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July 1, 2009

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 2009**

Dear Mr. Nitschke:

Enclosed are an original and nine (9) copies of Otter Tail Power Company's North Dakota Ten-Year Plan in accordance with NDCC 49-22-04. Notice of the filing of this plan is given pursuant to Article 69-06-02-02 of the North Dakota Administrative Code to the state agencies and officers as designated in Article 69-06-01-05 of the Administrative Code. A copy of Otter Tail Power Company's Ten-Year Plan has also been filed with the County Auditor of any county in which any part of a preferred or alternate site or corridor is proposed to be located.

Should you have any questions, please feel free to call Brian Draxten at 218-739-8417 or [bhdraxten@otpc.com](mailto:bhdraxten@otpc.com).

Very truly yours,

/s/ BRIAN DRAXTEN  
Brian Draxten  
Manager, Resource Planning

wao

Enclosures

By electronic filing and UPS overnight mail

c: Cass County Auditor – Michael Montplaisir  
Richland County Auditor – Harris Bailey  
Barnes County Auditor – Ed McGough  
Steele County Auditor – Linda Leadbetter  
Griggs County Auditor – Cynthia Anton

# **NORTH DAKOTA TEN-YEAR PLAN**



**Report RP09-5  
Resource Planning  
June 2009**

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## **INTRODUCTION**

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 Chapter 49-22 of the North Dakota Century Code, Otter Tail Power 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 state agencies and officers designated in Article 69-06-01-05 of the Administrative Code.

## **SECTION A: Existing Energy Conversion Facilities**

1. Otter Tail Power Company, (Otter Tail) owns 35% of the 427 MW rated Coyote facility or 149.45 MW in the summer and the winter seasons. 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% of two combustion turbines located at Jamestown, North Dakota. These combustion turbines have a combined summer and winter capacity rating of about 43.708 MW and 54.593 MW respectively. 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, ND. No energy was received in 2008 from this facility.
4. Otter Tail purchases energy from six non-utility wind-powered generating facilities in North Dakota.
  - One is a customer-owned two-unit facility that has a total capacity of 50 kW and delivered 3.44 MWh of energy to Otter Tail in 2008.
  - The second is a customer-owned facility that has a total capacity of 20 kW and delivered 1.379 MWh of energy to Otter Tail in 2008.
  - The third is a customer-owned facility that has a total capacity of 660 kW and delivered 224.36 MWh of energy to Otter Tail in 2008.
  - The fourth facility is the FPL Energy ND Wind II 21,000 kW wind farm owned by NextEra Energy, formerly FPL Energy, that delivered 60,610 MWh to Otter Tail in 2008.
  - Otter Tail purchases the output of 19,500 kW of wind turbines from Langdon Wind, LLC that delivered 69,559 MWh in 2008.
  - A sixth 100 kW facility is fully utilized by the customer, so no energy is delivered to Otter Tail Power.
5. Otter Tail purchases peaking capacity from two customer-owned diesel generators with a total nameplate capacity of 3.3 MW.
6. 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 of 2008.
7. 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.
8. No unit retirements of Otter Tail facilities in North Dakota are planned within the next ten years.

## **SECTION B: Energy Conversion Facilities Under Construction**

On May 22, 2009, Otter Tail announced contractual agreements to build and own 49.5 MW of a planned wind farm to be operated by NextEra Energy known as the Luverne Wind Farm. The wind farm will be built in Steele County and is anticipated to be operational by late 2009. Construction start is planned for June 2009. The entire Luverne Wind Farm has a project size of 169.5 MW. Table 1 below identifies further details associated with the Otter Tail portion of the project.

**Table 1: Luverne Wind Farm Detail**

<b>Location</b>	Steele County, North Dakota
<b>Size</b>	49.5 megawatts (MW)
<b>Turbines</b>	33 owned turbines, 1.5 MW each, manufactured by General Electric
<b>Tower height</b>	Approximately 250 feet to center of hub
<b>Turbine blades</b>	Variable pitch – 184 feet long
<b>Estimated Net Capacity</b>	35 – 45 %
<b>Cut-in wind speed</b>	6.7 mph
<b>Cut-out wind speed</b>	45 miles per hour
<b>Interconnection point</b>	Maple River Substation
<b>Suppliers</b>	When economically competitive, local labor, materials, and suppliers will be used
<b>Start-up date</b>	Operational by late 2009

## **SECTION C: Proposed Energy Conversion Facilities On Which Construction Is Intended Within The Ensuing Five Years**

No new energy conversion facilities owned by Otter Tail are proposed in the ensuing five-year time period in North Dakota, outside of the Luverne Wind Farm previously mentioned. The Otter Tail resource plan includes the addition of 160 MW of wind generating facilities. Approximately 157.5 MW of this amount has already been constructed or is designated for construction, including the Luverne project.

