



Memo

To: City of Rapid City
From: Ron Wilgers
CC:
Date: 12/19/2008
Re: South Rapid City Substation Expansions

Black Hills Power plans to make some additions to the South Rapid City substation located at 751 Catron Boulevard. All additions will be within the existing substation fence and will be completed in two separate phases. The first phase is an addition of capacitor banks for voltage support and power flow in the Rapid City area. The second phase is an additional distribution transformer to support the additional electrical load being added to the south side of Rapid City.

Phase One – Capacitor Banks:

Within the next two years, BHP will need to install four 230kV capacitor banks in this substation. I have included a general arrangement drawing showing the layout of the substation, everything shown in black is existing and everything in red is our proposed phase one additions.

The capacitor banks will need five 230kV breakers. One of the breakers will be used with existing equipment to connect the capacitor banks to our transmission system. The other four breakers will be used to switch the four individual capacitor banks on and off. There are four existing 230kV breakers in the substation; the new breakers will be of similar size and design.

The four capacitor banks consist of three racks each. The twelve racks will be installed in the substation as shown on the supplied general arrangement drawing.

In addition to those main components, BHP will need to install some buss work and four switches to make our electrical connections to the system. All new buss work and switches will match the existing buss work and switches installed in the substation.

Black Hills Power is requesting approval for all equipment listed above with all necessary appurtenances to complete the expansion.

Phase Two – Distribution Transformer:

Within the next 10 years, Black Hills Power will be installing a second distribution transformer in this substation. Black Hills Power proposes placing the transformer next to the existing one. The additions for phase two are shown in dark blue on the general arrangement drawing.

The transformer will be of similar physical size and design to the existing transformer. The new transformer capacity will be in the range of 10 to 25 MVA, the existing transformer is 14 MVA.

There would be an additional switchgear building placed next to the existing switchgear building, again it would be of similar size and design.

Black Hills Power is requesting approval for the phase two equipment listed above with all necessary appurtenances to complete the transformer addition.

Landscaping/Parking and Road Materials:

The landscaping plan is provided. The trees are existing and were planted during construction of the original substation. Irrigation has been added since the original substation construction. Trees on site include: 35 large deciduous, 54 large evergreens, 31 medium evergreens, 9 medium deciduous and 6 shrubs. Per the points system given in the landscape requirements, these trees provide 219,500 points. The substation is 192970 square feet, so the existing landscaping meets our point requirements.

There is an existing 22 foot wide gravel access road. Black Hills Power requests the access street remain gravel since the amount of traffic to the substation will be unchanged after construction. Dust has not been an issue with the existing road. The existing road is shown on the as-built planting plan.

The substation surface itself is a mix of crushed rock and base course. The substation surface must remain unpaved for safety; the gravel surface is required by the National Electric Safety Code.

The off street parking spots are shown on the general arrangement drawing. Please note the parking spaces are located inside the substation and are gravel surfaced to meet the safety requirements.