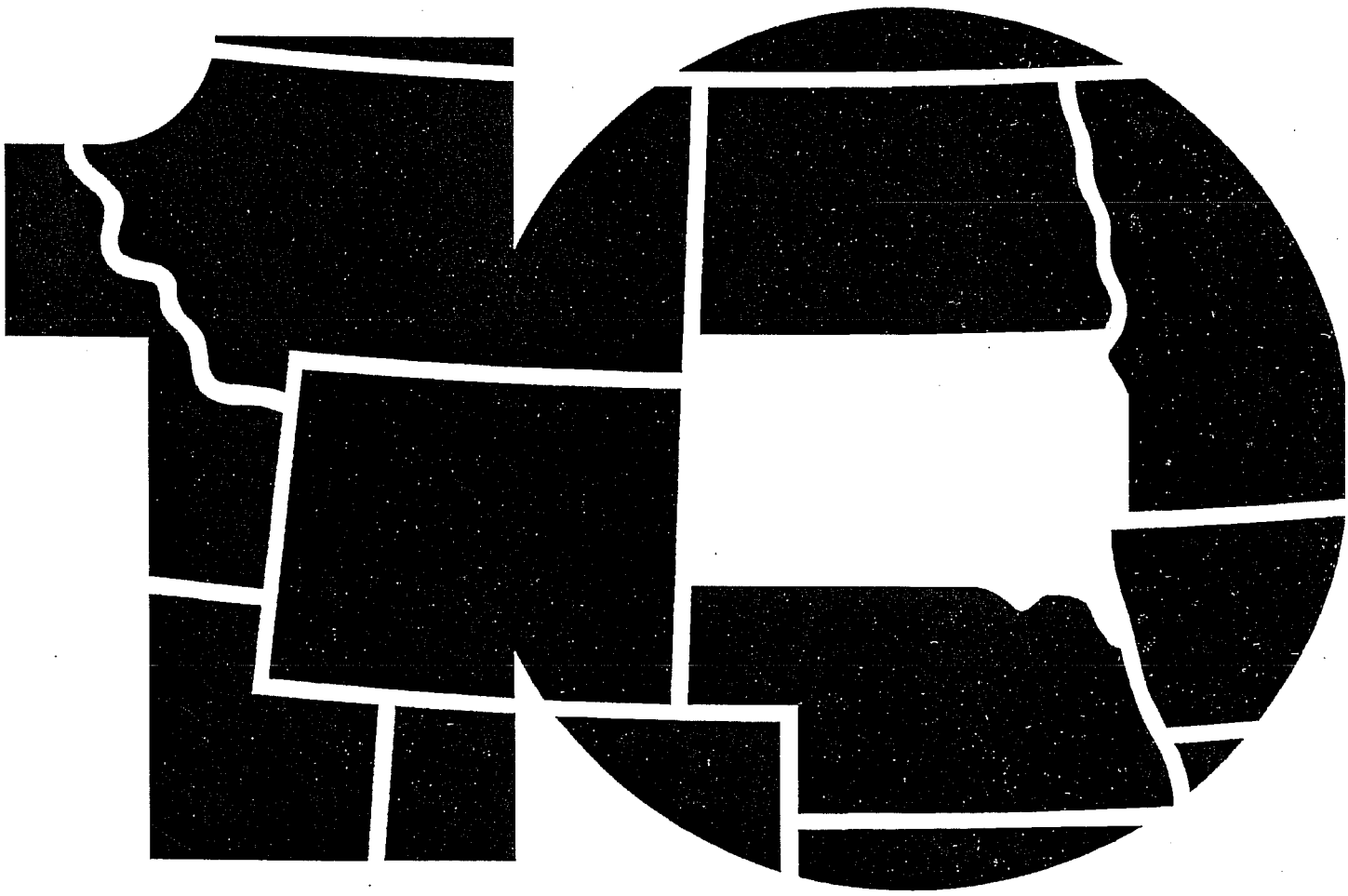
2000

Ten-Year Plan for Major Generation and Transmission Facilities to the South Dakota Public Utilities Commission