## **SECTION D: Proposed Energy Conversion Facilities During the Next Ten-Year Time Period**

No new energy conversion facilities owned by Otter Tail are proposed in the ensuing ten-year time period in North Dakota, outside of the Luverne Wind Farm previously mentioned. The

Otter Tail resource plan includes the addition of 160 MW of wind generating facilities, including the Luverne project.

**SECTION E: Existing Transmission Facilities (Electric)**

In-service dates for existing transmission facilities 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
Underwood – Harvey 230 kV	1986
Harvey – Balta – Rugby 230 kV	2002

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

We do not anticipate operating any of the transmission lines at 100% load factor. The nature of Otter Tail’s native load and the operating characteristics of the transmission system makes this impossible.

**SECTION F: Existing Transmission Facilities (Pipeline)**

None.

**SECTION G: Proposed Transmission Facilities On Which Construction Is Intended Within The Ensuing Five Years**

Due to the large number of generation interconnection projects proposed on the Otter Tail system, 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. This regional plan would be coordinated with the local utilities, the Midwest Independent System Operator (Midwest ISO), and the Mid-Continent Area Power Pool (MAPP).

## **Transmission Projects Related to Reliability Concerns**

### *Mapleton – Casselton – Buffalo 115 kV Line*

A new 12-mile 115 kV transmission line from Mapleton to Casselton was energized in October of 2008 to provide service to a new ethanol plant near Casselton, ND. This new 115 kV line was double circuited with an existing 41.6 kV line for a large portion of the length to minimize routing and environmental impacts. In order to provide looped service to the ethanol plant, Otter Tail is planning to construct a new 115 kV line from Casselton to Buffalo. The exact timing of the Casselton to Buffalo 115 kV line is still being evaluated. As part of this project, substation modifications have been completed at Mapleton and Casselton (new substation) and are expected at Buffalo once the new 115 kV line is extended from Casselton to Buffalo.

### *Ramsey (Devils Lake) 230/115 kV Transformer*

The jointly coordinated transmission studies completed to meet the Mid-Continent Area Power Pool (MAPP) study requirements for the Langdon Wind Energy Center has identified that the addition of the new Langdon – Hensel 115 kV line encourages 115 kV through-flow from Devils Lake to Grand Forks when the primary 230 kV transmission line (from the Ramsey Substation to the Prairie Substation) is out of service. This 115 kV through flow condition is most evident with low generation levels at Langdon. As a result of this flow pattern, the existing 230/115 kV transformer at the Ramsey substation (near Devils Lake) is overloaded. As part of identifying a jointly coordinated transmission solution, Otter Tail has agreed to perform a transmission study coordinated primarily with Great River Energy (GRE), Minnkota Power Cooperative (MPC), and Western Area Power Administration (WAPA) to identify the best method of alleviating this transformer overload. The study work is nearing completion and has identified that a replacement transformer with a higher rating is needed to alleviate the overloading problem caused from the addition of the Langdon – Hensel 115 kV Line. The new transformer is expected to be in service in the 2010-2011 timeframe. Absent the generation addition at Langdon, the transmission system would have required the Hensel – Langdon 115 kV line and the subsequent replacement of the Ramsey 230/115 kV transformer would have been required at some time in the future due to increasing load in this area.

### *Jamestown Area Voltage Control*

Previous studies conducted through the Midwest ISO and the Mid-Continent Area Power Pool have indicated the possibility of high voltage conditions in the Jamestown and Buffalo areas for outage of either the Jamestown to Buffalo 345 kV line or the Buffalo to Maple River (West Fargo) 345 kV line.

Likewise, recent generation interconnection studies performed through the Midwest ISO have indicated the possibility of low transient voltage concerns in the Jamestown and Buffalo areas. Since the Jamestown and Buffalo areas are prone to both high voltage and low voltage

issues, it may be optimal for Otter Tail to install a reactive device with the capability to output reactive power in one situation, but be able to absorb reactive power in another situation.

