

Western Transmission Expansion Coalition “WestTEC”

Public Webinar

May 5th, 2026

Agenda Overview

Time (PT)	Item	Speaker(s)
8:00-8:05	Welcome	Sarah Edmonds, WPP
8:05-8:15	WestTEC Overview	Sarah Edmonds, WPP
8:15-8:30	Study Execution Update	Keegan Moyer, Energy Strategies
8:30-9:15	20-Year Study Update	John Muhs, Energy Strategies
9:15-9:30	Benefits Subgroup Update	Sibyl Geiselman, PGP (REC Chair)
9:30-9:55	Q&A	Sarah Edmonds, WPP
9:55-10:00	Action Items and Next Steps	Sarah Edmonds, WPP

WestTEC Overview

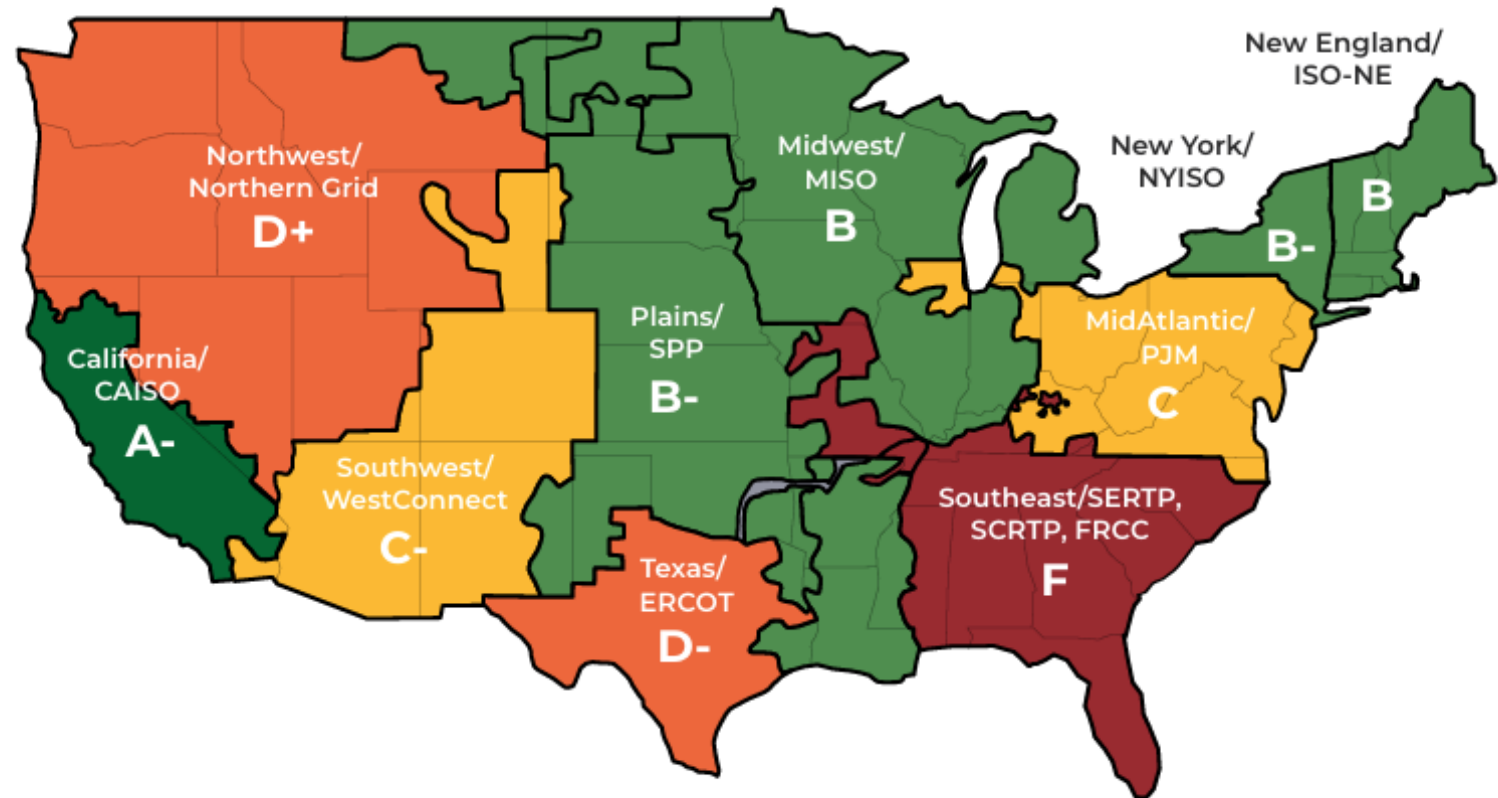
Western Transmission Expansion Coalition – “WestTEC”