Submitted by **Northern States Power Company**

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20:10:21:04 EXISTING ENERGY CONVERSION FACILITIES

Pathfinder:

1. Sioux Falls, South Dakota
2. Steam boiler 75 MW nameplate capacity
3. 64 MW net summer capacity
   0 MW net winter capacity
   Annual Net Production
   1998 – 351 MWh
   1999 – 0 MWh
4. Northern Natural Gas - Pipeline deliver
   Annual Fuel Consumption (MBTu)

Fuel Type	1998	1999
Natural Gas	5,923	6

Angus Anson:

1. Sioux Falls, South Dakota
2. 105 MW each unit, combustion turbine
3. 116 MW net summer capacity
   125 MW net winter capacity
   Annual Net Production
   1998 – 168,923 MWh
   1999 – 141,090 MWh
4. Northern Natural Gas - Pipeline deliver
   Annual Fuel Consumption (MBTu)

Fuel Type	1998	1999
Natural Gas	2,244,888	1,903,455

5. No retirement date has been set. The condition of NSP's generating equipment is monitored, and as the age increases, an evaluation of continued operation is periodically performed. Based only on a nominal average service life of 35 years, the Pathfinder Power Plant retirement date is estimated at the end of the year 2003.

20:10:21:05 PROPOSED ENERGY CONVERSION FACILITIES

NSP does not have energy conversion facilities under construction in the State of South Dakota. NSP proposes to utilize a competitive bidding process to fulfill all future resource needs. The specific generation technology and location of future generation

facilities will be determined through the competitive bidding process. A copy of the 2000 Resource Plan Executive Summary is included as Appendix B.

20:10:21:06 EXISTING TRANSMISSION FACILITIES

Northern States Power Company has the following existing transmission facilities operating at 115 kV or above in the southeastern South Dakota area.

Type 115 kV - AC

1. Lawrence Substation in Sioux Falls to the Lincoln County Substation south of Sioux Falls - 11 miles.

2. Lincoln County Substation south of Sioux Falls to the Cherry Creek Substation approximately 4 miles west of Sioux Falls - 10 Miles.

3. Cherry Creek Substation to the Grant Substation west of Sioux Falls - 24 miles.

4. Grant Substation west of Sioux Falls to Northwest Public Service at Mitchell - 24 miles to Wolf creek Interconnection owned by NSP, remainder owned by NWPS.

5. Lawrence Substation in Sioux Falls to the Western Area Power Administration Substation in Sioux Falls - 1 mile.

6. Lawrence Substation in Sioux Falls to the Split Rock Substation approximately 5 miles northeast of Sioux Falls - 2 miles.

7. Split Rock Substation to the Pathfinder Substation approximately 4 miles northeast of Sioux Falls - .8 miles.

8. Pathfinder Substation to the Pipestone Substation in Pipestone, Minnesota. Approximately 34 miles of this line are in the state of South Dakota - 42 miles total.

9. Lawrence Substation in Sioux Falls to the Split Rock Substation approximately 5 miles northeast of Sioux Falls. Approximately 1 mile of this line is double-circuited with the Split Rock-Magnolia 161 kV line - 2.6 miles total.

10. Split Rock Substation to the West Sioux Falls Substation approximately 1 mile northwest of Sioux Falls - 17.3 miles.

11. West Sioux Falls Substation to the Cherry Creek Substation approximately 4 miles west of Sioux Falls - 3.5 miles.

Type 161 kV - AC

1. Split Rock Substation approximately 5 miles northeast of Sioux Falls to the Interstate Power Company interconnection in Magnolia, Minnesota.

   Approximately 1 mile of this line is double-circuited with the second Lawrence-Split Rock 115 kV line. Approximately 11 miles of this line is in the State of South Dakota - 20 miles total.

Type 230 kV - AC

None

Type 345 kV - AC

1. Split Rock Substation northeast of Sioux Falls to the Western Area Power Administration's 345 kV line between Watertown and Sioux City. This is a double-circuited line - 5.1 miles.

