Evolving Grid

Update on Transmission Activities

December 4, 2024

Rates Hearing Room & Webex

Ex Parte Reminder

We want to make sure that everyone participating today is aware that the BP-26, TC-26, and public rate design methodology proceedings are underway and that the procedural rules for the proceedings prohibit "*ex parte*" communications with BPA about the merits of the issues in those proceedings. That means that BPA will not be talking about issues in BP-26, TC-26 or PRDM today and cannot listen to comments about the issues. Please direct any comments on issues in BP-26, TC-26, or PRDM to the proceedings themselves.

Agenda

Time	Topic	
9:00 to 9:05	Opening Remarks & Safety Moment	Katie Sheckells
9:05 to 9:15	Welcoming Remarks	Richard Shaheen
9:15 to 9:30	Environmental Compliance	Katey Grange & Kevin Cannell
9:30 to 11:30	Transmission Expansion Overview & Discussion • 2024 Transmission Plan • Bifurcated Commercial Model • Evolving Grid Projects 1.0 & 2.0 Q&A	Team
11:30 to 1	**LUNCH**	
1:00 to 1:30	Customer Reliability Improvement Service Program (CRISP)	Victor Hitchens
1:30 to 2:00	Customer Self-build	Katie Sheckells & Kevlyn Baker
2:00 to 2:25	WestTEC Update	Ravi Aggarwal & Crystal Ball
2:25 to 2:30	Closing Remarks & Next Steps	Katie Sheckells
End of Meeting		

Safety Moment: Winter Driving

The Objective of BPA's Evolving Grid Initiative

A variety of factors are creating a need for a transformational shift in the Transmission industry. Bonneville Transmission wants to raise awareness of recent efforts and initiatives, those underway and yet to come, and what customers and the region can expect in the future as we navigate the changing landscape.

Environmental Compliance

Laws and Requirements - Bonneville Power Administration

What is NEPA (National Environmental Policy Act)?

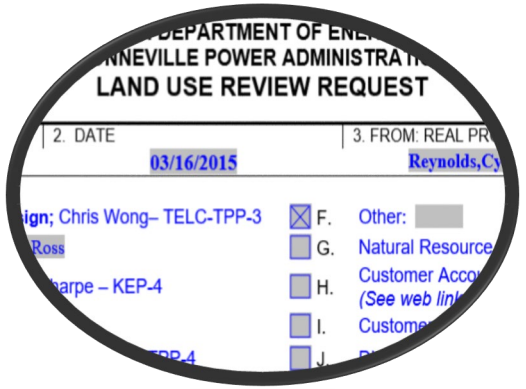
- Requires assessment of environmental effects of projects (proposed action) and to disclose the effects to the public
- Requires analysis *before* decisions are made and before actions are taken
- Includes public outreach and analysis availability
- Involves coordinating compliance with other environmental laws (including consultations and permitting)
- It is a process, not a permit

Examples of Transmission Actions Requiring NEPA

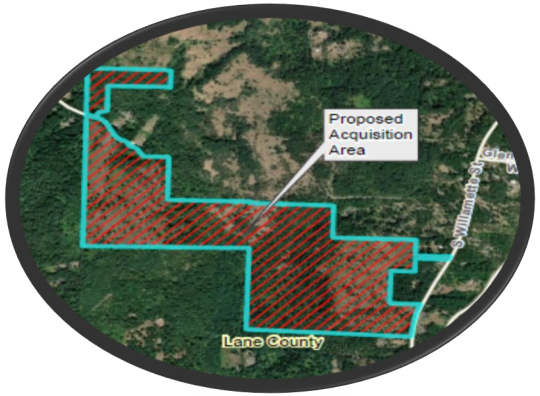
Capital

Vegetation Maintenance

Maintenance



Authorizations

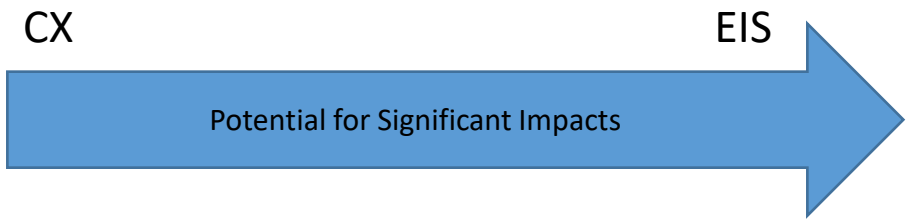


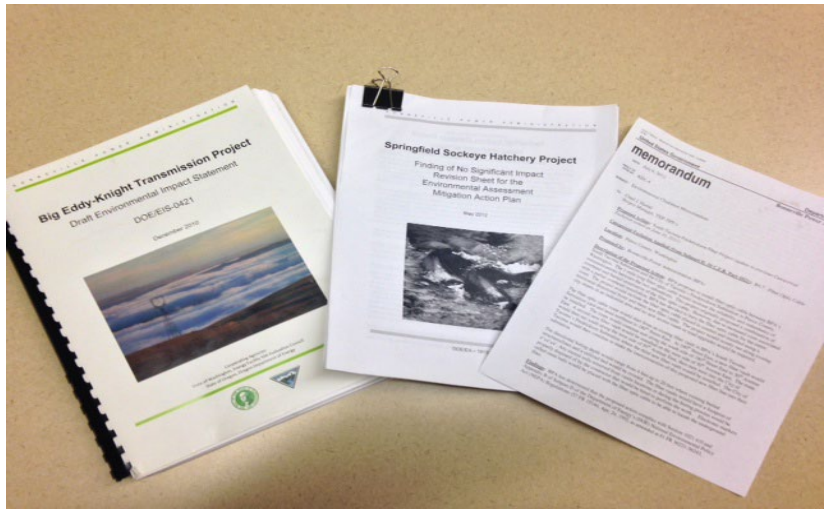
Acquisition & Disposal

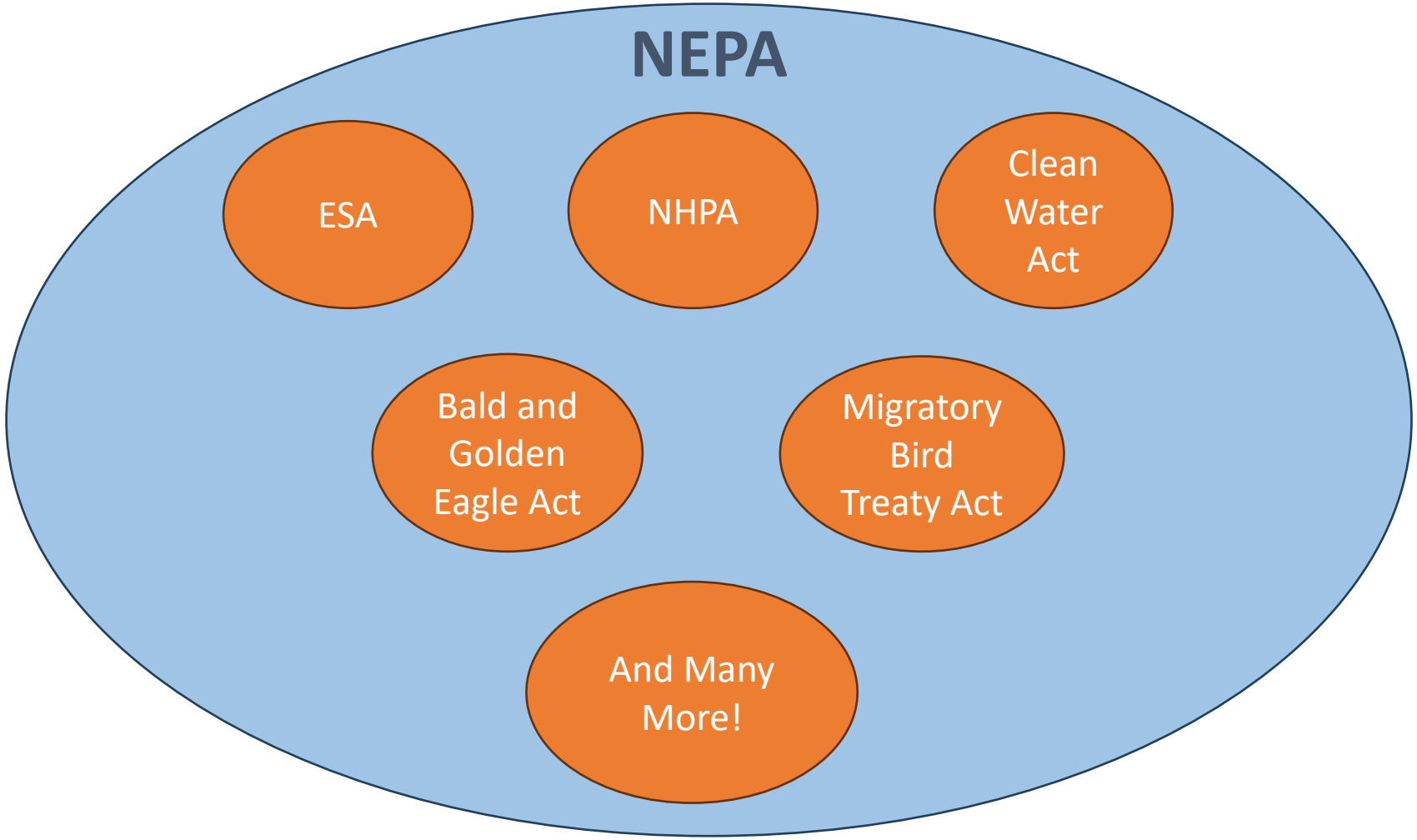
NEPA is required for actions taken by all BPA's business lines.