- » *West-wide 10 and 20-year transmission study*
- » *Industry-led with unprecedented regional partner inclusion*
- » *Goal is to produce an actionable transmission study*



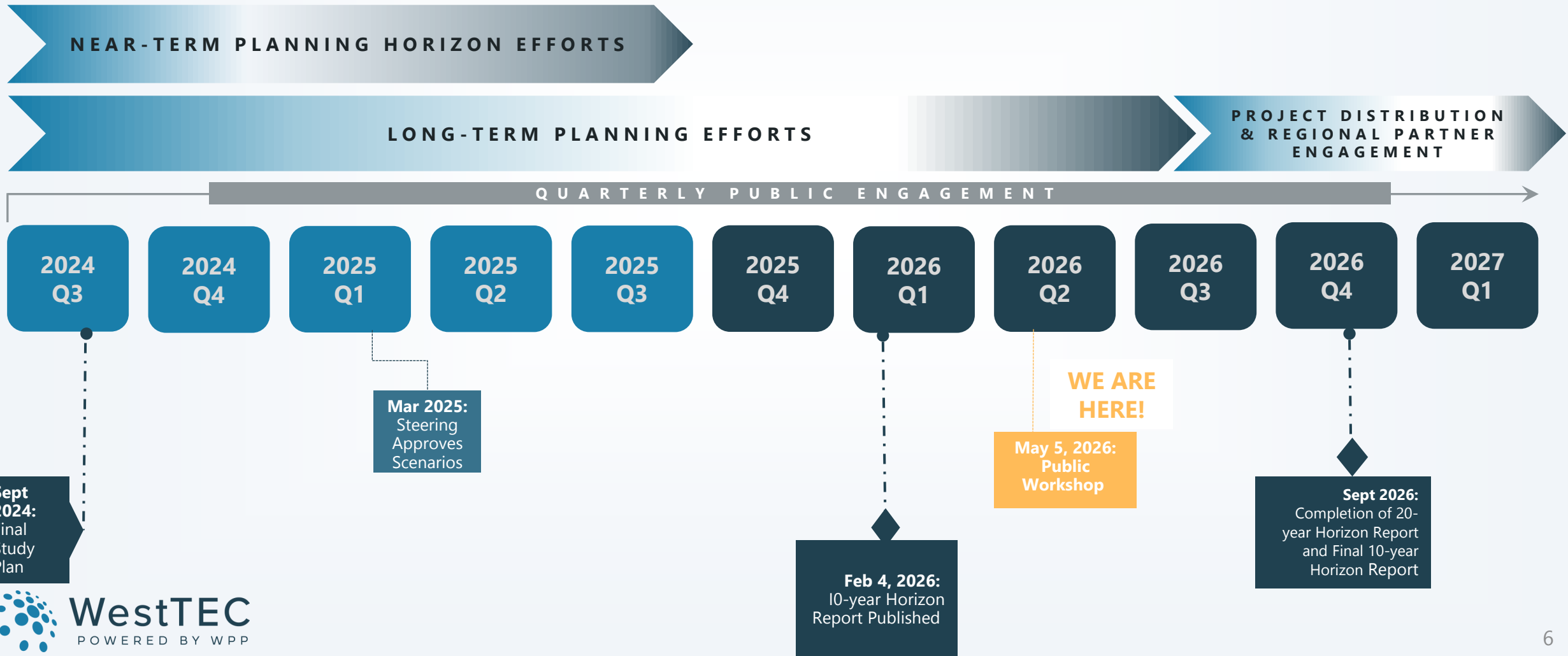
"...[I]n the West, the Northwest and Southwest along with California are participating in ...WestTEC, a voluntary, west-wide transmission planning process that has broad stakeholder participation and is currently one of the best interregional transmission planning practices in the country."

