

Alvey Substation 500kV Shunt Reactor Addition

This project will install a 500kV shunt reactor at the Alvey switching station. The addition of the shunt reactor is intended to lower the voltage at Alvey and the surrounding load service area to acceptable levels during light load hours.

Alvey Substation is located in Oregon at the southern end of the Willamette Valley between Eugene and Springfield. It is a major substation for bringing bulk power from the 500 kV grid to serve part of the Willamette Valley through 230 kV and 115 kV transmission lines that serve various load centers in the Valley, the coast range and the Central and Southern Oregon Coast. Lower voltage distribution lines radiate from Alvey to serve the communities surrounding it. The series capacitors at Alvey, on the Marion line, provide effective 500 kV transmission to PacifiCorp's load center in Southern Oregon.

The present method of controlling voltages at Alvey is to remove lines from the system through a series of switching operations. Installation of the shunt reactor is expected to reduce switching operations by fifty percent or more. This will provide a more reliable method for controlling excessively high voltages at Alvey, allowing BPA to meet NERC, WECC and BPA Operational and Planning Reliability Criteria. The shunt reactor is also expected to reduce the exposure of the grid, and especially the Columbia Generating Station (CGS), to problems that can occur when switching lines for voltage control. The design and installation will be performed in a manner that will facilitate additional shunt reactive support when it becomes necessary.