

Paul Shunt Reactor

Transmission Services Dispatch has requested another reactor in the Portland Area as it has become difficult to prevent high voltages in the load service area through line switching and reactive resources from generation. Paul Substation was selected as the most effective location for placement of a new reactor, given present performance and the potential for additional voltage violations due to anticipated system changes (I-5, retirement of the Centralia plant, Keeler and Maple Valley SVC renovations and the Big Eddy-Knight 500 kV line project).

The objectives of this investment are to:

- Reduce the frequency of line switching during light load hours to minimize operation in unstudied conditions when lines are taken out of service (NERC reliability requirement TOP-004-2 R4);
- Prevent system over voltages which could harm customer loads;
- Prevent system over voltages and above voltage ratings for substation and line components, helping ensure reliable service lives for the equipment;
- Eliminate high voltage violations during heavy load hours experienced today;
- Ease transition through higher voltages after closure of Centralia plants or energization of I-5 project; and
- Reduce the severity of over voltages due to the outage of Keeler or Maple Valley Static Var Compensator (SVC).

This project will expand the yard and install a bank of reactors with a total rating of 180 MVAR at 500 kV including 6-396kV arrestors, 4-500kV Disconnects, and 3 500kV circuit breakers to switch it at Paul Substation. Two additional breakers will be added to switch the Paul - Satsop line with sources from both the north and south buses. These breakers will make it easier to schedule maintenance outages for this reactor and other equipment at Paul Substation.