



Transmission Planning Processes

December 5, 2023



Stakeholder Workshop: Planning Process

One of the requirements from the TC-24 Settlement Agreement was that “No later than January 1, 2024, BPA will hold one stakeholder workshop to discuss BPA’s transmission planning process.”

This workshop is being conducted to satisfy the Planning Process workshop commitment in the TC-24 settlement agreement.



Transmission Planning Processes & Drivers

Process	Driver
System Assessment	Load Growth
TSEP	Long Term Firm Transmission Service Requests
Generator Interconnections	GI Requests
Line & Load Interconnections	LLI Requests
Other Planning Studies	Operational Issues, Joint Studies, Policy Obligations
Project Coordination	Developing Plans of Service



Transmission Planning Objectives

- Develop Plans for System Expansion, Modifications and Replacements to Meet Transmission Planning Drivers.
- Plan for at least the 10-year Planning Horizon
- Meet performance requirements of NERC Reliability Standards (TPL-001) and WECC Planning Criteria
- Define scope of project based on needs and assumptions. Feasibility of non-wires measures are evaluated when developing plans of service.
- Coordinate within BPA on constructability, operability, cost, and schedule.
- Regional coordination – Attachment K, Northern Grid, WECC

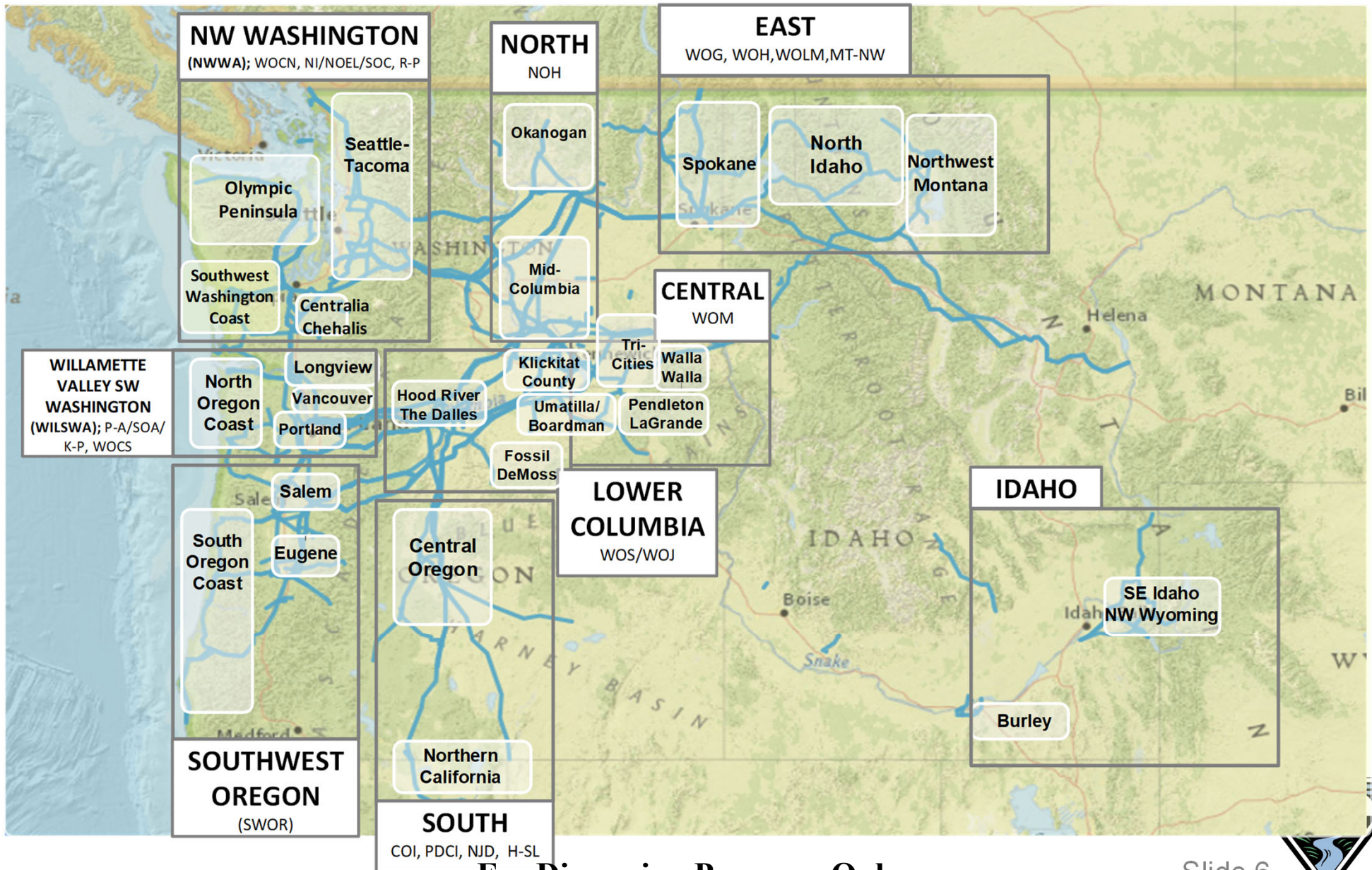


Types of Planning Projects

- Main Grid Reinforcement (500 kV & 345 kV)
- Area Service Reinforcement (230 kV & 115 kV)
- Customer Service (115 & 69 kV system)
- Generation / Line & Load Interconnection Requests
- Point-to-Point Transmission Requests
- Interties (COI, PDCI, NW-Canada)
- Network Paths (WOM, SOA, etc.)
- Reactive Additions (Capacitors, Reactors)
- Remedial Action Schemes (RAS)
- Technology Innovation (TI) Projects
- Equipment Replacements (circuit breakers, capacitors, etc.)



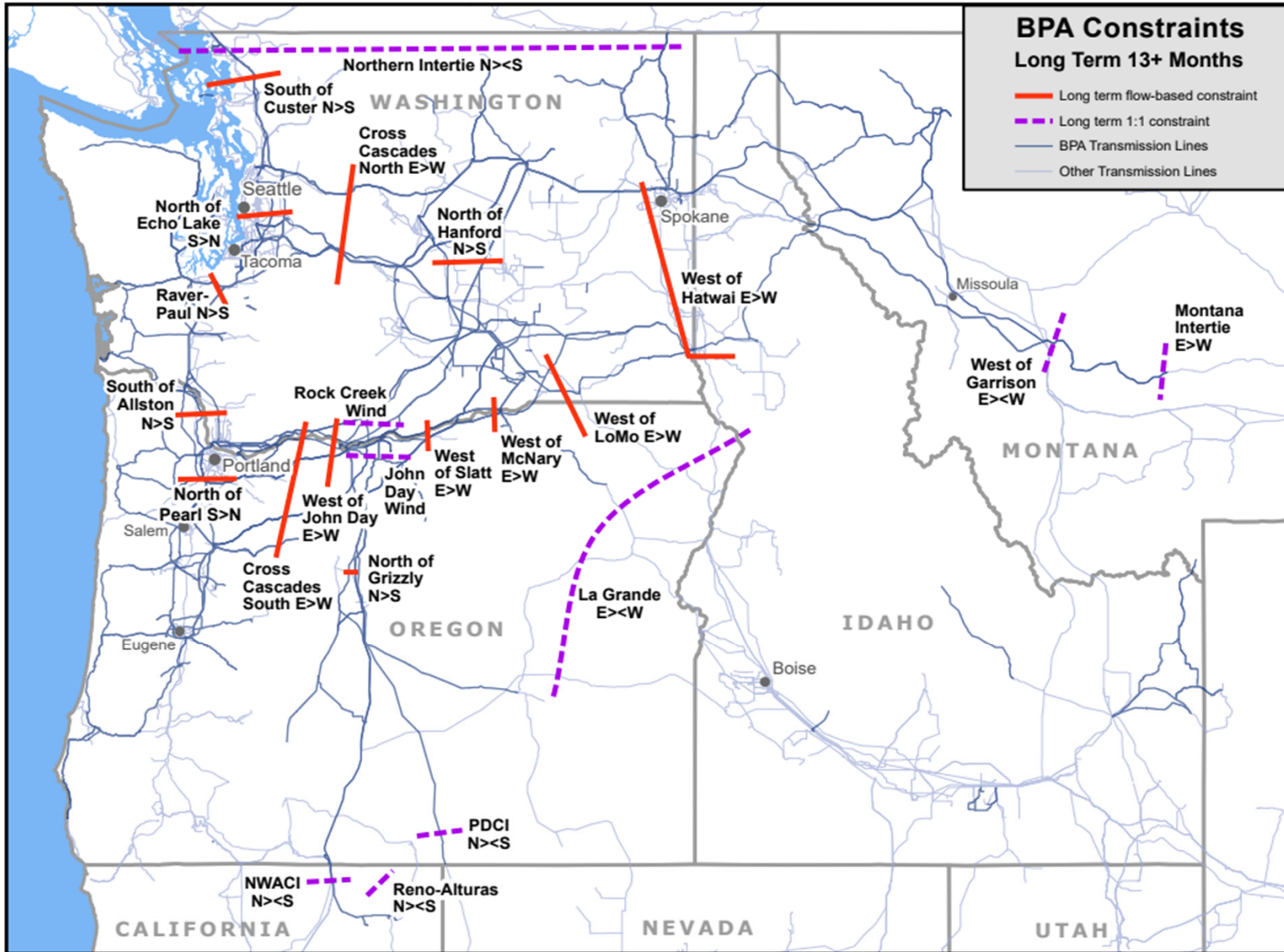
Transmission Planning & Load Service Areas



