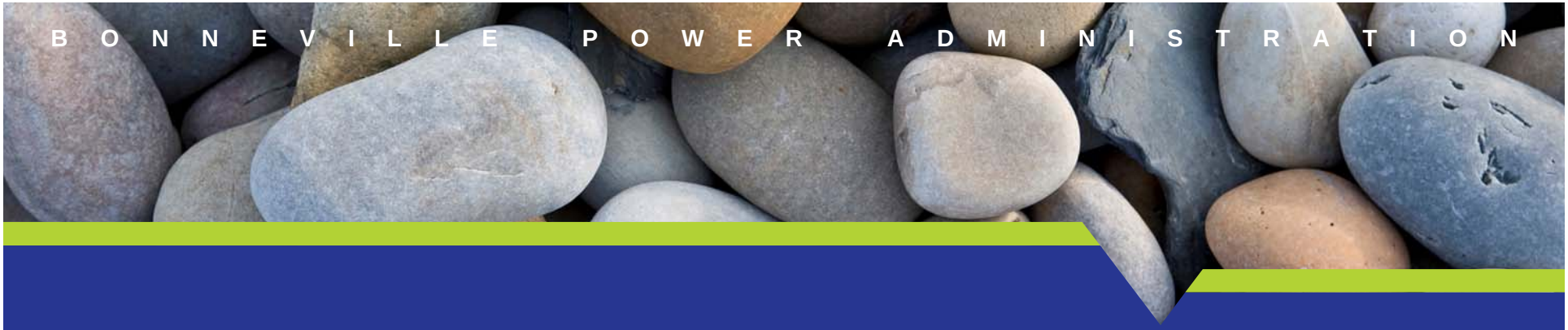
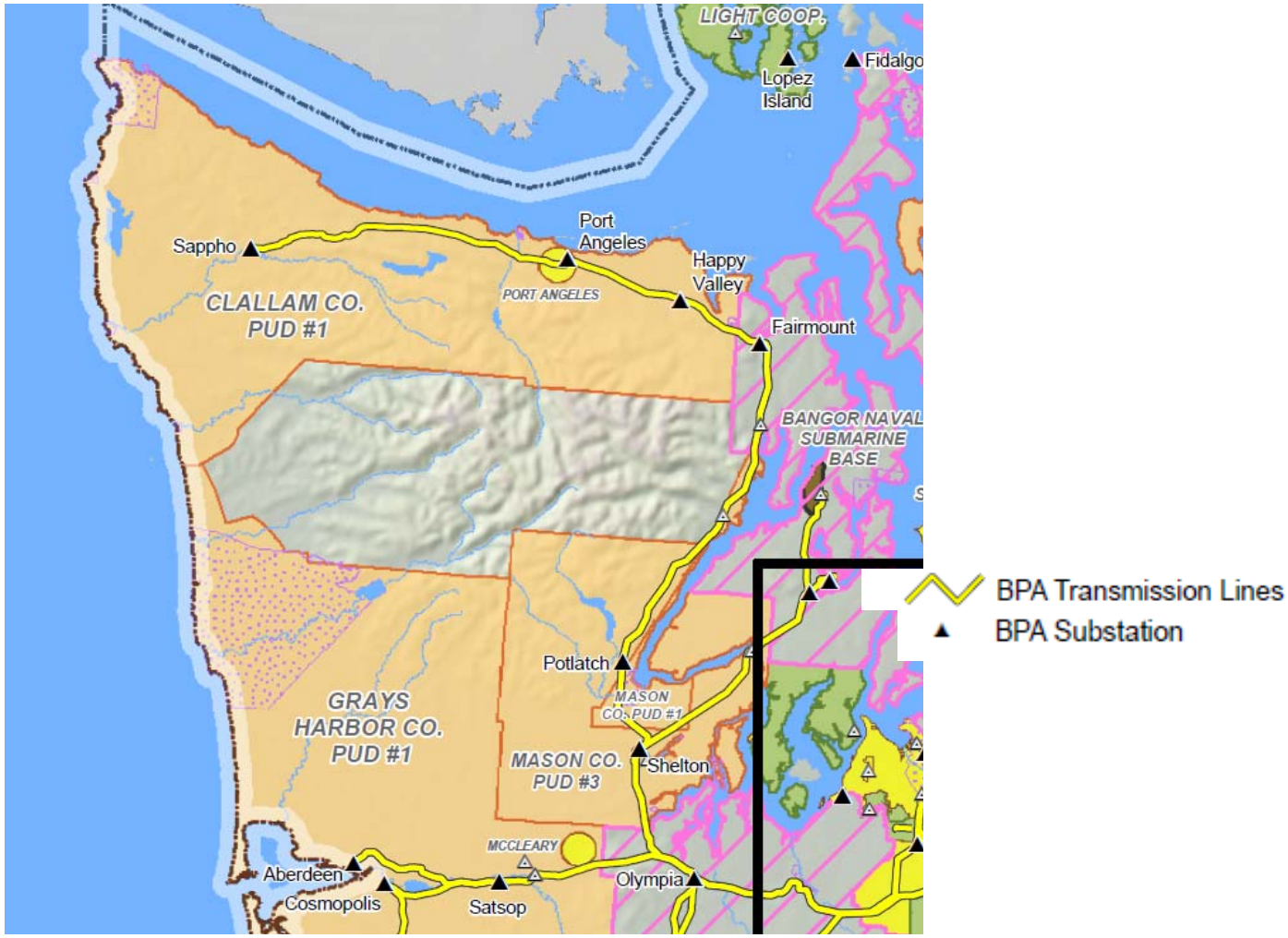


