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July 27, 2007

## VIA OVERNIGHT MAIL & EMAIL

Illona Jeffcoat-Sacco  
Executive Secretary  
North Dakota Public Service Commission  
State Capitol  
Bismarck, ND 58505

**Re: In the Matter of the Advance Determination of Prudence Application of Otter Tail Corporation Case No. PU-06-481**

Dear Ms. Jeffcoat-Sacco:

Please find enclosed for filing the following documents:

1. Applicant's Request for Protect Trade Secret Information (original and seven copies);
2. Sealed Trade Secret Late-Filed Exhibit No. 7;
3. Redacted Late Filed Exhibit Request No. 7 (original and seven copies);
4. Summaries of witness testimony, admitted to the record on June 26, 2007; and
5. Affidavit of Service.

All of the other late-filed exhibits are being filed this same date by Montana-Dakota Utilities Co. on behalf of itself and Otter Tail, as applicable. Please note, given the trade secret nature of this information, Late Filed Exhibit No. 7 should not be entered as part of Case No. PU-06-482.

Very truly yours,



Todd J. Guerrero

TJG/dmd

cc: The attached service list with attachments.

**STATE OF NORTH DAKOTA**  
**PUBLIC SERVICE COMMISSION**

Otter Tail Corporation, Advance  
Determination of Prudence  
Application

**REQUEST TO PROTECT  
TRADE SECRET INFORMATION**

Case No. PU-06-481

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Otter Tail Corporation d/b/a Otter Tail Power Company (“Otter Tail”), pursuant to N.D. Admin. Code § 69-02-09-01, hereby requests the North Dakota Public Service Commission for trade secret protection of information contained in the Response to Late Filed Exhibit Request No. 7 by the ND PSC .

The trade secret information for which Otter Tail seeks protection is conspicuously marked as Trade Secret Data on page 16 of its response. Pursuant to N.D. Admin. Code § 69-02-09-02, Otter Tail has separately filed the material containing the trade secret information in a sealed envelope. In particular, Otter Tail has submitted (1) an original and seven copies of a public redacted version of its Application; and (2) one copy of the nonpublic nonredacted version of the Application in a sealed envelope.

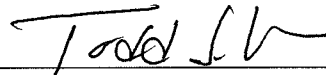
The designated trade secret information in the response to Request No. 7 is proprietary in nature.

The trade secret information for which Otter Tail seeks protection is not readily ascertainable by proper means by other persons. Rather, the trade secret information is known only to certain Otter Tail employees.

For the foregoing reasons, Otter Tail respectfully requests that the Commission treat the designated information as trade secret and that it not be made available to the public.

Date: July 27, 2007

Respectfully submitted,



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**STATE OF NORTH DAKOTA**  
**PUBLIC SERVICE COMMISSION**

Otter Tail Corporation , Advance  
Determination of Prudence Application

**OTTER TAIL POWER COMPANY'S  
RESPONSES TO LATE FILED  
EXHIBIT NO. 7 REQUESTED BY THE  
NORTH DAKOTA PUBLIC SERVICE  
COMMISSION – PUBLIC VERSION-  
TRADE SECRET DATA REDACTED**

Case Nos. PU-06-481

**Otter Tail Corporation  
Case Nos. PU-06-481  
Advance Determination of Prudence – Big Stone II Generating Station  
Late Filed Exhibit No. 7**

**Otter Tail's list of supply side options including Big Stone II. The list should include the cost of each supply option. Otter Tail's list of current DSM programs in any jurisdiction, and list of DSM programs identified in the 2006-2020 IRP. The lists should include the cost of implementing each of the DSM programs in North Dakota. If any of this information is in the current 2006-2010 IRP, please refer us to specific pages.**

Response:

The following four tables identify sets of DSM programs. Table OTP-1 lists those DSM programs that are/were already in effect prior to the development of the resource plan and are therefore considered cheaper than BSPII. Table OTP-2 identifies the programs that were selected by the IRP-Manager model ahead of BSPII and are therefore considered cheaper than BSPII. Table OTP-3 identifies the DSM programs that were selected by IRP-Manager after BSPII and are therefore considered more expensive than BSPII. Table OTP-4 identifies the DSM programs that were not selected and are therefore more expensive than BSPII and non-economic.

It is important to understand that the resource planning analysis is only a screening analysis for DSM technologies. Otter Tail has used the DSManager model for its detailed analysis of DSM technologies for many years, and the actual programs chosen for development are based on that analysis.

**Table OTP – 1  
DSM Programs in Effect at the Time of Development of the 2006 – 2020 IRP**

<b>Program</b>	<b>Description</b>
HotPack	Provides residential customers installing new or replacement electric water heaters with a free packet of energy saving devices, including a showerhead, waterflow tester, kitchen and bathroom aerator, pipe wrap insulation, and water temperature gauge card.
Air Source Heat Pump	Targets residential/commercial/industrial customers currently using or considering the installation of less efficient resistance electric heating and cooling systems by offering rebates for new or retrofit installations air source heat pumps.
Geothermal Heat Pump	Targets residential/commercial/industrial customers by offering rebates for replacing low-efficiency electric heating systems with higher efficiency geothermal heat pumps or purchasing geothermal heat pumps for first time retrofit or new construction installations.
Financing	Provides low interest loans for energy-efficiency improvement projects that are currently included in the Conservation Improvement Program.
Residential Demand Control	Provides a rebate and special rate to customers who install a monitoring device that notifies customers of high energy and demand use and that allows Otter Tail to control the load.
Air Conditioning Control	Offers residential customers a free programmable thermostat and compact fluorescent light bulbs in exchange for allowing cycling control of central air conditioning systems.
Change A Light	Otter Tail participates in a Change A Light, Change the World project, which is a program developed by outside entities. The purpose is to offer compact fluorescent bulbs at a discount through retail stores.
Refrigeration	A commercial program designed to promote high-efficiency refrigeration technologies by offering rebates for new and retrofit installations of compressor systems, condenser systems, subcooling systems, refrigerated display cases, and air circulation.
Cooking	A commercial program intended to assist with the design and installation of energy efficient cooking systems in businesses such as supermarket delis, schools, hospitals, colleges, and restaurants.
Grants	This is a customized incentive program where commercial/industrial customers can propose conservation and efficiency improvements. Rebates are determined based on the expected energy and demand savings.
Lighting	Provides rebates to commercial/industrial customers for the purchase of energy efficient lighting technologies such as T8 lamps, compact fluorescent fixtures and lamps, efficient HID lighting, induction lighting systems, electronic ballasts, and occupancy sensors.
Motors	Provides rebates to commercial/industrial customers for the installation of higher efficiency motors.
Energy Analysis and Recommissioning	Includes both compressed air audits and commercial/industrial audits designed to assist the customer in improving the efficiency of existing building operating systems.
House Therapy	This program's primary focus is audit and weatherization services to low-income residential customers. The project provides other services

	including electric water heating, refrigerator/freezer replacement, and installation of residential demand control units.
<b>Table OTP – 2</b> <b>DSM Programs Selected by IRP-Manager PRIOR to the Selection of BSPII During the Development of the 2006 2020 IRP</b>	
<b>Program</b>	<b>Description</b>
060DIN	This program would provide rebates for industrial customers to recover lost heat from their processes and re-use that heat for other purposes, such as building heat. This is already available to industrial customers through the grant program.
26049DCO	This program would provide rebates to commercial customers to increase the ceiling/roof insulation level to R-49, for those installations that use electric heating.
30DIN260	This program would provide rebates to industrial customers to increase the ceiling/roof installation to R-30, for those installations that use electric heating. This would only be available as a retrofit to older existing structures, since current building codes would require at least that level of insulation for new facilities.
70030DCO	This program would provide rebates to commercial customers to increase wall insulation to R-30.
290DRE	This residential program would be primarily informational in targeting customers to lower the temperature settings on their water heater.
480DRE	This residential program would target new and existing window replacements with Low E glass.

<b>Table OTP – 3</b> <b>DSM Programs Selected by IRP-Manager AFTER the Selection of BSPII During the Development of the 2006 2020 IRP</b>	
<b>PROGRAM</b>	<b>DESCRIPTION</b>
300DRE	Residential low flow showerhead
480DCO	Commercial Low E Window Glass
030DCO	Commercial outdoor lighting timeclock
19DRE260	Residential R-19 roof insulation – retrofit only
290DCO	Commercial lower water heater temperature
30DRE260	Residential R-30 roof insulation – retrofit only
310DCO	Commercial water heater blanket
520DRE	Residential window film/screen
700DIN	Industrial R-19 wall insulation – retrofit only
700DRE	Residential R-25 wall insulation
710DCO	Commercial air to air heat exchanger
750DCO	Commercial caulking/weather-stripping
MN2XINC	Combination of MN industrial customer programs, including commercial & industrial refrigeration heat recovery, optical reflectors, high-efficiency fan motors, high efficiency motors, motor down-sizing, adjustable speed drives, occupancy sensors at double the current rebate levels.

<b>Table OTP – 4</b>	
<b>DSM Programs NOT Selected by IRP-Manager During the Development of the 2006 – 2020 IRP or Eliminated in Pre-Screening Runs Using DSManger</b>	
<b>PROGRAM</b>	<b>DESCRIPTION</b>
49DRE260	Residential R-49 roof insulation
710DRE	Residential air to air heat exchanger
770DRE	Residential storm windows
26030DCO	Commercial R-30 roof insulation – retrofit only
70019DCO	Commercial R19 wall insulation – retrofit only
MN1XINC	Combination of MN industrial customer programs, including commercial & industrial refrigeration heat recovery, optical reflectors, high-efficiency fan motors, high efficiency motors, motor down-sizing, adjustable speed drives, occupancy sensors at the current rebate levels.
DL00270	Residential double pane glazing
DL00830	Residential car heater timers
DL00820	Residential water bed timers
DL00510	Residential clock thermostat
DL00300	Commercial/Industrial water flow restrictors
DL00270	Commercial/Industrial double pane glazing
DL0A160	Commercial/Industrial window tint/film
CL00130	Commercial/Industrial HVAC timeclocks

Table OTP-5 contains the utility implementation costs, estimated kWh and kW impacts of each DSM program, and the average life of the technology. There are some necessary explanations for the data:

- The implementation costs represent the utility costs to administer the program and provide rebates to encourage customers to participate to the economic potential identified in the DSM potential study. They do not include the time value of money or interest expense on the utility investment, and do not include any customer costs.
- A number of DSM technologies will cause increased kWh usage at times. For example, increased insulation in a house will reduce kWh usage during the heating season and during the summer cooling season. Air conditioning usage will increase in shoulder months, such as April and May because the house retains more heat. That is an additional cost that is not included in the cost data shown in the table, but the model calculates during its analysis. A second example would be energy efficient lighting. Such lighting will reduce the energy used to provide lighting, but will increase the energy used for heating in the winter time because there is less heat loss into the house. The planning model considers all of these effects through the end-use curve shapes that are included with each technology.
- The cost data is provided on an implementation basis, where the cost is allocated to the first year kWh savings only. This is because DSM expenditures take place when the program is implemented and the measure is installed. It is an all up-front cost, and is in the same format as entered into the capacity expansion model.
- During the resource plan analysis, DSM programs were assumed to run for 10-years, achieving 10% market penetration in each year, with the exception of the MN1XINC and MN2XINC programs. Thus only 10% of the total potential was realized in the first year

and full impact was reached in year 10. The MN1XINC and MN2XINC were developed by the consultant on a longer time period.