For Discussion Purposes Only



BPA System - Transmission



Effective date: 11.01.23

For Discussion Purposes Only

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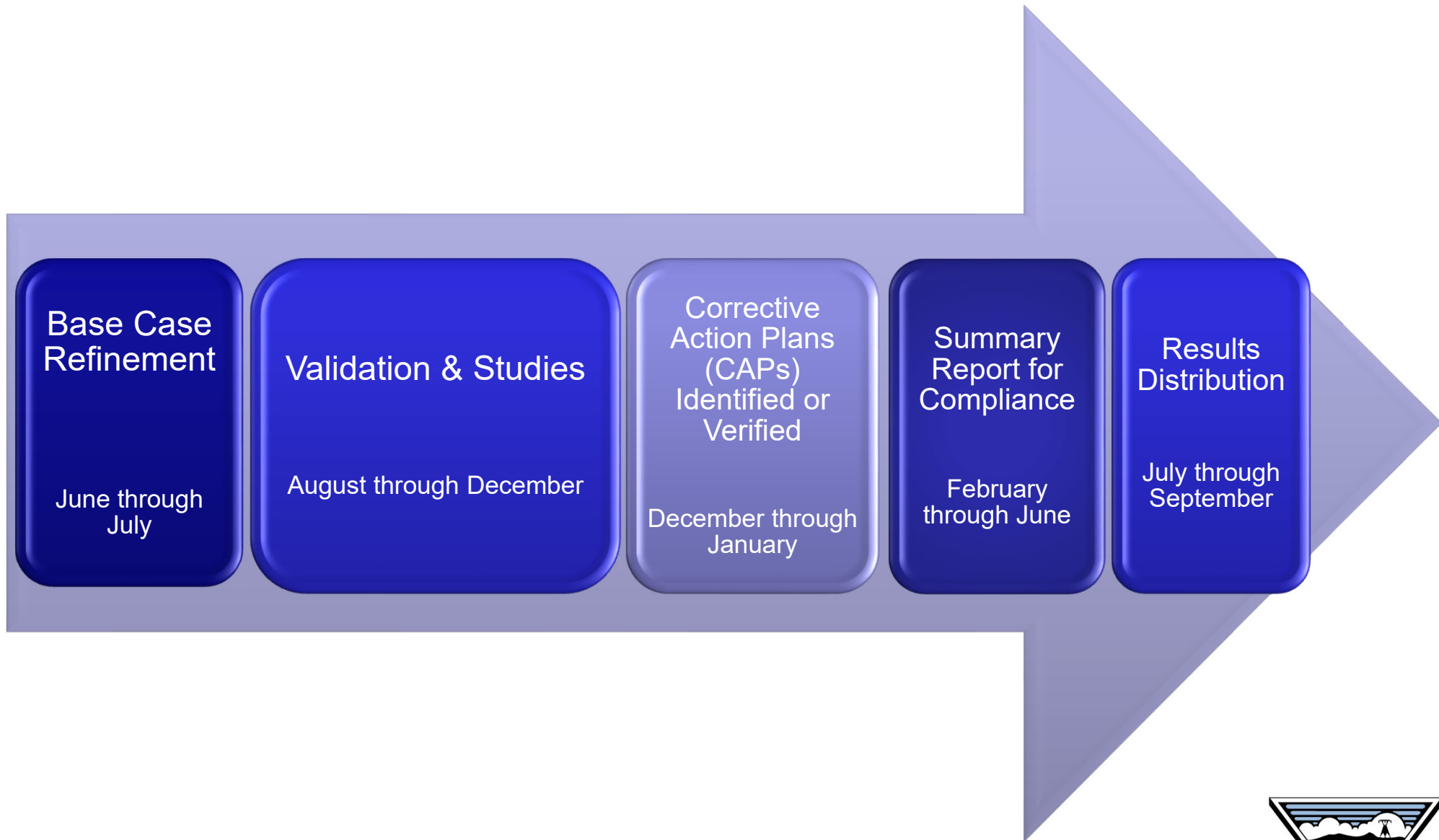
System Assessment