Short-term mitigation of these voltage concerns (by means of switchable capacitor banks in and around Jamestown along with varying generator control voltages at Coyote) has been successful. Otter Tail continues to monitor these concerns while trying to formulate a permanent resolution. While there are several generation interconnection projects, transmission service requests and other future transmission expansions under study, Otter Tail is staying engaged in regional planning to determine the most efficient and effective method of resolving these voltage concerns.

#### *Oakes – Forman 230 kV Line Reroute*

The Oakes – Forman section of the existing Ellendale – Hankinson 230 kV transmission line needs to be rerouted around Fiala Lake. Since 1967, the size of Fiala Lake has slowly overtaken the line structures. A reroute of the line is needed so that the line can be reliably operated and safely maintained. The Oakes – Forman 230 kV line is approximately 23 miles long and the section that needs to be rerouted is roughly 0.53 miles long close to the Forman end. This reroute is in the process of being completed.

### **Transmission Projects Related to Generator Interconnection Requests**

#### *Ladish (Spiritwood) 115/41.6 kV Substation Renovation*

As part of the Midwest ISO's generator interconnection procedures, Otter Tail is currently in the process of a large substation renovation at Ladish to accommodate a new generator addition at Spiritwood. This work is expected to be completed in June 2009 to accommodate a planned in-service date of the generator in the 3<sup>rd</sup> quarter of 2010.

#### *Jamestown Area 115 kV Line Upgrades*

In addition to the local substation upgrades at Ladish, it is expected that approximately 12 miles of 115 kV line between the Jamestown Peaking Plant substation and the Jamestown 345 kV substation will need to be upgraded as a result of the generator addition at Spiritwood. The upgrade of the 115 kV line will need to be coordinated through the Large Generator Interconnection Procedures at MISO. It is possible that interim operating guides and/or special protection schemes could be implemented to allow short-term operation of the plant prior to the physical line upgrade being completed.

#### *LuVerne Wind Farm – Pillsbury 230 kV Radial Interconnection Facility*

Otter Tail is in the process of building a new 230 kV interconnection transmission line for the exclusive purpose of delivering wind generation output from a new wind farm (called Luverne), located about 20 miles north of the existing Ashtabula I wind farm. The line is radial and does not serve, and was not designed to serve, any customers other than the new wind generating plant. This new 230 kV line will be approximately 13 miles long and allow

the new wind farm to connect into the Pillsbury substation, which is owned by Minnkota Power Cooperative. The line should be complete in the Fall of 2009.

#### *Big Stone II Transmission Upgrades*

*Big Stone – Browns Valley – Hankinson 230 kV Line*

*Hankinson – Wahpeton 230 kV Line*

*Fargo – Sheyenne 230 kV Line*

Transmission studies for the Big Stone II project have identified potential line loading issues on the transmission system within North Dakota in connection with the Big Stone II project. Current results of the transmission studies are indicating upgrades may be necessary along the Big Stone – Browns Valley – Hankinson 230 kV line, the Hankinson – Wahpeton 230 kV line and the Fargo – Sheyenne 230 kV line. Facility upgrade requirements for these transmission lines are subject to further investigation before a detailed upgrade plan can be developed. With the current schedule of the Big Stone II project being in-service in the 2015-2016 timeframe, it is expected that if these line upgrades are necessary, they will need to be completed in the 2014-2015 timeframe.

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. 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 the Midwest ISO and MAPP.

#### **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 is a participant in the CapX 2020 effort that is currently in the process of permitting 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 – St. Cloud – 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)

A portion of one of the initial projects, a proposed 345 kV transmission line from the Fargo, ND area to the St. Cloud/Monticello, MN area is located in North Dakota and is shown in Figure 1. Work has begun on the permitting of this project. The project participants have received a

Certificate of Need for the Minnesota portion of the project. The project participants will be requesting a Corridor Certificate and a Route Permit for the North Dakota portion of the project sometime during the next year. 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 (West Fargo, ND) with the entire line expected to be in-service sometime between 2012–2016.

**Figure 1: Proposed 345 kV line from Fargo, ND area to St. Cloud/Monticello Area**



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 in order to integrate additional resources. One of these efforts includes the Regional Generation Outlet Study (RGOS) being performed by the Midwest ISO. Another such effort is the Upper Midwest Transmission Development Initiative (UMTDI), which is assisting the Midwest ISO in the development of feasible transmission plans within the region. 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 Midwest ISO Process**

As a transmission-owning member of the Midwest ISO, Otter Tail participates in various transmission planning efforts, the most significant of which is the annual Midwest ISO 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, the Midwest ISO, with input from various stakeholders, evaluates the system for both reliability and economic needs.