Types of NEPA Documents

- Categorical Exclusion (CX)
- Environmental Assessment (EA)
- Environmental Impact Statement (EIS)







NEPA integrates the review and compliance requirements of other laws

National DOE NEPA Updates

- Categorical Exclusion B4.13 Upgrading and Rebuilding Existing Powerlines – removal of line mile limitations
- Grid Deployment Office (GDO) and Coordinated Interagency Transmission Authorizations and Permits Program (CITAP)

National Historic Preservation Act (1966)

SECTION 106: The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, *take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.* The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.

Section 106

BPA must take into account the effects of its undertakings on historic properties and afford the Advisory Council on Historic Preservation opportunity to comment.

Historic properties = districts, sites, buildings, structures or objects that are eligible for inclusion in the National Register of Historic Places.

Four steps (36 CFR 800)

1) Initiate consultation with consulting parties (Tribes, State Historic Preservation Officer, etc.)
   - Define area of potential effects

2) Identify historic properties – Potential methods include research, interviews, and fieldwork, etc.

3) Assess effects and make determination of effect
   - No historic properties affected
   - No adverse effect to historic properties
   - Adverse effect

4) Resolve adverse effects – avoid, minimize, or mitigate adverse effects
   - Memorandum of Agreement or Programmatic Agreement

Overview of Transmission Projects

2024 Transmission Plan Portfolio

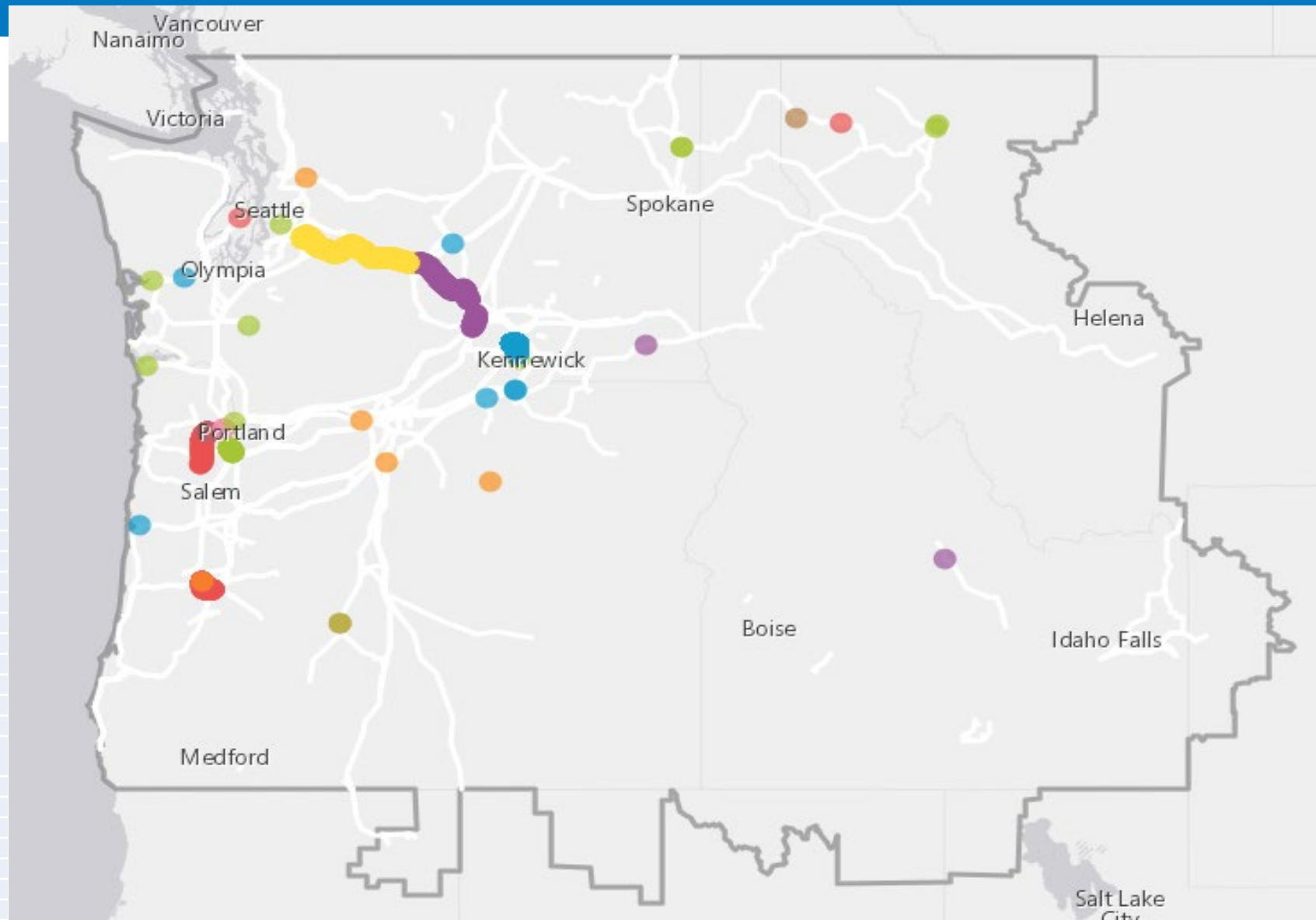
Bifurcated Commercial Model

Evolving Grid Project 1.0 & 2.0 Portfolios

2024 Transmission Plan

- 10-Year Planning Horizon. 35 Projects in all phases of development.

Expected Energization	Project
2025	CENTRAL OREGON COAST O&M FLEX/SUSTAIN (TOLEDDO-WENDSON-SANTIAM-TAHKENITCH)
2025	FOREST GROVE-MCMINNVILLE-1 115kV LINE UPGRADE
2025	LONGHORN 500/230 KV SUBSTATION l0482
2025	MCNARY 230KV SECTION BAY ADDITION L0481
2025	MCNARY-PATTERSON TAP 115KV LINE
2025	NORTHERN MID-COLUMBIA PROJECT (BPA-CHELAN-DOUGLAS-GRANT)
2025	RED MOUNTAIN-HORN RAPIDS 115KV TRANSMISSION LINE RECONDUCTOR
2025	SOUTH ELMA-SATSOP PARK-1 LINE REMOVE IMPAIRMENTS
2026	CARLTON AREA UPGRADES
2026	KITSAP CAP RELOCATION AND BREAKER REPLACEMENT
2026	LAPINE SUBSTATION UPGRADE TSEP 2016
2026	LIBBY POWER HOUSE 1 AND 2 REDUNDANT TRANSFER TRIP
2026	LOOKOUT POINT-ALVEY-1 AND ALVEY-2: 115KV LINE TRANSFER TRIP ADDITION
2026	TROUTDALE 230KV SERIES BUS SECTIONALIZING BREAKER
2027	BELL-BOUNDARY 230 kV No. 1 (SACHEEN) LINE UPGRADE.
2027	CONKELLEY SUBSTATION RETIREMENT
2027	HIGH SIDE BREAKER AND GEAR ASSOCIATED WITH THE CLATSOP TRANSFORMER REPLACEMENT
2027	LAPINE: UPGRADE TSEP 2016 - TRANSFORMER ADDITION
2027	MAPLE VALLEY 230 kV SHUNT REACTOR
2027	PEARL-SHERWOOD-MCLOUGHLIN UPGRADE TSEP 2021
2027	RICHLAND-STEVENS DRIVE 115KV LINE
2027	SILVER CREEK BUS SECTIONALIZING & TRANSFORMER PCB ADDITION
2027	SOUTH TRI-CITIES REINFORCEMENT WEBBER CANYON G0558
2027	ST. JOHNS 230/115 kV LOW-SIDE LINE SECTION REMOVE IMPAIRMENTS
2027	UPGRADE ABERDEEN TAP TO SATSOP PARK-COSMOPOLIS-1: 115KV (TPP)
2028	ALVEY-DILLARD TAP 115KV LINE REBUILD
2028	BUCKLEY AIR INSULATED SUBSTATION (FUTURE)
2028	KEELER 230 kV BUS SECTIONALIZING BREAKER ADDITION (KEELER EQUIPMENT REPLACEMENTS, BREAKER ADDITION & NEW HORIZON TERMINATION (L0452))
2028	MONROE-NOVELTY 230KV LINE UPGRADE
2028	MORROW FLAT 230 KV SHUNT REACTOR
2028	QUENETT CREEK SUBSTATION (L0380)
2029	KEELER 500KV EXPANSION AND TRANSFORMER ADDITION
2030	SCHULTZ-RAVER RECONDUCTOR AND PAUL CAPACITOR
2030	SCHULTZ-RAVER: SERIES CAPS TSEP 2020
2032	TROY SUBSTATION EXPANSION PROJECT