Preliminary Non-Wires Planning & Design Summary

A Non-Wires Alternative to
Port Angeles 230 kV Bus Development

November 17, 2011

Map of Area



Olympia to Shelton: 20miles
Shelton to Fairmount: 60miles
Fairmount to Port Angeles: 27miles
Port Angeles to Sappho: 42miles

Area Description

- North of Fairmount load service area is served via a long radial transmission system from BPA's Olympia substation (~110 miles)
  - North of Fairmount load service area reached a historical winter peak of 320 MW in 2009/2010 (with Elwha and Glines Canyon generation on-line) for a corresponding North of Shelton path flow of 461 MW
- Customers served are Clallam County PUD and the City of Port Angeles

Description of Problem

- Reinforcement is needed for the North of Fairmount load service area to mitigate potential local voltage instability in the event of a single line outage
  - Fairmount-Port Angeles #1 230kV
- Projected need-date for reinforcement: winter of 2013/2014

Proposed 230 kV Bus Development

- Proposed Reinforcement: Develop a Port Angeles 230kV substation
  - Construct three 230kV bays laid out in a breaker-and-a-half configuration
  - Develop a new 69kV bay
  - Install a second 230/69kV transformer
  - Project needs to be operational by winter of 2013/2014

Non-wires Alternative

- North of Fairmount is ideally suited for a non-wires solution
  - Radial system with mix of load types and a demand-side load reduction that causes an equivalent reduction on the transmission system
- BPA has been working with the City of Port Angeles to manage their peaks via demand response (DR)
  - Residential and Commercial/Industrial pilots underway
  - Time-of-use rate (targeted for 4th quarter of CY 2012)
- Additional DR, energy efficiency, and distributed generation assets have the potential to delay the proposed transmission reinforcement

Non-wires Alternative

- Summary of proposed non-wires alternatives:
  - There is a need to enable 5 to 10 MW/year, depending on load type, of demand reduction prior to the winter of 2013/2014
  - Purpose of demand reduction: avoid loads growing beyond the North of Shelton path voltage stability limit = 493 MW
  - Example: 40 MW of load reduction = deferral of proposed transmission reinforcement until winter 2017/2018 (Nippon Mill refining process load reduction)

Non-wires Project Plan and Timeline

- Task 1: Enable 5 to 10 MW/year of Demand Response prior to the winter of 2013/2014
- Task 2: Evaluate the efficacy of UISOL's DRBizNet Dispatching Platform (2012)
- Task 3: Investigate Demand-Side Potential and Cost (+2013)
  - Task 3A: Identify Energy Efficiency Potential
  - Task 3B: Identify Demand Response Potential
  - Task 3C: Identify Distributed Generation Potential
  - Task 3D: Identify Power Factor Correction Potential
  - Task 4: Develop a Cost-Effective Non-Wires Portfolio and Implementation Plan
- Task 5: Secure Coordination Agreement(s) to Ensure Execution of Implementation Plans (2012)