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UTILITIES COMMISSION



**2006-2016**

**ENERGY FACILITY PLAN**

**THE SUBSEQUENT BIENNIAL  
REPORT  
OF THE TEN YEAR PLAN**

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## BLACK HILLS POWER - ENERGY FACILITY PLAN

### §20:10:21:02      **Ten year plans**

This 2006 submittal is for Black Hills Power, Inc. (BHP) subsequent biennial report of the ten year plan which will restate each area required by the South Dakota Public Utilities Commissions Rule, Chapter 20:10:21.

### §20:10:21:03      **Contents of plans.**

BHP's plan contains all sections from §20:10:21:02 - §20:10:21:25.

### §20:10:21:04      **Existing Energy Conversion Facilities**

1. The Ben French facility is located in Pennington County in the Northwest area of Rapid City, along Deadwood Avenue (393). The site is located in Section 34, Township 2N, Range 7E. The Ben French site has a combination of one (1) steam turbine, four (4) combustion turbines and five (5) internal combustion diesels.

The name plate rating and net capacity of the units are:

UNIT TYPE	# OF UNITS	GENERATOR RATING	NET RATING	PRIMARY FUEL
Steam Turbine	1	25 MW	21.6 MW	Sub-bituminous Coal
Combustion Turbine	4	25.2 MW each	20.2 MW each	Diesel Fuel Oil Natural Gas
Internal Combustion Diesels	5	2MW each	2MW each	Diesel Fuel Oil
<b>2TOTAL</b>	<b>10</b>	<b>135.8</b>	<b>112.4</b>	

The 2004 and 2005 net Megawatt (MWH) generation of these units was:

TYPE	2004 MWH's	2005 MWH's
Steam Turbine (MWH)	144,283	152,534
Combustion Turbine Combined (MWH)	4,252	1,410
Internal Combustion Diesels Combined (MWH)	1,038	913

The fuel source for the steam turbine is sub-bituminous coal which is supplied by the Wyodak Resource Development Corporation Clovis Point mine, located near Gillette, Wyoming. The steam plant consumed 127,062 tons of coal in 2004 and 133,933 tons in 2005.

The water source for this entire generating facility is private wells located on the property. The wells draw water from the Madison & Minnekahta Formations. Water consumed in 2004 was 349.48 acre feet and in 2005 423.54 acre feet.

The fuel oil used by the combustion turbines and internal combustion diesels is supplied from regional refineries and delivered by truck to Ben French. The combustion turbines used a total of 119,145 gallons in 2004 and 35,233 gallons in 2005. The internal combustion diesels consumed a total of 102,878 gallons in 2004 and 93,235 gallons in 2005.

The combustion turbines are able to use Natural Gas as a fuel also. Natural Gas is supplied from regional suppliers on a monthly bid basis and transported by Williston Basin Interstate Pipeline through the Krebs Border Station. The combustion turbines consumed 69,516 MCF for 2004 and 36,966 MCF for 2005.

No retirements are planned for the generation equipment at the Ben French Plant.

2. The Lange LM6000 combustion turbine unit is located in Pennington County in the northwest area of Rapid City, off Tatonka Drive at 2900 Lange Ranch Road. The site is located in the southwest quarter of the northeast quarter of Section 22, Township 2N, Range 7E. The Lange LM6000 combustion turbine unit went commercial March 10, 2002.

The name plate rating and net capacity of the unit is:

UNIT TYPE	# OF UNITS	GENERATOR RATING	NET RATING	PRIMARY FUEL
Combustion Turbine	1	40 MW	38 MW	Natural Gas

The 1994 and 1995 net MWH generation for this facility was as follows:

TYPE	2004 MWH's	2005 MWH's
Combustion Turbine	16,388	17,839

The water source for the Lange facility is provided by a private well in the Minnelusa formation. The 2004 use was 17.87 acre feet and the 2005 use was 17.35 acre feet.

The combustion turbine uses Natural Gas as its fuel type. Natural Gas is supplied from regional suppliers on a monthly bid basis and transported by Williston Basin Interstate Pipeline through the Lange Border Station. The combustion turbines consumed 69,516 MCF for 2004 and 36,966 MCF for 2005.

There are no plans to retire the Lange facility.

**§20:10:21:05 Proposed Energy Conversion Facilities.**

Black Hills Power has no proposed energy conversion facilities for the ensuing 10 calendar years.