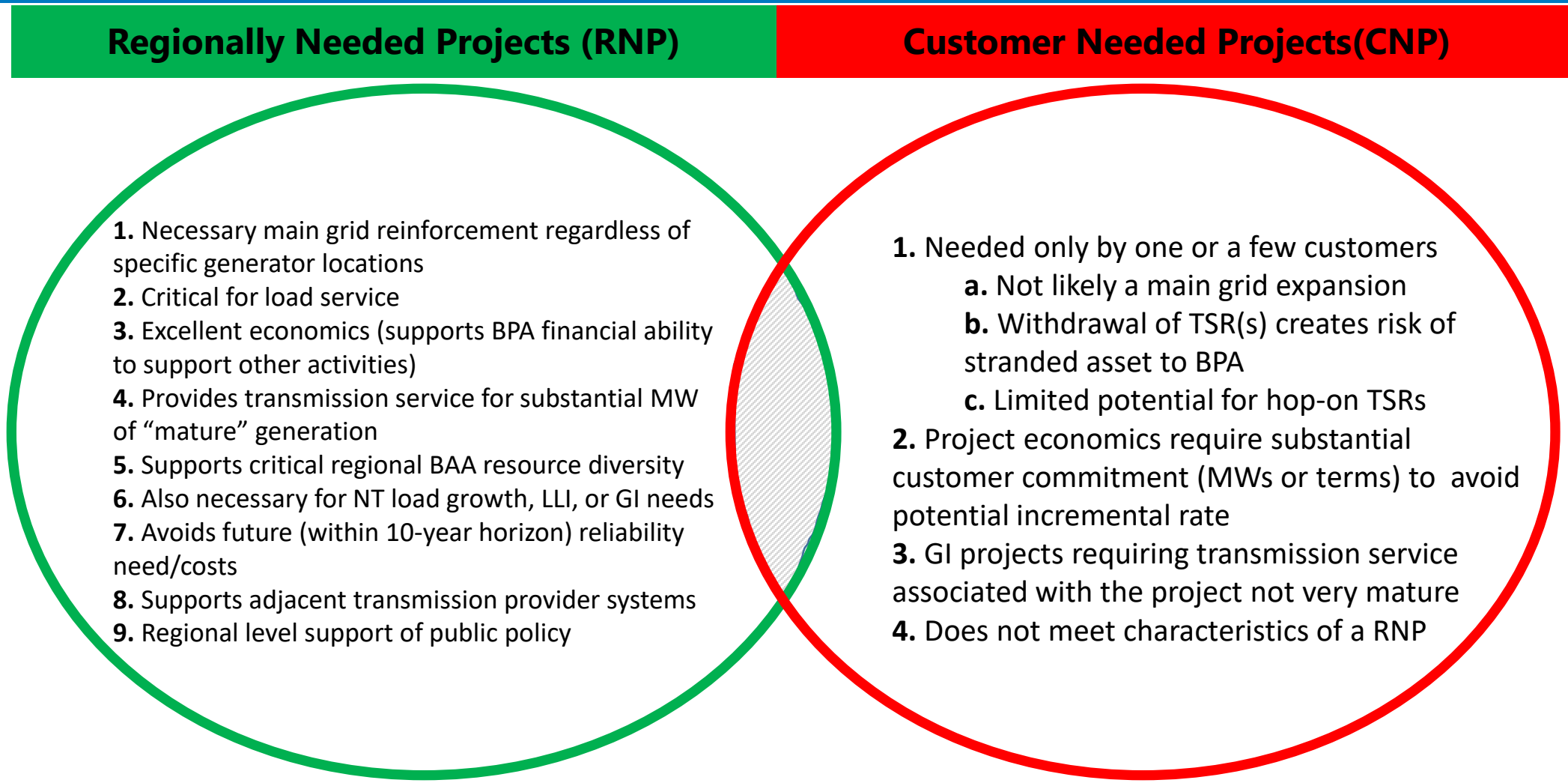
Bifurcated Commercial Model

How a Commercial Upgrade Becomes an Evolving Grid Project (EGP)

Disclaimers

- Construction of transmission and transmission expansion projects are subject to the Administrator's determination and completion of environmental compliance.
  - This includes commercially driven projects in the TSR Study and Expansion Process (TSEP)
- This discussion is to share as much information as possible without placing limits on the ability of the Administrator to respond to the needs of the region and the dynamic industry landscape.
- This is the process, decisions, and timelines BPA envisions, but any of these could change as needs arise.

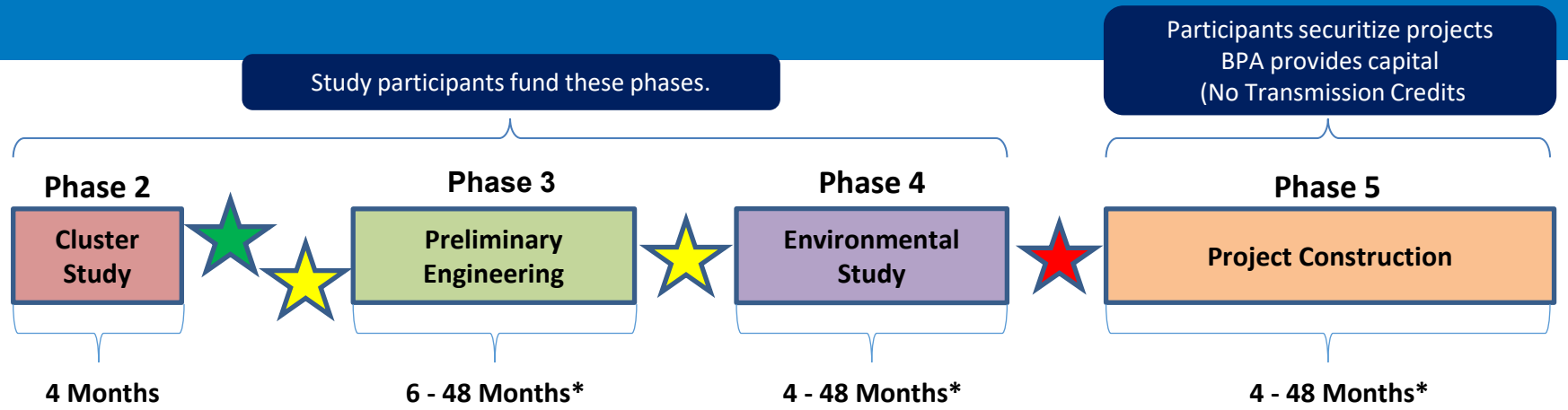
Characteristics that may Differentiate Projects



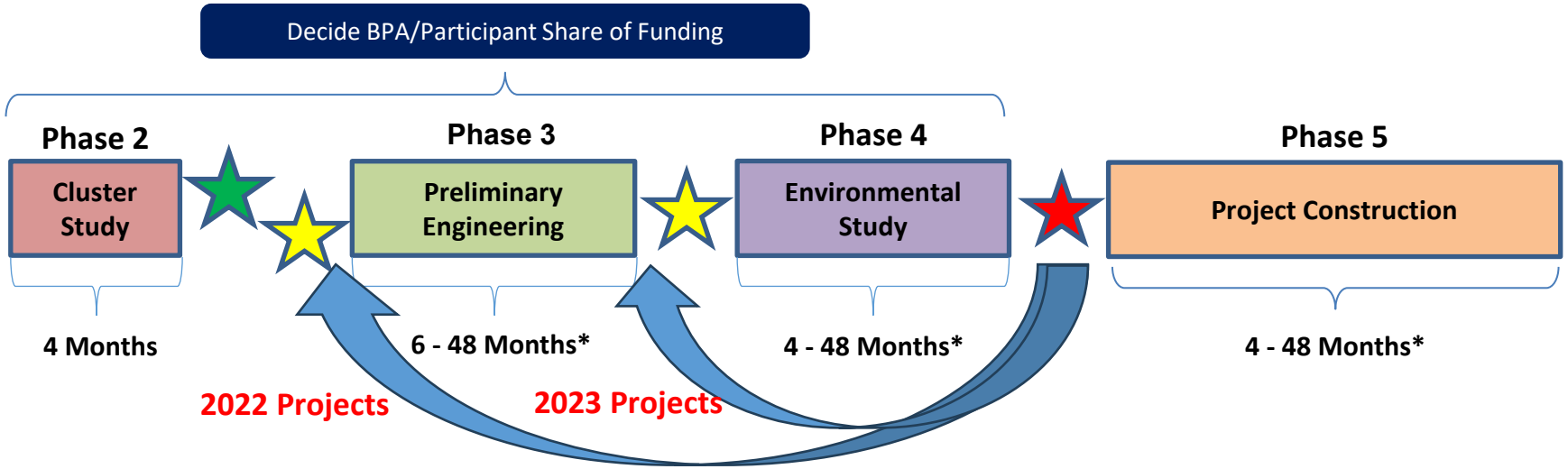
For each project, the characteristics and their importance is at the discretion of the BPA Administrator.

