coordinated transmission planning (such as CapX 2020, and the ITAs). Otter Tail’s participation in the MISO study process provides coordinated planning for the entire 15-state MISO footprint. Participation in various working groups and committees (such as the West Technical Studies Task Force) provides for coordinated planning on a sub-regional basis including both utilities that are MISO members and utilities that are not MISO members.

SECTION K: Environmental Information

Otter Tail employees are involved with other groups in a variety of organizations to keep informed on various environmental issues. Edison Electric Institute (EEI), the Utility Air Regulatory Group, and the Lignite Energy Council all provide information exchange on environmental issues.

Otter Tail generating plants are subject to stringent federal and state standards and regulations regarding, among other things, air, water and solid waste pollution. Otter Tail estimates that operation and maintenance expenditures related to environmental items at Coyote Station in 2013 were \$3,615,278. In addition, there was \$1,182,300 in capital expenditures relating to environmental items at Coyote Station in 2013.

Otter Tail has complied in the past and will continue to comply with all requirements of the Commission in siting, operating and maintaining all proposed energy conversion and transmission facilities located in North Dakota.

Air Quality

Pursuant to the Federal Clean Air Act (the Act), the United States Environmental Protection Agency (EPA) has promulgated national primary and secondary standards for air pollutants. The Coyote Station has sulfur dioxide removal equipment. The removal equipment, referred to as a dry scrubber, consists of a spray dryer, followed by a fabric filter. The Coyote Station is currently operating within all presently applicable federal and state air quality and emission standards.

On December 19, 1996, the EPA adopted nitrogen oxide emissions regulations that are applicable to cyclone-fired boilers such as those used at the Coyote Station. The regulations required that the cyclone boilers meet the emission standards beginning on January 1, 2000 and Coyote Station meets those standards.

On March 14, 2011, the North Dakota Department of Health (NDDOH) issued a construction permit to Coyote Station requiring installation of control equipment to limit its NO_x emissions to 0.50 pounds per million Btu as calculated on a 30-day rolling average basis. The permit was issued under the North Dakota Regional Haze Implementation Plan, and compliance with the limit must be met beginning on July 1, 2018. On March 1, 2012 EPA signed a final rule for partial approval of the North Dakota Regional Haze State Implementation Plan that included the NO_x emission rate permit conditions for Coyote Station as proposed by the NDDOH. The rule became effective on May 7, 2012. The Sierra Club and National Parks Conservation Association appealed the EPA approval of the ND SIP to the 8th U.S. Circuit Court of Appeals in June of 2012; however, the 8th Circuit denied the Sierra Club petition in regard to Coyote Station on September 23, 2013.

On December 16, 2011, the EPA signed a final rule to reduce mercury and other air toxic emissions from power plants (the MATS rule). MATS was published in the Federal Register on February 16, 2012, became effective on April 16, 2012, and plants will have until April 16, 2015 to comply. Coyote Station will meet the requirements by installing activated carbon injection for

mercury control. Emissions monitoring equipment and/or stack testing will also be needed to verify compliance with the standards.

The two combustion turbines located at Jamestown are not impacted by the Act's emission reduction standards.

Greenhouse Gases

On June 2, 2014, EPA signed a proposed rule to reduce carbon dioxide emissions (CO₂) from the power sector. Using a formula that consists of four building blocks, EPA set state-specific goals expressed in terms of CO₂ pounds per net megawatt hour that must be met by the year 2030. EPA also set an interim goal that must be met on average over the period from 2020 to 2029. The goals are not requirements on individual units, and states do not have to follow EPA's formula to achieve the goal. Rather, each state can reduce carbon intensity from the power sector through whatever combination of measures that reflect its particular circumstances and policy objectives. According to EPA's rulemaking schedule, they intend to issue a final rule by June 2015, and all states must submit initial or complete plans by June 30, 2016. Individual state plans would be eligible for a one-year extension, or multi-state plans would be eligible for a two-year extension. The specific impact to Coyote Station will be unknown until EPA issues a final rule and the NDDOH develops a state plan.

Water Quality

The Federal Water Pollution Control Act Amendments of 1972 and amendments thereto, provide for, among other things, the imposition of effluent limitations to regulate discharges of pollutants, including thermal discharges, into the waters of the United States. The EPA has established effluent guidelines for the steam electric power generating industry. Discharges must also comply with state water quality standards. A water discharge permit for the Coyote Station was renewed on April 1, 2013 for a five-year term.

