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**SOUTH DAKOTA**

**TEN YEAR PLAN**

**Report BD - 3**

**Resource Planning Department**

**Otter Tail Power Company**

**June 2000**

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June 12, 2000

South Dakota Public Utilities Commission  
State Capitol Building  
Pierre, SD 57501

Attention: Executive Director

Commissioners:

Subject: OTTER TAIL POWER COMPANY'S BIENNIAL TEN YEAR PLAN - JUNE 2000

Pursuant to the rules of the South Dakota Public Utilities Commission Energy Facility Plans ARSD 20:10:21, Otter Tail Power Company hereby files its Biennial Ten Year Plan.

With the above introduction, Otter Tail Power Company submits the following biennial ten year plan in accordance with ARSD 20:10:21 and Guidelines issued October 1977.

## TABLE OF CONTENTS

INTRODUCTION.....	i
SECTION 4 -- EXISTING ENERGY CONVERSION FACILITIES .....	1
SECTION 5 -- PROPOSED ENERGY CONVERSION FACILITIES.....	2
SECTION 6 -- EXISTING TRANSMISSION FACILITIES .....	2
SECTION 7 -- PROPOSED TRANSMISSION FACILITIES .....	3
SECTION 8 -- COORDINATION OF PLANS .....	3
SECTION 9 -- SINGLE REGIONAL PLANS .....	3
SECTION 10 -- SUBMISSION OF REGIONAL PLAN .....	3
SECTION 11 -- UTILITY RELATIONSHIPS .....	3
SECTION 12 -- EFFORTS TO MINIMIZE ADVERSE EFFECTS .....	4
SECTION 13 -- EFFORTS RELATING TO LOAD MANAGEMENT .....	6
SECTION 14 -- LIST OF REPORTS .....	6
SECTION 15 -- CHANGES IN STATUS AT FACILITIES.....	7
SECTION 16 -- PROJECTED ELECTRIC DEMAND .....	7
SECTION 17 -- CHANGES IN ELECTRIC ENERGY .....	10
SECTION 18 -- MAP OF SERVICE AREA.....	10

## INTRODUCTION

In accordance with the rules and regulations of the South Dakota Public Utilities Commission Energy Facility Plans ARSD 20:10:21, Otter Tail Power Company hereby files its Biennial Ten Year Plan.

Ten copies of this Biennial Ten Year Report are being filed with the Commission with enclosures. Notice of Filing of the plan is being sent to each of the state agencies and officers designated in Section 23 of the Energy Facility Plans.

## SECTION 4 -- EXISTING ENERGY CONVERSION FACILITIES

### A. Big Stone Plant

1. The Big Stone Plant is located in Grant County, South Dakota, approximately two miles west-northwest of Big Stone City, 1-3/4 miles from Big Stone Lake, and approximately two miles north of U.S. Highway 12. The site is in the central portion of Section 12, Township 121 N, Range 47 W.
2. The turbine-generator was built by Westinghouse and has a nameplate capacity of 414,590 kW at the generator terminals with inlet steam conditions of 2,400 psig, 1000 degrees F, a condenser pressure of 3.25 inches HgA, and 0% makeup.
3. Big Stone Unit #1 has a cruise rating of 450 MWs using the subbituminous coal. Net generation for the year 1998 was 2,910,902 MWh, and for 1999 was 3,541,832 MWh.
4. The Big Stone Plant appropriates its entire supply of water from Big Stone Lake. During calendar year 1998, 3,372 acre-feet of water was appropriated, and during 1999, 4,423 acre-feet was appropriated.
5. The Big Stone Plant continued to burn subbituminous coal in 1998 and 1999. The amount of subbituminous coal burned in 1998 was 1,715,858 tons and 2,038,901 tons in 1999. Big Stone also supplemented its coal supply by burning alternative fuels totaling about 3% of its annual fuel requirements. Tire-derived fuel (TDF) and renewable resource material (RRM) are burned at Big Stone Plant. TDF consumption for calendar year 1998 was 23,261 tons and for 1999 was 45,974 tons. In addition, 29,395 tons of RRM was burned in 1998 and 42,309 tons of RRM was burned in 1999.
6. Otter Tail Power does not have a projected date of removal from service for the Big Stone unit.