Decision Timing

Track A
Customer Needed Expansion Projects (TSEP Status Quo)



Track B
Regionally Needed Expansion Projects



Key Takeaway: Decisions of critical importance to regional stakeholders for the 2023 TSEP CS Regionally Needed Projects will occur late in the Preliminary Engineering Phase.

Project Decisions for EGP 1.0

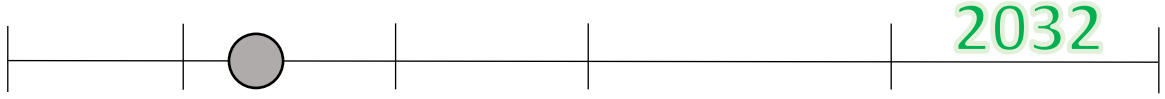
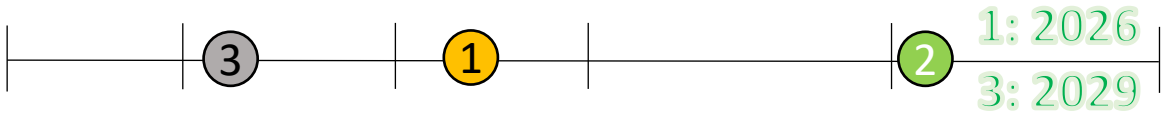
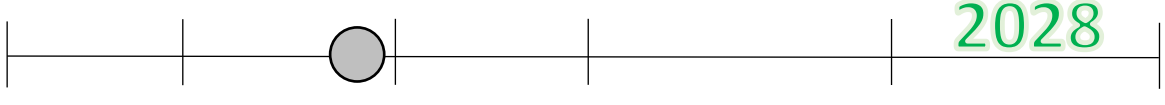
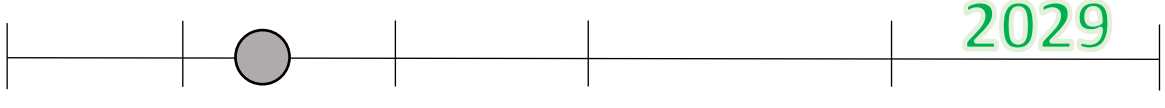
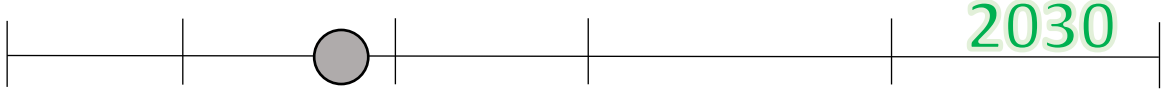
- Extent of customer funding for Preliminary Engineering/Scoping (0 – 100%)
- Extent of customer funding for Environmental Study and Design (0 – 100%)
- Extent of required securitization (0 – 100% of direct project costs, assigned to TSRs on a per MW share basis)
- Announcing an initial intention to make BPA capital funding available, subject to environmental compliance can be done early, or at a point up to post-completion of NEPA; must be done prior to offer of contracts.
- Embed project costs for the initial rate proposal.

EGP 1.0* Decisions	
Item	**Decision**
Preliminary Engineering Costs	Customer Pays 100%
Environmental Review	Customer Pays 100%
Securitization	Not Required
BPA Capital Funding	Early BPA Capital if Needed
Embed Costs for Initial Proposal	Yes

**Treatment of EGP 2.0 projects will not be determined until they complete Scoping.*

EGP 1.0 & 2.0 Portfolio Update

- On Oct 17, BPA presented a significant update on the potential for an additional portfolio of major transmission projects (upgrades and expansion).
  - EGP 1.0 consists of 10 projects of over $2 billion
  - EGP 2.0 consists of 13 projects of over $3 billion
- During the public meeting, several questions and clarifications were asked and BPA is providing answers to those questions and welcomes further discussion.
  - Oct 17 consolidated list of questions and clarifications
- Prior to the open discussion on the Q&A, BPA would like to provide some additional updates and clarifications on the status of its queues and the bifurcated model.

EGP 1.0 Project	Initiation → Scoping → Design → Construction → Closeout	Next Milestone
Cross Cascades North Upgrades: Multiple projects		1. Schultz-Raver 500 kV line upgrade in Scoping. 2. Paul 500 kV substation in Scoping 3. Olympia 230 kV substation in Scoping
Big Eddy-Chemawa Line Upgrade		Project started Scoping this fall and planned to finish in summer 2025.
Portland Area: Multiple projects		1. Pearl-Sherwood-Mcloughlin: Project is in Design. 2. Keeler-Horizon#2: Project is Energized. 3. Keeler Transformer Addition: Project is in Scoping.
Chehalis-Covington Line Upgrade		Project has finished Scoping and starting Design in early 2025.
Ross-Rivergate Line Upgrade		Project started Scoping this fall and planned to finish in late spring 2025.
Rock Creek-John Day Line Upgrade		Project has completed significant scoping and planned to finish in spring 2025.

