

COOS BAY  
TRANSMISSION SYSTEM STUDY  
2012-2016

## **Executive Summary**

The study's focus is on the 230 kV and 115 kV transmission systems, including transmission and distribution substations, in the Coos Bay area. The purpose of the study is to identify major constraints and recommend the improvements needed to meet area load growth for a period starting from the summer of 2012 and continuing through the winter of 2016-17.

The summer 2012 peak load is projected to peak near 91 MW. The winter 2012-13 load is projected to peak at slightly over 143 MW. Based on historical load growth data, the overall area load growth is approximately 0.4% for summer and 0.5% for winter.

Coos Bay is a winter peaking study area; winter peaks are roughly 60% higher than summer peaks. Area loads (coincidental) are projected to peak at 85.9 MW for the 2016 summer and 151.6 MW for the 2016-17 winter.

The most significant system deficiencies identified in the study include the following:

### *Capacity limitations at Empire and State Street Substations*

The 115-20.8 kV transformer T-1185 at Empire is projected to reach its winter capacity in the winter of 2014-15. The 115-20.8 kV transformer T-2070 (Bank #1) at State Street is projected to reach its winter capacity during the winter of 2015-16. To address these problems it is recommended to redistribute load from State Street over to Lockhart and then from Empire over to State Street.

### *Loss of the Isthmus 115 kV Source*

An Isthmus source outage consists of the loss of any of the following items: the Fairview-Isthmus 230 kV line, the 230-115 kV Isthmus transformer or the Isthmus-Coos River 115 kV line. It results in an outage for Coos River, Lockhart, State Street, Jordan Point and South Dunes Substations. Service can be restored to the sites from BPA's Fairview transformer via the Coquille to Empire 115 kV line – by closing the normally open line tie between Red Dike Tap and Lockhart substation.

An outage of the Isthmus source during heavy winter loading conditions can lower transmission voltage levels for Coos River, State Street, Lockhart, Jordan Point, South Dunes, and Empire. While the Isthmus source causes neither voltage nor thermal violations at either the transmission or distribution voltage levels, it should be noted that the system is at its limit for voltage support.

### North Spit Loop Project

Jordan Point and South Dunes substations (North Spit area) are fed radially from State Street via a 115 kV line that crosses Coos Bay. An outage of this 115 kV line could result in a lengthy outage to the North Spit area. Although the load is currently relatively small, there have been recent requests to study large block load increase on the North Spit.

Whether the load increase is due to a single block load increase or occurs because of a series of smaller incremental changes, eventually a second 115 kV line is recommended to provide an alternate source into the North Spit area. This new line would also provide voltage support to the northern portion of the Coos Bay transmission system for a loss of the Isthmus 115 kV source.

The recommendation is that this line be constructed when loads grow to the point where voltages can no longer be supported during the Isthmus source outage.

### Bandon Mobile Bay

There is currently no mobile bay at Bandon. When BPA's transformers need to be taken out of service for maintenance the distribution must be switched to alternate sources. For Pacific Power this means serving the Bandon 20.8 kV load out of Coquille substation, 17 miles away. There are voltage limitations in this configuration. The solution to this problem is to construct a Mobile Bay at Bandon.