NOTE: The Big Stone Plant is owned jointly by Otter Tail Power, Montana-Dakota Utilities Co., and Northwestern Public Service. Otter Tail Power serves as the operating agent for the unit.

22.62 miles, all in Roberts County. This is a wood-pole, H-frame line. No date has been projected for the removal of this line. Maps were provided with the 1978 plan.

## SECTION 7 -- PROPOSED TRANSMISSION FACILITIES

No transmission 230 kV and above is under consideration during the ten year period.

## SECTION 8 -- COORDINATION OF PLANS

Otter Tail Power Company is a member of the Mid-Continent Area Power Pool (MAPP). In addition, Otter Tail Power is involved from time to time with other utilities serving load in South Dakota on various study groups and task forces.

Montana-Dakota Utilities Co., Northern States Power Company, Northwestern Public Service Company, Otter Tail Power Company, Minnkota Power Cooperative, and Basin Electric Cooperative are members of the Dakotas-Montana Power Suppliers Group. This group was formed in 1979 to provide regional planning coordination.

## SECTION 9 -- SINGLE REGIONAL PLANS

The proposed facilities mentioned in Sections 5 and 7 comprise a part of the Mid-Continent Area Power Pool (MAPP) Regional Plan.

## SECTION 10 -- SUBMISSION OF REGIONAL PLAN

The Mid-Continent Area Power Pool publishes a ten-year map entitled 'Principal Power Supply Facilities Existing and Authorized-10Year Map'. Facilities to be added during the ten-year period 1999-2008 are based upon information contained in the 1999 MAPP – U.S. Coordinated Bulk Power Supply Program. An authorized 500 kV line is proposed from Huron to Sioux Falls in 2007. Since the project is located outside of the OTP service territory in South Dakota, OTP is not involved in the project.

## SECTION 11 -- UTILITY RELATIONSHIPS

Refer to Section 8 for a listing of the associations and power pools in which Otter Tail Power Company is involved. In addition, we have interconnections and transmission agreements in South Dakota with the following utilities: Northwestern Public Service Company, Montana-Dakota Utilities Co., East River Electric Cooperative, and Western Area Power Administration.

From experience gained in past construction projects, such as Big Stone Plant, and Coyote Station located near Beulah, North Dakota, Otter Tail Power has been made aware of the socioeconomic effects of large construction projects. Pre-construction and post-construction socioeconomic monitoring was conducted in the vicinity of Big Stone in order to evaluate the effect of a large construction force on such things as the business community, housing, and essential services such as hospital and dental care. This type of monitoring was employed in conjunction with the construction of Coyote Station. Should Otter Tail Power need to construct a large facility in South Dakota, socioeconomic monitoring would be initiated to identify potential problem areas and direct the proper steps to problem solving.

In order to aid the economy in the area of construction, it has been Otter Tail Power's policy to utilize the local labor force and local contractors as much as possible. Local contractors also provide essential services during plant operations.

### Health Effects

Various governmental regulations, including, for example, primary and secondary ambient air quality standards and water quality standards, have been promulgated to protect the public health and welfare. Otter Tail Power will comply with these regulations. In addition, Otter Tail Power contributes to research organizations, such as the Edison Electric Institute, which work to identify potential health and environmental problems as they relate to the electric utility industry.

### Public Safety

Otter Tail Power is very concerned about public safety. All readily accessible substations and major plant sites are fenced to prevent unescorted access by the public who might be unfamiliar with electric energy or associated generation facilities.

In addition, Otter Tail Power complies with all applicable construction codes for the construction of electrical transmission lines and generation facilities.

Otter Tail Power also inspects its facilities periodically to help safeguard against failures of vital components and prevent any unnecessary exposure to the general public. Included in the inspections are electric transmission lines, circuit breakers, capacitors, and transformers.

### Historic or Aesthetic Preservation Effects

Aesthetic effects have been considered in the design of transmission lines and power plants and will be considered in the design of future facilities. Transmission line routing considerations include visual effect on surrounding terrain. The design of Big Stone Plant included the choice of a color scheme that would blend with the surrounding countryside.

## SECTION 15 -- CHANGES IN STATUS AT FACILITIES

There is no change in the Big Stone Plant status. The unit continues to be operated as a base-loaded unit for OTP system load. Lake Preston continues to be operated during peak demands and line stability conditions. Lake Preston will be adding an inlet fogging system in 2000 to increase monthly summer ratings.