Section 316(b) of the Clean Water Act requires facilities to install the best technology available (BTA) for minimizing adverse environmental impact caused by cooling water intake structures. Coyote Station utilizes cooling towers that meet the classification of closed-cycle cooling, which has historically been considered to be a BTA. EPA signed a rule on May 19, 2014 that revises Section 316(b). The impact of the final rule on Coyote Station appears to involve providing additional information to the NDDOH related to Coyote's intake structure and the surrounding biological community.

Solid Waste

The EPA has promulgated various solid and hazardous waste regulations and guidelines. These provide for the comprehensive control of various solid and hazardous wastes from generation to final disposal. The NDDOH issued Coyote Station permits for disposal of ash and other solid wastes.

On May 4, 2010, EPA released two alternative proposals to regulate disposal of coal combustion residuals (CCRs) which include fly ash, bottom ash, boiler slag, and Flue Gas Desulfurization

materials. The two alternatives differ substantially in the fact that one proposal would regulate CCRs similar to a hazardous waste under Subtitle C of the Resource Conservation and Recovery Act (RCRA), while the other proposal would further regulate CCRs under the non-hazardous provisions of Subtitle D.

Previous to the most recent EPA effort, the Bevill Amendment to RCRA excludes CCRs from regulation as hazardous waste under Subtitle C. However, EPA was directed to study the impacts of CCRs and make a determination of whether or not regulation of CCRs under Subtitle C was necessary. The EPA determined that regulation of CCRs was not warranted in 1993. In 2000, EPA concluded that significant improvement had been made in waste management practices as a result of state requirements, but gaps still remained. At that time, EPA decided to retain the Bevill exemption and to establish minimum national standards for CCR management under Subtitle D of RCRA, which would be managed by the states. The Subtitle D standards were never issued as part of the 2000 determination.

EPA began another review of CCR regulation following the December 2008 rupture of a Tennessee Valley Authority surface impoundment located near Kingston, Texas. Over 400,000 comments on the proposals were submitted to EPA, which EPA must evaluate prior to issuing a final rule. EPA is currently subject to a Court Order to sign a final notice by December 19, 2014 whether or not to pursue the Subtitle D option.

SECTION L: Projected Demand for Service

Historical Growth and Long-Range Forecast

Otter Tail had an all-time high unmanaged winter peak of 883 MW on January 6, 2014 for the hour ending at 9 a.m. The ten-year historical growth of Otter Tail's unmanaged annual peak demand is shown in Table 1. For the purposes of Table 1, annual data reflects the MISO Planning Year that begins in May of the listed year and extends through April of the following year.

Table 1: Historical Unmanaged Annual Peak Demands (MW)

Year	Peak	Annual Growth %	Cumulative Growth %
2004	698		
2005	727	4.2	-2.3
2006	714	-1.8	3.4
2007	787	10.2	13.6
2008	810	2.9	16.5
2009	818	1.0	17.5
2010	831	1.6	19.1
2011	837	0.7	19.8
2012	872	4.2	24.0
2013	883	1.3	25.3

A long-range forecast was made using an econometric model. This model is designed to

incorporate a number of different assumptions about variables such as weather, economic growth, and demographics.

Three scenarios were used in this forecast: the Base Scenario, the Upper Scenario, and the Lower Scenario. The Base Scenario represents the best-fit econometric forecast of the statistically significant variables impacting customer load. The Upper and Lower Scenarios are calculated using confidence intervals that effectively describe the uncertainty around the forecast values.

Otter Tail's projected unmanaged winter peak demand is presented in Table 2 and Otter Tail's unmanaged summer peak demand is presented in Table 3. In Table 2, winter data reflects the MISO Planning Year in which the winter season begins in November of the listed year and extends through April of the following year. In Table 3, summer begins in May and ends in October of the listed year.

Table 2: Forecasted Unmanaged Winter Peak Demands (MW)

Year	Lower	Base	Upper
2014	774	830	886
2015	804	860	916
2016	806	862	918
2017	813	869	926
2018	837	894	950
2019	847	903	959
2020	860	917	973
2021	876	933	989
2022	885	942	998
2023	894	950	1,007

Table 3: Forecasted Unmanaged Summer Peak Demands (MW)

Year	Lower	Base	Upper
2014	629	685	741
2015	655	711	767
2016	686	742	798
2017	688	744	800
2018	695	751	807
2019	719	775	832
2020	728	785	841
2021	742	799	855
2022	758	815	871
2023	767	824	880

It is important to note that the data provided in Tables 2 and 3 does not reflect planned or committed energy efficiency efforts in Minnesota and South Dakota and that some demand savings would be realized from such efforts. Otter Tail anticipates the demand savings could be as much as 39 MW by 2020 based on plans in Minnesota and South Dakota. North Dakota has not approved an energy efficiency plan for implementation.