- Some DSM programs are mutually exclusive, meaning that if the model picked one program it could not pick the other. For example, if the model picked a ceiling insulation retrofit of R-30, it then could not pick a ceiling insulation retrofit of R-49 for the same facilities.
- While some DSM programs may have similar costs/kWh, their economic analysis may be significantly different. When costs are expressed in a \$/kWh format, the cost data ignores the demand impact of the technology. Two technologies with very similar costs can have greatly different benefit/cost ratios because they have different load characteristics, impact demand in different ways, and may impact other resources in different ways.

<b>Technology</b>	<b>Annual Energy (kWh) Savings Potential</b>	<b>Demand (kW) Savings Potential</b>	<b>Implementation Cost/kWh on First Year Savings (2005\$)</b>	<b>Life (years)</b>
310DCO	152,000	25	\$0.3174	50
290 DCO	55,000	16	\$0.2455	20
26030DCO	29,000	37	\$0.5168	50
030DCO	1,305,000	50	\$0.5660	20
710DRE	3,954,000	2,816	\$0.5536	15
480DRE	9,748,000	7,526	\$0.3221	50
480DCO	9,823,000	8,560	\$0.4108	50
70019DCO	277,000	415	\$0.2829	50
70030DCO	3,577,000	4,730	\$0.3297	50
710DCO	1,255,000	1,063	\$0.2744	15
750DCO	175,000	399	\$0.4039	10
30DIN260	277,000	367	\$0.2172	50
700DIN	15,000	12	\$0.3608	50
26049DCO	6,308,000	8,653	\$0.4214	50
MN1XINC	70,332,000	11,492	\$0.1331	Various
MN2XINC	123,584	20,473	\$0.2606	Various
19DRE260	871,000	455	\$0.75	50
290DRE	964,000	264	\$0.1577	20

300DRE	680,000	213	\$0.1374	30
30DRE260	1,727,000	1,497	\$0.75	50
49DRE260	2,055,000	1,824	\$0.75	50
520DRE	828,000	38	\$0.56	20
700DRE	1,544	1,247	\$0.75	50
770DRE	4,043,000	2,740	\$0.56	20
060DIN	48,000	77	\$0.1498	20

**The following measures are the measures from the Otter Tail CIP submittal. This is actual data from the program, thus the potentials shown are for the two year program as filed (rather than a 10-year program) and do not represent total kWh or kW potential of the marketplace. They only indicate what is being accomplished in the two year program. The dollars are in 2003\$.**

HotPack	285,714	52	\$0.0721	N/A
Air Source Heat Pump	667,092	90	\$0.0872	N/A
Geothermal Heat Pump	266,208	54	\$0.0856	N/A
Residential Demand Control	4,522	512	\$13.268	N/A
Air Conditioning Control	60,286	767	\$2.47	N/A
Change A Light	2,091,772	288	\$0.041	N/A
Refrigeration	835,844	166	\$0.1149	N/A
Cooking	464,620	154	\$0.099	N/A
Grants	10,344,090	1,650	\$0.058	N/A
Lighting	2,503,446	616	\$0.0639	N/A
Motors	1,054,508	154	\$0.1157	N/A
House Therapy	750,642	160	\$0.517	N/A

### **Demand-Side Management (DSM) Resources**

Otter Tail Power Company uses a fully integrated capacity expansion model to conduct detailed computer modeling of Otter Tail's load, generation resources, (DSM) and conservation programs, regulatory requirements, and financial structure so that an optimal long-range plan is developed to meet customer needs. Otter Tail's current resource plan,

developed in 2005, identifies the addition of up to 67 MW of DSM and conservation over the 15-year planning period. Because of timing, the most recent resource plan does not include the consideration of the Company's recently filed proposal with the Commission for conservation programs in South Dakota. The plan also does not include consideration of new conservation initiatives recently passed by the latest Minnesota legislature.

DSM is a broad category that includes load management (direct load control and interruptible programs) as well as conservation and energy efficiency programs. We discuss these areas in two distinct categories for this filing.

### **A. Load Management**

**Direct Load Control** - DSM program activities that can interrupt consumer load at the time of annual peak load by direct control of the utility system operator by interrupting power supply to individual appliances or equipment on consumer premises. This type of control usually involves residential consumers, but it can involve larger customers as well.

**Interruptible Load** - DSM program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator. This type of control usually involves commercial and industrial consumers, but it can involve residential customers as well.

**Other Load Management** - DSM programs other than direct load control and interruptible load that limit or shift peak load from on-peak to off-peak time periods. Other Load Management includes technologies that primarily shift all or part of a load from one time of-day to another and, secondarily, may have an impact on energy consumption. Examples include space heating and water heating storage systems, cool storage systems, and load limiting devices in energy management systems. This category also includes programs that aggressively promote TOU (time-of-use) rates and other innovative rates such as real time pricing. These rates are intended to reduce consumer bills and shift hours of operation of equipment from on-peak to off-peak periods through the application of time-differentiated rates. In all cases savings are typically reported as kilowatt or megawatt savings.

### **B. Energy Efficiency and Conservation**

Energy conservation and efficiency programs are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided.

These programs reduce overall electricity consumption (reported in kilowatt-hours (kWh) or megawatt-hours (MWh)), often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technologically more advanced equipment to produce the same level of end-use services (e.g., lighting, heating, motor drive) with less electricity. Examples include energy saving appliances and lighting programs, high-efficiency heating, ventilating, and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

### **Otter Tail's DSM Portfolio**

DSM has been part of Otter Tail's energy plan since the 1940s when we encouraged customers to put timers on their water heaters. Today over 30 percent of our customers participate in

some form of DSM program. **Otter Tail operates a diverse DSM portfolio in all three states.** In 2006, Otter Tail added 34 MW of new controlled load. From 1999 through 2006 we have added 159 MW of new controlled load capability system-wide. The following two parts of Table 1 summarize our achievements for the past eight years.

<b>Demand Side Management - MN, ND, SD</b>								
<b>Otter Tail Power Company</b>								
<b>1999-2006</b>								
<b>Additional Controlled Load (kw) by customer class</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Residential	4,792	6,750	9,017	7,975	10,290	11,689	13,268	18,633
Commercial	4,932	6,183	11,457	9,666	12,560	6,838	9,838	15,476
<b>Total kw</b>	<b>9,724</b>	<b>12,933</b>	<b>20,474</b>	<b>17,641</b>	<b>22,850</b>	<b>18,527</b>	<b>23,106</b>	<b>34,109</b>
<b>Additional Controlled Load (kw) by Load Type</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Dual Fuel	5,370	6,571	15,087	11,939	13,795	9,898	14,482	21,533
Heat Storage	1,156	2,845	1,922	2,891	4,658	3,992	3,776	7,120
Demand Control	1,789	2,023	2,616	2,008	2,556	2,356	2,525	2,240
Water Heating	1,409	1,494	850	802	1,841	2,281	2,323	3,217
<b>Total kw</b>	<b>9,724</b>	<b>12,933</b>	<b>20,474</b>	<b>17,641</b>	<b>22,850</b>	<b>18,527</b>	<b>23,106</b>	<b>34,109</b>

**Table 1**

**Keep in mind that these numbers represent potential peak reduction, which is different than actual peak reduction.** These charts reflect the installed load reduction capability, as opposed to the actual peak reduction achieved by participants, during the time of annual system peak load.

Conservation and energy efficiency have been a part of our portfolio since the 1980s to some extent. The conservation improvement program in **Minnesota** became much more aggressive in the early 1990s. Today in Minnesota we are required to spend 1.5 percent of our Minnesota retail gross operating revenues on programs for customers. The Next Generation Energy Act of 2007 recently passed also includes a requirement to achieve energy savings of 1.5 percent of annual retail kilowatt-hour sales, based on a rolling three-year, weather-normalized average. We do not have projections on what the new law will cost at this time.

Our Minnesota portfolio has approximately 20 programs to improve efficiency of lighting, motors, water heating, refrigeration, cooking, heating, cooling, and process improvements. Table 2 below provides a summary of our current portfolio of conservation programs operated in Minnesota along with the 2007 annual budget and energy and demand savings goals.

<b>MN CIP – 2007</b>	<b>PROPOSED BUDGET</b>	<b>ENERGY SAVINGS KWH</b>	<b>COINCIDENT DEMAND SAVINGS KW</b>
<b>PROGRAM NAME</b>			
<b>RESIDENTIAL PROGRAMS</b>			

Hot Packs	\$9,600	142,739	29
Air Source Heat Pump	\$32,000	150,557	0
Geothermal Heat Pump	\$28,000	362,711	262
Financing	\$13,600		
Advertising & Education	\$163,000		
Residential Demand Control	\$49,500	39,291	429
Air Conditioning Control	\$67,500	29,989	0
Implementation & Training	\$40,000		
Change a Light	\$72,000	1,459,326	205
<b>TOTAL - RESIDENTIAL</b>	<b>\$475,200</b>	<b>2,184,613</b>	<b>925</b>
<b>COMMERCIAL PROGRAMS</b>			
Refrigeration	\$50,000	545,173	86
Cooking	\$24,500	215,732	83
Grants	\$400,000	6,018,281	1,299
Lighting	\$81,000	1,289,372	322
Motors	\$40,000	263,424	39
Energy Analysis & Recommissioning	\$40,000		
Financing	\$31,700		
Air Source Heat Pump	\$32,000	110,131	0
Geothermal Heat Pump	\$36,600	520,438	360
Implementation & Training	\$60,000		
EZ-Lights (Pilot)	\$40,000	109,246	27
Plan Review Program	\$58,000	916,844	228
<b>TOTAL - COMMERCIAL</b>	<b>\$893,800</b>	<b>9,988,641</b>	<b>2,445</b>
<b>LOW-INCOME</b>			
House Therapy	\$189,000	380,676	73
<b>RESEARCH &amp; DEVELOPMENT</b>			
Technical Research	\$55,000		
CIP Development	\$114,000		
<b>TOTAL - RESEARCH &amp; DEVELOPMENT</b>	<b>\$169,000</b>		
<b>OTHER REGULATORY REQUIREMENTS</b>			
Distributed Generation	\$30,000		
PUC Assessments & Carrying Charges	\$20,000		
<b>TOTAL - RESEARCH &amp; DEVELOPMENT</b>	<b>\$50,000</b>		
<b>TOTAL - 2007 MN CIP PROGRAMS</b>	<b>\$1,777,000</b>	<b>12,553,930</b>	<b>3,443</b>

**Table 2**

Since 1992 we have helped our Minnesota customers conserve more than one million cumulative megawatt-hours of electricity. That's roughly equivalent to the amount of electricity that 90,000 average homes would have used in a year. Annual cumulative kWh saved as a percentage of 2006 mwh sales is 7.95 percent since 1992, or averaging approximately 0.64 percent of Minnesota kilowatt-hour sales annually. Table 3 lists historic our energy and demand savings, and our annual and aggregate spending.