EGP 1.0 Project

Initiation | Scoping | Design | Construction | Closeout

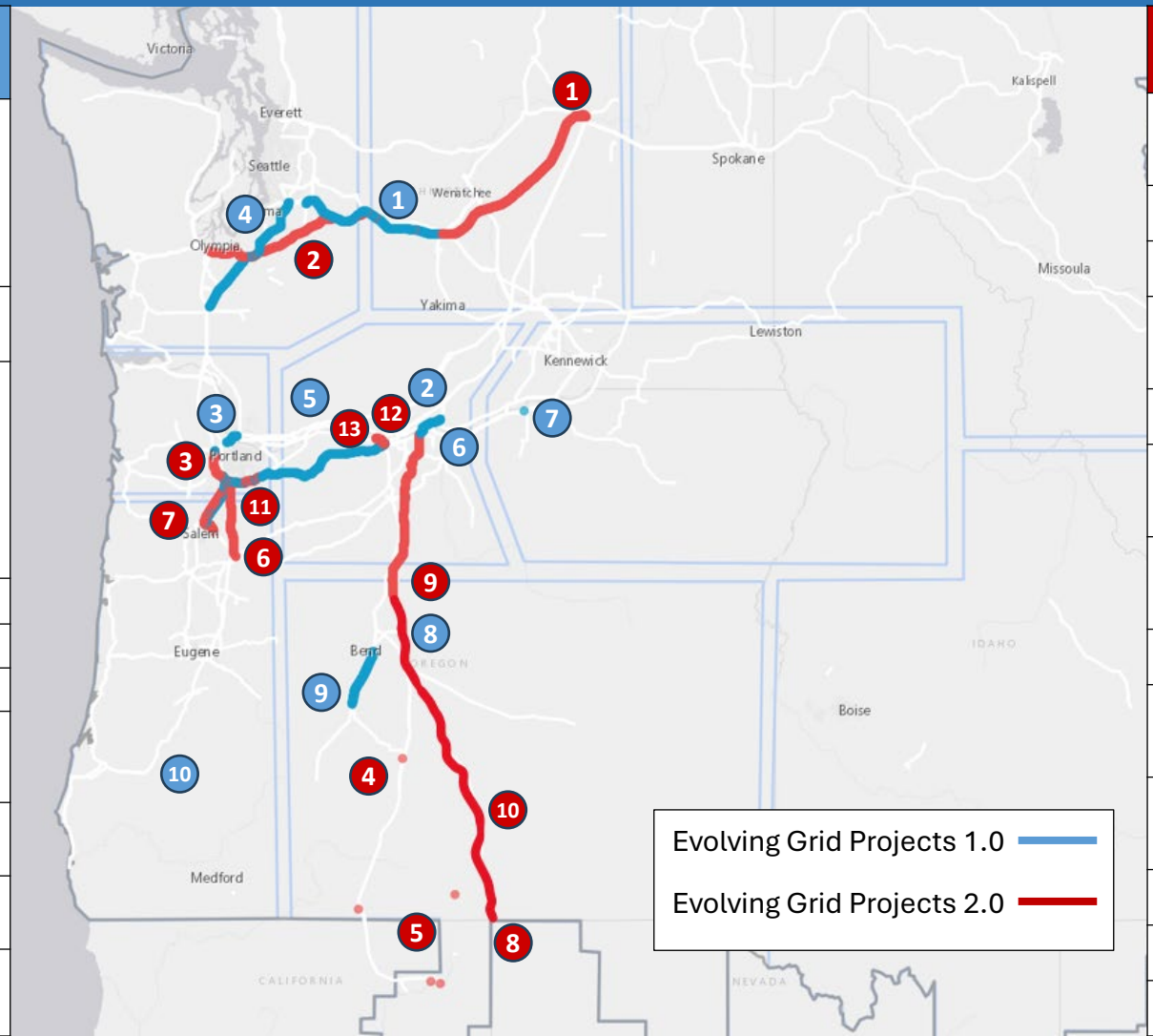
Next Milestone

Six Mile Canyon Substation	2027	Project is nearing completion of Scoping. A feasible site has been selected. Longest Lead Material has been placed on order.
Bonanza Substation	2028	Project started Scoping this fall and planned to finish in summer 2025.
La Pine-Bonanza Line	2030	Plan of Service has been completed and Scoping planned to start in early 2025.
Buckley Substation Rebuild	2028	Project is in Design.

B O N N E V I L L E P O W E R A D M I N I S T R A T I O N

Evolving Grid Projects 1.0 & 2.0

Evolving Grid 1.0	
1	Cross Cascades North Upgrades • Schultz-Raver 500 kV Line Upgrade • Paul 500 kV Substation Upgrade • Olympia 230 kV Substation Upgrade
2	Big Eddy-Chemawa 230/500 kV Line Upgrade
3	Portland Area Upgrades • Pearl-Sherwood McLoughlin 230 kV Line Upgrade • Keeler-Horizon 230 kV Line • Keeler 230/500 kV Transformer Addition
4	Chehalis-Covington 230 kV Line Upgrade
5	Ross-Rivergate 230 kV Line Upgrade
6	Rock Creek-John Day 500 kV Line Upgrade
7	Six Mile Canyon 230/500 kV Substation (New Construction)
8	Bonanza 230/500 kV Substation (New Construction)
9	La Pine-Bonanza 230 kV Line (New Construction)
10	Buckley 500 kV Substation Rebuild



Evolving Grid 2.0	
1	Grand Coulee-Columbia-Schultz 500 kV Line Upgrade
2	Schultz-Olympia 500 kV Line Upgrade
3	North of Pearl Upgrades
4	Central Oregon 500 kV Dynamic Reactive Upgrades
5	RATS: Reno-Alturas Reactive Addition
6	Salem Area Upgrades #1 (North of Marion)
7	Salem Area Upgrades #2 (North of Marion)
8	NOB Substation (New Construction)
9	Lower Columbia-Bonanza 500 kV Line (New Construction)
10	Bonanza to NOB 500 kV Line (New Construction)
11	Ostrander-Pearl 500 kV Line Upgrade
12	Big Eddy-Quenett Creek Upgrade
13	Big Eddy-The Dalles Line Rebuild

EGP 1.0 & 2.0 Portfolio Q&A

- Panel discussion with BPA SMEs to review questions and clarifications from the October 17 public meeting.
- BPA has published an updated document with answers to questions and clarifications here:
  - Evolving Grid Project 1.0 & 2.0 Questions and Answers (updated 12/2/24)

Customer Reliability Improvement & Service Program (CRISP)

The Background

- BPA Transmission measures transmission line reliability in two forms:
  1. System Average Interruption Duration Index (SAIDI) measures the average minutes of unplanned interruptions per line per year.
  2. System Average Interruption Frequency Index (SAIFI) measures the average number of unplanned interruptions per line per year.
- SAIDI/SAIFI metrics are BPA transmission line-based, reported as part of the agency and transmission performance scorecards.
- Metrics provide an excellent system-wide overview of average performance. However, often some customers experience a much different Quality of Service (QOS) at their specific points of delivery (POD).
- BPA can analyze outages at each POD, which offers a more granular look at history from the customer perspective.

The Issue

- BPA's strategic plan outlines a vision to provide a reliable, resilient electric grid to support customers.
- Certain parts of BPA's transmission system historically provide a lesser quality of service (QOS) than others.
- Existing Network Integration Transmission Service (NITS) customers are routinely sending BPA letters of concern about their transmission service reliability.
- This briefing outlines an initiative to develop a program focused on improving customer reliability and reducing future risk exposure.

Current Reactive Approach

- No overarching program for projects geared towards customer QOS improvements.
- Discretionary (non-OATT).
- Not associated with new revenue, so the Net Economic Benefits Ratio (NEBR) is generally low or negative.
- Not compliance related and associated with adhering to NERC/WECC reliability standards.
- Submitted ad-hoc for approval yet are lower priority and compete for limited resources with projects deemed higher priority.
- No special funding allocation or budget.

Future Proactive Approach

- Develop programmatic approach and portfolio of Network Upgrades focused on:
  - Improving QOS.
  - Managing risk.
  - Providing equity for customers, including those served radially.
- Prioritize projects by leveraging potential future risk exposure information, historical outage data, and other factors.
  - Leading and lagging indicators.
- Acknowledge this is the right thing to do for BPA Transmission customers.
  - Specifically in areas that have historical weather extremes and wildfire danger where customers incur more risk than others.
  - Without this program, projects will not rise to the level of attention needed.
  - Good utility practice that will help strengthen customer relationships.

Example Projects

Funded Projects

- Chenoweth-Goldendale 115kV line
- L0479 Bridge Substation
- Disconnect Switch Replacement at Gold Beach
- USACE Dexter & Foster Powerhouse - Replace Ground Switch
- Eugene Alderwood 115kV Line Rebuild
- L0495 Latham Sub Reliability Project
- Targhee Substation Breaker and Expansion
- Alvey-Dillard Tap 115kV Line Rebuild

Identified Areas of Concern and Projects Need Further Evaluation

- Port Angeles-Sappho 115kV line
- Columbia Falls-Trego 115kV line
- Targhee tap to Swan Valley-Teton 115kV line
- Bald Mountain to Powerdale Tie
- Redmond-Brasada and Brasada-Harney 115kV lines

FY25 Plan

- Q1
  - Mature the program, develop expanded project inventory, brief executives, and provide initial customer outreach.
- Q2
  - Apply project valuation tools to draft prioritization and multi-year project forecast and develop future customer outreach plan.
- Q3
  - Finalize prioritization and multi-year project forecast and add specific Network Upgrade projects to the Asset Plan.
- Q4
  - Initiate highest prioritized projects to the Capital process and request project funding approval to begin scoping in FY26.

Summary

- Historically, less formalized.
- In the future, formalize, add structure, and pivot to new approach.
- Network Upgrades focused on improving QOS, managing risk, and providing equity for customers.
- Evaluate projects based on several criteria, including estimated cost, historical POD-specific outage metrics, public health and safety concerns, and potential future risk.
- Committed to FY25 performance scorecard metrics.
- Success of program will be dependent on project execution bandwidth.
- Continue to provide customers an opportunity to provide feedback, including via CSEs and AEs.

Customer LGIA Option to Build

Background on the LGIA Option to Build

- Bonneville adopted pro-forma changes to the Option to Build language in the TC-20 settlement
- This is an option under the Standard Large Generator Interconnection Agreement (LGIA)
  - Cannot be exercised until negotiating the LGIA
  - Bonneville does not tender LGIA until after environmental compliance is complete, which requires a percentage/completion of design

Background on Option to Build

LGIA Section 5.1.3: Interconnection Customer shall have the option to assume responsibility for the design, procurement and construction of Transmission Provider's Interconnection Facilities and Stand Alone Network Upgrades on the dates specified in Article 5.1.2. Transmission Provider and Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify such Stand Alone Network Upgrades in Appendix A. Except for Stand Alone Network Upgrades, Interconnection Customer shall have no right to construct Network Upgrades under this option.

