

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA

**IN THE MATTER OF BLACK HILLS )**  
**POWER, INC. d/b/a BLACK HILLS )**                      **Docket EL 19-\_\_\_\_\_**  
**ENERGY FOR A FACILITY PERMIT )**  
**TO CONSTRUCT A 230/69 KV )**  
**TRANSMISSION LINE AND )**  
**ASSOCIATED SUBSTATION )**

Black Hills Power, Inc. d/b/a Black Hills Energy, Inc. (“Applicant” or “Black Hills”), a South Dakota corporation, submits this Application to the South Dakota Public Utilities Commission (“Commission”) pursuant to S.D.C.L. § 49-41B-11. In particular, Black Hills seeks authority from the Commission to construct a new 230/69 kV substation at the location of the former Ben French Power Plant along with a new 230 kV transmission line from the substation running southeast approximately 0.2 miles and then east approximately 0.5 miles. In support of the Application, the Applicant sets forth the following facts and circumstances justifying the granting of this Application and in satisfaction of the requirements set forth in S.D.C.L. § 49-41B-11; S.D.C.L. § 49-41B-22; A.R.S.D. 20:10:22:06 through 20:10:22:25; and A.R.S.D. 20:10:22:34 through 20:10:22:39.

**I. NAME OF OWNER, MANAGER, AND PARTICIPANTS (ARSD 20:10:22:06 and 20:10:22:07).**

The new 230/69 kV substation and 230 kV transmission line (“Project” or “Facility”) will be constructed, owned and managed by Black Hills. The Project is planned for a nine (9) month construction period and construction will begin upon Commission approval of this Application

Black Hills’ principal place of business is located at 7001 Mt. Rushmore Rd., Rapid City, South Dakota, 57702. Black Hills is a wholly owned, first tier subsidiary of Black Hills Corporation, incorporated under the laws of South Dakota

Black Hills is a public utility as described in S.D.C.L. Ch. 49-34A and is engaged in the generation, transmission, distribution, purchase and sale of electric power and energy through an interconnected transmission network. Upon completion of the facility, Black Hills will remain the sole owner of the facility.

Communications regarding this Application should be provided to:

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## **II. PURPOSE OF FACILITY (ARSD 20:10:22:08).**

Currently, Black Hills customers in the Rapid City, SD area are served by two parallel 230/69 kV transformers at the Lange Substation and a single 230/69 kV transformer at the South Rapid City Substation. These transformers feed the Rapid City 69 kV sub-transmission network. There is 130 MW of nameplate generation capacity installed on the Rapid City 69 kV network. Evaluating the simultaneous loss of two of the three transformers in Rapid City is considered a Category P6 outage as defined in the TPL-001-4 NERC Reliability Standard. For the loss of the two larger 150 MVA transformers under peak load conditions, overloads on the remaining 100 MVA transformer may be encountered. This is due to insufficient generation capacity and sub-transmission energy import capability. Transformer overloads can lead to equipment damage, reduced transformer lifecycle and potential catastrophic failure. A corrective action plan is needed to address the overload and maintain compliance with the Reliability Standard. The importance of the upgrade is emphasized since a large transformer may be considered a 'long lead time' piece of equipment (>12 months for replacement) and temporary operating measures are often not a viable solution for longer periods of time.

As a temporary operating measure, two normally open 69 kV lines connecting Rapid City to Whitewood and Pactola must be closed in to avoid overloading the remaining transformer under peak demand conditions. Additionally, local generation must be dispatched to offset power flow across the transformers. The transformers have a 30-minute emergency rating of 125% of the continuous rating, which allows enough time to start generation following the loss of the second transformer. As load grows in Rapid City, the installed generation will no longer be sufficient to avoid exceeding the remaining transformer's emergency rating for those critical outages. The generation would have to be preemptively dispatched ("must run generation") for a period of time until the risk of overloads has passed. Summer and winter peak load values can be very similar, extending the chance of must-run generation requirements. A reliance on must-run generation is considered a temporary solution due in part to the reduced operational flexibility it provides as well as a 5% reduction in generation reliability compared to a transmission solution.

The corrective action plan identified a new 200 MVA, 230/69 kV transformer to address the future transformer overload concerns and reduce ‘must-run’ generation requirements during transformer outages. The dependence on generation availability under critical outage conditions would also be reduced or eliminated.

A secondary benefit of the new West Rapid City substation is that the new source into the sub-transmission network will allow the operation of that network in a radial configuration. Areas of the Rapid City 69 kV system would be fed from either the Lange Substation, West Rapid City Substation, or South Rapid City Substation. Those substations would not be connected to one another via the 69 kV system under normal operating conditions. Outages on the 69 kV system would impact a smaller number of customers due to the sectionalized nature of the system.

### **III. ESTIMATED COST OF THE FACILITY (ARSD 20:10:22:09).**

The estimated construction cost for the Project is estimated to be approximately \$9.7 million, \$8.1 million for the substation and \$1.6 million for the 230 kV transmission line.

### **IV. DEMAND FOR TRANSMISSION FACILITY (ARSD 20:10:22:10).**

#### **a. Strengthen and Improve Transmission System Capability & Reliability.**

The historic actual peak Rapid City area demand is approximately 212 MW. The Project is forecasted to serve approximately 30% of the total Rapid City area load under normal operating conditions. This was determined by reviewing the historical actual demand data for Rapid City and identifying the portion of the total demand that would fall within West Rapid City sub-transmission network bound by the new 69 kV normal open points. The load served by the new substation is generally assumed to grow in proportion to the overall Rapid City load, with the exception of any large spot load additions within Rapid City.

The delayed construction of the proposed facility may negatively impact local reliability indices and increase fuel costs associated with must-run generation. As the Rapid City area load limit is reached, the sub-transmission and distribution networks would be unable to accommodate additional load growth without demand reduction or load shedding under critical outages. The timing criticality of the project is largely dependent on load growth, but the post-outage transformation capacity of 100 MVA and nameplate generation capacity of 130 MW is only slightly larger than the historic peak demand of 212 MW. This value may vary by 10 MW or more depending on whether Sturgis and Piedmont substations are connected radial from Rapid City, which is currently an abnormal operating condition. Support provided by the two 69 kV lines connecting Rapid City to the area sub-transmission network does provide a bit of operational margin in the interim period but the timely completion of the project is justified.