## SECTION 16 -- PROJECTED ELECTRIC DEMAND

The next ten years projected base demand for the Otter Tail Power system is as follows:

<u>Year</u>	<u>Unmanaged Peaks</u>	<u>Load Managed Peaks</u>	<u>Load Mngmt. Utilized</u>
2000	679	679	0
2001	688	688	0
2002	692	692	0
2003	696	696	0
2004	698	638	60
2005	699	618	81
2006	704	623	81
2007	708	627	81
2008	707	626	81
2009	704	623	81

**Table 1**  
**2000-2014 Seasonal Load & Capability - Base Forecast**

MAPP Load & Capability Calculation	Sum 2000	Win 2000	Sum 2001	Win 2001	Sum 2002	Win 2002	Sum 2003	Win 2003	Sum 2004	Win 2004	Sum 2005	Win 2005	Sum 2006	Win 2006	Sum 2007
Seasonal Maximum Demand	595	679	604	688	615	692	619	696	623	698	627	699	632	704	638
Schedule L Purchases	17	0	21	0	26	0	26	0	26	60	26	81	26	81	26
Seasonal System Demand	578	679	583	688	589	692	593	696	597	638	601	618	606	623	612
Annual System Demand	657	679	679	688	688	692	692	696	696	638	638	618	618	623	623
Firm Purchases - Total	0	0	50	0	50	0	0	0	0	0	0	0	0	0	0
Firm Sales - Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adj. Net Demand	578	679	533	688	539	692	593	696	597	638	601	618	606	623	612
Annual Adjusted Net Demand	657	679	629	688	638	692	692	696	696	638	638	618	618	623	623
Net Generating Capacity	630	662	630	662	630	662	630	662	630	662	630	662	630	662	630
Participation Purchases - Total	152	177	102	177	102	177	102	177	102	102	52	52	52	52	52
Participation Sales - Total	75	0	75	0	75	0	75	0	75	0	0	0	0	0	0
Adjusted Net Capability	707	839	657	839	657	839	657	839	657	764	682	714	682	714	682
Net Reserve Cap. Obligation	99	102	94	103	96	104	104	104	104	96	96	93	93	93	93
Total Firm Cap. Obligation	677	781	627	791	635	796	697	800	701	734	697	711	699	716	705
Surplus or Deficit (-) Capacity	30	58	30	48	22	43	-40*	39	-44*	30	-15*	3	-17	-2	-23

MAPP Load & Capability Calculation	Win 2007	Sum 2008	Win 2008	Sum 2009	Win 2009	Sum 2010	Win 2010	Sum 2011	Win 2011	Sum 2012	Win 2012	Sum 2013	Win 2013	Sum 2014	Win 2014
Seasonal Maximum Demand	708	646	707	649	704	649	701	649	702	652	704	657	704	660	704
Schedule L Purchases	81	26	81	26	81	26	81	26	82	26	82	26	82	26	82
Seasonal System Demand	627	620	626	623	623	623	620	623	620	626	622	631	622	634	622
Annual System Demand	627	627	626	626	623	623	623	623	623	626	626	631	631	634	634
Firm Purchases - Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Firm Sales - Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal Adj. Net Demand	627	620	626	623	623	623	620	623	620	626	620	631	622	634	622
Annual Adjusted Net Demand	627	627	626	626	623	623	623	623	623	626	626	631	631	634	634
Net Generating Capacity	662	630	662	630	662	630	662	630	662	630	662	630	662	630	662
Participation Purchases - Total	52	52	52	52	52	2	2	2	2	2	2	2	2	2	2
Participation Sales - Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted Net Capability	714	682	714	682	714	632	664	632	664	632	664	632	664	632	664
Net Reserve Cap. Obligation	94	94	94	94	93	93	93	93	93	94	94	95	95	95	95
Total Firm Cap. Obligation	721	714	720	717	716	716	713	716	716	720	716	726	717	729	717
Surplus or Deficit (-) Capacity	-7	-32	-6	-35	-2	-84	-49	-84	-49	-88	-52	-94	-53	-97	-53

OTP proposes to meet the seasonal deficits through a combination of seasonal purchases and long term firm purchases. OTP potential future resources are outlined in the 1999 Resource Plan Filing, Docket No. EO17/RP-99-909.

\* See the Special Note on page 10.