<b>CIP Savings and Expenditures - Minnesota Only</b>
<b>Otter Tail Power Company</b>
<b>1992-2006</b>

<b>CIP Year</b>	<b>Annual KWH Saved</b>	<b>Aggregate KWH Saved (based on measure lifetime)</b>	<b>Annual KW Saved</b>	<b>Aggregate KW Saved (based on measure lifetime)</b>	<b>Annual CIP Spending</b>	<b>Aggregate CIP Spending</b>
1992	4,284,548	4,284,548	1,010	1,010	\$793,002	\$793,002
1993	7,371,451	11,655,999	1,903	2,913	\$1,419,873	\$2,212,875
1994	9,177,166	20,833,165	2,943	5,856	\$1,067,207	\$3,280,082
1995	11,970,185	32,803,350	3,434	9,290	\$1,603,473	\$4,883,555
1996	13,470,907	46,274,257	2,513	11,803	\$1,585,598	\$6,469,153
1997	17,957,861	63,307,100	2,760	14,442	\$1,591,258	\$8,060,411
1998	10,175,545	72,558,174	2,373	16,691	\$1,521,266	\$9,581,677
1999	10,258,589	81915611	2,180	18,679	\$1,579,010	\$11,160,687
2000	13,302,713	94,963,467	2,075	20,711	\$1,843,790	\$13,004,477
2001	10,533,420	105,316,910	2,244	22,922	\$1,918,475	\$14,922,952
2002	10,131,511	113,444,953	1,935	24,459	\$1,545,358	\$16,468,310
2003	13,681,770	122,528,207	2,984	26,354	\$1,703,663	\$18,171,973
2004	10,991,151	131,082,743	3,555	28,878	\$1,783,288	\$19,955,261
2005	18,099,987	146,401,910	2,874	30,589	\$1,590,411	\$21,545,672
2006	14,027,710	157,388,505	3,218	33,050	\$1,938,812	\$23,484,484
<b>Total</b>	<b>175,434,514</b>	<b>1,204,758,899</b>			<b>\$23,484,484</b>	

**Table 3**

In March of 2007, Otter Tail filed with the **South Dakota** Public Utilities Commission a portfolio of ten conservation and energy efficiency programs covering the majority of the same end uses as our Minnesota portfolio. The budget is less than one percent of annual South Dakota retail revenues and, if approved, would launch January 1, 2008. The filing does propose a cost-recovery mechanism, as well as a financial incentive comparable to the Minnesota model. We await approval from the South Dakota Commission. Table 4 lists our proposed programs, energy and demand savings, and budgets.

<b>PROPOSED 2008 SOUTH DAKOTA ENERGY EFFICIENCY PLAN</b>			
	<b>PROPOSED BUDGET</b>	<b>ENERGY SAVINGS KWH</b>	<b>DEMAND SAVINGS KW</b>
<b>RESIDENTIAL</b>			
HotPacks	\$4,000	28,548	6
Residential Demand Control	\$9,900	4,836	53
Air Source Heat Pumps	\$8,800	32,621	50
Geothermal Heat Pumps	\$5,600	48,361	35
Air Conditioning Control	\$12,600	1,468	32
Change A Light	\$11,100	153,503	22
<b>Total - Residential</b>	<b>\$52,000</b>	<b>269,337</b>	<b>197</b>
<b>COMMERCIAL</b>			
Grant	\$57,000	687,804	148
Motors	\$13,100	57,594	9
Lighting	\$22,400	280,176	70
Air Source Heat Pumps	\$7,000	16,520	10
Geothermal Heat Pumps	\$2,700	14,066	10
<b>Total - Commercial</b>	<b>\$102,200</b>	<b>1,056,160</b>	<b>246</b>
<b>Total - Direct Impact</b>	<b>\$154,200</b>	<b>1,325,497</b>	<b>444</b>
<b>INDIRECT IMPACT PROJECTS</b>			
Financing	\$12,500		
Advertising & Education	\$14,000		
<b>Total - Indirect Impact</b>	<b>\$26,500</b>		
<b>TOTAL - ALL PROGRAMS</b>	<b>\$180,700</b>	<b>1,325,497</b>	<b>444</b>

**Table 4**

Otter Tail Power Company currently manages a number of conservation-related educational programs in **North Dakota** including our on-line audit tools and conservation tips. North Dakota customers also have access to our Idea Center where they can call for information on energy-efficient building practices and equipment. In 2006 we did a series of workshops in Jamestown, Devils Lake, Rugby, as part of our Energy Makeover series. Four North Dakota homes received Energy Makeovers in 2007, which included weatherization improvements and heating system upgrades. Those homes are located in Jamestown, Devils Lake, Rugby, and Oakes. The approximately cost for that project in North Dakota was \$85,000. North Dakota customers also have access to our full demand-side management portfolio, which includes some energy-efficiency programs like Residential Demand Control. We do not have itemized detail of our North Dakota conservation-related educational programs, with the exception of the Energy Makeovers.

Throughout most of the 1990s we had a relatively full portfolio of North Dakota conservation programs including rebates for end uses such as lighting, motors, and heat pumps. However, adequate cost recovery was not in place and those programs were phased out. We are open, at the request of the North Dakota Commission, to discussing development of a portfolio of

energy-efficiency programs similar to that which we have in Minnesota and have proposed in South Dakota. Historically we have not had comparable cost recovery of conservation and efficiency efforts in North Dakota, and that would be critical to development of these program offerings.

**Near-term Objectives**

As mentioned previously, the Company’s long-term objective in our current integrated resource plan identifies the addition of up to 67 MW of DSM and conservation within the next few years. The integrated resource plan process looks at potential resources from a least cost planning perspective. While it does identify potential DSM resources, it is not intended to determine which programs the Company will offer. Additional analysis is conducted in that regard.

The IRP goal is defined as the Actual Peak Reduction (measured in kilowatts) achieved by consumers that participate in a utility DSM program. It reflects the changes in the demand for electricity resulting from a utility DSM program that is in effect at the same time the utility experiences its annual peak load, as opposed to the installed peak load reduction capability (i.e., Potential Peak Reduction). The DSM program should account for the regular cycling of energy efficient units during the period of annual peak load.

The Company has found that aggressive marketing tactics and goals are required to achieve the actual peak reduction defined in our integrated resource plan. Table 5 below provides a summary of our DSM KW and KWH goals, including conservation, for the next two years. This table reflects preliminary goals for 2008 and may change as final planning processes are completed.

<b>FUTURE DSM AND CIP SAVINGS &amp; BUDGETS 2007-2008</b>		
<b>ADDITIONAL CONTROLLED LOAD (KW) BY CUSTOMER CLASS</b>	<b>2007</b>	<b>2008</b>
Residential	12,309	14,770
Commercial	8,225	10,281
<b>Total Controlled KW (DSM)</b>	<b>20,534</b>	<b>25,051</b>
<b>ADDITIONAL CONSERVATION SAVINGS BY STATE</b>		
	<b>2007</b>	<b>2008</b>
MN - CIP - KWH	12,553,929	12,553,929
SD - EEP - KWH	0	1,325,497
<b>Total Proposed KWH Savings</b>	<b>12,553,929</b>	<b>13,879,426</b>
MN - CIP - KW	3,443	3,443
SD - EEP - KW	0	444
<b>Total Proposed KW Savings</b>	<b>3,443</b>	<b>3,887</b>

**Table 5**

Table 6 provides an estimated budget for 2007 and 2008 to attain these DSM goals including conservation.

<b>Demand Side Management Goals</b>				
<b>Minnesota, North Dakota, and South Dakota</b>				
<b>2007/2008</b>				
(North Dakota would be approximately 40% of forecast. Budgets do not include cost to serve.)				
	<b>2007 Goals</b>		<b>2008 Goals*</b>	
<b>RESIDENTIAL</b>	KW	Budget	KW	Budget
Dual Fuel	6,730	\$382,000	8,076	\$458,500
Deferred / TOU	1,655	\$172,500	1,986	\$207,000
Demand Control	1,944	\$437,700	2,333	\$525,200
Water Heating	1,980	\$270,000	2,376	\$324,000
<b>Total - Residential</b>	<b>12,309</b>	<b>\$1,262,200</b>	<b>14,770</b>	<b>\$1,514,700</b>
<b>COMMERCIAL</b>				
Dual Fuel	5,345	\$280,000	6,681	\$350,000
Deferred / TOU	2,505	\$262,000	3,131	\$326,300
Demand Control	0	\$0	0	
Water Heating	375	\$51,100	469	\$64,000
<b>Total - Commercial</b>	<b>8,225</b>	<b>\$593,100</b>	<b>10,281</b>	<b>\$740,300</b>
<b>TOTAL - 2007/2008 PROPOSED DSM GOALS</b>	<b>20,534</b>	<b>\$1,854,091</b>	<b>25,051</b>	<b>\$2,255,000</b>
<b>CONSERVATION PROGRAM BY STATE</b>	<b>2007 BUDGET</b>		<b>2008 BUDGET</b>	
MN- CIP	\$1,777,000		\$1,747,000	
SD - EEP	\$0		\$180,700	
<b>Total Proposed Spending</b>	<b>\$1,777,000</b>		<b>\$1,927,700</b>	
* subject to change				

**Table 6**

Otter Tail Power Company remains dedicated to building DSM resources and has been recognized as a leader in the utility industry in implementing DSM programs through a combination of flexible rates, successful advertising and education efforts with customers, and dedicated service to aide customers in living with load control and conservation in their daily lives.

## **Otter Tail Power Supply-side Alternatives**

It is important to note at the outset that one of the primary purposes of Otter Tail's resource planning process is to thoroughly evaluate both supply-side and demand-side options and alternatives for meeting our customers' future needs. And our resource plan takes a much broader view than just the company's decision to participate in Big Stone Unit II.

As part of our resource planning, Otter Tail contacted area utilities and other known entities within the region close to the Company's service territory to explore the potential to purchase long-term capacity and energy. To those entities that indicated having available resources or the expectation of available resources, a written Request-For-Proposal (RFP) was issued. The only proposals received were three proposals from the Manitoban Hydro Electric Board ("MHEB").

Excelsior Energy was contacted in late 2003 to seek proposals from the planned coal gasification project in northern Minnesota, both by telephone and via the issuance of an RFP. They declined to make a proposal.

In 2002 Otter Tail had hired Black & Veatch to develop costs and operating parameters for a number of supply-side alternatives. Following the MN Commission's July 20, 2006 hearing in which it required Otter Tail to update its estimated costs for Big Stone Unit II, Otter Tail hired Black & Veatch to complete an update to some of the supply-side alternatives, incorporating information learned about commodity and labor costs in the BSPII process.

Otter Tail used the updated Black & Veatch information, the 2006 Gas Turbine World handbook, information from General Electric, data from Company owned facilities, and publicly available information to develop updated supply-side alternatives. This updated information was then incorporated into Otter Tail's capacity expansion software model, IRP Manger. The results of our capacity expansion modeling process forms the backbone of our resource selection process. Table 1 on the next page identifies the resources made available to capacity expansion model, the number of units available, winter and summer season ratings, and the years that the alternative was available to the model.