Local planning of the Otter Tail facilities, less than 100 kV, is primarily coordinated on a subregional level. Otter Tail’s locally planned projects are then reviewed by the Midwest ISO and may become part of the MTEP. Developing local transmission plans at a subregional level and rolling them up to the Midwest ISO provides for regional coordination of local transmission plans, which leads to transmission projects being built in a coordinated manner to address the transmission needs of the larger region. This coordination for identifying new transmission projects also augments the larger region by providing for a transmission plan that maximizes the benefits of the new projects and in many cases reduces the number of new transmission projects that are needed than if the transmission planning was done solely on an individual basis. Regional coordination of local transmission plans also results in study efficiencies by keeping a broader group of utilities, states, and stakeholders informed through the transmission planning process.

During the course of the MTEP process, the Midwest ISO seeks opportunities to coordinate or consolidate, where possible, individually defined transmission projects into more comprehensive cost-effective developments. The Midwest ISO coordinates with Transmission Owners, and considers the input from various stakeholder groups (through the Subregional Planning Meetings, Planning Subcommittee, and Planning Advisory Committee) to develop expansion plans to meet the needs of the transmission system. This multi-party collaborative process allows for all projects with regional and inter-regional impacts to be analyzed for their combined effects on the transmission system. Moreover, this collaborative process is designed to ensure the most efficient and cost-effective transmission expansion plan is developed, while giving consideration to the inputs from all stakeholders.

Additionally, subregional, state, and non-Midwest ISO coordination is necessary because the Otter Tail transmission system is highly interconnected with neighboring non-Midwest ISO/Mid-Continent Area Power Pool (“MAPP”) transmission owners. The Otter Tail transmission system is nearly the farthest, most western border of the Midwest ISO footprint; therefore, it is interconnected with several transmission-owning utilities that are not members of the Midwest ISO, but instead remain members of MAPP.

## **Regional Coordination through the MAPP Process**

Otter Tail continues to coordinate with the non-MISO parties in our region that are still a part of the MAPP Regional Transmission Committee (RTC).

We accomplish this coordination through participation in several working groups and committees. Some of these groups and committees include:

- Northern MAPP Subregional Planning Group (NM SPG)
- Missouri Basin Subregional Planning Group (MB SPG)
- Northern MAPP Operating and Review Working Group (NMORWG)
- Transmission Reliability Assessment Working Group (TRAWG)

The NM SPG and MB SPG typically meet every other month to discuss members' planned projects (including the identification of member-system enhancements that could relieve congestion or integrate new resources), share study results, and establish ad-hoc study groups for regional and local concerns at all voltage levels. The SPGs provide forums for the coordination of individual utility transmission plans, coordination with other SPGs, and coordination with neighboring non-MAPP utility systems. SPG meetings are open to all interested parties who have a signed Non-Disclosure Agreement with MAPP.

Otter Tail is also actively engaged in NMORWG. This working group performs seasonal operating studies for the Northern MAPP region and defines specific operating guides relevant to different operating conditions. The NMORWG meetings provide a forum for exchanging information with neighboring transmission owners regarding projects that are being built and operated in the near-term operating horizon.

The TRAWG performs transmission system assessments for MAPP members that are required by the reliability standards defined by the North American Electric Reliability Corporation (NERC). Given that the Otter Tail system is highly integrated with MAPP members, it is required that we stay actively engaged in these studies in order to coordinate these system assessments with our neighboring transmission owners. This coordination also eliminates any duplication that may occur if each transmission owner would be performing their own assessments individually.

### **Regional Coordination through the Local Process**

Otter Tail also 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 MAPP and the Midwest ISO.

Otter Tail has Integrated Transmission Agreements (ITA) with Central Power Electric Cooperative, Missouri River Energy Services, Minnkota Power Cooperative, and Great River Energy (GRE). 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 Cooperative,

Montana-Dakota Utilities, Manitoba Hydro (MHEB), Northwestern Energy, and Western Area Power Administration (WAPA). 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 through this local process become part of the MISO Transmission Expansion Plan (MTEP) and are also coordinated with the Mid-Continent Area Power Pool (MAPP).