Demand Response Capability

Otter Tail has two Demand Resources registered under Module E with the MISO. Both resources are load modifying resources that are netted from the demand forecast prior to calculation of the reserve obligation. These resources are obligated to provide sustained load reduction for up to four hours at a time and be available five times in the summer to the MISO in the event of a declared reliability emergency. This obligation does not preclude the Company from relying on these resources to control for capacity events or economic reasons outside of a MISO emergency event.

Direct Load Control – The Radio Load Management System

The first Demand Resource, “Direct Load Control,” represents the Company’s extensive radio load management system that is used to control customer load during economic or capacity events. This resource was accredited with MISO at 18 MW for June 2014 through May 2015. Under MISO’s revised resource adequacy construct that became effective June 1, 2013, demand response is accredited based on its summer capability. Otter Tail has approximately 129,500 customers and approximately 41,000 of those customers have some type of load control. The level of control that is available can vary with temperature, customer behavior, and load control responsiveness. For example, more load control is available during extremely cold temperatures in the winter than during moderate temperatures.

Winter season demand response loads are in several categories and can reach as high as 130 MW. These manageable loads include water heaters, thermal storage, residential demand controllers, commercial time of use rates, small dual fuel heating systems, and large dual fuel (industrial and bulk interruptible loads). The radio load management system also has the capability of interrupting as much as 20 MW of summer peak load in the months of June through September. These summer loads consist primarily of water heaters, irrigation, large dual fuel loads, and air conditioning systems. Otter Tail continues to add customers to cycling control of central air conditioning (15 minutes on, 15 minutes off), and cycling of cooling systems on the dual fuel rate.

Firm Service Level – Customer Contracts

The second Demand Resource registered with MISO is a “Firm Service Level” resource that represents Otter Tail’s contract with a large industrial customer to shed load to a firm service level in the event of a capacity event. This resource was accredited at 15 MW for each month of the 2014/2015 Planning Year (June 2014 through May 2015). Unlike the “Direct Load Control” resource that reduces load when called upon by our load management system,

this resource must demonstrate that it did not exceed the registered firm service level during a capacity event.

The Company's current resource plan adds 5 MW of summer capability and 10 MW of winter capability every five years. Of particular benefit to the Company is the smoothing of the reserve obligation that Demand Resources provide from winter to summer.

As a company, Otter Tail will continue to use a combination of Demand Resources, energy efficiency, and purchase agreements with other utilities to help meet future capacity deficits. Otter Tail also continues to study and assess the potential for future additions to its generation.

Further detailed information may be obtained from Otter Tail's Resource Plan documents that are filed with the Minnesota Public Utilities Commission. Copies of the Company's Resource Plans are provided to the North Dakota Public Service Commission. The Company's current Resource Plan was filed December 2, 2013.

Operational Improvements to Generation Facilities

Otter Tail continues to explore operating improvements at its generating facilities. These projects are undertaken to increase reliability, increase efficiency, and/or lower the cost of production. In addition to the specific projects mentioned below, cooling tower fans, air compressors, RO pumps, coal feeders and wash pumps are examples of equipment that have been replaced with more efficient variable speed drives to lower station service (thereby increasing efficiency) at our plants.

Big Stone Plant:

There were several projects completed in 2013 that will contribute to improved reliability in the future. Cold end air pre-heater baskets and air heater seals, were replaced to improve efficiency and reliability of equipment. A program is being undertaken to replace smaller critical auxiliary transformers which have become unreliable and to replace underground piping that is approaching the end of its life expectancy. The owners of Big Stone Plant have approved the addition of environmental retrofits to the plant. The plan calls for selective catalytic reduction (SCR) to reduce emissions of nitrogen oxide and a dry scrubber to reduce sulfur dioxide. Both nitrogen dioxide and sulfur dioxide are expected to be reduced by 80 to 90 percent. Construction began in 2013 and the goal is to have the equipment operational in 2015 or early 2016.

Coyote Station:

Coyote completed a bag replacement for the baghouse system and is planning a Gas recirculation fan VFD upgrade. Work has begun at Coyote to install an Activated Carbon Injection System to meet the MATS (Mercury and Air Toxics Standard) rule.