**b. Consequences of Delay or Termination of the Construction of the Facility.**

The delayed construction of the proposed facility may negatively impact local reliability indices and increase fuel costs associated with must-run generation. As the Rapid City area load limit is reached, the sub-transmission and distribution networks would be unable to accommodate additional load growth without demand reduction or load shedding under critical outages. The timing criticality of the Project is largely dependent on load growth, but the post-outage transformation capacity of 100 MVA and nameplate generation capacity of 130 MW is only slightly larger than the historic peak demand of 212 MW. Support provided by the two 69 kV lines exiting Rapid City provides a bit of operational margin in the interim period but the justification for the timely completion of the Project is clear. *See Exhibit B for historical load.*

**V. GENERAL SITE DESCRIPTION (ARSD 20:10:22:11).**

The substation portion of the Project will be contained within Black Hills' property formerly containing the Ben French Power Plant located on the northwest side of Rapid City, SD. The new 230 kV transmission line will be constructed from the substation southeast approximately 0.2 miles and then east approximately 0.5 miles. The transmission line will be constructed completely within existing a Black Hills easement *See Exhibit C.*

**VI. ALTERNATIVE SITES (ARSD 20:10:22:12).**

Site selection criteria was based on the following metrics, in descending order of importance:

1. Available space in existing 230 kV substations
2. Proximity to existing 230 kV lines
3. Proximity to existing 69 kV substations
4. Site availability

There were two locations that were considered for criteria #1: the Lange Substation and the South Rapid City Substation. The Lange Substation has no available space on the 230 kV system or the 69 kV system and cannot be expanded, so it was not a viable option. The South Rapid City Substation could accommodate a second transformer, but the 230 kV capacitor would have to be relocated to another site. Due to lack of an alternate location for the capacitor, South Rapid City Substation was not a viable option for the new transformer.

The West Rapid City Substation site was selected due to its relatively close proximity to the Lange-South Rapid City 230kV line, close proximity to the existing Ben French 69 kV substation, and geographic diversification of a new 230 /69 kV transformation source into the Rapid City sub-transmission network. The selected site for the West Rapid City substation is also located on existing Black Hills owned property, reducing the need for additional land purchases and reliance on eminent domain powers.

As discussed above, one of the criteria for selecting the substation site was the proximity to the existing Lange-South Rapid City 230kV line. The route of the new 230kV line that will intersect into the Lange-South Rapid City line was selected based on the following criteria:

1. Least amount of impact to private property
2. Least amount of encroachment into already developed areas
3. Shortest route length
4. Utilize existing easements and property owned by Black Hills

The route shown in Exhibit C was selected as it met all of the above criteria. While analyzing different routes, it was determined that intersecting into the Lange-South Rapid City line north of the location selected was not feasible as it would cause impact to more private land and encroached into more already developed areas.

## **VII. ENVIRONMENTAL INFORMATION (ARSD 20:10:22:13).**

Sections VIII through XVI of this Application provide a description of the existing environment at the time of submission of this Application, anticipated changes to the environment as a result of construction and operation of the proposed Facility and irreversible changes that are anticipated to remain beyond the operating lifetime of the Facility. Anticipated impacts from construction, operation and maintenance for each environmental feature are noted, along with appropriate mitigation steps to be taken by Black Hills during construction and operation of the Facility.

Black Hills is unaware of any other major industrial facilities under regulation which may have an adverse effect on the environment as a result of their construction or operation in the siting area.

The substation site previously consisted of a coal-fired power plant constructed in the early 1960s which included a coal conveyor and unloading building, an ash monofill area with slag pond, and associated equipment storage areas. Black Hills initiated an underground diesel fuel oil remediation project in 1991 in response to a leaking fuel line associated with the bulk fuel (1,000,000 gallon) tanks. The project continued through 2005, and an additional soil excavation project in November and December of 2006 recovered 22,723 gallons of fuel. On June 7, 2007, the South Dakota Department of Environment and Natural Resources (“DENR”) issued a letter of No Further Action declaring that active clean-up could stop. The letter went on to state that the releases had not been cleaned to state soil or groundwater standards, but that DENR had determined that there was presently no risk to human health or the environment.

The coal-fired power plant and associated facilities were demolished and decommissioned in 2015. The main driving force in decommissioning the plant was complying with Environmental Protection Agency’s Industrial Boiler rules. Compliance with the rules would have required a significant financial cost.

American Engineering Testing completed a limited Phase II Assessment in May 2018 to characterize potential petroleum impacts in the subsurface soil at the future substation location. Additionally, the degree of petroleum impacts identified in the soil were quantified and compared with the DENR's Risked Based Corrective Tier 1 Action Levels for the purpose of determining appropriate soil disposal during construction activities for the substation. Soil samples from ten 30' deep soil borings were screened for the presence and concentration of organic vapors. Select soil samples that exhibited elevated organic vapors were further analyzed. The results indicated concentrations of total petroleum hydrocarbons as diesel (TPH-D) exist, ranging from non-detectible to 9690 ppm.

Black Hills will retain an environmental consultant licensed in the State of South Dakota as a petroleum release remediator to assist the contractor with segregation of any construction derived petroleum impacted soil during the substation foundation excavation. Additionally, generation of any construction derived petroleum impacted soil will be properly disposed of at a permitted solid waste landfill.

## **VIII. EFFECT ON PHYSICAL ENVIRONMENT (ARSD 20:10:22:14).**

### **a. Existing Environment.**

Review of the United States Geological Survey topographic map, Rapid City West, South Dakota Quadrangle, indicates the elevation of the study area is approximately 3,300-3,460 feet above mean sea level and the proposed substation location slopes gently to the southwest.

- i.** Based on the topographic map, visual observations, and the surveyed surface elevations at the boring locations, the inferred flow direction of surface water on the proposed substation site is to the southwest.