20:10:21:07 PROPOSED TRANSMISSION FACILITIES

In accord with a mandate from the Minnesota Legislature, NSP plans to install a total of 425 MW of wind-powered generation by 2002. These wind generators are likely to be installed in southwestern Minnesota and may also be located in eastern South Dakota. NSP has been evaluating the transmission requirements of this plan, the later stages of which could involve new transmission or substation facilities in South Dakota. Recent studies indicate the need for a new 115/34.5 kV substation to be located in Lincoln County, Minnesota, called "Yankee". This substation would be located approximately 1 mile from the South Dakota border and would connect, via a new 115 kV transmission line, the existing Buffalo Ridge Substation in Minnesota with the WAPA White 345/115 kV Substation, approximately 6 miles into South Dakota. The White Substation would be expanded to accommodate a new termination. Addition of a new 115 kV source provides not only increased generator outlet from the Buffalo Ridge area but also provides improved services to the 115 kV network in the area and acts as back-up to the 345 kV network between the White Substation and Sioux Falls.

Recent NSP studies have also predicted the need for a new 345 kV source to the Sioux Falls area by 2007. Several alternatives will continue to be evaluated as the need for this project becomes more evident.

20:10:21:08 COORDINATION OF PLANS

The area power suppliers continually evaluate the regional electric needs in order to develop the most efficient regional system.

20:10:21:09 SINGLE REGIONAL PLANS

Northern States Power is continuing to work with other area utilities to evaluate potential transmission needs in the future and to develop coordinated regional plans as required to meet those needs.

20:10:21:10 SUBMISSION OF REGIONAL PLANS

Further regional additions will include continued development and use of the 115, 230, and 345 kV systems. Specific plans for additional facilities will be developed with other area power suppliers, and submitted with a subsequent ten-year plan when the need is clearly identified.

20:10:21:11 UTILITY RELATIONSHIPS

All major transmission and generation planning performed by Northern States Power Company is coordinated on regional basis through the Mid-Continent Area Power Pool (MAPP). This coordination applies to all NSP facilities in Minnesota, Wisconsin, North Dakota and South Dakota. This joint planning is intended to maximize utilization of existing facilities and minimize the amount of new facilities.

20:10:21:12 EFFORTS TO MINIMIZE ADVERSE EFFECTS

NSP uses a multi-step effort to minimize adverse effects resulting from siting, constructing, operating and maintaining large electric generating plants and high voltage transmission lines. These efforts relate to long-range planning and coordination, environmental site and route analysis, and mitigative construction and operation practices.

NSP coordinates its plans for large electric generating plants and high voltage transmission facilities with other area power suppliers in order to develop, whenever possible, joint use facilities. Coordination with others can reduce the number of facilities by providing for joint ownership and operation of individual facilities.
Once need for generation or transmission has been determined, an initial site or route search is begun by defining a broad study area in which the facility should be located. A broad range of information about the physical, biological and cultural environment within the study area is collected. As information on such factors as land use, air and water quality, plants and animals, transportation and social services, and local and regional employment becomes available, various siting criteria are used to define preferred and

alternate routes and sites. NSP prefers to develop a project with the cooperative assistance of state and local agency officials and possibly affected landowners in order to assure the widest possible considerations of information, concerns and options. It is NSP's policy to insure compliance with all local, state and federal regulatory requirements in the development and location of proposed projects.

Because of the detail involved in a major generation or transmission project, NSP prefers to complete detailed site and route engineering once permits have been granted. This permits last minute adjustments to be completed which can take into account concerns which may arise during construction. Such flexibility allows concerns regarding factors such as structures, locations, land use, construction techniques, etc., to be mitigated without due delay and expense.

NSP is committed to working with affected landowners to mitigate environmental and land use problems which may arise in relation to necessary and proper construction and maintenance activities.