As discussed above, Otter Tail coordinates extensively with its neighboring utilities to share system plans and identify system enhancements through the Midwest ISO, the Mid-Continent Area Power Pool (MAPP), and through local participation in coordinated transmission planning (such as CapX 2020, and the ITAs). Otter Tail's participation in the Midwest ISO study process provides coordinated planning for the entire 15-state Midwest ISO footprint while participation in various working groups and committees within MAPP provides for coordinated planning within the historic 7-state MAPP region, which includes both utilities that are Midwest ISO members and utilities that are not Midwest ISO 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. On an individual basis, employees participate in Energy and Environment Research Center (EERC) conferences, Air and Waste Management Conferences, and MPCA task forces and other informational meetings. Otter Tail, along with other government and industrial entities, funds various types of research projects such as the Energy and Environment Research Center's Coal-Ash Research Resources Consortium (CARRC) and the Center for Air Toxic Metals (CATM). CATM is devoted to the study of the emission, control, and fate of hazardous air pollutants with primary emphasis on mercury. The CARRC was established to evaluate potential beneficial uses of coal combustion by-products.

Otter Tail Power 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 2008 were \$4,579,323. In addition, there was \$242,745 in capital expenditures relating to environmental items at Coyote Station in 2008.

Otter Tail Power has complied in the past and will continue to comply with all requirements of the Public Service 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. In February of 2008, Basin Electric Power Cooperative, Minnkota Power Cooperative, and Otter Tail Power Company completed a Memorandum of Understanding forming the North Dakota Lignite-Fired Cyclone Boiler NOx Reduction Group. The purpose of the group is to evaluate technologies for NOx reduction on North Dakota lignite-fired cyclone boilers that have greater NOx removal efficiencies than currently available technologies.

The Act contains a list of hazardous air pollutants, which includes certain substances believed to be emitted by Otter Tail plants. The Act calls for EPA studies of the effects of emissions of the listed pollutants by electric utility steam generating plants. The EPA has completed the studies and sent reports to Congress. On December 14, 2000, the EPA announced that it affirmatively decided to regulate mercury emissions from electric generating units. The EPA published final mercury emission rules in the May 18, 2005 Federal Register. On October 28, 2005, EPA announced a reconsideration of portions of the final rules. EPA reaffirmed most relevant portions of the rules in their May 31, 2006, final action on the reconsideration. On February 8, 2008, the United States Court of Appeals for the District of Columbia granted petitions for review of the EPA mercury rules that would have allowed the EPA to regulate mercury emissions based on a cap and trade approach. The Court issued a mandate vacating the rules on March 14, 2008. Given the Court's decision, future mercury regulatory requirements for the electric utility industry are uncertain at this time.

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

### ***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. Water discharge permits for the Coyote Station were renewed on April 1, 2008 for a five-year term.

### ***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 North Dakota Department of Health issued Coyote Station permits for disposal of ash and other solid wastes.

## SECTION L: Projected Demand For Service

### *Historical Growth and Long Range Forecast*

The ten-year historical growth of Otter Tail annual peak demand is shown in Table 2.

**Table 2: Historical Annual MW Peak Demands**

<b>Year</b>	<b>Peak</b>	<b>Annual Growth %</b>	<b>Cumulative Growth %</b>
1999	628	0.0	0.0
2000	643	2.4	2.4
2001	630	-2.0	0.3
2002	640	1.6	1.9
2003	669	4.5	6.5
2004	686	2.5	9.2
2005	665	-3.1	5.9
2006	680	2.3	8.3
2007	705	3.7	12.3
2008	806	14.3	28.3

A long-range forecast was made using an econometric model developed with the assistance of Christensen Associate of Madison, Wisconsin. This model is designed to incorporate a number of different assumptions about important 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 3, and Otter Tail's unmanaged summer peak demand is presented in Table 4.