### **ii. Geological features.**

The surficial geology of the proposed substation area is generally comprised of the Spearfish Formation. The Spearfish Formation consists of red sandy shale, siltstone, sandstone, and minor limestone, interbedded with abundant gypsum. Thickness of the Spearfish Formation is 328-559 feet.

### **iii. Economic Deposits.**

There are no commercially important sources of coal, oil and gas, or metals in the Project area.

#### **iv. Soil Types.**

The predominate soil types at the future substation location are base course surface cover, underlain by reworked red silty lean clay with some sand and gypsum and/or black coal (fill), which was underlain by red silty lean clay with sand (Spearfish Formation). The Spearfish Formation was interbedded with laminations, lenses and layers of gypsum.

#### **iv. Seismic Risks**

Seismic risks for the Facility are considered low. The United States Geological Survey (USGS) has recorded no earthquakes in the Black Hills of 3.5 magnitude or greater since the year 1990.

##### **b. Potential Impacts**

The Project will have limited impacts on soil resources overall. Potential impacts could involve soil compaction from the traffic of construction equipment, the removal of a portion of the existing topsoil resource from excavation for structure installation and blading for access construction; and erosion from disturbed soils that have not been stabilized. The majority of the soils that will be disturbed have a high restoration potential.

##### **c. Mitigation**

Black Hills has design criteria and mitigation techniques that will apply as part of the Project to avoid or reduce impacts to soils and geologic features. In particular, Black Hills will adopt Best Management Practices (BMP) and Standard Operating Procedures (SOP) for soil protection. Erosion and sediment control measures will conform to applicable federal and state regulations. In addition, prior to construction, all supervisory construction personnel will be instructed on the protection of ecological resources including soils. Proper implementation of design criteria and mitigation measures, as well as compliance with federal and state regulations, will reduce soil and geologic feature impacts to negligible levels.

### **IX. HYDROLOGY (ARSD 20:10:22:15).**

#### **a. Existing Environment.**

This study area falls entirely within the boundaries of the Black Hills foothills region of the Middle Rockies Level III Ecoregion. The proposed Project crosses an unnamed stream channel classified as perennial in the National Hydrology Database (NHD) and is adjacent to two National Wetland Inventory (NWI) features. *See Exhibit D.* Based on site observations, the majority of the area in NWI 1 (with the exception of the north point of the NWI feature) is fill material not part of any hydrologic feature. This area was historically used as a permitted solid waste ash monofill facility for the power plant that was decommissioned. On June 2, 2014 the SD DENR issued the Final Cap and Closure Inspection Report, fulfilling the closure requirements for the site. The area

immediately north of NWI 1 has been modified and is an artificial wetland created for storm water retention. The NWI feature identified in the location of the proposed substation (NWI 2) is currently a graveled storage lot, and does not demonstrate any characteristics of a wetland.

Based on the current proposed location of the transmission line and structure locations, it is anticipated that any potential impacts to wetland features could be avoided with strategic placement of the transmission line poles.

A Federal Emergency Management Agency (FEMA) designated 100-year floodplain is located along Rapid Creek adjacent to the study area. *See C.* It is anticipated that transmission poles will be placed in this mapped floodplain area. Coordination efforts will be organized with the City of Rapid City to determine whether a floodplain development permit will be required. Because an existing 3-pole wood pole structure with down guys and anchors will be removed and replaced with a single tubular steel structure on a concrete pier foundation, the long term impacts will be minimal.

Groundwater resources were not evaluated because the Project will not use or affect these resources.

Exhibit E shows the surface water drainage before and anticipated patterns after construction of the Facility. There will be no significant difference between pre-construction and post-construction surface water drainage patterns.

The Project will not use either surface water or groundwater supplies as a water source or a direct water discharge site. Aquifers will not be used as a source of potable water supply or process water. The Project will result in no discharge of heated water and no deep well injections. Additionally, the Project will not use offsite pipelines or channels for water transmission.

#### **b. Potential Impacts.**

All water courses, including associated riparian vegetation, will be spanned by the transmission line. Spanning of water courses will result in negligible long term impacts to surface water resources or surface water quality from implementation of the Project. Soil disturbance during the construction of the Project has the potential to impact water quality. Soil disturbance will occur from construction of the substation pad and access roads for transmission structure installation. The impacts to surface water hydrology and water quality from disturbance of highly erodible soils will be short term and minor to negligible during construction.

Permanent impacts to municipal, private, and agricultural waters will not occur, and permanent impacts to surface water and ground water will also likely not occur. Impacts to recreational water resources will be negligible and should not impose any restrictions on outdoor recreation water activities. Impacts to water storage, reprocessing, cooling, or deep well injection will not occur, as these uses are limited or not present in the area.



**c. Mitigation.**

Black Hills has design criteria and mitigation techniques that will be applied as a part of the Project to avoid or reduce impacts to hydrology. In particular, Black Hills will adopt BMPs and SOPs to protect hydrological features. The BMPs may include any of the following: sediment control wattles, silt fence, vehicle track out controls, covering and seeding exposed soils, and other methods as proposed by the construction contractor and approved by Black Hills.

The Project will disturb greater than one acre, therefore Black Hills will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) and obtain coverage under the South Dakota Department of Environment and Natural Resources (SD DENR) General Permit for Stormwater Discharges Associated with Construction Activities.

**X. EFFECT ON TERRESTRIAL ECOSYSTEMS (ARSD 10:10:22:16).**

**a. Existing Environment.**

The Project area is entirely within the city limits of Rapid City, South Dakota, and consists primarily of industrial and commercial development, with undeveloped areas along the alignment. The undeveloped areas are primarily grassland, with some forested areas within the limits of the study area.

**i. Flora.**

One plant species is federally-listed as threatened for Pennington County, South Dakota: Leedy’s Roseroot (*Rhodiola integrifoli ssp. leedyi*). This plant species is unlikely to be found in the Project area as suitable cliff habitat is not present.