Stand Alone Network Upgrades shall mean Network Upgrades that are not part of an Affected System that an Interconnection Customer may construct without affecting day-to-day operations of the Transmission System during their construction. Both the Transmission Provider and the Interconnection Customer must agree as to what constitutes Stand Alone Network Upgrades and identify them in Appendix A to the Standard Large Generator Interconnection Agreement. If the Transmission Provider and the Interconnection Customer disagree about whether a particular Network Upgrade is a Stand Alone Network Upgrade, the Transmission Provider must provide the Interconnection Customer a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Stand Alone Network Upgrade within 15 days of its determination.

Current Approach

- Currently, we work with interested customers when they reach the LGIA stage on a case-by-case basis to explore how the option would work for specific projects.
- Customers have expressed a desire to better understand how Option to Build works prior to reaching the LGIA stage.

Status Update

- We are continuing efforts to evaluate developing a standardized approach and providing public-facing materials to educate customers.
  - Conducted benchmarking with WAPA.
  - Identified required changes to standardize: Business Practice, Contracting Strategy, Contract Oversight Mechanism.
- Challenges to developing guidance and standardizing approach:
  - New or altered contracting mechanisms.
  - Ensuring consistency with statutory and legal obligations and that equipment or facilities built under the option meet BPA's reliability obligations.
    - For example, all design and construction must be to BPA standards.
  - Resource constraints due to prioritizing implementation of the large generator interconnection transition process (TC-25 reforms).

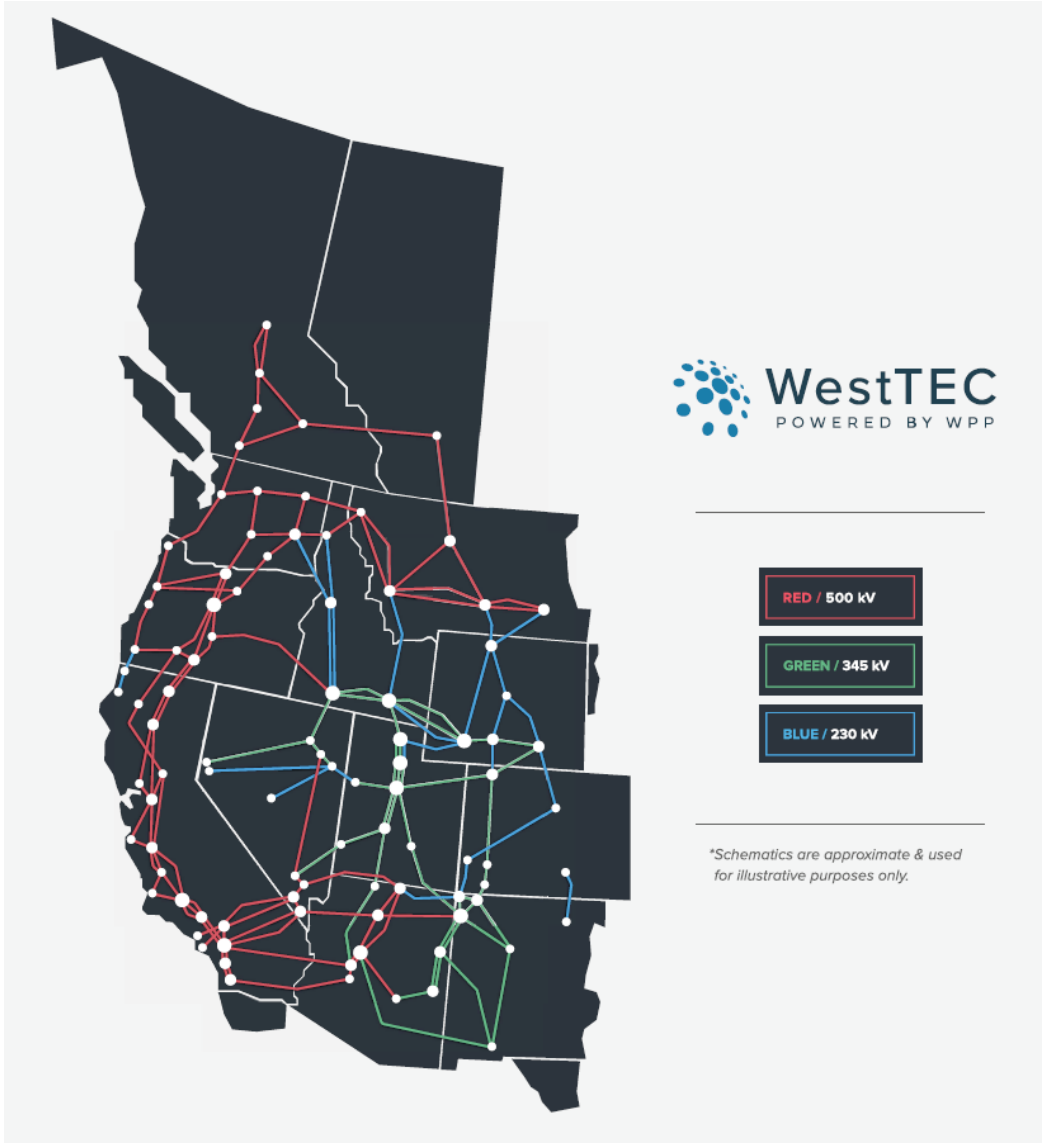
Update on WestTEC
BPA Evolving Grid Public Workshop

Crystal Ball, Pacific Northwest Utilities Conference Committee

Ravi Aggarwal, BPA Transmission Planning

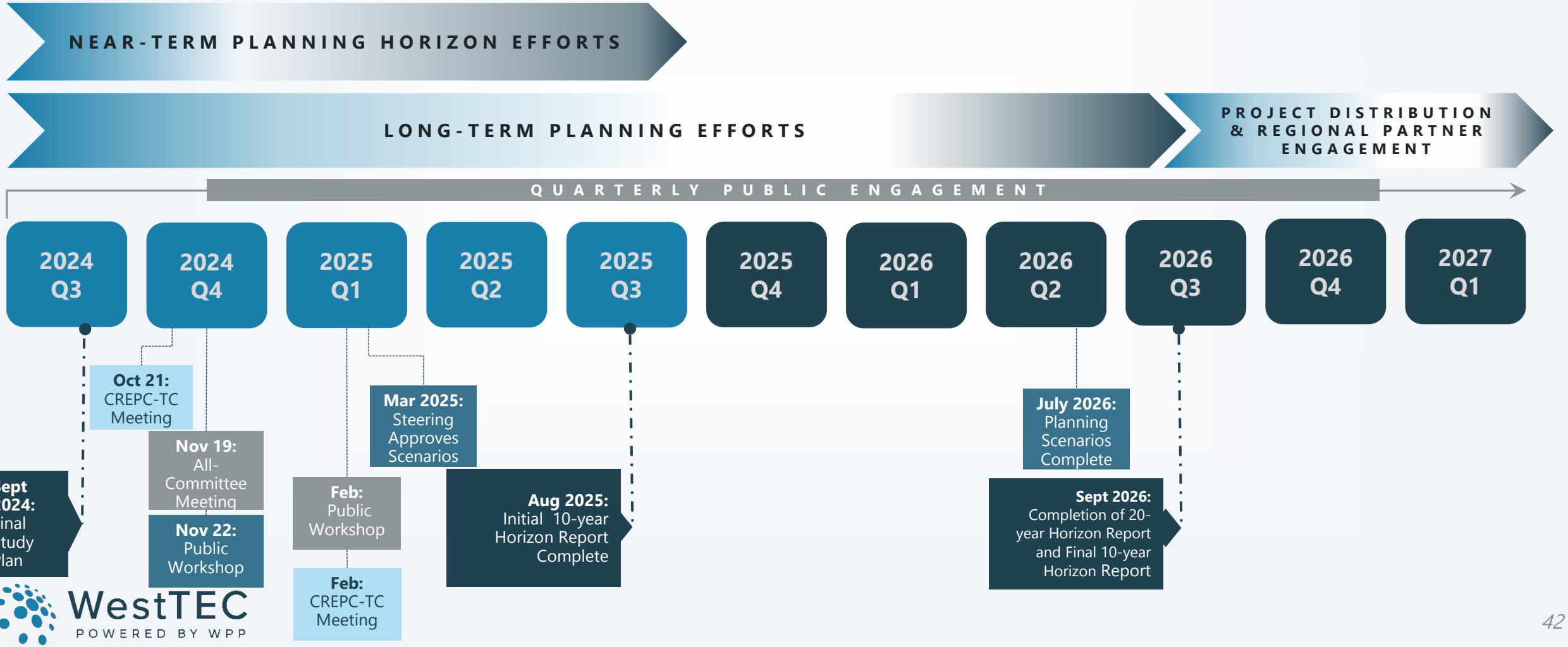
What is the Western Transmission Expansion Coalition?

