

## **Bonneville Powerhouse 1 Main Unit Breakers and Station Service Replacement**

This proposed investment addresses issues with two groups of equipment in Powerhouse 1 at Bonneville:

- **Main unit breakers** The main unit breakers are original to the powerhouse, with manufacture dates from 1937 to 1948. At 70 years of age, they pose a unit reliability risk. The breakers also use oil as an arc extinguishing medium and each contains approximately 210 gallons of insulating oil. There are three or more breakers for each pair of generators and they pose a significant personnel safety concern. Operators must control the breakers from push stations located inside each cabinet, exposing the operators to potentially life-threatening arc flash. The oil-filled main unit breakers will be replaced with more modern vacuum breakers, reducing the arc flash risk, increasing reliability and eliminating the environmental concerns of an oil spill.
- **Station Service** The current station service is an unusual dual-voltage configuration and is less than robust. It is a hybrid 2.4 kV and 13.8 kV system that has a unique design as it was the first FCRPS powerhouse and pre-dates BPA. The station service system has evolved over the last 70 years through multiple changes driven by various circumstances, resulting in a complex system that is not ideal. It will be upgraded to a single voltage, dual bus arrangement that conforms to the regional station service design philosophy. There is currently no automatic operation of station service that would restore power to critical systems in the event of primary (13.8 or 2.4kV) loss. Certain apparatus is not protected by a current limiting reactor and is susceptible to full system arc fault energy. In addition, demands on station service have increased over time.