**ii. Fauna.**

Under the federal Endangered Species Act and state laws, species are “listed” in an effort to protect them and their habitat. Species are also listed within the State of South Dakota (SD Codified Laws § 34A-8). Six bird and four mammal listed species have the potential to occur near the Project area in Pennington County (Table 1).

Table 1 Special Status Species with the Potential to occur near the Project in Pennington County			
Birds			
Common Name	Scientific Name	Status	Likelihood of Occurrence
Whooping Crane*	Grus Americana	FE, SE	Unlikely – no stopover habitat within study area

Interior Least Tern*	Sternula antillarum athalassos	ST	Unlikely – no sandy habitat within the study area
Rufa Red Knot	Calidris canutus rufa	FT	Potentially – due to migration
American Dipper*	Cinclus mexicanus	ST	Unlikely – no suitable aquatic resources
Osprey*	Pandion haliaetus	ST	Unlikely – no suitable aquatic resources
Peregrine Falcon*	Falco peregrinus	SE	Potentially – proximity to developed area
<i>Mammals</i>			
Black-footed Ferret*	Mustela nigripes	FE, SE	Unlikely – no prairie dog colonies in study area
Northern Long-eared Bat*	Myotis septentrionalis	FT	Potentially – trees suitable for roosting may be present within the study area
Northern River Otter*	Lontra canadensis	ST	Unlikely – no suitable aquatic resources
Swift Fox*	Vulpes velox	ST	Unlikely – proximity to developed area

\*Indicates documented occurrence in Pennington County.

Sources: USFWS, 2018; SDGFP 2018

Species statuses include: SE = State Endangered, ST = State Threatened, FE = Federally Endangered, FT = Federally Threatened.

### **b. Potential Impacts.**

The chief concern for avian species from transmission lines is direct mortality from line collisions. The grassland area that the proposed transmission line would cross creates a higher potential for avian species to perch on the transmission line. A wide range of avian species are also expected to cross the route in the study area during migration. There is also a potential for raptor nests in the area. If it is determined that a raptor nest is present, consultation with the United States Fish and Wildlife Service (USFWS) may be required.

Impacts to insects and spiders will also be minimal and likely temporary in nature due to construction.

### **c. Mitigation.**

The proposed Project will follow existing roads and quarter lines and should have no adverse long-term impact on the vegetation and wildlife composition within the Project area. No permanent service roads will be required that would result in vegetation removal and unauthorized access.

Black Hills has an Avian Protection Plan in place for their South Dakota operations to mitigate for impacts on protected bird species.

Black Hills also requested comments from the South Dakota Game Fish & Parks (SDGFP) on the environmental aspects of the Project. See Exhibit F. Ms. Hilary Meyer, Environmental Review Senior Biologist, has indicated on her response, “We do not anticipate that this project will have impacts to fish and wildlife resources due to the project being located in a previously disturbed area.”

**XI. EFFECT ON ACQUATIC ECOSYSTEMS (ARSD 20:10:22:17).**

**a. Existing Environment.**

The nearest surface drainage is a tributary drainage of Rapid Creek located approximately 200 feet southwest of the proposed substation and a perennial unnamed stream that will be spanned by the 230kV transmission line, and Rapid Creek to the south.

Two special status fish species listed in Table 2 have the potential to occur near the Project in Pennington County, both are considered unlikely.

Table 2 Special Status Fish Species with the Potential to Occur near the Project in Pennington County			
Common Name	Scientific Name	Status	Likelihood of Occurrence
Longnose Sucker*	Catostomus catostomus	ST	Unlikely – no aquatic resources
Strugeon Chub*	Macrhybopsis gelida	ST	Unlikely – no aquatic resources

*\*Indicates documented occurrence in Pennington County.*

*Sources: USFWS, 2018; SDGFP 2018*

*Species statuses include: SE = State Endangered, ST = State Threatened.*

**b. Potential Impacts.**

During construction there is a possibility that sediment may reach surface waters as a result of ground disturbance during excavation, grading and construction traffic. Once the Facility is constructed, it will have no impact on surface water quality.

All streams will be spanned by the Project and no in-water work will occur. Aquatic species such as fish and mussels will likely not be impacted by the Project as their preferred habitats (streams and rivers) are not present in the Project area.

Aquatic species associated with clear water may experience temporary habitat depredation beyond the boundaries of the ROW resulting from siltation, if road-improvement and other ground-breaking activities cause erosion and siltation of streams, lakes, and ponds during the construction phase.

**c. Mitigation.**

Black Hills has design criteria and mitigation techniques that will be applied as part of the Project to avoid or reduce impacts to aquatic ecosystems. In particular, Black Hills will adopt BMPs and SOPs to protect these ecosystems. Engineering design, structure spotting (spanning of wetlands and streams), BMPs, and compliance with regulatory policy will ensure impacts to wetlands will be minimized or eliminated.

Additionally, prior to construction, all supervisory construction personnel will be instructed on the protection of aquatic resources. To assist in this effort, the construction contact will address: (a) federal, and state laws regarding plants and wildlife; (b) the importance of these resources and the purpose and necessity of protecting them; and (c) methods for protecting sensitive resources including specific mitigation measures. Proper implementation of these measures, as well as compliance with federal and state regulation, will reduce to negligible levels impacts to aquatic ecosystems.

**XII. LAND USE (ARSD 20:10:22:18).**

**a. Current Land Use.**

**i. Existing Environment.**

Enclosed is Exhibit G showing the land use adjacent to the proposed Project. The following land uses are not shown on the map as we are unaware of their existence in the Project area; land used primarily for row and non-row crops in rotation, irrigated lands, hay lands, undisturbed native grasslands and existing and potential extractive nonrenewable resources.

**ii. Potential Impacts.**

The land in the public and private ROW can be used for the same purpose as prior to this Project. The land will be subject to the restrictions as stated in the easements. These restrictions include that trees and structures that might interfere with the safety, operation or maintenance of the line may not be permitted in the ROW.

**iii. Mitigation.**

Mitigation is not required.

**b. Displacement.**

**i. Existing Environment.**

Exhibit H shows land ownership adjacent to the proposed Project.