**Table I  
Supply-Side Alternatives Evaluated With IRP-Manager**

<b>Resource Type</b>	<b># of Units Available</b>	<b>Winter Season Rating (MW)</b>	<b>Summer Season Rating (MW)</b>	<b>Years Available</b>
GE LM6000PC CT	3	48.4	42.5	2009 - 2020
GE Frame 7EA CT	2	95.3	74.8	2009 - 2020
Combined Cycle Based on GE Frame 7EA	1	141.3	116.7	2010 - 2020
Combined Cycle Based on GE MS 6001FA	1	115.1	95.1	2010 - 2020
Combined Cycle Based on Hitachi H2025	1	88.1	72.8	2010 – 2020
Combined Cycle Based on GE LM6000PC	1	59.3	44.9	2010 - 2020
IGCC	2	88.1	72.8	2015 – 2020
Big Stone Plant II	Up to 120 MW Summer Rating	Up to 126 MW Winter Rating	Up to 120 MW Summer Rating	2011
Phosphoric Acid Fuel Cell	2	20 MW	20 MW	2009 – 2020
Manitoba Hydro Purchase	1	120 MW	120 MW	2011 - 2020
Manitoba Hydro Purchase	1	50 MW	50 MW	2011 – 2020
Wind	8	20 MW <sup>1</sup>	20 MW <sup>2</sup>	2008 - 2020
Spot Market	1	70 MW	70 MW	2008
Spot Market	1	80 MW	80 MW	2009
Spot Market	1	95 MW	125 MW	2010

The cost and pertinent operating parameters of the supply-side options are shown in Table II. Some of this data is considered proprietary and, accordingly, Otter Tail is seeking trade secret protection under applicable North Dakota rules. The shaded cells indicate the proprietary data contained in the table.

<sup>1</sup> Nameplate rating. Expected accreditation level for peak months is 20% winter and 15% summer.

\*\*\*BEGINNING PROPRIETARY DATA \*\*\* REDACTED

<b>Table II</b> <b>Cost of Supply-side Alternatives (2006\$ except as noted)</b>					
<b>Alternative</b>	<b>Capital Cost (\$/kW)<sup>2</sup></b>	<b>Fixed O&amp;M Cost (\$/kW-year)<sup>3</sup></b>	<b>Variable O&amp;M Cost (\$/MWh)</b>	<b>Transmission Cost (\$/kW)<sup>3</sup></b>	<b>Full Load Heat Rate (Btu/kWh)</b>
GE LM6000PC CT					
GE Frame 7EA CT					
GE Frame 7EA Based Combined Cycle					
GE MS 6001FA Based Combined Cycle					
Hitachi H2025 Based Combined Cycle					
GE LM6000PC Based Combined Cycle					
IGCC (Assumed Hoot Lake location)					
Big Stone Plant II					
Phos. Acid Fuel Cell					
Manitoba Hydro PPA					
Wind-A					
Wind-B					
Wind-C					
Wind-D					
Wind-E					
Wind-F					
Wind-G					
Wind-H					
Spot Market					
Spot Market					
Spot Market					

\*\*\* ENDING PROPRIETARY DATA \*\*\*

Other Supply-side Technologies Considered

The State of Minnesota has a site that it has promoted for development as a pumped storage hydro facility. In October 1995 the DNR issued a Request for Development Interest regarding a potential pumped storage hydro facility at Hill-Annex State Park. The site is a potential 75 MW closed storage system using the old Majorca iron ore mine pit. An engineering study performed in 1993 by Barr Engineering reviewed a number of sites in the area and identified potential capital costs of \$867/kW - \$1,235/kW at that time.

This alternative was not included in our IRP Manger capacity expansion model. Otter Tail has extensive load management capability over the winter peak, which is the Company’s annual peak. The load shape is relatively flat on peak and near-peak days from early in the morning until almost midnight. The Company already has difficulty at those times finding

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<sup>2</sup> The capital cost is based on the winter rating of the resource, except for the spot market purchases.

opportunities to restore customer load that has been shed. The Company does not have an off-peak reduced load period that could be used to recharge a pumped storage hydro facility for use during the day.

Solar photovoltaic technology was not included in the model as a generating option, due to continuing high costs. Cost estimates for solar photovoltaic capacity installed in 2004 in the U.S. ranged from \$6,500/kW to \$9,000/kW.<sup>3</sup> That cost is substantially above the cost of other non-fuel technologies and would not be selected by the model as part of the resource plan.

Otter Tail has completed a preliminary assessment of anaerobic digester potential in its service territory. Anaerobic digestion of manure can be used to produce biogas, containing anywhere from 55 – 80% methane. The biogas, with proper handling, can be burned directly in an internal combustion engine to generate electricity. The amount of biogas available from manure varies by type of livestock, and can also vary significantly within the same type of livestock based on feed, manure collection and treatment, etc. Anaerobic digestion requires a facility where manure is collected daily, and where a digester can be properly fed and maintained at optimum conditions.

The AgSTAR program is a voluntary program designed to encourage the widespread use of livestock manure as an energy resource. The U.S. Environmental Protection Agency website contains information on anaerobic digestion, and a handbook is available for download at [www.epa.gov/agstar/library](http://www.epa.gov/agstar/library) to guide the user through an assessment. The guide recommends a minimum of 300 head of dairy cattle and 2,000 swine when considering anaerobic digestion. A preliminary survey of potential anaerobic digestion locations on the Otter Tail system has identified limited resource availability. Dairy herd potential indicates possible capacity of 390 – 720 kW with annual energy production of 3,075,000 – 5,676,000 kWh. Swine herd production indicates a possible potential of 333 – 501 kW with an annual energy production of 2,634,000 – 3,951,000 kWh. Otter Tail included swine herds as small as 1,000 head in conducting the survey.

Turkey farms are also present on the Company system, although many have already committed their manure and waste bedding to the turkey manure fired facility located in Benson, Minnesota

The economic development potential of anaerobic digestion for generation is very site specific. The economics would be better if anaerobic digestion was already required for odor control, but none of the three states in which Otter Tail serves customers has such a requirement. Anaerobic digestion when used on the farm is a multi-faceted approach to resource management. Any evaluation needs to take into account electricity costs, fertilizer costs, waste handling costs, and any avoided heating costs associated with waste heat collection. The amount of potential generation that may result on the system is at the most 1.2 MW, too small to be of consequence to this resource plan filing. As a result, anaerobic digestion was not included as a generation option within the model.

According to an EPRI report completed in the late 1990's, the Otter Tail Service territory does not include any landfills of sufficient size to support a landfill gas generating facility. The only two landfills in the area that were identified were at Fargo and Grand Forks, both served

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<sup>3</sup> reFOCUS Magazine, May/June 2005, pg.3.

by another utility. Each of those landfills was identified as having the potential to support two 2 MW generators. As a result, landfill gas was not included as an option within the model.

Microturbines are small combustion turbines, similar in concept to the large combustion turbines used in conventional utility power plants. Whereas large combustion turbines range from 20,000 to over 200,000 kW, microturbines fit into the 25 to 400 kW range. Microturbine efficiencies have not met early manufacturer projections of mid-30 percent and higher. Most available units are in the mid-20's for efficiency in a standalone configuration. The waste heat from the turbine exhaust can be collected to supply a useful thermal load, which improves the overall cycle efficiency and the economics. However, the capital costs are still higher than the cost of a standard utility size combustion turbine and the efficiencies are much worse. At this point in time, potential economic applications are somewhat limited.

Otter Tail had previously proposed a natural gas-fired cogeneration facility based on a microturbine that would be tied to a community center in the service territory. Waste heat from the exhaust would be used to help heat the water for a community swimming pool. The purpose was to evaluate a microturbine in a setting that was well suited for the technology. As development work on the proposal continued, it became quite evident that even under the most optimistic of circumstances, the economics were still very poor. The Company chose to discontinue the proposal.

The model did not include consideration of microturbines due to their small size, limited application at this time, and high cost.

Since the early 1990's Otter Tail has made an effort to use renewable fuels in its existing coal-fired plants. The Big Stone Plant has successfully burned a number of renewable and alternate fuels over the years and has an alternative fuels handling facility to aid in blending such fuels in with coal. Some of the renewable fuels that have been tried or researched over the years include spoiled or research corn seed, wood waste in various types, soybeans, beet pulp, sunflower hulls, and similar agricultural wastes. Some of these materials caused significant problems in test burns by either plugging fuel handling systems (bark wood waste) or plugging boilers (soybeans). Sunflower hulls and soybeans have proven to be problematic due to their high content of potassium.

Otter Tail did not include any other additional biomass alternatives in the model. As the cost of fossil fuels increases, other markets develop for biomass fuels such as wood waste. In many cases, the wood products companies that create the waste use it as fuel in their own process. Otter Tail has experience with the customer owned 11.5 MW wood waste fired facility and has worked with other customers on potential wood waste fired biomass facility investigations. The fuel supply is limited and the costs of such facilities are high. The development potential of these facilities is limited and very site specific. To date, Otter Tail has not found other opportunities for development of such facilities with costs being close to economic.

Otter Tail has worked with the Geology Dept. at the University of North Dakota on investigating the potential for geothermal energy. Western North Dakota has geothermal resources in temperature ranges that would be suitable for binary cycle geothermal technologies. A binary cycle facility typically pumps natural water or brine from underground that has been heated by the earth to moderate temperature ranges of 200° F. - 500° F. The heat in the fluid is transferred to another working fluid such as iso-pentane which is used in place of

water in a normal thermal generation mode. The brine is then reinjected back into the earth. The extraction and reinjection wells are typically from 1,000 – 3,000 feet deep and require significant horsepower to extract the fluid and then reinject it. The resources in western North Dakota are located much too deep to be economic for binary cycle operation, typically in the 10,000 – 12,000 foot range. Otter Tail did not include any geothermal options as potential generating resources in the model.

The binary cycle technology used for moderate temperature geothermal resources would work with any source of waste heat that falls within the moderate temperature range and in sufficient quantity to support a binary cycle unit. Otter Tail has been involved in investigating waste heat generation from combustion turbines used at natural gas compression stations on pipelines. Otter Tail has also searched for other potential waste heat streams that could be used to support a small binary cycle facility. ORMAT is a company that has binary cycle units in the 1.5 – 5 MW range that are designed to be operated remotely. One of the difficulties for developing a small waste heat recovery facility that has been identified is that the State of Minnesota rules require full time staffing of such a facility any time working pressures are in excess of very low pressures. The labor requirements to have staffing 24 hours per day significantly increase the costs and make such facilities uneconomic.

**As to Responses for Otter Tail Corporation:**

Dated this 27<sup>th</sup> day of July, 2007

/s/ \_\_\_\_\_  
Stacie Hebert, Otter Tail Corporation

**VERIFICATION**

STATE OF )  
 ):SS  
COUNTY OF )

The undersigned states that he does not have personal knowledge of all of the facts recited in the foregoing Responses, but the information in the Responses has been gathered by and from employees and/or contractors of the Applicants, including the undersigned and other employees of Otter Tail Company.