FIGURE ES-1 Summary of overall grades by region



Source: Americans for a Clean Energy Grid, 2025 Transmission Planning and Development Report Card, February 2026

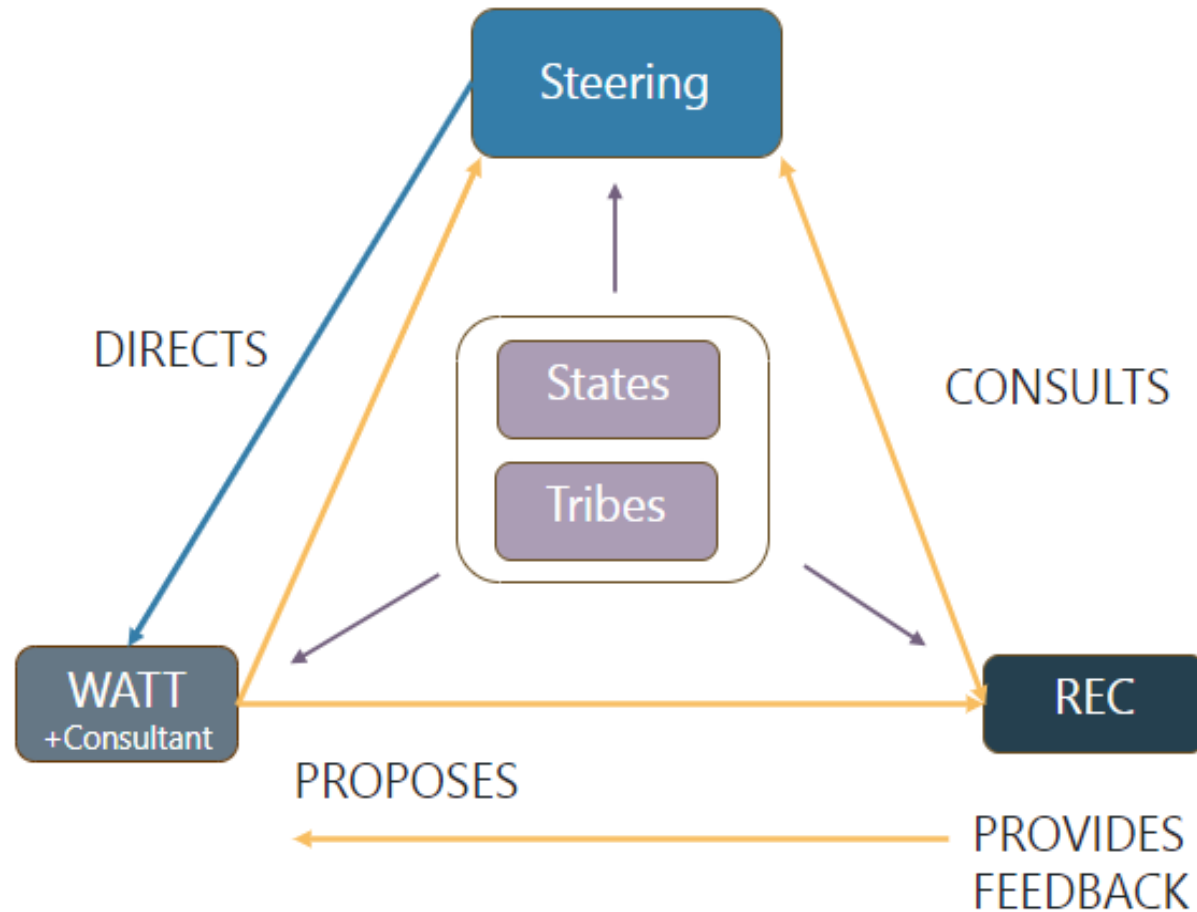
WestTEC Project Timeline & Future



WestTEC Regional Partners – Over 70+

Western Interstate Energy Board	Washington Department of Commerce	Northwest Requirements Utilities	California ISO
GridWorks	Interwest Energy Alliance	PNGC	Southwest Power Pool
Western Electricity Coordinating Council	Invenergy	Western Resource Advocates	Avista
Connected Grid Initiative	Idaho Power Company	Clean Energy Transition Institute	Xcel Energy
Wyoming Office of Consumer Advocate	NorthWestern Energy	NW Energy Coalition	Powerex
Public Advocates Office at the California Public Utilities Commission	NV Energy	From the Light Consulting	BC Hydro
Bonneville Power Administration	Salt River Project	Navajo Transitional Energy Company	GridLiance
Grid United	Arizona Public Service	Warm Springs Power & Water Enterprises	Pacific Northwest Utilities Conference Committee
Clean Energy Buyers Association	Public Service Company of New Mexico	Avangrid Renewables	Pattern Energy
Amazon Energy	Western Area Power Administration	EDF Renewables	Cascade Renewable Transmission
PacifiCorp	WestConnect	Aypa Power	Chelan County PUD
Puget Sound Energy	NRDC	Grid Strategies	Pacific Northwest National Laboratory
Portland General Electric	Northwest & Intermountain Power Producers Coalition	PG&E	Northwest Power and Conservation Council
Renewable Northwest	Public Power Council	Southern California Edison	Whatcom County PUD
Snohomish PUD	Colorado River Energy Distributors Association	Seattle City Light	Savion
Tucson EPC	LS Power	Black Hills Energy	Belval Connections
Grant County PUD	Tacoma Power	LADWP	<i>E3</i>
<i>Western Power Pool</i>	New Mexico RETA	GridLab	<i>Energy Strategies</i>
<i>GDS Consulting</i>		The Public Generating Pool	

Committees, States, & Tribal Engagement



Study Execution Update

Keegan Moyer, Energy Strategies

20-year Horizon: What is different?

- » 20-year horizon assessment will detail long-term interregional transmission needs for the West
- » This assessment:
 - » Explores **long-term planning scenarios** – a solution to address the significant amount of uncertainty facing planners