**ii. Potential Impacts.**

The Project will not displace any person or home, nor will it displace any other structure.

**iii. Mitigation.**

Mitigation is not required.

**c. Noise.**

**i. Existing Environment.**

The primary land uses surrounding the proposed Facility are heavy industrial, light industrial, commercial, low density residential, general agriculture and cement plant operations.

**ii. Potential Impacts.**

With respect to noise sensitive issues and the proposed Project, noise from a transmission line can be associated with two causes, corona and wind induced. Noise as a result of the transmission line is expected to be comparable to the existing noise environment and will not have a significant impact on humans or the environment.

**iii. Mitigation.**

Mitigation is not required.

**d. Aesthetics.**

The surrounding land use is zone as Heavy Industrial, Light Industrial, General Commercial, or Cement Plant zoning. The proposed 230kV transmission line will be constructed to an existing transmission line to the east.

It is not anticipated that the Project will negatively affect the aesthetics of the proposed area.

**XIII. LOCAL LAND USE CONTROLS (ARSD 20:10:22:19).**

The proposed Project will comply with all applicable zoning requirements. No existing land use controls by any of the governing bodies (Pennington County, City of Rapid

City) restrict the use of the land within the proposed Project area for the purpose of constructing and maintaining the substation and transmission facility.

#### **XIV. WATER QUALITY (ARSD 20:10:22:20).**

##### **a. Existing Environment.**

The Clean Water Act requires states to release, every two years, a list of streams that are not meeting their designated uses because of excess pollutants (impaired waters). The list released in 2018, known as the 303(d) list, is based on violations of water quality standards. The Project does not span any streams, lakes or reservoirs listed on the 303(d) list.

##### **b. Potential Impacts.**

Please refer to Section IX of this Application for a summary of the potential impacts to water quality.

##### **c. Mitigation.**

Please refer to Section IX of this Application for a summary of the mitigation measures that Black Hills will employ to limit the potential impacts the Facility may have upon water quality.

#### **XV. AIR QUALITY (ARSD 20:10:22:21).**

##### **a. Existing Environment.**

Rapid City has a history of poor air quality conditions associated with dust (PM10) and currently has a status as a Maintenance Area for PM10. This means the area is in attainment for the National Ambient Air Quality Standard (NAAQS), but controls will remain in place to maintain the standard. Fugitive dust particles are generated from a variety of sources including wind erosion of disturbed areas that can affect rural and urban areas alike. With the exception of PM10, the existing air quality in the region is very good. There are limited air pollution emission sources and good atmospheric dispersion conditions. Types of air pollutant emission sources within the Project area include:

- Carbon monoxide, nitrogen oxides, particulates, sulfur dioxide, and volatile organic compounds
- Particulate matter (dust) generated by vehicle travel on unpaved graded roads and paved road sanding during the winter months; and
- Wind blow dust and pair pollutants transported from emission sources located outside the Project area.

**b. Potential Impacts.**

The Project will directly impact air quality within the Project area though increased vehicular and equipment traffic during construction. Construction will generate fugitive dust particulates and gaseous tailpipe emissions from construction equipment. Specifically, activities such as construction of access roads, ROW clearing and wind erosion of disbursed areas produce fugitive dust. These impacts will be short-term and will end once construction is complete.

No impacts to air quality due to the operation of the proposed Facility are anticipated.

**c. Mitigation.**

Dust control, monitoring, and reclamation standards required by the city, state and federal permits will be applied during and after construction, which will minimize potentially harmful emissions and particulates and their impacts on visibility in the Project area and surrounding property. The Project will comply with NAAQS and state standards. Construction activities will result in the disturbance of greater than one area in the City of Rapid City Air Quality Control Zone, therefore an Air Quality Construction Permit will be required for the Project.

**XVI. TIME SCHEDULE (ARSD 20:10:22:22).**

Black Hills proposes that the entire Project be placed in service nine (9) months following Commission approval. A preliminary permitting and construction schedule for the Facilities is provided below:

Survey	Completed
Final Transmission Line and Substation Design	First Quarter 2019
Submit PUC Route Permit Application	February 2019
In-Service Operations	Nine (9) Months Following PUC Approval
Project Closeout	Three (3) Months Following In-Service

This schedule is based on information known as of the date of this filing, and upon planning assumptions that balance the timing of implementation with the availability of crews, materials, and other practical considerations. This schedule may be subject to adjustments and revisions as further information is developed.

**XVII. COMMUNITY IMPACT (ARSD 20:10:22:23).**

This Section describes the primary community characteristics in and around the Project area and the Project’s impacts on socioeconomics, community resources, agriculture, transportation, and cultural resources. Socioeconomic factors analyzed include

population, minority and low-income populations, employment and income, and housing. The socioeconomic factors relied on U. S. Census Bureau data.

**a. Socioeconomic and Community Resources.**

The analysis area for socioeconomics includes the City of Rapid City and Pennington County in South Dakota.

Pennington County is ranked as the 2<sup>nd</sup> most populated county in the state with an estimated population of 109,372 in 2016. Rapid City is the county seat and has a population of 74,048 (US Census Bureau, 2017). It is considered the “Gateway to the Black Hills” and is the closest urban area to Mount Rushmore National Memorial and the Black Hills National Forest. Tourists traveling through the Black Hills and from nearby cities such as Sturgis and Deadwood travel through and often stay in Rapid City. These cities, as well as the majority of their inhabitants, are generally located along the highways Interstate (I)-90, I-190, US-16, South Dakota (SD) 79 and SD 44 that cross the area.

The Rapid City area is more densely populated than areas in the majority of the state. The population of Rapid City was estimated to be 74,048 in 2016, where the total population of Pennington County was estimated to be 109,372 for the same year. The population of Rapid City is primarily white (87.3%) and American Indian or Alaskan Native (15.4%), with less than 3% each of Black or African American, Asian (2.3%), Native Hawaiian and other Pacific Islander (0.2%), or some other race (0.7%) (US Census Bureau, 2017).