**§20:10:21:06 Existing Transmission Facilities.**

Black Hills Power is an investor-owned utility and operates and owns, with Basin Electric Power Cooperative, a looped 230 kV transmission system which includes an AC/DC/AC converter station at Rapid City. The 69 kV transmission system is supported from the 230 kV transmission system from substations at Spearfish, Lead, Rapid City, Hot Springs, and Wyodak; and by generation located in Rapid City, South Dakota, and Osage & Gillette, Wyoming. Power is also delivered through interconnection with other systems. The interconnecting points to other systems are at Stegall, Nebraska and the Wyodak Substation at Gillette, Wyoming.

<b>LOCATION</b>	<b>TYPE</b>	<b>CONDUCTOR</b>	<b>VOLTAGE</b>
<b>SOUTH DAKOTA:</b>			
Wyodak-Lookout	H-Wood	1272 MCMAL	<b>230 kV</b>
Lookout-Lange	H-Wood	1272 MCMAL	<b>230 kV</b>
Lange-West Hill	H-Wood	795 MCMAL	<b>230 kV</b>
West Hill-Stegall	H-Wood	1272 MCMAL	<b>230 kV</b>
West Hill-Osage	H-Wood	1272 MCMAL	<b>230 kV</b>
Lange-Ben French	H-Wood	795 MCM	69 kV
DC Tie West			<b>230 kV</b>
Osage-Yellowcreek	H-Wood	<b>1272 MCM</b> ACRS	230 kV
<b>WYOMING:</b>			
Wyodak-Lookout	H-Wood	<b>1272 MCM</b>	<b>230 kV</b>
Wyodak-D/C Exit	SP-Steel	<b>1272 MCM</b>	<b>230 kV</b>
Osage-West Hill	H-Wood	1272 MCMAL	<b>230 kV</b>
Osage-Wyodak	H-Wood	1272 MCMAL	<b>230 kV</b>
NSI-NSII	SP-Steel	795 MCM ACSR	69 kV
Osage-Yellowcreek	H-Wood	<b>1272 MCM</b> ACSR	230 kV
Osage 230 kV Sub-			
Osage 69 kV Sub	Wood	795 MCM ACSR	<b>230 kV</b>

<u>LOCATION</u>	<u>TYPE</u>	<u>CONDUCTOR</u>	<u>VOLTAGE</u>
<b>WYOMING CONTINUED:</b>			
NSI-Wyodak	H-Wood		69 kV
<b>NEBRASKA:</b>			
Hot Springs-Stegall	H-Wood	1272 MCM	230 kV

Retirement dates on these facilities has not been determined or anticipated at this time.

**§20:10:21:07 Proposed Transmission Facilities.**

Planned Activity for the ensuing years.

- 2008 Whitewood/Sturgis 230 kV Substation addition:
  - \* Required to serve additional loads in the area.
  - \* 100-125 MVA 230/69 kV transformer additional.
  - \* Estimated costs \$3-5 million dollars.
  
- 2008-2010 Addition of a 230 kV Line from Wyodak (Gillette WY) south towards Dave Johnston facility (Glenrock, WY).
  - \* Associated 230 kV substation facilities required at Wyodak, Hartzog, and Dave Johnston locations to interconnect line segment.
  - \* Required to support addition loads and interconnection of generation resources which serve the Black Hills area.
  - \* Estimated costs \$35-40 million dollars.

**§20:10:21:08 Coordination of plans.**

Black Hills Power is a member of Western Electricity Coordinating Council (WECC) and reports regional information through this agency.

Black Hills Power, Basin Electric Power Cooperative (Basin Electric) and Powder River Energy Corporation (PRECorp) through participation in a Federal Energy Regulatory Commission (FERC) filed "Common Use System Open-Access Transmission Tariff perform joint planning studies on their facilities that serve loads in South Dakota and Wyoming.

**§20:10:21:09 Single Regional Plans.**

The Spearfish-Yellowcreek and Yellowcreek-Osage 230 kV lines are part of a regional plan with Basin Electric to provide transmission service and electric power to consumers of Black Hills Power and Basin in the Spearfish, Deadwood, Rapid City, Hot

Springs area of South Dakota. Also in joint effort with Basin, the Rapid City Asynchronous Tie is part of a single regional plan.

The proposed facilities mentioned in Section 20:10:21:07 are all incorporated in a single regional plan.

#### **§ 20:10:21:10      Submission of Regional Plan.**

As future joint transmission studies between Basin Electric, Black Hills Power and PRECorp are completed and show the need for additional facilities to support regional loads, those study(s) will be submitted to the commission.

#### **§20:10:21:11      Utility Relationships.**

Black Hills Power has interconnections with PacifiCorp (PAC) and Western Area Power Administration – Rocky Mountain Region (WAPA-RMR).

