



# Introduction to the Needs Assessment

Scenario Analysis of New Transmission Service Requests  
to Identify Flowgate Capacity Needs

May 26, 2021



# Needs Assessment Objectives

- Define transmission capacity requirements driven by TSEP TSRs.
  - Capacity requirements handed off for plan of service development
- Analyze a robust set of scenarios to capture anticipated firm Network flowgate utilization.
  - Powerflow-based study approach to defining requirements for TSRs in the LT queue
  - Allows us to tailor each year's study to attributes of TSRs in the Cluster Study, and allows for consistent updates to assumptions based on what we know of potential future states
  - Integrates risk-based planning into study assumptions to potentially identify more awardable service

# Methodology - Scenarios

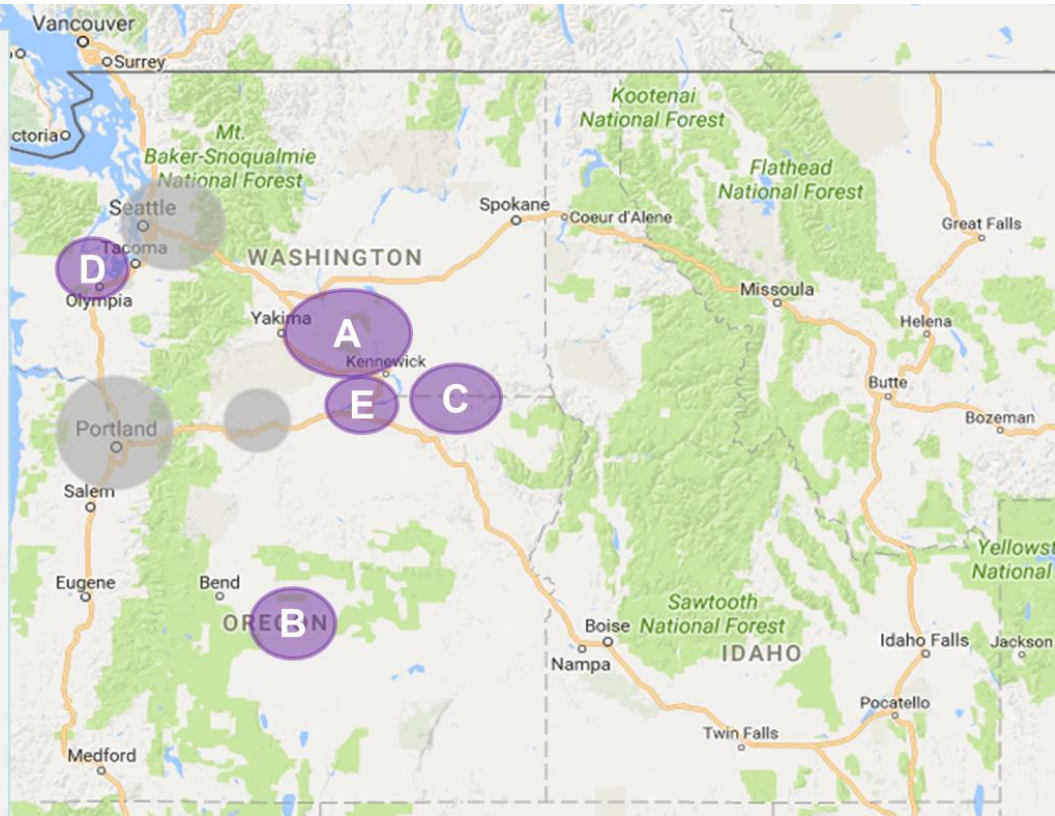
- Scenarios are developed to induce the greatest firm transmission utilization on Network flowgates, while using risk-based planning.
- Scenario development is based on factors such as:
  - Point of Receipt (POR) and Point of Delivery (POD) locations
  - Expected resource types
  - Expected future market conditions
  - Weather patterns
- Production Cost Model analysis with added Cluster Study resources informs potential future patterns of congestion.

# Geography of Resource Location (93% of Demand)

## Primary Resource Locations

### 1. Generation Zones

- A. Tri-Cities (1,025 MW – 26%)
- B. Central Oregon (750 MW – 20%)
- C. Boardman/McNary (768 MW – 19%)
- D. Olympic Peninsula (600 MW – 15%)  
-All existing resources (Gray's Harbor, Tacoma resources)
- E. Gorge (527 MW – 13%)