Government services is the largest employment sector in the Rapid City area, including the U.S. Air Force, the U.S. Army National Guard, National Park Service, US Forest Service, and the Indian Health Service offices. Health Services is a major employment sector with an estimated 8,000 jobs in the Rapid City area.

Portland cement, Black Hills gold jewelry, and stamping machines used for labeling plywood and chipboard are all produced in Rapid City. Tourism also comprises a major portion of the economy. With Mount Rushmore, Deadwood, and Sturgis in close proximity, as well as a close proximity to I-90, hotels and restaurants and other minor tourist attractions are particularly profitable during the spring, summer, and fall months.

**b. Socioeconomic and Community Resources Impacts and Mitigation.**

The proposed Facility will improve the capacity and reliability of the regional electrical system. Having a more reliable electrical system will improve the climate for future economic development in the Project area and region. However, the availability of reliable power is only one of several factors needed to facilitate economic development. So, while this Project would improve electrical capacity and reliability, little if any development is expected to be induced directly or indirectly by its implementation.



The proposed Facility is not expected to have a significant short or long-term impact upon commercial and industrial sectors, housing, land values, labor markets, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities or other community or governmental facilities or services.

The proposed Facility is also not expected to have a significant short or long-term impact upon population, income, occupational distribution, and integration and cohesion of communities. Black Hills expects to employ approximately 10-15 workers for a 4-month time period for line construction and support services for the Project, as well as 6-8 workers for substation construction and support services for a 12-month time period. The Project will likely have a minimal impact upon the local area as a result of transient workers.

The Project will have a negligible effect, if any, on the assessed values of private property and thereby, property taxes. Black Hills will compensate private landowners for the Project's impacts on private land.

During construction, operation, and maintenance activities associated with the Project, there is the possibility that improperly using, storing, and/or disposing of hazardous materials (fuels, oils, maintenance fluids) could result in a release that could cause contamination and exposure. Direct effects would include contaminating soil and water resources. Indirect effects would include exposing humans, wildlife, and vegetation to the contamination. Black Hills expects to store less than 2,200 pounds of hazardous waste per month which would be under the Resource Conservation and Recovery Act (RCRA) storage limit to qualify as a Conditionally Exempt Small Quantity Generator. This will require Black Hills to transport, treat, and dispose of hazardous waste in accordance with state and federal regulations.

Black Hills will also implement plans and procedures to minimize the risk of contaminating soil and water resources and the associated exposure to humans, wildlife, vegetation, and air quality. The Project's design, best management practices (BMPs), and mitigation measures will further minimize the risk of contamination and exposure. Black Hills currently maintains a site specific Spill Prevention, Control, and Countermeasure (SPCC) Plan addressing both petroleum and chemical management at the Black Hills Service Center as well as substations in the Black Hills area. The SPCC Plan also addresses emergency response in the event of a spill. The SPCC plan will be updated and maintained through construction and Project completion.

Black Hills has an Environmental Training Program to communicate environmental concerns and appropriate work practices, including spill prevention, control, and countermeasure protocols to all field personnel. The training program is consistent with Black Hills' corporate environmental health and safety policy.

**c. Agriculture Impacts.**

The Project area is entirely within the city limits of Rapid City, South Dakota, and will have a minimal impact on agricultural production and uses. The current land use in the Project area ranges from undeveloped, to residential with commercial and industrial development interspersed.

**d. Transportation Impacts.**

The proposed Facility will not result in any permanent impacts to the Project area's transportation resources. During construction, indirect effects could include increased traffic volumes along State Highway 445 (Deadwood Avenue). These effects are expected to be minor as relatively low numbers of workers and equipment will be accessing any one location along the Project ROW at any given time. During operation and maintenance activities, direct effects on transportation and travel management will be minimal. All highway crossings will meet or exceed National Electrical Safety Code requirements.

**e. Cultural Resources.**

Cultural resources are located adjacent to the Project's proposed transmission line. Based on a background records search conducted by the South Dakota Archeological Research Center, the one cultural site nearest to the proposed Project is recommended as not eligible for listing on the National Register of Historic Places.

**XVIII. EMPLOYMENT ESTIMATES (ARSD 20:10:22:24).**

Black Hills expects to employ approximately 10-15 workers for 4 months to construct the line portion of the Project and 6-8 workers for 12 months to complete the substation portion of the Project.

Black Hills anticipates that the Project's construction activities will include the following labor categories and descriptions:

- Land Rights:
  - Experienced land team responsible for working closely with landowners, federal, city and county agencies. Prepare right of entry, access, ROW agreements.
- Surveys:
  - Professional engineering firm with licensed surveyors responsible for land ties, centerline establishment, ROW exhibits, construction staking.
- Construction Management:
  - Construction Supervisor/Foreman – Responsible for day-to-day Project construction activities.
  - Safety Director/Manager – Responsible for the construction workers' on-site health and safety and ensuring that procedures are in place to ensure

the general public's safety in the vicinity of the Project's construction areas.

- Construction Coordination:
  - Construction Coordinator/Assistant Manager – Responsible for assisting the Construction Supervisor/Foreman with day-to-day construction activities.
  - Environmental Specialists – Responsible for conducting environmental clearance surveys prior to commencing construction activities.
- Construction Labor:
  - Surveyor – Responsible for providing accurate topographic surveys, control points, and staking locations to the Construction Coordinator/Assistant Manager.
  - Construction Laborer – Responsible for various tasks, which may include helping to prepare the Project's construction staging area and decking yards, laying out materials, clearing brush and debris from the ROW using mechanical equipment and by hand, revegetating disturbed areas, installing fences and/or gates to prevent unauthorized access to structure work areas and the ROW, and installing BMPs.
  - Heavy Equipment Operators – Responsible for operating excavators, bulldozers, graders, and dump trucks to construct access roads, and using cranes and cement mixers to frame and assemble the transmission structures.
  - Concrete Laborer – Responsible for preparing and pouring transmission structure foundations.
  - Power Line Technician – Responsible for installing and stringing transmission line conductors, ground wires, and shield wires using cable pulling, tensioning, and splicing equipment.
  - Substation Construction Technician-Responsible for installing substation equipment, bus, conductors and cabling.
  - Truck Driver – Responsible for transporting construction materials to and from raw materials' suppliers and the construction staging area and structure work areas.