We are members of Western Electricity Coordinating Council (WECC), Rocky Mountain Reserve Group (RMRG), Mid-Continent Energy Marketers Association (MEMA) plus belonging to Rocky Mountain Power Pool (RMPP) and an associate member of Mid-Continent Area Power Pool (MAPP).

BHP has transmission agreements with the following utilities: Basin Electric Power Cooperative, PacifiCorp (PAC), Western Area Power Administration – Rocky Mountain Region (WAPA-RMR), Powder River Energy Corporation (PRECorp), Butte Electric Cooperative and Black Hills Electric Cooperative.

#### **§20:10:21:12      Efforts to Minimize Adverse Effects.**

##### Environmental

Black Hills Power is committed to providing safe, reliable and affordable energy in a manner that insures the highest priority for protection of the environment as well as the health and welfare of our customers, general public and our employees. Our outstanding environmental compliance enhances customer and shareholder value and provides protection of our natural environment for present and future generations to enjoy. Energy development in the West requires a strong commitment to the protection of our natural resources. We have and will continue to work closely with state and federal agencies to insure our projects have minimal impact on these resources.

BHP's environmental practice is implemented through the principles of our environmental management system:

- All management and employees are committed to continuous environmental compliance by providing the resources required to meet this goal. Every employee has the responsibility of complying with this practice.
- Operations are conducted in a manner that insures meeting or surpassing applicable environmental rules and regulations. Operations are monitored to strive to cost-effectively meet requirements and minimize corporate risk and liability.
- Training is provided to all employees to insure knowledge of environmental compliance requirements related to their job duties.
- The Board of Directors is updated regularly regarding the status of our environmental and safety compliance programs.
- We participate in the development of new technologies in a manner that provides for customer and shareholder value.
- We actively participate with policy makers to ensure the best scientific information is being considered and to ensure customer and shareholder values are represented.

### Social

All Black Hills Power employees are encouraged to provide leadership to local civic and charitable organizations. The Company has an active program to encourage employees to support the United Way Program financially and with time.

### Public Safety

Black Hills Power conducts public safety educational programs throughout the public schools, local civic organizations, local contractors associations and through local media plus safety links on our website. The Company continues to offer power plant tours, as security issues permit, to schools & organizations wanting to learn more about the production of electricity.

### **§20:10:21:13          Efforts Relating to Load Management.**

Black Hills Power load management efforts are achieved through the promotion of energy management rates, energy efficiency rebates and training opportunities.

Residential customers are offered an optional demand service rate in combination with the installation of a demand controller that limits their on-peak energy use. Over 3,500 residential customers take advantage of this rate. Rebates and financing are offered for demand controllers and certain energy efficient equipment. Preventative maintenance checks for heat pumps and air conditioners are offered to insure the equipment is operating at its peak efficiency. Energy audits are available to existing electric customers for advice on energy efficient equipment. A heat loss analysis is available upon request for new customers considering electric heating options.



Commercial customers can take advantage of BHP's Energy Storage rate for heat storage, ice storage, battery charging, water heating and geothermal heat pump systems. Rebates are offered for energy efficient heat pumps – primarily geothermal installations in the commercial sector. Larger commercial and industrial customers can shift load to off-peak periods to improve their load factor. C&I customers are offered assistance with load monitoring, power factor analysis, energy use calculations and rate analysis.

Black Hills Power also promotes its programs through trade shows, home shows, and newsletters. Specific training is offered to employees, trade allies and Key Customers for residential heat pump installations, duct work sizing, demand controller installations, energy efficient construction standards and energy efficient equipment.

#### **§20:10:21:14 List of Reports.**

As stated in Section §20:10:21:05, Black Hills Power has no proposed energy facilities planned. The proposed facilities mentioned in Section §20:10:21:07 have been reported in “Black Hills Corporations 2005-2016 Integrated Resource Plan” filed with the South Dakota Public Utilities Commission and Wyoming Public Service Commission.

#### **§20:10:21:15 Changes In Status of Facilities.**

Black Hills Power had no facilities change during 2004 and 2005. In recent years, BHP has added two (2) 40 MW combustion turbine units. As noted in Section §20:10:21:04 item #2 – on March 10<sup>th</sup>, 2002, one 40 MW LM6000 combustion turbine unit in Rapid City, SD and on June 19, 2000 in Gillette, Wyoming one 40 MW LM6000 combustion turbine. In addition, BHP jointly owns an AC/DC/AC converter station with Basin Electric Power Cooperative which was placed into service in October of 2003.