The objective is to ensure reliable load service and maintain adequate transfer capabilities for existing firm transmission obligations over the Planning Horizon

- Conducted Annually
- Studies cover the 10-year Planning Horizon
- Several scenarios are studied
 - Winter peak, summer peak, spring off-peak
 - Forecasts reflect: 1-2 years, 5 years, 6-10 years
- Studies simulate the system performance for contingencies defined in the NERC TPL-001 Standard
 - Single contingencies – single element outages (lines, transformers, generators)
 - Multiple contingencies – Breaker failures, bus faults, common tower, etc.
- If the studies find overloads, voltage issues, or instability, Transmission Planning will identify required system reinforcements needed to maintain reliability of the transmission system through the Planning horizon



System Assessment Annual Process



Commercial Service - TSEP

- TSR = Transmission Service Request
- TSEP = Transmission Service Request Study and Expansion Process
- Needs Assessment to determine capacity needs across flowgates, based on TSR's received.
- Cluster Study (CS) – Analyze the transmission system to identify reinforcements to meet the capacity needs.
- Prepare Technical Report with Cluster Study results
- Communicate results with Stakeholders



Interconnection Processes

Interconnection of requested new generation, lines, and loads

Generator Interconnection Process

- Large Generator Interconnection Process (OATT Attachment L) for requests to interconnect generating facilities with more than 20 MW in nameplate generation capacity
- Small Generator Interconnection Process (OATT Attachment N) for requests to interconnect generating facilities equal to or less than 20 MW in nameplate generation capacity
- Both processes include meetings between BPA and the customer and technical studies (as specified in the OATT)
- National Environmental Protection Act (NEPA) clearance required
- Generation Interconnection Agreement

Line and Load Interconnection Process is similar (Line and Load Interconnection Procedures Business Practice)



Other Planning Studies - Examples

- Operational issues – Voltage support/control, improve operational flexibility
- Special Studies – i.e. Public Policy Obligations
- Joint Studies – with other utilities, Regional Planning
- Compliance Analysis – CIP-014, NUC-001, MOD-033, PRC-012
- Deep Dives – system limits and long range plans for customers



Project Coordination

- Develop plans of service and project technical requirements
- Project Requirement Diagrams (PRDs)
- Coordinate with Design, Operations, Project Engineering
- Support Business Case Development
- Request Funding Approval
- Support Project Management during project implementation



Load Forecasts

- Forecasts are reviewed and updated on an annual basis between April and December.
- If conditions change after the annual update, Forecasters will work with customers to understand the scope of the change. Updated information will be incorporated in the next annual update.
- Published forecasts are distributed in January for inclusion into the base case.
- Minor forecast updates for the Base Case may be done at any time throughout the year.