Black Hills estimates its labor expenditure for construction of the Project will be approximately \$2 million.

The number of workers hired from within and outside of the Project area may result in positive economic gains. The majority of the positions may require specialized skills and expertise. It is possible that positions will be filled by qualified individuals from South Dakota as part of the Project. Contractors are responsible for determining employment needs for construction and will determine estimated employment expenditures during the construction phase of the Project. No permanent or long-term employees are expected to be hired. There may be indirect economic benefits associated with transient workers such as lodging and food sales. Indirect benefits may also be created in sectors closely related to the construction industry.

After construction is complete, the transient workers will likely leave the analysis area and return home. However, it is possible that some could relocate to the analysis area. If so, the addition of these workers and their dependents would have negligible to minor direct and indirect effects on the analysis area's population and resource supply.

During the first 10 years of the Project's operation, Black Hills expects to utilize both internal and external labor to support operations and maintenance. Annual employment costs are estimated to be approximately \$14,500.

#### **XIX. FUTURE ADDITIONS AND MODIFICATIONS (ARSD 20:10:22:25).**

The West Rapid City Substation will be designed with one open terminal on the 230 kV bus and one open terminal on the 69 kV bus to accommodate a second 230/69 kV transformer. Those terminals could alternatively be used for other interconnections as deemed necessary in the future. There are no other expansion plans for this facility at this time.

#### **XX. TRANSMISSION FACILITY LAYOUT AND CONSTRUCTION (ARSD 20:10:22:34)**

##### **a. Route Clearing.**

The substation and the proposed 230kV transmission route will be on existing Black Hills easement or owned land. In order to maintain National Electric Safety Code (NESC) and North American Electric Reliability Corporation (NERC) reliability standards, the Project ROW will be cleared of vegetation necessary to construct, operate, and maintain the Facility. Any vegetation that is cleared will be removed from the ROW by Black Hills.

##### **b. Transmission Construction Procedures.**

BHE plans to commence construction in 2019. Construction of the proposed facility will follow the sequence of: 1) surveying and staking the centerline; 2) identifying and constructing access trails; 3) clearing work access trails as needed; 4) distributing materials along the centerline; 5) installing poles and/or foundations; 6) installing OPGW ground wire or static wire and phase conductors; and 7) site reclamation.

For environmental matters please refer to sections (VII and X).

Excavation for pole holes and foundations will be made with power auger or backhoe equipment. The poles will be direct embedded or installed on drilled pier concrete foundations to a depth of approximately 10 to 25 feet depending on load and soil characteristics.

Conductor will be strung using powered pulling equipment at one end and powered braking or tensioning equipment at the other end. For public protection during wire installation, temporary guard structures will be erected over roadways, powerlines,

structures, and other obstacles where needed. Guard structures will typically consist of single-pole or wood H-frame poles with cross-arms placed on either side of an obstacle. Safety measures such as barriers, flagmen, and traffic control will be used as needed for the Deadwood Avenue crossing.

Construction sites, material storage yards, and access trails will be kept in an orderly condition throughout the construction period. Refuse and trash will be removed from the sites and disposed in an approved manner. Oils and fuels will not be dumped along the Project route. Oils or chemicals will be hauled to an approved site for disposal. No open burning of construction trash will occur.

### **c. Restoration Procedures.**

Upon completion of the construction phase, all work sites will be reclaimed using excess material, approved native vegetation and seed mixtures. The sites will be restored within a reasonable period of time substantially to their original surface conditions. The contractor will remove and dispose of excess soil materials, rock, and other objectionable materials that cannot be used in reclamation work in an approved location.

Disturbed areas, with the exception of existing access trails, will be restored, as nearly as possible, to their original contour and reseeded with landowner/SDDOT approved native seed mixtures where appropriate. Once construction is completed, each landowner will be contacted to review requirements and determine if requests have been satisfied. Remediation will comply with all state, federal, and local laws.

### **d. Maintenance Procedures.**

Transmission lines are designed to operate for decades and require only moderate maintenance, particularly in the first years of operation. Access to the line is required periodically to perform inspections, conduct maintenance and repair damage. Generally, the facility will be inspected by air bi-annually and with a ground inspection once every five years. If problems are identified during inspections, repairs will be performed and the landowner will be contacted prior to work being completed, unless an emergency exists. Vegetation will be removed that would interfere with safe operation of the line and all NERC requirements will be met.

## **XXI. INFORMATION CONCERNING TRANSMISSION FACILITIES (ARSD 20:10:22:35).**

The West Rapid City 230kV transmission line will consist of a double circuit spanning approximately 0.7 miles.

### **a. Configuration of Poles**

The basic structure type will be steel monopole with davit arms. Strength of all structures will meet or exceed requirements set forth in the National Electric Safety Code (NESC).

## **b. Conductor Configuration**

Each phase will consist of a 1272 ACSR “Bittern” conductor. A fiber optic ground wire (OPGW) will be installed.

## **c. Proposed Transmission Site and Major Alternatives**

The proposed facility is discussed in Section VI.

## **d. Reliability and Safety**

### **i. Transmission Line Reliability**

The facility will be maintained to meet NERC and NESC minimum transmission system performance requirements. Black Hills will be responsible for maintaining the transmission system by monitoring, testing, and repairing the line and terminal equipment. Typical maintenance activities include: periodic routine aerial inspections with emergency aerial inspections after storm, periodic ground inspections, and routine inspection and repairs to items identified during patrol and inspection. In addition, a planned vegetation management program will be followed, and requirements of NERC FAC-003-3 will be maintained. All substation equipment maintenance will meet the necessary test and maintenance criteria set forth in NERC reliability standards.