- *"WestTEC"*
- *West-wide 20-year transmission study (10-year look)*
- *Industry-led with unprecedented stakeholder inclusion*
- *Goal is to produce an actionable transmission study*



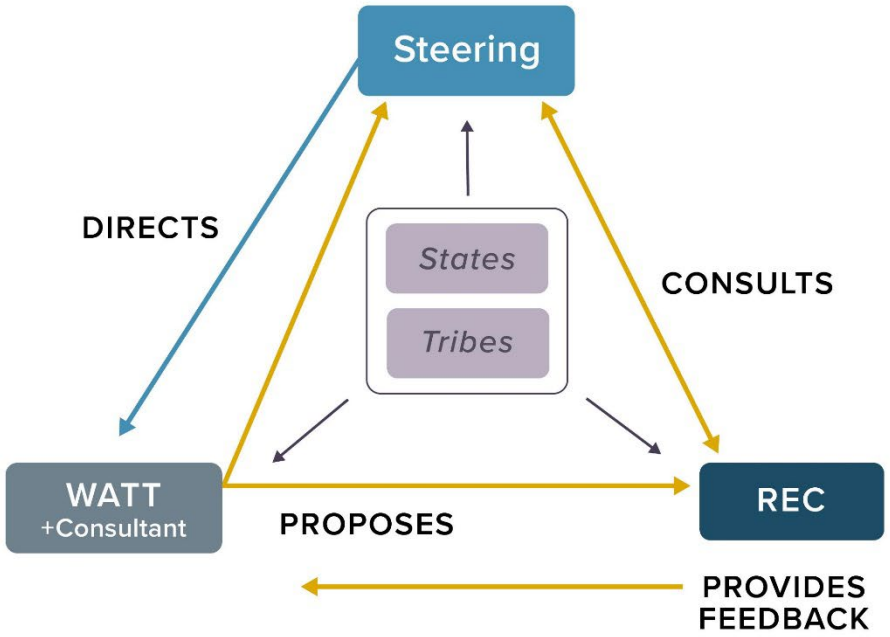
WestTEC
POWERED BY WPP

WestTEC Project Timeline



WestTEC
POWERED BY WPP

Committees and Governance



Technical Status Update

1. Significant progress has been made developing the **10-year Reference Case,** which is a trendline view of 2035 that will be used to assess nearer-term interregional transmission needs and will service as the starting point for 20-year assessments
   - » This consists of forecasts for **load, generation, and transmission** for the 2035 study horizon – see subsequent slides
2. Energy Strategies and the WATT have been **finalizing study methodologies** for the System Reliability Assessment
   - » The team will begin work refining other methods (e.g., Interarea Deliverability Assessment) soon
3. Energy Strategies and E3 have been coordinating baseline assumptions and data handoffs to support execution of 20-year assessment in 2025
   - » See next section for details on E3 capacity expansion modeling

Notable Transmission Projects included in 10-year Reference Case

- The following list is a list of notable projects that are regional in nature or are >300-kV, with some exceptions for certain 230-kV projects
  - The list does not include all projects that will be included in the WestTEC 2035 Reference Case, but captures major topology changes

BPA
- Montana to Washington (M2W)
- Cross Cascades North Upgrade TSEP 2022 (1)
- Raver -Paul: Chehalis - Cowlitz Tap 230 (4)
- Big Eddy - Chemawa rebuild (2)
- North of Marion: Marion-Chemawa-Pearl 500 (6) (7)
- North of Pearl 500-kV upgrade (incl. Pearl-Keeler #2 500) (3)
- Schulta - Olympia 500 kV Transmission Line (2)
- Grand Coulee - Columbia - Schultz 500-kV (1)
- Big Eddy - Ostrander #1 500 (2)
- Ostrander - Pearl #1 500 (11)
- South of Knight: Rock Creek-John Day 500 kV line upgrade (6)
- South of Allston: Ross-Rivergate 230 (5)
- Bonanza - Lapine 230 kV (9)

CAISO
- All CAISO approved projects as of 23-24 TPP
- TransWest Express
- SWIP North
- SunZia
- Imperial Valley–North of SONGS 500 kV Line and Substation
- Colorado River-Red Bluff 500 kV 1 Line Upgrade
- Delaney-Colorado River 500kV line
- North of SONGS–Serrano 500 kV line
- Serrano–Del Amo–Mesa 500 kV Transmission Reinforcement
- San Jose Area HVDC 230 kV Line (Newark - NRS)

PacifiCorp
- Gateway West: Borah to Midpoint (E-North)
- Gateway West: Bridger/Anticline to Populus (Segment D3)
- Gateway West: Cedar Hill to Hemingway (E-south)
- Gateway West: Cedar Hill to Midpoint (Segment E)
- Gateway West: Midpoint to Hemingway (Segment E8)
- Gateway West: Populus to Borah (E-North)
- Gateway West: Populus to Cedar Hill (E-south)
- Corral to Grassland Annex 500kV Line
- Corral to Snow Goose 500kV Line
- Energize the existing Red Butte – St. George line at 345 kV
- Gateway Central: Limber to Terminal (Segment C)
- Grassland Annex to B2H Tap Substation 500kV Line
- Oquirrh-Terminal 345 kV #3 and #4 Double Circuit Line
- Sigurd - Clover 345 kV line
- Spanish Fork - Mercer 345 kV line
- Three Peaks - Purgatory Flat 345 kV line

IPCo/PacifiCorp
- Longhorn to Hemingway (B2H)

Arizona Public Service
- Four Corners to Cholla to Pinnacle Peak 345kV Line Rebuilds
- Jojoba to Rudd 500kV line

Cheyenne Light Fuel and Power
- Sweetgrass - Bluffs 230 kV Line
- West Cheyenne - Sweetgrass 230 kV Line
- West Cheyenne - Windstar 230 kV Line

Idaho Power
- Hemingway - Bowmont #2 230 kV line
- Hubbard - Bowmont 230 kV line

Salt River Project
- Hassayampa - Pinal West 500kV #2

Public Service Company of Colorado/ Xcel Energy
- Colorado's Power Pathway

Tucson Electric Power
- DMP to Vail 230kV line
- Golden Valley 230kV Transmission Line
- Tortolita to DMP 230kV line

NV Energy
- Greenlink North
- Greenlink West
- Lantern – Comstock Meadows 345 kV line

El Paso Electric Company
- Afton North-Airport 345 kV Line (New)
- Afton-Afton North 345 kV Double Bundled Line (New)

Portland General Electric
- Bethel-Round Butte 500kV upgrade
- Harborton-Trojan #3 & #4 230kV

Tri-State Generation and Transmission Association
- Badger Creek - Big Sandy 230 kV
- Big Sandy - Burlington 230 kV Uprate
- Boone - Huckleberry 230 kV
- Burlington - Lamar 230 kV

Western Area Power Administration (all regions)
- Bouse upgrade
- Pinal Central - ED5 Transmission Line
- Pinnacle Peak - Rogers 230kV Restoration Project
- Ault-Husky 230KV Line Upgrade