/s/ \_\_\_\_\_  
Mark Bring

Subscribed and sworn to before me this 27<sup>th</sup> day of July, 2007

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

**OTP Witness  
Ward Uggerud**

Senior Vice President  
Otter Tail Power Company

**Summary  
OTP Exhibits 101 & 102**

tabbles®  
**EXHIBIT**  
OTP-101-A

# Overview

- Otter Tail Power Company
  - Investor-owned utility with operations in South Dakota, North Dakota and Minnesota
  - 50,000 square miles of service territory
  - Serving 423 communities; one-half are smaller than 200 people
  - Lead developer of the Big Stone Unit II project
  - We propose to own a 19.3% share of the Big Stone Unit II project

# Increasing Energy Demand

- Growing 2.4% per year
  - Big Stone II – OTP Share
    - 121.8 MW
    - 19.33%
- Baseload Need
  - Plus Other Resources
    - More Wind
    - Power Purchases
    - Conservation
    - Natural Gas Peaking

## Big Stone Unit II

- 630 MW Nominal Capacity
- Supercritical Pulverized Coal
- Powder River Basin Coal
- 88% Capacity Factor Expected
- Baseload Facility Located in South Dakota
- Two New High Voltage Transmission Lines

# Environmental Features

- Wet Scrubber – SO<sub>2</sub> reduced 85%
- Baghouse Filter – control small particles
- Selective Catalytic Reduction – Control NO<sub>x</sub>
- Mercury- Capped at present limits, future reductions

# Coal Supply and Delivery

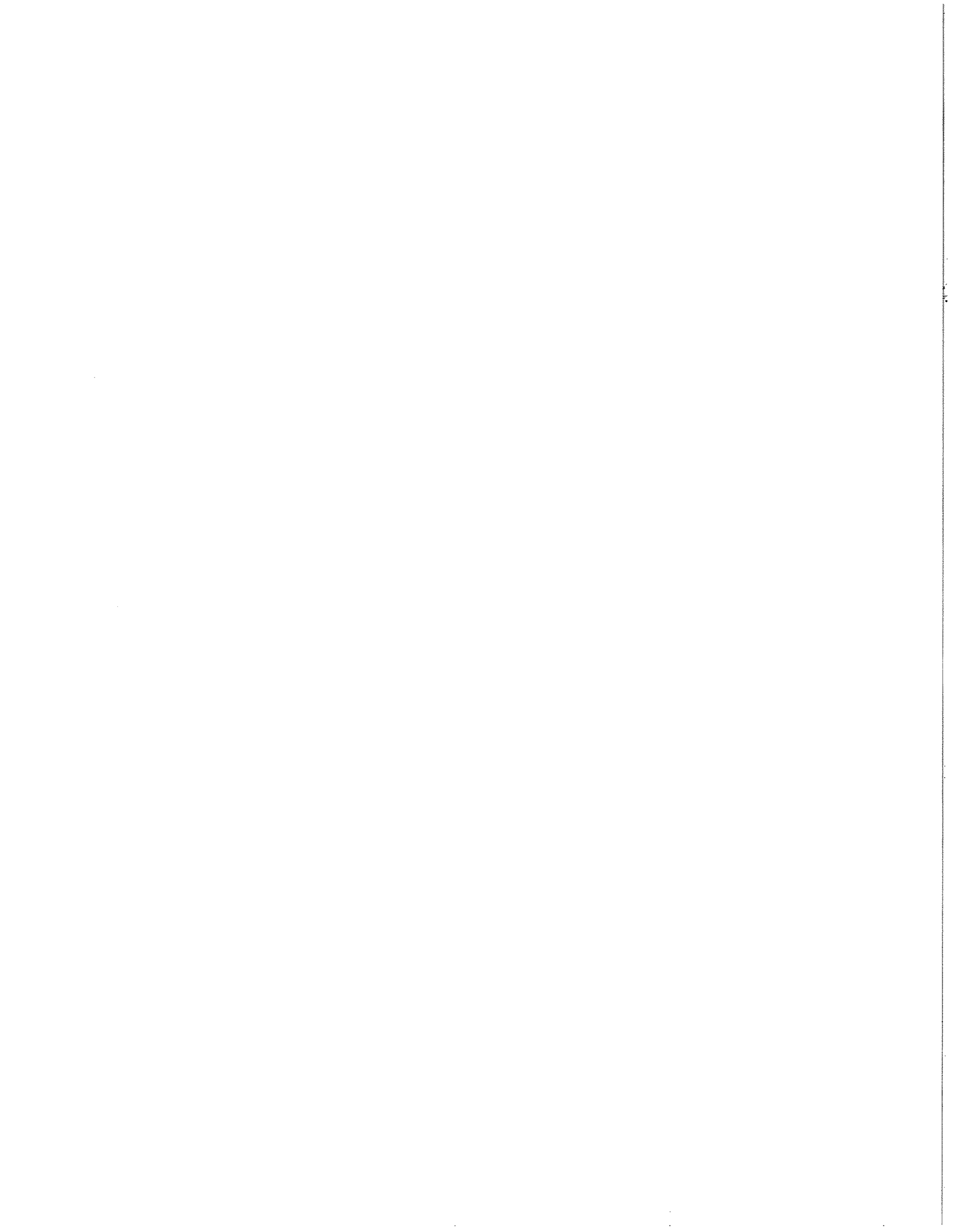
- Powder River Basin Coal
- Burlington Northern Santa Fe Railway
- Number of Rail Cars
- Coal Inventory

# Asset-Backed Sales

- Credited 100% to Customers

# Coyote Station

- Viable Site
- Transmission Limitations



**OTP Witness**

**Bryan Morlock**

Manager of Resource Planning  
Otter Tail Power Company

Summary

OTP Exhibits

103, 104, 105, 106, 107, 108, 109, 110 & 111

EXHIBIT

tabbles

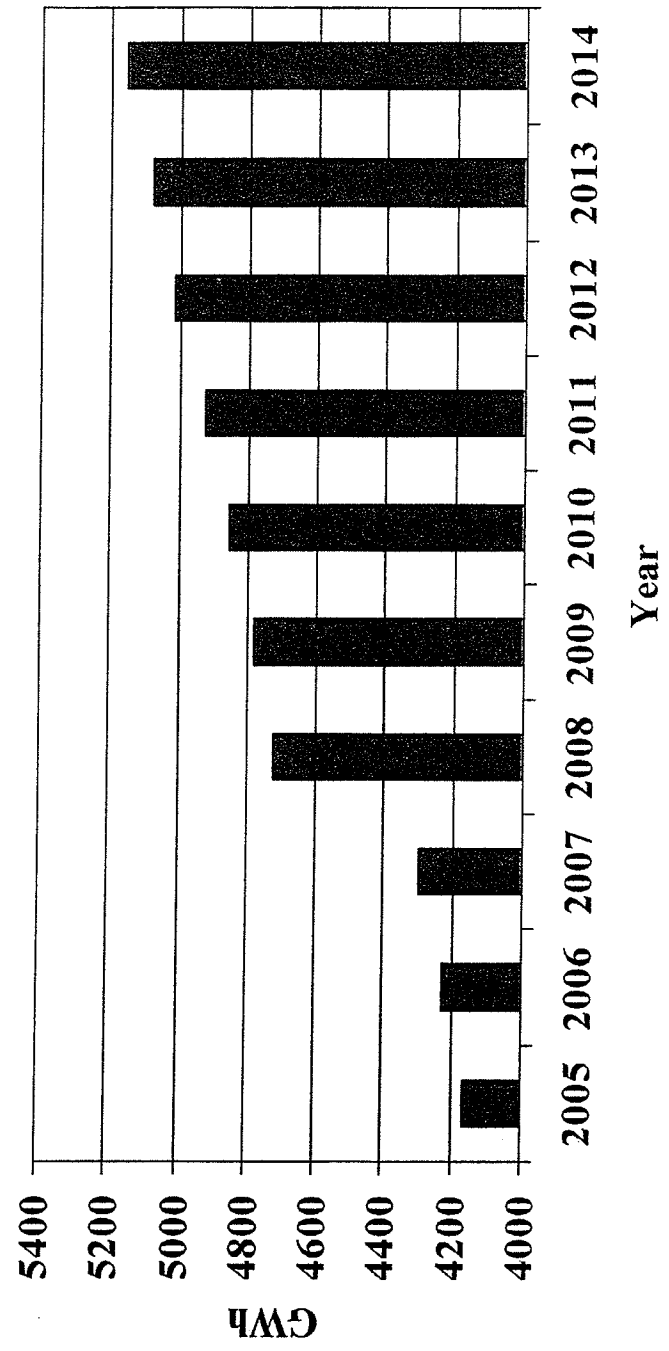
OTP-103-A

# Resource Planning

- Forecast Customer Energy and Demand Requirements
- IRP-Manager Capacity Expansion Model
  - Used for 15 years
- Forecasted Energy Growth
  - 2.4% per year 2005-2014
  - Increasing generation deficits

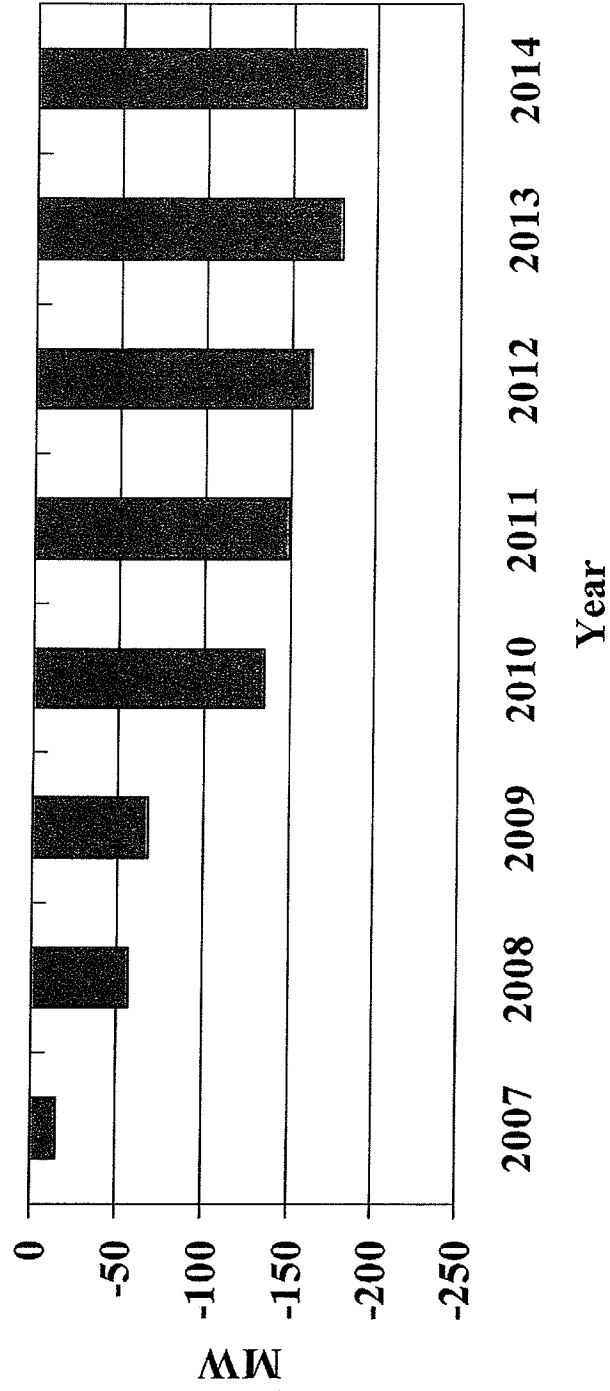


### OTP Energy Requirements Forecast



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### OTP Summer Season Capacity Surplus/Deficit