Load Forecast Concepts



Customer

35-year forecast at annual, monthly, and hourly level

- Energy (HLH & LLH)
- Coincident Peak
- Non-Coincident Peak
- Minimum Load

Point of Delivery

*35-year forecast at annual and monthly level
3-year forecast at hourly level*

- Energy (HLH & LLH)
- Coincident Peak
- Non-Coincident Peak
- Minimum Load

Bus

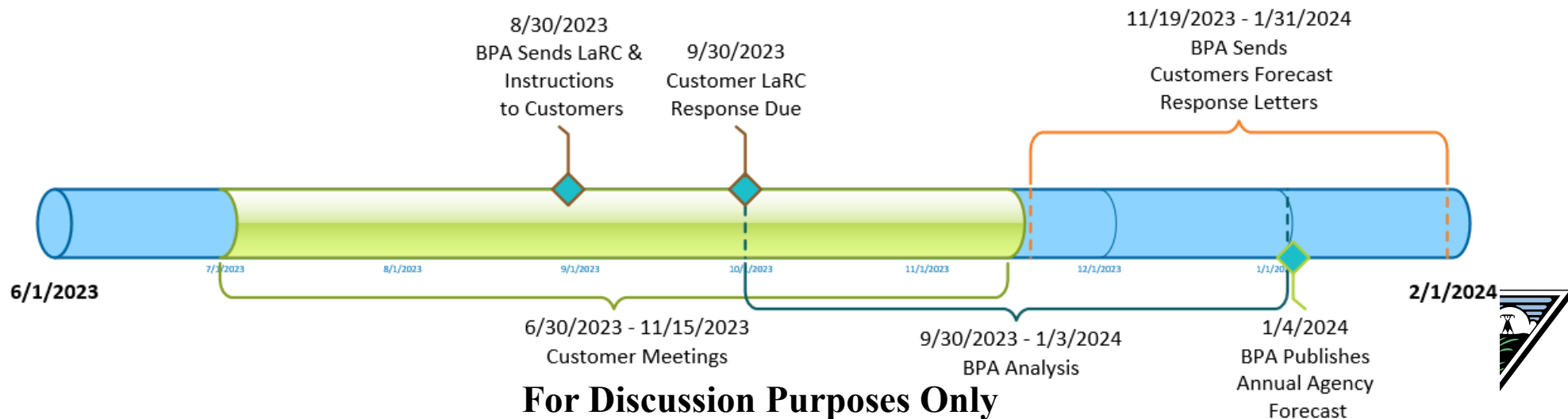
*35-year forecast at annual and monthly level
3-year forecast at hourly level*

- Energy (HLH & LLH)
- Coincident Peak
- Non-Coincident Peak
- Minimum Load



Load Forecasts and LaRC

- BPA’s annual NT Load and Resource Forecasting Process (LRFP) is made up of 3 major parts:
 - BPA Forecasting meetings with customers
 - Load and Resource Consolidated (LaRC) document review and return by customers
 - BPATs Review and Response to updated LaRC



Load Forecasts and Base Cases

- Transmission Grid Modeling (TPMG) maintains/updates a meter map which associates load buses in the base case with meters related to loads from the customer meter diagram.
- Agency Load Forecasting (MSL) will keep in-sync (regularly and on-demand) the meter map and forecast the loads.
- TPMG will pull the latest load forecast from MSL before updating the base cases.
- The MSL forecast is loaded into WECC Basecases according to the review dates of the WECC Basecase Compilation Schedule (annual cycle).
- The MSL forecast is used to update Transmission Planning's annual System Assessment base cases according to the review dates in the Western Power Pool Annual System Assessment Case Coordination schedule. (Usually Feb-May).



Questions?