# Geography of Requested Delivery (91% of Demand)

## Primary Delivery Points (Sinks)

### Requests to Deliver to the Portland metro area

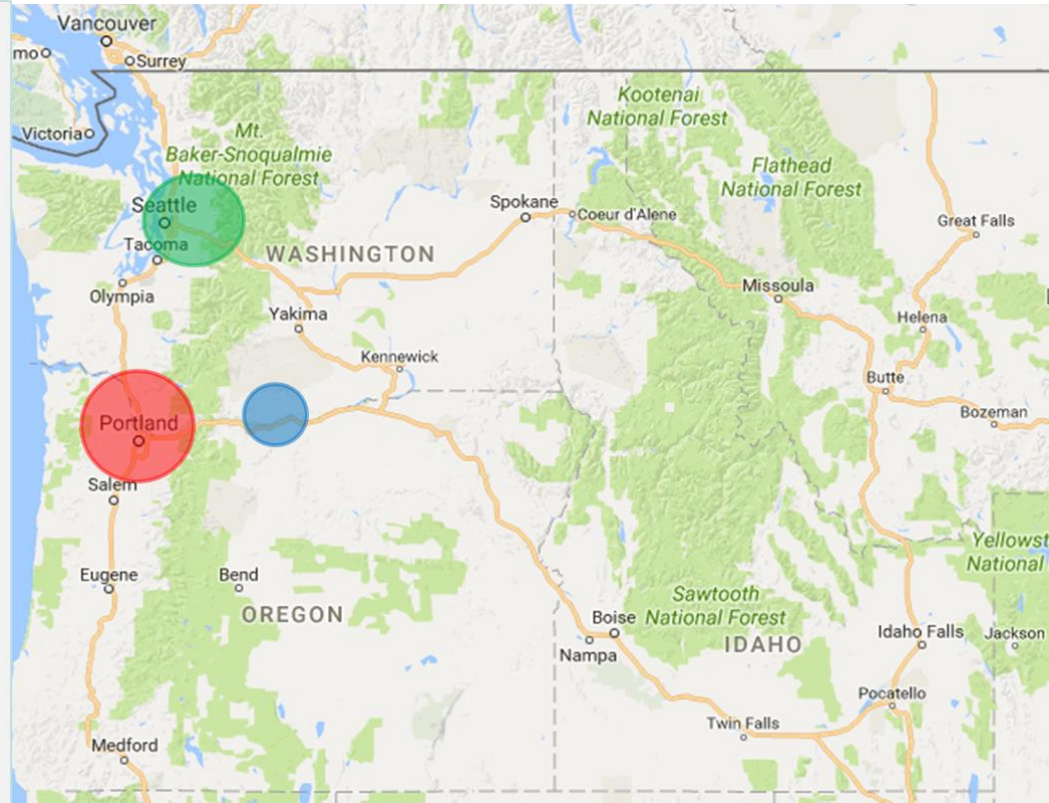
- 1,778 MW of requested demand (approximately 45% of all studied demand)

### Requests to Deliver to the Seattle/Puget Sound area

- 1,298 MW of requested demand (approximately 32% of all study demand)

### Deliveries to Big Eddy/John Day

- 565 MW of requested demand (approximately 14% of all study demand)



# Methodology - Scenarios

- Scenarios reconsidered each year, added or removed as needed
  - Scenario descriptions provided in Cluster Study report
- High level assumptions/drivers
  - Season
  - Load profile
  - Interchange patterns
  - Status of wind, solar, storage
  - Merit order dispatch

# Methodology – Scenarios (2021 TSEP)

Season	Load Profile	Wind	Solar	General Description
Summer	Off-peak	Off	Off	Sunset hour (around 7 pm) with high N>S flows and exports to California
Summer	Off-peak	On	Off	
Summer	Peak	Off	On	Traditional peak loading of summer afternoon, Moderate exports to California after high consumption in the NW
Summer	Peak	On	On	
Spring	Off-peak	Off	Off	Night hour with NW hydro oversupply, high imports from MT, exporting to BC and CA
Spring	Off-peak	On	On	Mid-day hour with high renewable and hydro availability, exports to BC
Winter	Peak	On	Off	Traditional peak loading of cold winter evening, solar assumed unavailable
Winter	Off-peak	On	On	Sunny mid-day hour with exports to BC

# Methodology – Modeling and Sensitivities

- Start with LT ATC seasonal cases, adjusted to match scenario descriptions
- Model previously studied plans of service, if appropriate
- TSRs modeled on/off according to scenario definition
  - Wind on/off, Solar on/off, etc.
- TSRs producing counterflow not modeled
- Cumulative Demand TSRs are limited by maximum resource output
- Case balanced according to merit order definition
  
- Model additional sensitivities to account for uncertainties in future state:
  - Requests from Garrison, Montana to Washington project (M2W)
  - Load growth, large load additions
  - Energy storage



# Methodology – Queue Order

- Needs Assessment considers queue order and priority of service:
  - Existing commitments
  - Existing commitments + Previously studied TSRs
  - Existing commitments + Previously studied TSRs + Cluster Study TSRs
- Needs Assessment identifies a cut line within the LT queue between TSRs that do and don't require a plan of service, for paths with capacity needs
  - Additional Plans of service requirements will not be added to previously studied TSRs, but requirements may be removed based on updated Needs Assessment results
- Once a cut line is established, plans of service are allocated to TSRs below the cut line with non-de minimis impacts on the identified path

# Methodology – Cut Line Analysis

Customer	Source	Sink	MW Demand	SOA N>S	CCN E>W	RP N>S
Cust A	Garrison	Portland	100	25	20	15
Cust B	Mid-C	Seattle	50	0	45	0
Cust C	BC Border	Big Eddy	20	5	0	3
Cust D	Upper C	Seattle	100	0	90	0
Cust E	Upper C	Portland	40	12	12	8
Cust F	Upper C	Garrison	100	0	0	0

- A “0” value represents either counter-directional flow or de minimis impacts.
- TSRs and MW values on this slide were fabricated to provide a generic example.

Questions?