# Big Stone II Not Satisfy Demand

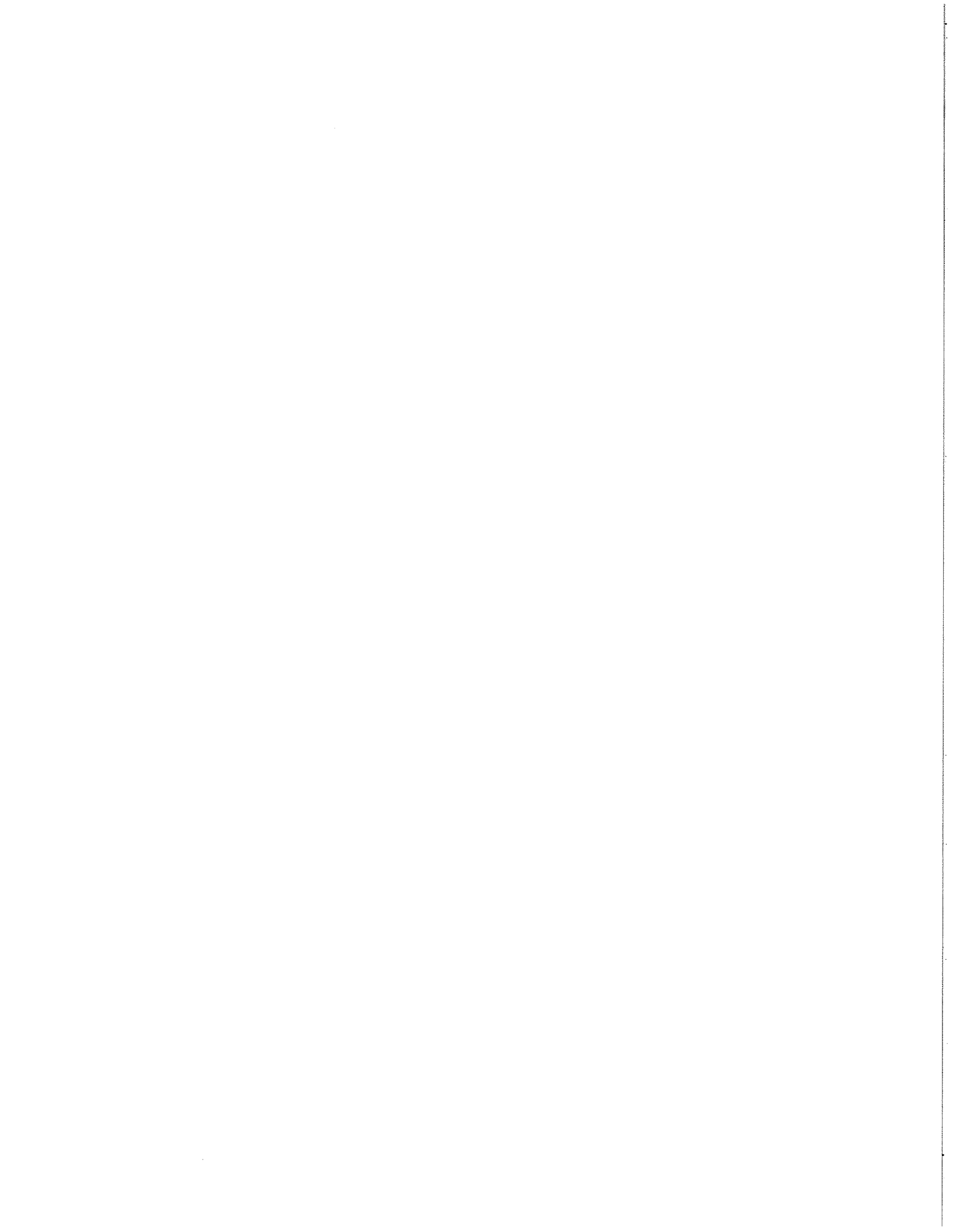
- 67 MW Conservation
- 135 MW Natural Gas Peaking
- 160 MW Wind
- 50 MW Hydro Purchase
- 88 MW IGCC
  
- Small Amount Spot Market Purchases

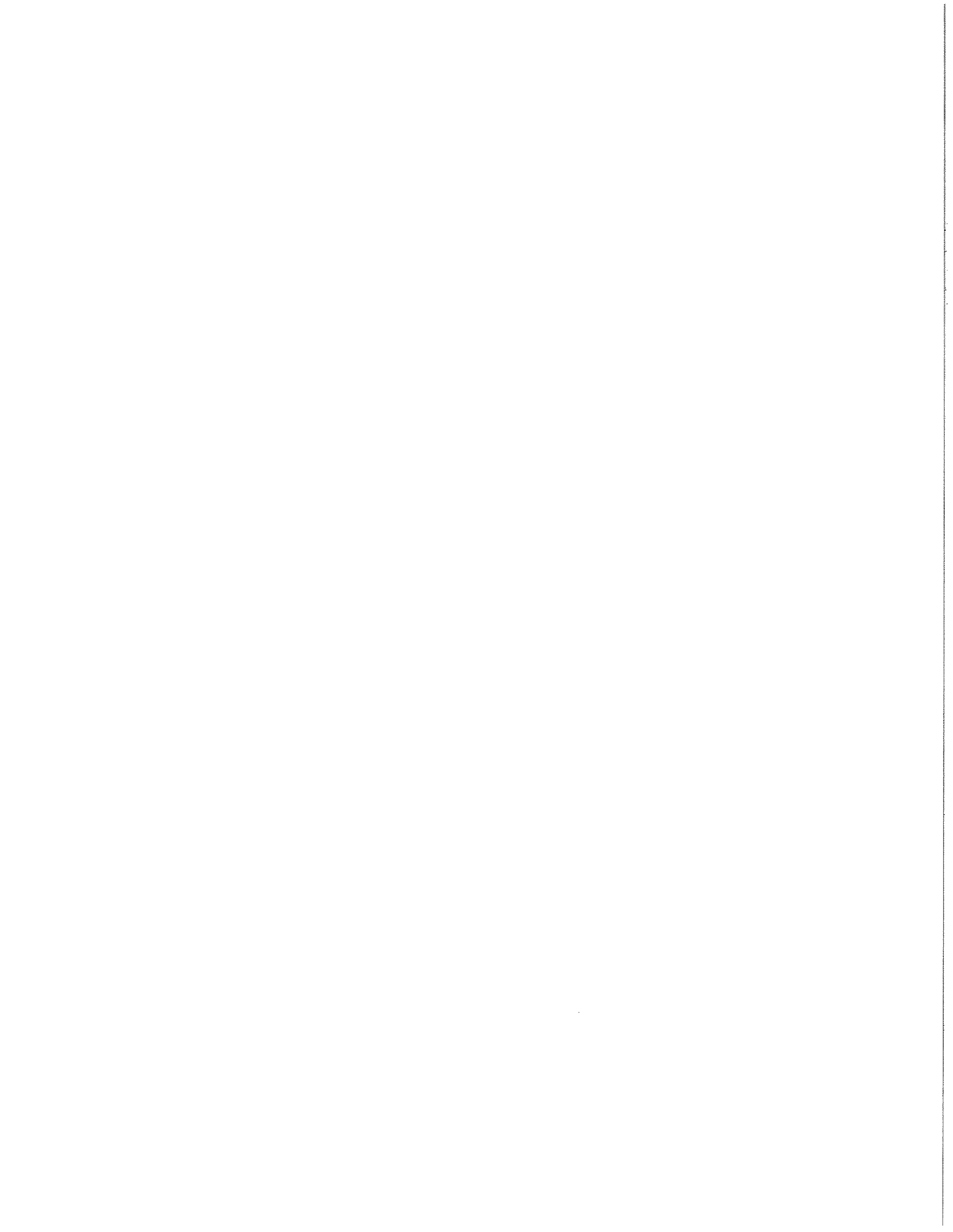
# Wind

- 160 MW
- Transmission Constraints
- Power Purchases
- Production Tax Credit

# Manitoba Hydro

- Alternative to Big Stone Unit II
- Cost Differential
  - End Effects
- MH alternative does not provide any benefit to wind generation
- MH alternative does not expand the transmission system



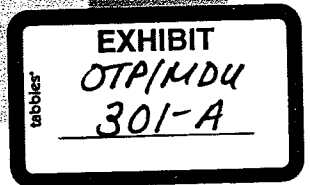


# MDU/OTP Joint Witness

Mark Rolfes

Project Manager  
Otter Tail Power Company

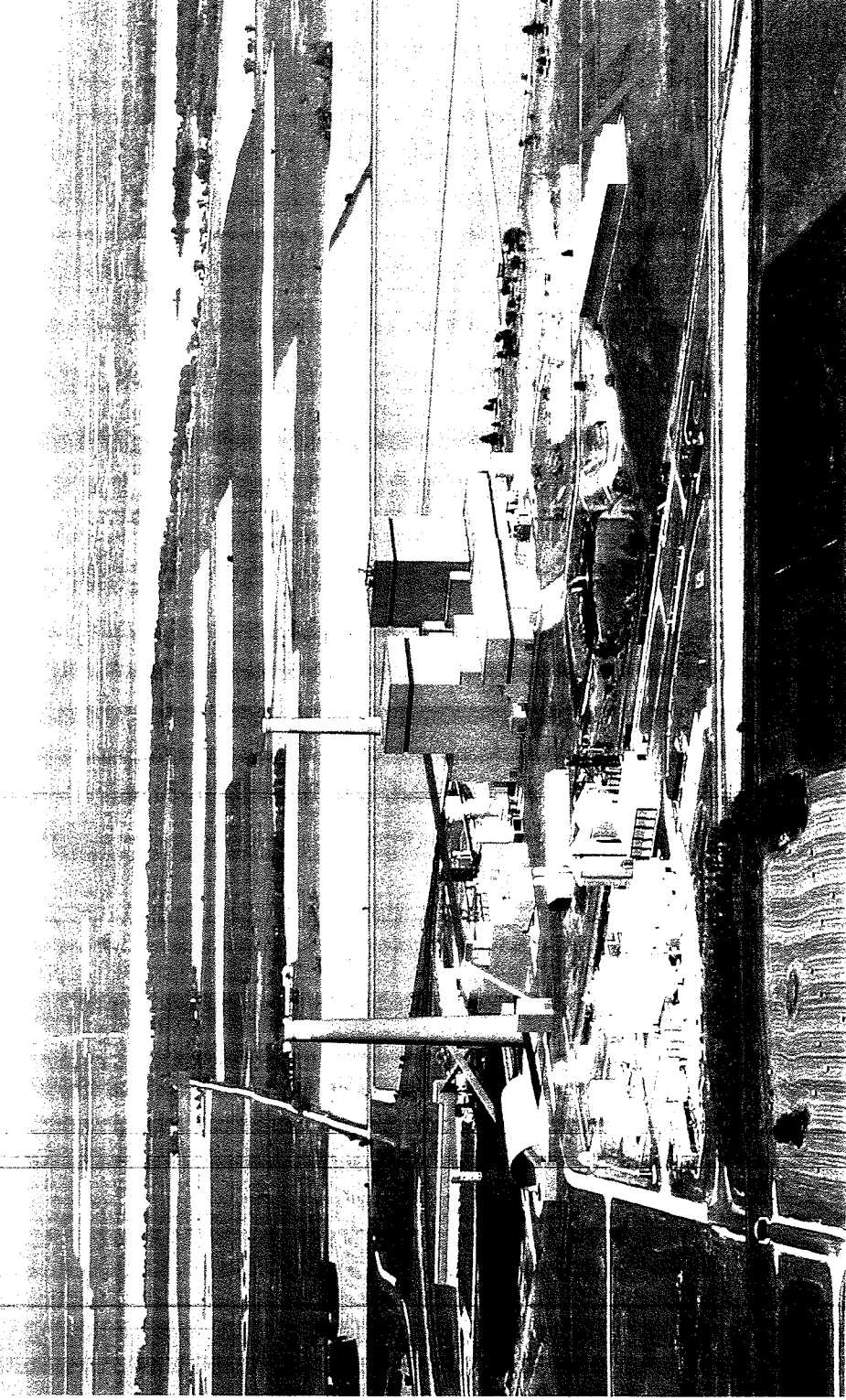
Summary  
MDU/OTP Exhibits 301 & 302



## Big Stone Unit II

- 630 MW Nominal Capacity
- Supercritical Pulverized Coal
- Powder River Basin Coal
- 88% Capacity Factor Expected
- Baseload Facility Located in South Dakota
- Two New High Voltage Transmission Lines