20:10:21:13 EFFORTS RELATIVE TO LOAD MANAGEMENT

NSP's demand-side management efforts are extensive and continue to expand. A copy of the status report on impacts and expenditures for 1998 and 1999 is attached as Appendix C.

20:10:21:16 PROJECTED FORECASTS

The forecast of native energy requirements and peak demand for the state of South Dakota is shown in Table NSP-SD-1. Table NSP-1 through Table NSP-3 show the long-term "median" system forecasts of native energy requirements, summer peak, and winter peak demands for the NSP system as a whole. For each of its forecast, NSP developed two alternative scenarios to supplement its "median" forecast, called the semi-high and semi-low. NSP believes that these semi-high and semi-low scenario forecasts describe uncertainty in a business-as-usual context: a relatively narrow range of US economic growth with no basic change in the relationship between the regional and national economies. These scenarios are derived using alternative forecasts for national and regional economic variables and assume that the regional economy continues to be linked to the national economy. Table NSP-SD-1 shows the South Dakota portion of the system forecast.

The forecast for the NSP system is based on forecast of sales by major customer class, namely; residential, commercial, industrial, small commercial and industrial (SC&I), and large commercial and industrial (LC&I). The South Dakota portion of these sales forecasts is obtained by apportioning the sales of each class by jurisdiction. For the residential sector, the relative intensity of use per residential customer is assumed to

remain constant for the average customer in the states of Minnesota, North Dakota, South Dakota, and Wisconsin. The sales to the SC&I and LC&I classes are apportioned among the jurisdictions by assuming that the relative intensity of use per employee between states to the total number of total non-agricultural employee is maintained. The native energy requirements are determined by applying a loss factor on total sales.

The NSP system peak is apportioned to jurisdictions based on the native energy requirements by state and the load factor by state. Consequently, the summer and winter "peak loads" provided in Table NSP-SD-1 represent the South Dakota jurisdiction customer demand at time of NSP total system seasonal peak demand. This "coincident" demand is appropriate for generating capacity requirement forecasting.

It is important to note, however, that a "non-coincident" peak demand must be used in evaluating transmission requirements. This is because the transmission system must be able to supply the full local customer demand at all times. Due to load diversity caused by weather variations within the NSP multi-state power system, peak customer demands in NSP's South Dakota service areas can be as much as 10 percent higher than the demands registered during the hour in which the total system peak demand occurs. It is these local "non-coincident" peak demands that determine the need for transmission improvements required for load serving functions.

Table NSP-SD-1.
Northern States Power Company
State of South Dakota
Forecast of Electric Energy Requirements and Peak Demand

	Winter Peak (MW)	Summer Peak (MW)	Energy (GWh)	Change In Energy (GWh)	% Change In Energy
2000	253	331	1,614		
2001	258	344	1,649	35	2.1
2002	263	350	1,689	40	2.4
2003	268	357	1,731	42	2.5
2004	273	364	1,769	38	2.2
2005	281	362	1,804	35	2.0
2006	286	368	1,836	32	1.8
2007	291	374	1,867	31	1.7
2008	296	379	1,895	28	1.5
2009	300	385	1,924	29	1.5
2010	304	391	1,952	28	1.4
2011	309	396	1,979	27	1.4
2012	313	402	2,007	28	1.4
2013	317	407	2,036	29	1.4
2014	322	413	2,063	27	1.3
2015	326	418	2,090	27	1.3
2016	330	423	2,115	25	1.2
2017	333	428	2,140	25	1.2
2018	337	433	2,163	23	1.1
Average Annual Growth Rate, 2000-2018:					
% growth:	**1.59**	**1.49**	**1.63**		

Notes:
1). Peak Load is co-incident to the NSP system peak.
2). Winter Peak = MAPP Winter Peak season, 2000 is 2000-2001 winter peak.