**Table 3: Forecasted Unmanaged Winter Peak Demands (MW)**

<b>Year</b>	<b>Lower</b>	<b>Base</b>	<b>Upper</b>
2009	739	782	826
2010	742	785	829
2011	789	834	878
2012	810	855	900
2013	821	867	912
2014	832	879	925
2015	843	891	938
2016	854	903	951
2017	866	915	964
2018	877	927	978
2019	888	940	991

**Table 4: Forecasted Unmanaged Summer Peak Demands (MW)**

<b>Year</b>	<b>Lower</b>	<b>Base</b>	<b>Upper</b>
2009	666	709	753
2010	670	713	757
2011	680	724	767
2012	728	772	816
2013	749	794	839
2014	760	806	852
2015	771	818	864
2016	783	830	877
2017	794	842	890
2018	805	854	904
2019	816	867	917

It is important to note that the data provided in Tables 3 and 4 do not reflect planned or committed energy efficiency efforts in Minnesota, North Dakota, 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 54 MW by 2019 based on those plans that have been approved in Minnesota and South Dakota. Should North Dakota approve Otter Tail’s proposed energy efficiency programs, that number could be higher.

***Load Management Capability***

Otter Tail has been developing its Load Management System for many years. This system has allowed Otter Tail to delay capacity and energy production facilities. The load forecast used in Otter Tail’s projected forecast reflects conservation efforts that are customer driven and those that develop as a natural result of load management efforts. Otter Tail offers load management and demand-side management programs to its ND customers that are rate related and offers off-peak rates.

**Table 5: Load Management Capability Forecast**

<b>Year</b>	<b>Summer Season (May-October) Base Forecast Scenario (MW) <sup>1</sup></b>	<b>Winter Season (November-April) Base Forecast Scenario (MW) <sup>1</sup></b>
2009	25	100
2010	26	102
2011	27	104
2012	28	106
2013	29	108
2014	30	110
2015	31	112
2016	32	114
2017	33	116
2018	34	118
2019	35	120

1. Values assume a winter morning peak at -22 °F and a summer afternoon peak at 92 °F.

As a company, Otter Tail will continue to use a combination of load management and purchase agreements with other utilities to meet any future deficits. Otter Tail also continues to study and assess the potential for future additions to its generation. Otter Tail had a winter peak of 816 MW on January 13, 2009 for the hour ending at 10 a.m.

Otter Tail has purchased year-round capacity, as well as summer and winter season peaking capacity for the year 2009. Otter Tail has purchased summer and winter capacity from Manitoba Hydro Electrical Board for May 1, 2000 through April 30, 2010. A comparable contract for summer and winter capacity from Minnesota Power will extend from May 1, 2010 through May 31, 2013. OTP has also purchased participation power from other MISO

members for the summer and winter of 2009. 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 next Resource Plan will be filed in the fall of 2009.

### ***Operational Improvements to Generation Facilities***

Otter Tail continues to explore operating improvements at its generating facilities to increase their efficiency and to lower the cost of production.

#### **Big Stone Plant:**

There were three significant projects completed in 2007 that contributed to improved performance in 2008 and will continue pay dividends in the future. A generator stator rewind has significantly reduced the risk of a major failure. The replacement of the Advanced Hybrid Particulate Collector (AHPC) was successful and the new baghouse has operated as designed. A condenser/circulating water pump upgrade has provided significant improvement in summer NPHR, eliminated summer load restrictions and eliminated the ongoing corrosion problem with condenser tubes.

#### **Coyote Station:**

The Coyote Station is a sister unit to Big Stone Plant, but six years newer. In order to correct design deficiencies with the existing low-pressure rotor, a new rotor was installed in 2003. The new rotor improves overall plant efficiency by approximately 2%. The Coyote Station approved outlet rating is only 427 MW, due to transmission limitations. The unit has consistently exceeded this level in its URGE test the past few years. The facility also has two emergency diesel generators that are not accredited in MAPP due to the transmission limitations. The co-owners are pursuing a 25 MW increase to the transmission outlet capacity of Coyote. A North Dakota Group Study, which includes the proposed increase at Coyote along with a few other North Dakota projects, is underway with the Midwest ISO. The co-owners signed an Interconnection Facilities Study Agreement in February of 2008 and continue to pursue the increase to the transmission outlet capability.

#### **Jamestown, ND, Lake Preston, SD, and Solway, MN 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 Midwest ISO market. Otter Tail continues to review ways to improve the unit's efficiency. Improvements at Jamestown and Lake Preston include an upgrade of control systems and the installation of an inlet fogging system to increase summer ratings in 2001.