# Project Site (artist's rendering)



## Alternative Sites

- Big Stone, Grant County, South Dakota
- Coyote, Mercer County, North Dakota
- Fargo, Cass County, North Dakota
- Dickinson, Wright County, Minnesota
- Glenham, Walworth County, South Dakota
- Utica Junction, Yankton County, South Dakota

## Evaluation Criteria

- Water Supply – 20%
- Fuel Lines – 20%
- Transmission – 20%
- Environmental – 15%
- Air Quality – 15%
- Other – 10%

## Alternative Technologies

- Supercritical Pulverized Coal
- Wind/Natural Gas Combination
- Integrated Gasification Combined Cycle
- Other

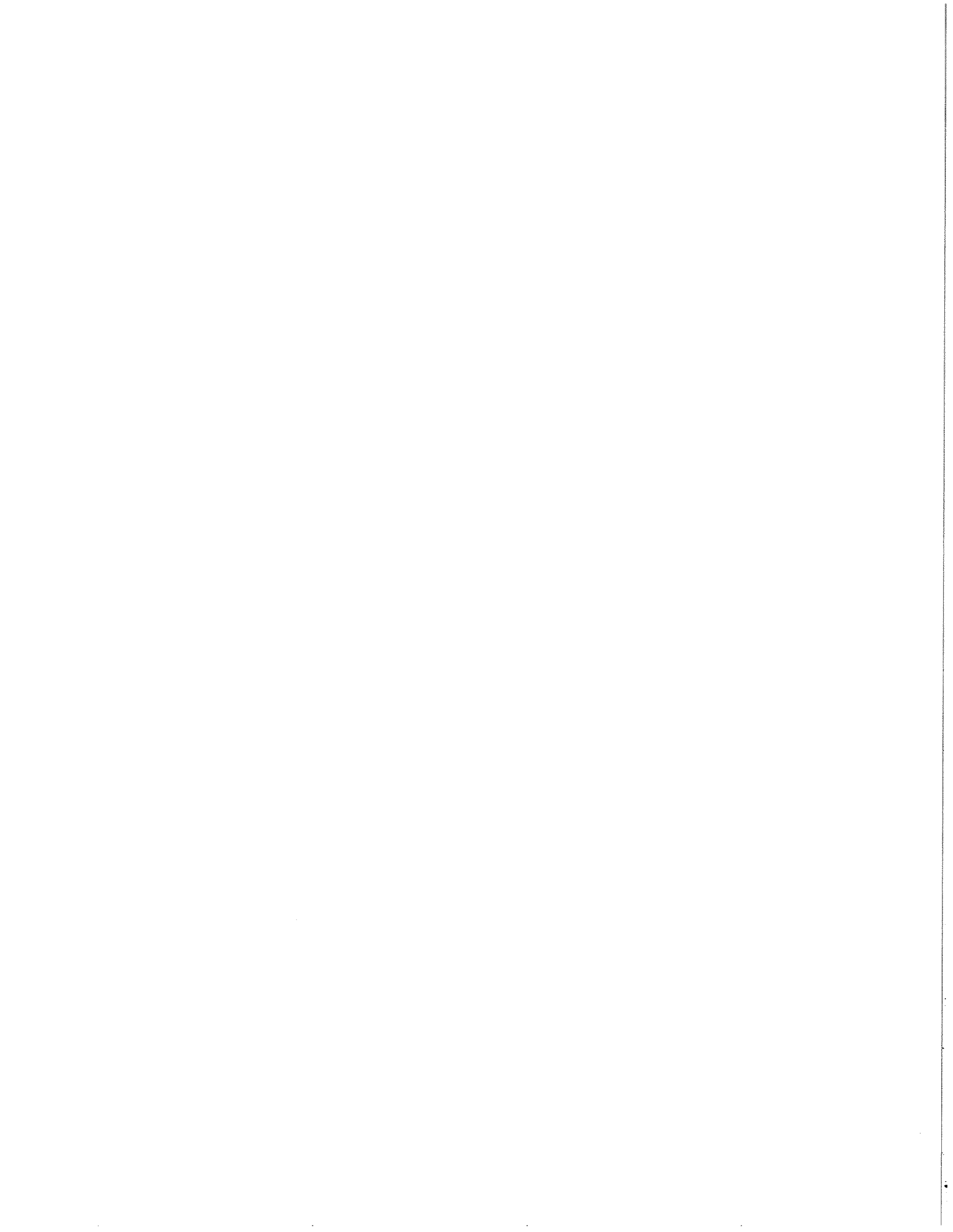
Burns & McDonnell – Analysis of Baseload  
Generation Alternatives

## Big Stone Unit II

- Estimated Capital Cost – \$1.442 Billion-  
excluding transmission
- Commercial Operation Date: Mid 2012

## Fuel Supply and Deliverability

- Powder River Basin sub-bituminous coal
- Delivery by Burlington Northern Santa Fe Railway



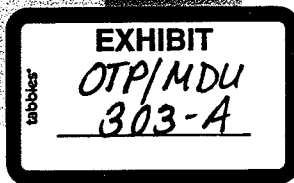
# OTP/MDU Joint Witness

Kermit Trout, Jr.

Vice President-Senior Project Manager  
Black and Veatch Corporation

## Summary

OTP/MDU Exhibits  
303,304,305,306,307 & 308



## Purpose

- Black & Veatch's role in project
- Describe process leading to July 7, 2006 Cost Report
- Summarize Big Stone Unit II project cost estimate

## Black & Veatch Role in Project

- B&V engaged in summer 2005 to develop plant system design, provide engineering and construction services, including competitive quotations on five major plant components
- In October 2005, B&V analyzed and evaluated BSP II's 2004 capital cost estimate and found that 2004 cost estimate was in the range of reasonable costs and was valid.

## B&V Cost Analysis

- Generic plant assumed for 2004 cost estimate
- B&V refined and adjusted the plant design and specifications
- This refinement will continue as design progresses, contracts are awarded and construction begins
- The BSP II cost development process is similar to that for any large generation unit where a 5 or more year gap exists between conceptual design and actual construction.

## B&V Cost Estimate

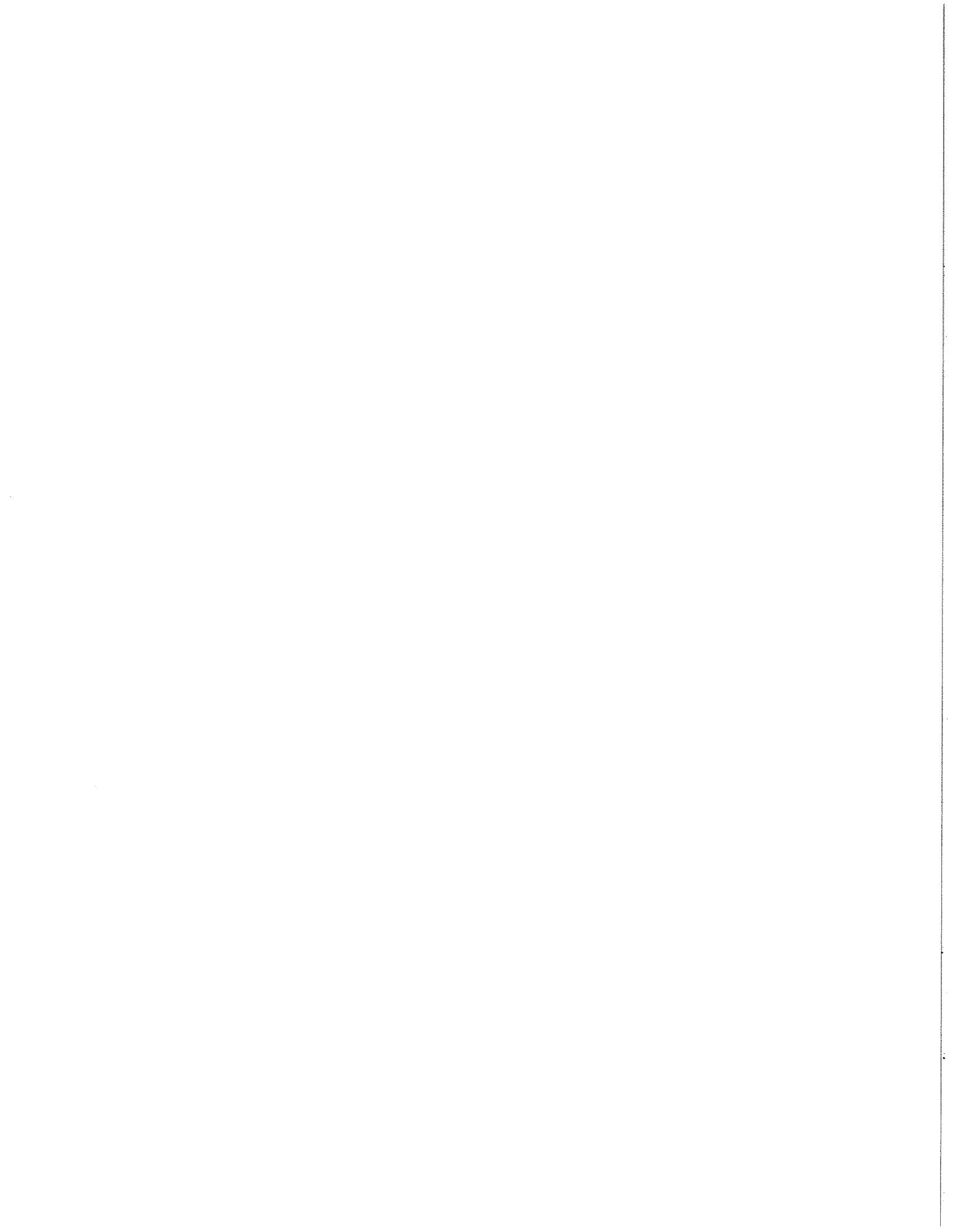
- Source of cost information was B&V cost and related data from its own projects, supplemented with trade publication and other third party public information
- Bids were received for five major components
  - Boiler
  - Turbine
  - Fabric Filter
  - Wet Scrubber
  - Chimney

## B&V Cost Estimate (continued)

- Increases were largely due to:
  - Global growth and demand for generating plants
  - Increased cost of fabricated materials and specialty engineered equipment
  - Construction commodity cost increases
  - Labor rate escalation
- Current Estimate \$1.442 Billion

## CONCLUSION

- Similar cost increases for material and labor will impact other energy generation project's costs.
- The process of estimating and evaluating costs for the Big Stone II project is consistent with other large generation projects.