Table NSP-1
Northern States Power Company
NSP System Net Energy Requirements (MWh)

Year	Semi-Low (MWh)	Median (MWh)	Semi-High (MWh)
2000	41,281,315	42,178,464	43,236,968
2001	41,453,497	42,703,224	44,053,569
2002	42,069,006	43,579,157	45,271,920
2003	42,650,207	44,420,756	46,406,103
2004	43,176,519	45,184,864	47,460,411
2005	43,715,926	45,990,283	48,547,147
2006	44,250,599	46,792,480	49,641,542
2007	44,792,482	47,609,329	50,763,516
2008	45,342,998	48,440,245	51,918,693
2009	45,892,557	49,281,123	53,104,582
2010	46,434,932	50,123,248	54,302,044
2011	46,967,952	50,964,389	55,507,876
2012	47,454,445	51,764,215	56,674,703
2013	47,904,159	52,534,012	57,814,176
2014	48,337,894	53,303,730	58,960,205
2015	48,750,974	54,059,345	60,097,148
2016	49,121,810	54,779,766	61,198,102
2017	49,493,090	55,509,179	62,325,558
2018	49,859,692	56,241,419	63,475,568
Avg. Grw: 2000-2018	**1.0**	**1.6**	**2.1**

Table NSP-2
Northern States Power Company
NSP System Net Summer Peak (MW)

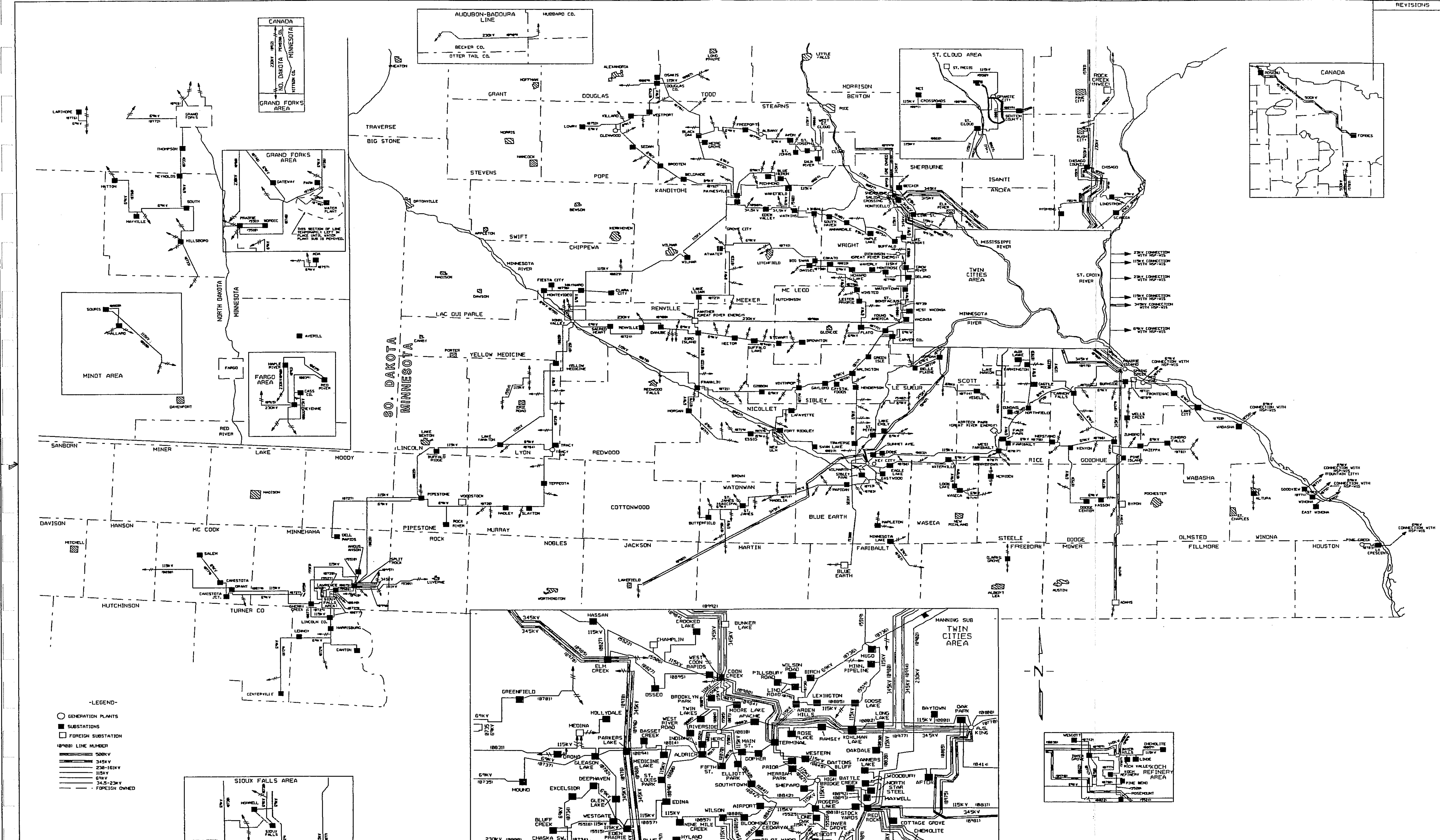
Year	Semi-Low (MW)	Median (MW)	Semi-High (MW)
2000	7,481	7,639	7,833
2001	7,473	7,689	7,935
2002	7,540	7,799	8,103
2003	7,614	7,913	8,267
2004	7,695	8,032	8,436
2005	7,772	8,151	8,604
2006	7,863	8,286	8,788
2007	7,959	8,426	8,981
2008	8,056	8,569	9,180
2009	8,158	8,717	9,388
2010	8,260	8,867	9,599
2011	8,358	9,017	9,811
2012	8,448	9,158	10,016
2013	8,531	9,293	10,215
2014	8,615	9,432	10,418
2015	8,695	9,568	10,620
2016	8,767	9,697	10,814
2017	8,839	9,828	11,012
2018	8,910	9,959	11,217
Avg. Grw: 2000-2018	**1.0**	**1.5**	**2.0**