Key
- Regional projects

WestTEC POWERED BY WPP

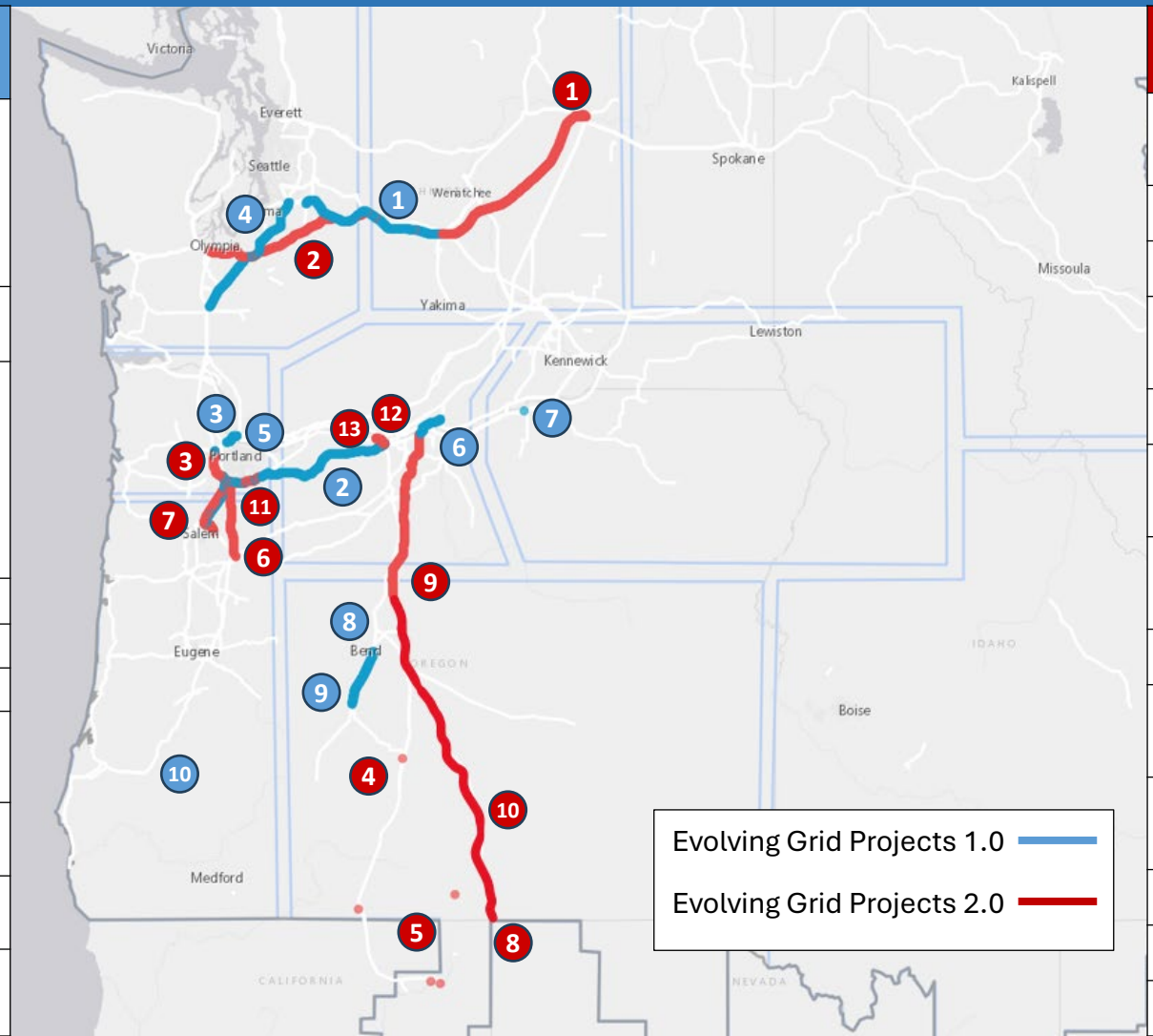
Not final and subject to change

BONNEVILLE POWER ADMINISTRATION

Evolving Grid Projects 1.0 & 2.0

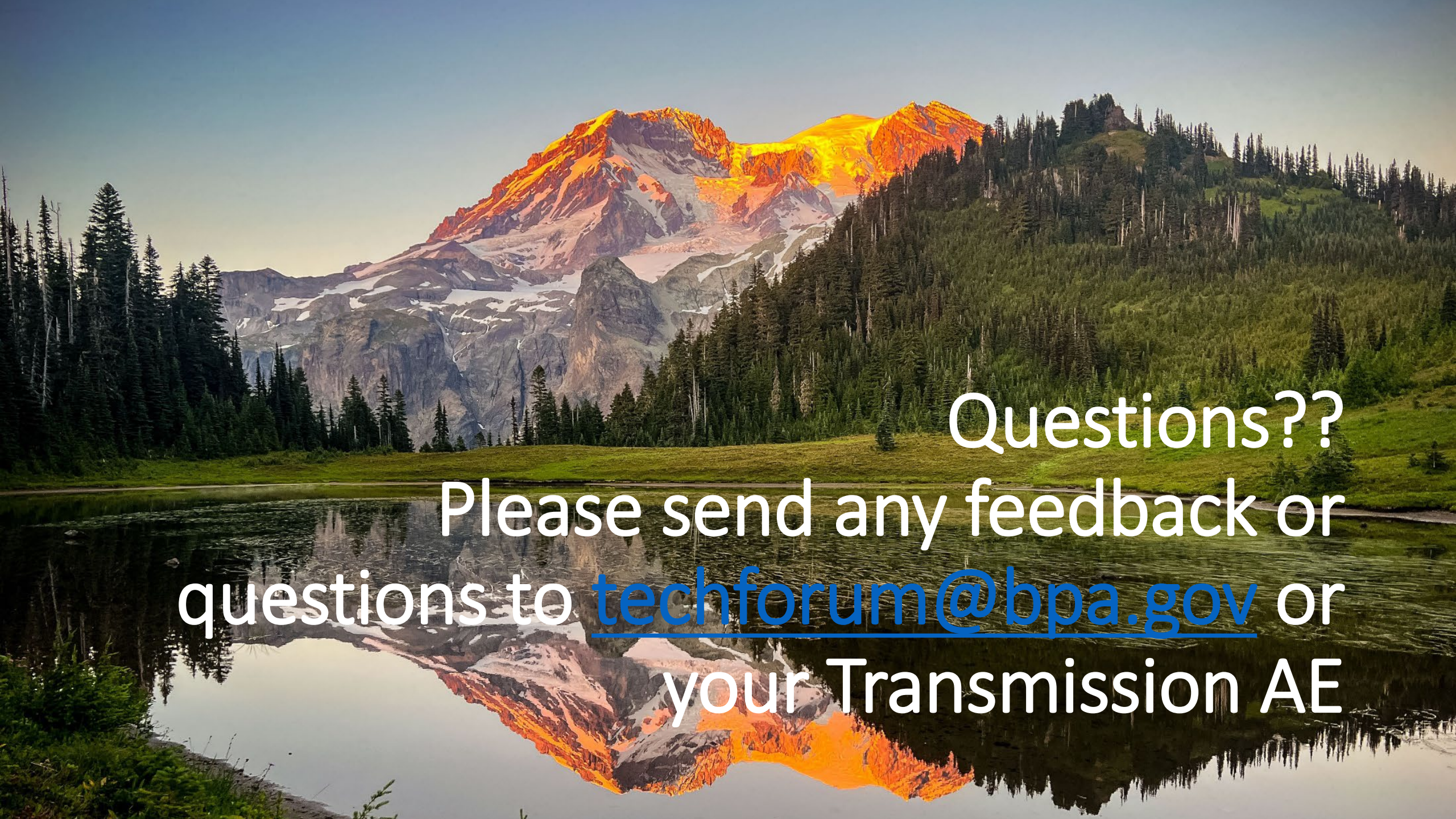
Evolving Grid 1.0

1	Cross Cascades North Upgrades • Schultz-Raver 500 kV Line Upgrade • Paul 500 kV Substation Upgrade • Olympia 230 kV Substation Upgrade
2	Big Eddy-Chemawa 230/500 kV Line Upgrade
3	Portland Area Upgrades • Pearl-Sherwood McLoughlin 230 kV Line Upgrade • Keeler-Horizon 230 kV Line • Keeler 230/500 kV Transformer Addition
4	Chehalis-Covington 230 kV Line Upgrade
5	Ross-Rivergate 230 kV Line Upgrade
6	Rock Creek-John Day 500 kV Line Upgrade
7	Six Mile Canyon 230/500 kV Substation (New Construction)
8	Bonanza 230/500 kV Substation (New Construction)
9	La Pine-Bonanza 230 kV Line (New Construction)
10	Buckley 500 kV Substation Rebuild



Evolving Grid 2.0

1	Grand Coulee-Columbia-Schultz 500 kV Line Upgrade
2	Schultz-Olympia 500 kV Line Upgrade
3	North of Pearl Upgrades
4	Central Oregon 500 kV Dynamic Reactive Upgrades
5	RATS: Reno-Alturas Reactive Addition
6	Salem Area Upgrades #1 (North of Marion)
7	Salem Area Upgrades #2 (North of Marion)
8	NOB Substation (New Construction)
9	Lower Columbia-Bonanza 500 kV Line (New Construction)
10	Bonanza to NOB 500 kV Line (New Construction)
11	Ostrander-Pearl 500 kV Line Upgrade
12	Big Eddy-Quenett Creek Upgrade
13	Big Eddy-The Dalles Line Rebuild


Questions??
Please send any feedback or
questions to techforum@bpa.gov or
your Transmission AE

Appendix: Helpful BPA Links

New Evolving Grid web page: https://www.bpa.gov/energy-and-services/transmission/evolving-grid

BPA Transmission Plan: https://www.bpa.gov/energy-and-services/transmission/attachment-k

Transmission Availability : https://www.bpa.gov/energy-and-services/transmission/transmission-availability

Becoming a BPA Customer: https://www.bpa.gov/energy-and-services/transmission/becoming-a-transmission-services-customer

Interconnection: https://www.bpa.gov/energy-and-services/transmission/interconnection

Transmission Service Request Study: https://www.bpa.gov/energy-and-services/transmission/acquiring-transmission/tsep

Transmission Business Model: https://www.bpa.gov/energy-and-services/transmission/business-model