OTP/MDU Joint Witness  
Timothy Rogelstad

Manager of Delivery Planning  
Otter Tail Power Company

Summary  
OTP/MDU Exhibits  
312,313,314,315,316,317 & 318

tabbles  
EXHIBIT  
OTP/MDU  
312-A

# Transmission Planning Process

- Planning Objectives
  - Load Growth Planning
  - Interconnection Requests
  - System Maintenance
  - Transmission Service Requests
  - Regional and State Policy Goals

# Big Stone Transmission Planning

- Transmission Screening Study
- Interconnection Study
- Delivery Service Study

# The Big Stone Transmission Lines

- 230 kV – Big Stone to Morris, Mn
- 345 kV – Big Stone to Granite Falls

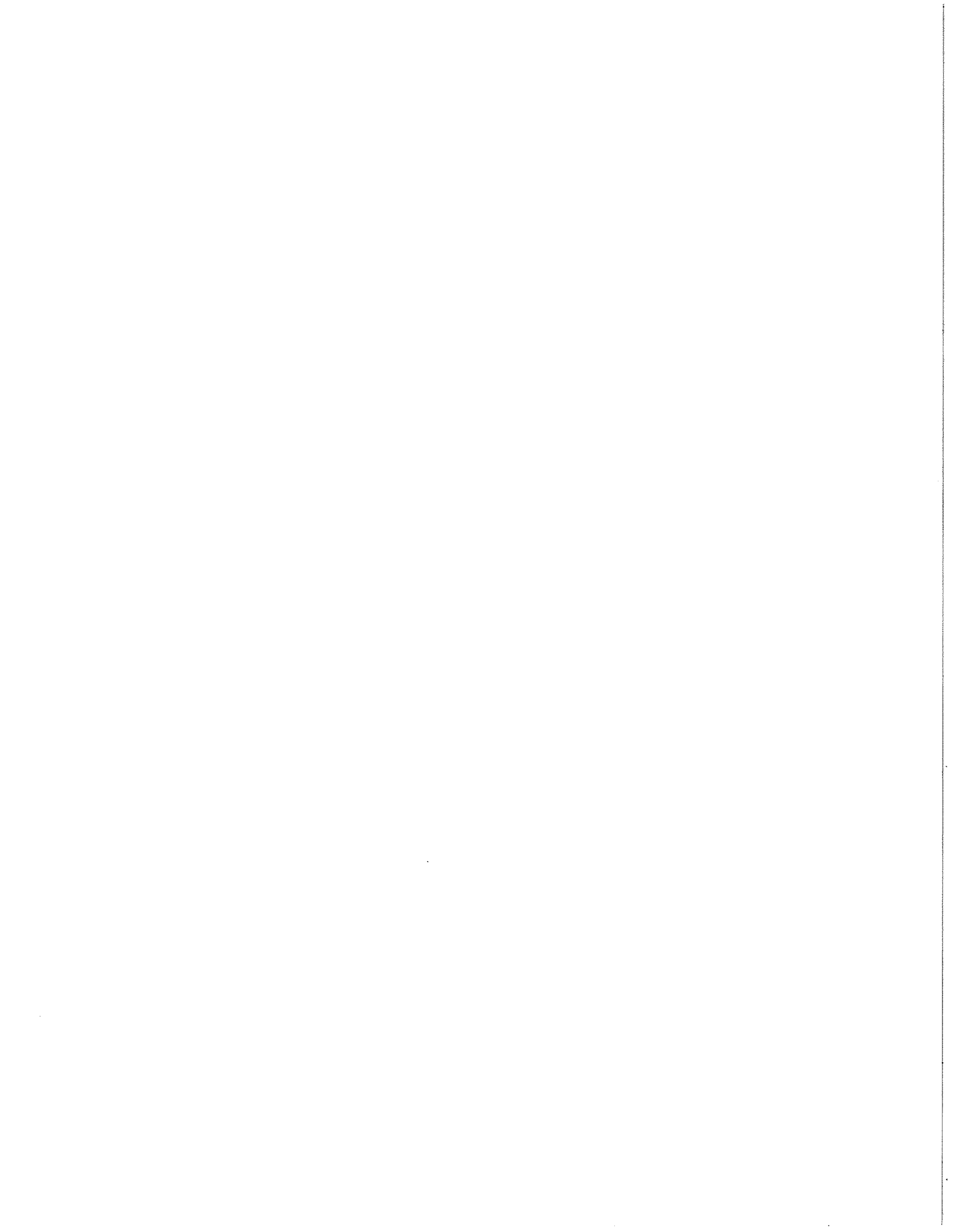
Least Cost Option

## Granite Falls at 345kV

- Initially operated at 230 kV
- Consistent with original plans
- Positive impact on North Dakota
  - Export (NDEX) constraint
- Provides capacity for wind

## Midwest Independent Transmission System Operator - MISO

- Recommends the Big Stone  
Transmission Lines
- MISO Transmission Expansion Plan
- Cost recovery under MISO tariff

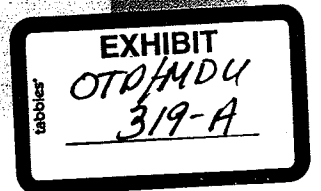


**OTP/MDU Joint Witness  
Robert Brautovich**

Assistant Vice President  
BNSF Railway Company

**Summary**

**OTP/MDU Exhibits 319 & 320**



# BNSF Overview

- One of the country's largest railroads
- 32,000 route miles
- 6,300 locomotives
- 220,000 freight cars
- 40,000 employees

# Powder River Basin

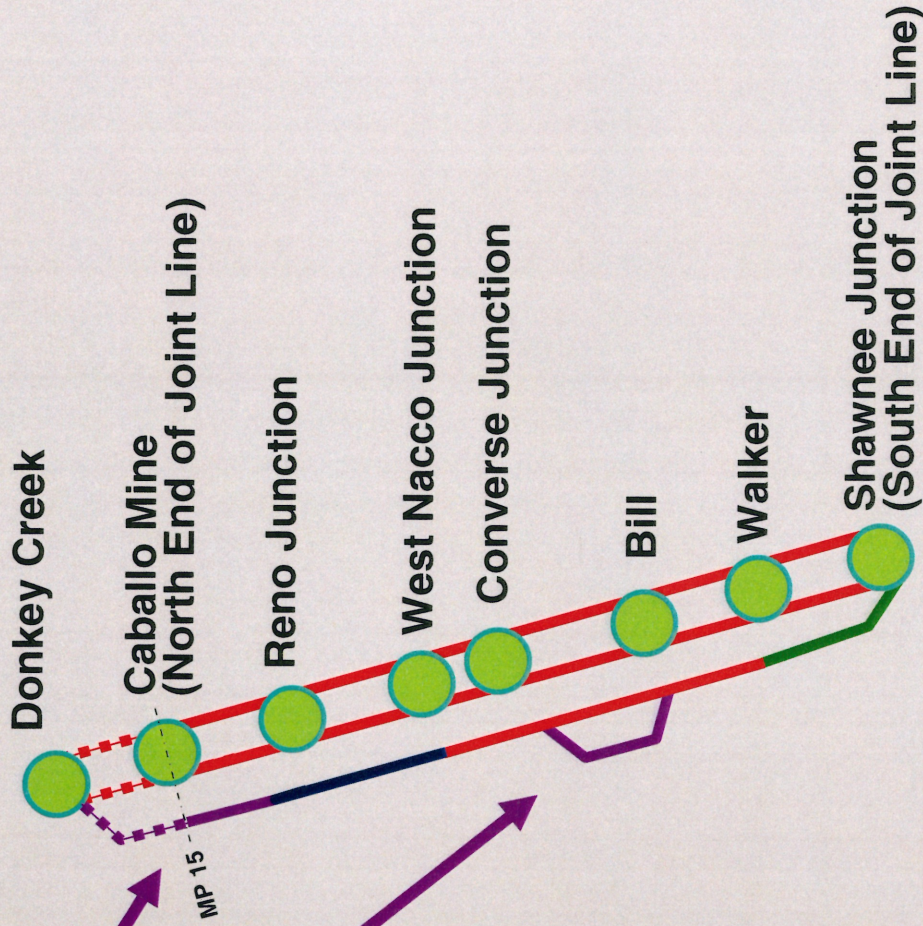
- World's largest single deposit of low-sulfur coal
- Fastest growing and dominant coal supply basin in the U.S. since passage of the Clean Air Act in 1970.
- 97% of production moves by rail to markets in 39 states
- Lowest cost delivered coal for electric generators

## Summary

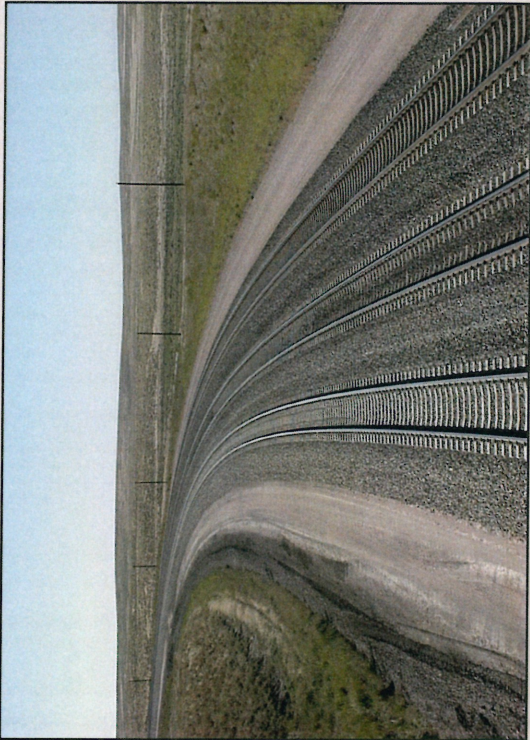
- Discussion of current and future reliability of coal supply from Powder River Basin
  - BNSF has undertaken an unprecedented program of coal expansion capital investment:
    - More than \$300 million in 2005
    - More than \$600 million in 2006
    - Additional rail capacity (labor, motive power, track, terminals, yards)
  - Current deliveries to Big Stone power plant
    - Additional equipment



# Joint Line Capacity Expansion



**In Service 2007:**  
3<sup>rd</sup> Main Reno to MP 0; 39 Miles  
- Reno to MP 15; 24 Miles (Jt Line)  
- MP 15 to MP 0; 15 Miles (BNSF)  
4<sup>th</sup> Main Logan Hill; 21 Miles



**STATE OF NORTH DAKOTA**  
**PUBLIC SERVICE COMMISSION**

Otter Tail Corporation, Advance  
Determination of Prudence  
Application

**SERVICE LIST**

Montana-Dakota Utilities Co.,  
a Division of MDU Resources Group,  
Inc., Advance Determination of Prudence  
Application

Case Nos. PU-06-481, PU 06-482

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