Jamestown, North Dakota, Lake Preston, South Dakota, and Solway, Minnesota Peaking Plants:

The units continue to be operated during load peaking conditions and to provide transmission stability during emergency conditions and maintenance situations. They have also seen

additional run time for reliability reasons in the MISO market. Otter Tail continues to review ways to improve the operational performance of these units.

Hoot Lake Plant:

Both Units #2 and #3 continue to maintain high levels of rating capability and performance. Unit #1, a 7.5 MW nameplate unit built in 1948, was retired in 2005. The company was directed by the Minnesota Public Utilities Commission to perform a Baseload Diversification Study for Hoot Lake Plant with a specific focus on evaluating retirement and repower options. The Study was submitted in November 2012. The Minnesota Public Utilities Commission's order dated March 25, 2013 approved Otter Tail's plan to install upgrades to the existing Hoot Lake Plant equipment to meet the MATS (Mercury and Air Toxics Standard) rule by 2015, and plan for the retirement of the Hoot Lake plant by 2020. The MATS upgrade project at Hoot Lake is underway and scheduled for installation in June 2014. Additionally, during the planned outage, the Hoot Lake Plant will undergo additional maintenance activities.

Description of Generation Facilities

Otter Tail owns or is a co-owner of the following generating facilities:

Coyote Station is a coal-fired 427 MW (Net Dependable Capacity) facility located near Beulah, North Dakota. The Coyote Station is a sister unit to Big Stone Plant, but six years newer. The Coyote Station approved outlet rating is only 427 MW, due to transmission limitations. Coyote Station is a mine-mouth fed facility that uses North Dakota lignite for its fuel source. Otter Tail is a co-owner with MDU, MPC, and NWE. Otter Tail has a 35 percent ownership share in Coyote Station and is the operating agent of Coyote Station. The net generation from Coyote Station in 2013 was 2,650,881 MWh.

Big Stone Plant (BSP) is a coal-fired 475 MW (Net Dependable Capacity) facility located near Milbank, South Dakota. In association with using sub-bituminous coal for its fuel source, BSP burned alternative fuels from 1989-2009. Deliveries of alternative fuels peaked in the mid to late 90s. After a thorough review of the BSP's use of alternative fuels, the plant decided to end the program at the end of 2009.

Otter Tail is a co-owner with MDU, MPC, and NWE. Otter Tail has a 53.9 percent ownership share in Big Stone and is also the operator of the BSP. The net generation from BSP in 2013 was 2,854,757 MWh.

Hoot Lake Plant is a coal-fired facility consisting of 2 generators with a combined capacity of 138 MW (Net Dependable Capacity) located in Fergus Falls, Minnesota. Hoot Lake Plant burns sub-bituminous coal as its fuel supply and receives rail shipments from Burlington Northern. Otter Tail is the sole owner/operator of the Hoot Lake facility. Net generation for Hoot Lake Plant in 2013 was 655,940 MWh.

Otter Tail owns and operates 6 run-of-river hydro units in Minnesota. The total Net Dependable Capacity of the six units is about 2.6 MW.

Otter Tail owns two CT units in Jamestown, North Dakota and a single CT unit in Lake Preston, South Dakota. The Net Dependable Capacity rating for Jamestown unit #1 and unit #2 are 20.6 MW and 20.4 MW, respectively. The Net Dependable Capacity rating for the Lake Preston unit is 18.2 MW. All three units burn #2 fuel oil that is delivered by truck and stored in above-ground storage tanks. Gross generation for the three combustion turbines totaled 367 MWh in 2013, but the net generation was negative as station service to these plants over the year exceeded their generation.

Otter Tail also has a 2,000 kW standby diesel generator located at its System Operations Control Center in Fergus Falls, Minnesota.

Otter Tail owns a 42.4 MW (Net Dependable Capacity) LM6000 CT unit and a 1.250 MW diesel unit at Solway, Minnesota. Net generation for Solway in 2013 was 42,778 MWh.

Otter Tail owns 40.5 MW of the Langdon Wind Energy Center located 6-12 miles south of Langdon, North Dakota. The portion owned by Otter Tail had net generation of about 136,020 MWh in 2013. Otter Tail owns 48 MW of the Ashtabula Wind Energy Center located in Barnes County, North Dakota. The portion owned by Otter Tail had net generation of about 147,319 MWh in 2013. Otter Tail owns 49.5 MW of the Luverne Wind Farm located in Steele County, North Dakota. The portion owned by Otter Tail had net generation of 169,217 MWh in 2013.