### **ii. Safety**

The facility will be designed to meet local, state, and NESC standards regarding strength, clearance to ground, clearance to crossing utilities, clearance to buildings, and ROW widths. The proposed facility will be equipped with protective devices to safeguard the public from the facility if an accident were to occur. The protective devices are breakers and relays located where the facility connects to the substation. The protective equipment will de-energize the facility should an event occur. In addition, all substation equipment is secured within a fence and access is limited to authorized personnel.

### **iii. Electric and Magnetic Fields**

Research related to possible health effects from Electric and Magnetic Fields (EMF) exposure has been in progress for more than 30 years. In 1992, the U.S. congress directed the National Institute of Environmental Health Sciences (NIEHS) to direct the EMF Research and Public Information Dissemination Program. The goal was to provide evidence to clarify potential health risks from EMF exposure. There are no standards established for safe levels of exposure to EMF and to date, evidence suggesting that EMF exposure can cause health risks is weak.

#### **iv. Stray Voltage**

“Stray Voltage” is a voltage resulting from the normal delivery and/or use of electricity that may be present between two conductive surfaces that can be simultaneously contacted by the general public. Stray voltage is caused by primary or secondary return circuits and power systems. Such issues are common to distribution lines and not to transmission lines. Transmission lines are not used in normal delivery to business or residences. Transmission lines can cause induced voltage when long conductors parallel transmission or distribution lines. Measures will be taken to address induced voltage issues with this facility on a case by case basis.

#### **v. Farming Operations, Vehicle Use, and Metal Buildings Near Power Lines**

The line is designed to allow normal farming and ranching operations, and any restrictions would be set by the National Electric Safety Code (NESC) for clearance and public safety.

#### **e. Right of Way or Condemnation Requirements**

As of the filing date of this application, Black Hills has not taken steps to condemn property in South Dakota for this Project. If Black Hills determines condemnation to be necessary, it will follow the procedures outlined in South Dakota Statutes.

#### **f. Necessary Clearing Activities**

The ROW will be cleared of trees tall enough to endanger the facility. When the conductor ground clearance is substantially greater than required code clearance, trees and shrubs will remain, provided they do not violate minimum clearance requirements.

#### **g. Underground Transmission**

No portion of the facility will be undergrounded. Because of the significantly greater expense associated with the underground transmission construction, the use of underground technology is limited to locations where the impacts of overhead construction are completely unacceptable or where physical circumstances allow for no other option. The applicant concluded that the environmental and land use setting does not warrant underground construction on any portion of the facility.

### **XXII. ADDITIONAL INFORMATION IN APPLICATION (ARSD 20:10:22:36).**

Black Hills believes that this Application, including appendices, contains all the information required to meet its burden of proof as set forth in S.D.C.L. § 49-41B-22.

### XXIII. TESTIMONY AND EXHIBITS (ARSD 20:10:22:39).

The following witness will provide testimony in support of this Application:

Daniel Kline  
Director, Transmission & Engineering Services  
7001 Mt. Rushmore Rd.  
P.O. Box 1400  
Rapid City, SD 57709  
605-721-1396  
[Dan.Kline@blackhillscorp.com](mailto:Dan.Kline@blackhillscorp.com)

The following exhibits are filed in support of this Application:

Exhibit A	Testimony of Daniel Kline
Exhibit B	Rapid City Load
Exhibit C	Project Map
Exhibit D	Hydrology
Exhibit E	Surface Water Drainage Maps
Exhibit F	SDGFP Impact Review
Exhibit G	Land Use
Exhibit H	Land Ownership

### XXIV. REFERENCES.

#### a. Text and Data References.

South Dakota Codified Laws (SD Codified Laws). Title 34 Environmental Protection Chapter 8 *Endangered Species* and 8A *Species of Management Concern*.  
[http://sdlegislature.gov/Statutes/Codified\\_Laws/DisplayStatute.aspx?Type=Statute&Statute=34A](http://sdlegislature.gov/Statutes/Codified_Laws/DisplayStatute.aspx?Type=Statute&Statute=34A)

South Dakota Game Fish and Parks (SDGFP). 2018. Threatened, Endangered and Candidate Species of South Dakota. <http://gfp.sd.gov/wildlife/threatened-endangered/threatened-species.aspx> Accessed May 2018.

United States Fish and Wildlife Services (USFWS). 2018. U.S. FWS Threatened & Endangered Species Active Critical Habitat Report.  
<https://ecos.fws.gov/ecp/report/table/critical-habitat.html> Accessed May 2018.

### XXV. CONCLUSION.

Black Hills contends that the information contained in this Application satisfies its burden of proof as set forth in S.D.C.L. § 49-41B-22. In particular, Black Hills has demonstrated the proposed facility will comply with all applicable laws and rules; it will not pose a threat of serious injury to the environment or to the inhabitants of the citing



area; it will not substantially impair the health, safety, or welfare of the inhabitants; and it will not unduly interfere with the orderly development of the region. As a result, Black Hills respectfully requests the Commission grant this Application.

Dated this 5<sup>th</sup> day of February, 2019.

BLACK HILLS POWER, INC.

By:



Jason Keil

Manager, Regulatory

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF WYOMING**

\* \* \* \* \*

STATE OF SOUTH DAKOTA     )  
  ) SS:  
COUNTY OF PENNINGTON    )

I, Jason Keil, being duly sworn, do hereby depose and say that I am the Manager of Regulatory for Black Hills Power, Inc., Applicant in the foregoing Application; that I have read such Application; and that the facts set forth therein are true and correct to the best of my knowledge, information, and belief.

  
\_\_\_\_\_  
Jason Keil  
Manager, Regulatory

Subscribed and sworn to before me this 5<sup>th</sup> day of February, 2019.



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

My Commission Expires:     My Commission Expires June 22, 2023

**CERTIFICATE OF SERVICE**

I certify the foregoing pleading was electronically filed on this 5<sup>th</sup> day of

February, 2019 and served on the following:

Patricia Van Gerpen  
South Dakota Public Utilities Commission  
500 E. Capitol  
Pierre, SD 57501  
Patty.vangerpen@state.sd.us

  
\_\_\_\_\_  
Jason Keil