#### **§20:10:21:16 and §20:10:21:17 Projected Electric Demand & Change in Electric Energy.**

Black Hills Powers projected electric demand and change in electric energy are shown below on Tables 1, 2 and 3. These tables show actual data for the 2005 year and projected data for the years 2006-2016. The forecasted values were developed by Black Hills Power personnel.

**Table 1**  
**BHP Peak Demand and Energy Forecast 2005-2016**

Year	Peak Demand (MW)	Annual Energy (MWh)
2005-Actual	322	1,640,005
2006	329	1,656,110
2007	334	1,673,590
2008	338	1,689,370
2009	342	1,705,750
2010	346	1,725,750
2011	351	1,745,580
2012	355	1,765,210
2013	360	1,784,130
2014	364	1,802,650
2015	368	1,820,180
2016	370	1,838,970

**Sheridan**

The Sheridan load began on January 1, 1997 and was acquired by the bidding process. A new contract was signed in late 2004. Montana-Dakota Utilities (MDU) provided this forecast of the peak demand and energy usage for the City of Sheridan, Wyoming for this filing information.

**Table 2**  
**Sheridan Peak Demand and Energy Forecast 2005-2016**

Year	Annual Energy (MWh)	Peak Demand (MW)
2005 - Actual	269,251	55.0
2006	276,573	54.7
2007	279,437	55.1
2008	283,748	56.2
2009	287,997	57.0
2010	292,430	57.7
2011	296,964	58.6
2012	301,456	59.6
2013	305,774	60.4
2014	310,236	61.2
2015	314,889	62.4
2016	319,613	63.0

## Gillette

BHP delivered 23 MW in most hours of some months during 2004 with energy usage continuing to grow such that by 2011, 23 MW will be consumed by the City of Gillette in every hour of the year. The City of Gillette load assumes that BHP continues to provide service throughout the period 2006-2016.

**Table 3**  
**Gillette Energy Usage 2005-2016**

Year	Energy Usage (MWh)	Peak Demand (MWh)
2005 - Actual	198,803	23
2006	198,190	23
2007	199,160	23
2008	200,580	23
2009	200,860	23
2010	201,410	23
2011	201,480	23
2012	202,030 (leap year)	23
2013	201,480	23
2014	201,480	23
2015	201,480	23
2016	202,030 (leap year)	23

### §20:10:21:18      **Map of Service Area.**

The map for Black Hills Powers service area is included as Exhibit 1.

### §20:10:21:19      **Individual Utility Plans.**

Black Hills Power submits its own plan, of which is contained herein.

### §20:10:21:20      **Biennial Filing.**

Black Hills Power submits its' IO-year plan to the South Dakota Public Utilities Commission on this 30<sup>th</sup> day of June, 2006. This IO-year plan shall apply beginning with the 2006-2016 years.

**§20:10:21:21 Subsequent plans.**

Subsequent biennial plans for Black Hills Power will be submitted to the South Dakota Public Utilities Commission as stated when we have additions, deletions, or modifications. These plans shall be clearly cross-referenced to prior reports.

**§20:10:21:22 Places of Filing.**

Ten (10) copies of Black Hills Power's 10-year plan shall be filed and are included herewith. Upon the PUC's request, Black Hills Power shall file within fifteen (15) days with each county auditor that the PUC designates.

**§20:10:21:23 Notice of filing.**

Black Hills Power shall comply with the PUC's determination of the notice of filing by public notice to the following state agencies (see below) and officers and, within ten (10) days of designation, to any other governmental agencies or bodies designated by the commission order.

- |   |   |
|---|---|
| (1) Aeronautics Commission                            | (2) Department of Agriculture                     |
| (3) Attorney General                                  | (4) Department of Commerce & Regulation           |
| (5) Governor's Office of Economic<br>Development      | (6) Department of Education & Cultural<br>Affairs |
| (7) State Engineer                                    | (8) Department of Game, Fish & Parks              |
| (9) State Geologist                                   | (10) Governor                                     |
| (11) Department of Health                             | (12) Indian Affairs Commission                    |
| (13) Department of Labor                              | (14) Legislative Research Council                 |
| (15) Department of Environment &<br>Natural Resources | (16) Department of School & Public<br>Lands       |
| (17) Department of Transportation                     |   |

**§20:10:21:24 Copy on request.**

Black Hills Power shall provide a copy of this plan, upon written request and without cost, to any agency or officer named in §20:10:21:23 or designated by the commission under the provisions of any section.

**§20:10:21:25 Form for plans.**

Black Hills Power's plan is submitted under this chapter in numeric sequence as requested. Our service area map is condensed to 8 ½ by 11 inches and is clearly marked for the commissions use.

# **EXHIBIT I**

## **BLACK HILLS POWER**

### **SERVICE AREA**