Table NSP-3
Northern States Power Company
NSP System Net Winter Peak (MW)

Year	Semi-Low (MW)	Median (MW)	Semi-High (MW)
2000	6,427	6,590	6,777
2001	6,488	6,691	6,923
2002	6,564	6,802	7,076
2003	6,622	6,891	7,204
2004	6,710	7,014	7,367
2005	6,801	7,140	7,532
2006	6,890	7,266	7,700
2007	6,980	7,395	7,873
2008	7,073	7,526	8,052
2009	7,164	7,657	8,233
2010	7,253	7,788	8,414
2011	7,337	7,915	8,593
2012	7,415	8,036	8,766
2013	7,490	8,156	8,939
2014	7,562	8,275	9,111
2015	7,628	8,389	9,278
2016	7,693	8,502	9,446
2017	7,757	8,616	9,618
2018	7,821	8,731	9,786
Avg. Grw: 2000-2018	**1.1**	**1.6**	**2.0**

Note: Winter Peak = MAPP Winter Peak season, 2000 is 2000-2001 winter peak.

APPENDIX A: NSP TRANSMISSION LINES



(FORMERLY "DR-830)

THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PREFORMANCE OF THEIR JOB'S. YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPAR'S.

REV	PROJECT	SHT DATE	DWN	CHK	APPR
	997505	2-1-97	MAH	HAB	RAJ
B	99850		MAH	HAB	RAJ
C	99734A		HAB	RAJ	RAJ
D	99734A	2-18-98	HAB	RAJ	RAJ
E	99734A		HAB		

ELECTRIC PRODUCTION TRANSMISSION & SUBSTATION FACILITIES

NORTHERN STATES POWER CO.
ENGINEERING DEPARTMENT
MINNEAPOLIS

NE-172841

APPENDIX B: NSP 2000 RESOURCE PLAN EXECUTIVE SUMMARY

(To be supplied under separate cover when available-approximately 2 weeks)

APPENDIX C: CONSERVATION AND LOAD MANAGEMENT REPORT

(To be supplied under separate cover)