Otter Tail added a 44.5 MW GE LM6000 combustion turbine (CT) unit at Solway, MN in the spring of 2003. The unit includes inlet chilling to improve the summer rating and efficiency, as well as water injection for NOX control and increased output. Interruptible natural gas is the primary fuel with fuel oil as the back-up fuel supply. The combustion turbine also includes a clutch to allow synchronous condensing service to support the transmission system. The LM6000 is an aero-derivative machine, powered by a Boeing 747 engine, and is one of the most fuel-efficient simple cycle turbines in the world.

#### Hoot Lake Plant:

Hoot Lake Plant has also taken steps to lower its operating costs. 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.

### ***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 facility located near Beulah, North Dakota. Coyote Station is a mine-mouth fed facility that uses ND lignite for its fuel source. Otter Tail is a co-owner with Montana Dakota Utilities (MDU), Northern Municipal Power Agency (Minnkota Power Cooperative (MPC) acts as the agent for Northern Municipal Power Agency), and Northwestern Energy (NWE). Otter Tail has a 35% ownership share in Coyote Station and is the operating agent of Coyote Station. The net generation from Coyote Station in 2008 was 2,905,224 MWh.

Big Stone Plant is a coal fired 475 MW facility located near Milbank, South Dakota. In association with using sub-bituminous coal for its fuel source, Big Stone Plant also burns a limited amount of tire-derived-fuel (TDF), refuse-derived-fuel (RDF), and agricultural biomass. Otter Tail is a co-owner with MDU, MPC, and NWE. Otter Tail has a 53.9% ownership share in Big Stone and is also the operator of the Big Stone Plant. The net generation from Big Stone Plant in 2008 was 3,426,842 MWh.

Hoot Lake Plant is a coal-fired facility consisting of 2 generators with a combined capacity of 145 MW located in Fergus Falls, Minnesota. Hoot Lake Plant burns sub-bituminous coal as its fuel supply and receives rail shipment from Burlington Northern. Otter Tail is the sole owner/operator of the Hoot Lake facility. Net generation for Hoot Lake Plant in 2008 was 765,992 MWh.

Otter Tail owns and operates 6 run-of-river hydro units in Minnesota. The total capacity of the six units is about 4 MW. The six hydro units produced net generation of 23,260 MWh in 2008.

Otter Tail owns two CT units in Jamestown, ND and a single CT unit in Lake Preston, SD. The three combustion turbines' capacity rating varies monthly, although all three have about a 28.8 MW winter capacity rating. All three units burn #2 fuel oil that is delivered by truck

and stored in aboveground storage tanks. Net generation for the three combustion turbines was 1,602 MWh in 2008.

Otter Tail also has a 2,000 kW standby diesel generator located at its System Operations Control Center in Fergus Falls, MN. The generator had net generation of about 18 MWh in 2008.

Otter Tail owns a 44.5 MW nameplate rated LM6000 CT unit and a 1.250 MW diesel unit at Solway, MN. Net generation for Solway in 2008 was 47,234 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 began commercial operation in January of 2008 and had net generation of about 133,640 MWh in 2008.

Otter Tail owns 48 MW of the Ashtabula Wind Energy Center located in Barnes County, North Dakota. The portion owned by Otter Tail began commercial operation during October 2008 and had net generation of about 20,350 MWh in 2008. Approximately 3,696 MWh was sold to Minnkota Power Cooperative during October and November 2008 because the transmission outlet was not operational until December 2008.

Otter Tail is in the process of constructing the Luverne Wind Farm located in Steele County, North Dakota. The 49.5 MW farm consists of 33 1.5 MW General Electric turbines with an expected operational date of late 2009.

#### Proposed Big Stone II Plant:

Otter Tail Power Company is one of five utilities that have been working together to build a baseload-generating unit at Big Stone City, South Dakota. Otter Tail has 120 MW to 133 MW ownership share of a new super-critical pulverized coal-fired unit to be constructed adjacent to the existing Big Stone unit. The original project had seven owners and was planned to be a 630 MW plant. With the departure of two owners in September of 2007, additional need analyses was completed for two plant size alternatives, a 500 MW plant with the remaining five owners, or a 580 MW plant if another owner was included in the project. A decision has not yet been made on final size of the project. The proposed Big Stone II unit has a commercial operation date of late 2015 to early 2016 and the energy generated is expected to serve the owners' retail and wholesale native load customers. There are still some factors that could impact the commercial operation date of the Big Stone II Plant.

Dated this 1st day of July, 2009.

OTTER TAIL POWER COMPANY

By: /s/ KERRY KASEMAN  
Kerry Kaseman, Sr. Credit Administrator