

**BLACK HILLS POWER, INC.**

SD PUC DOCKET: EL14-061

REQUEST DATE : August 21, 2014

RESPONSE DATE : September 17, 2014

REQUESTING PARTY: SDPUC Staff

---

**SDPUC Request No. 12:**

Per ARSD 20:10:22:14(8), please provide “[a]n analysis of any constraints that may be imposed by geological characteristics on the design, construction, or operation of the proposed facility and a description of plans to offset such constraints.”

**Response to SDPUC Request No. 12:**

Geological characteristics that may affect design and construction of the proposed facility include areas with shallow or deep bedrock, areas with shallow or deep soft soils, or areas with expansive soils. If bedrock is encountered on the project, then the proposed directly embedded and drilled pier foundations would be designed using rock teeth augers, expansive concrete ( bristar ) or rock drilling and implosive charges to clear the hole for a pole embedment and rock socket design. If bedrock is solid and intact ( i.e. high RQD ) then a rock anchor design could also be employed. A spread footing foundation placed above bedrock could also be used. If deep soft soils are encountered on the project, then the direct embed or drilled pier foundations would change to a deep foundation solution such as driven steel piles and a concrete pile cap, helical piers or vibratory steel caissons. The proposed directly embedded or drilled pier depth will be set below the potential for expansive soils to have an effect on the structure foundations.

**Attachments:** None