 - » Enhance understanding of how transmission needs change in response to planning unknowns
 - » Allows for continued evaluation and right-sizing of 10-year horizon upgrades
 - » Identify long-lead transmission that is **least regrets**
 - » Forecasts benefits of key transmission

Timeline for 20-Year Study

Case	Task	Q1 2026	Q2 2026	Q3 2026	Q4 2026	Q1 2027
Reference	Case & Methodology Development	✓				
	Transmission Assessments/ Solutioning					
	Benefits/Extreme Event Assessments					
Scenarios (Flux & Core)	Busbar Mapping	✓				
	Case & Methodology Development	✓	✓			
	Transmission Assessments/ Solutioning					
	Benefits/Extreme Event Assessments					
20-Year Report	Portfolio Synthesis					
	Report Editing & Review					
	Stakeholder Engagement					



Progress This Year

- » Finalized 20-Year Reference Case Production Cost Model (PCM)
- » Completed Screening #1 for System Reliability Assessment models
- » Finalized Busbar Mapping & Developed Preliminary PCM models for Flux and Core scenarios
- » Created Sub-Group to Provide Guidance on Benefits Assessment
- » Committee-guided refinements to 20-year Reference Transmission Portfolio

Task	Description	Reference	Flux	Core
1	Develop Transfer Constraints	Complete	Complete	Complete
2	Develop Resource Plan	Complete	Complete	Complete
3	Busbar Mapping	Complete	Complete	Complete
4	Hypothesis Map Development	Complete	Under construction	Under construction
5	Powerflow Assessment	Under construction	Not started	Not started
6	Transmission Portfolio Refinement & Iteration	Under construction	Not started	Not started
7	Congestion Assessment	Draft/review	Under construction	Under construction
8	Transmission Solutioning	Under construction	Not started	Not started
9	Value Proposition	Under construction	Under construction	Under construction
10	Synthesis of Transmission Portfolios	Not started	Not started	Not started

Technical challenges in 20-year planning

» **Drastic changes in grid operations**

- » New power flows change how we must think about transmission needs
- » Transmission, generation, and operations are tightly coupled

» **Evolving study methods**

- » Planning models and constraints built for today's grid may not hold under future system conditions

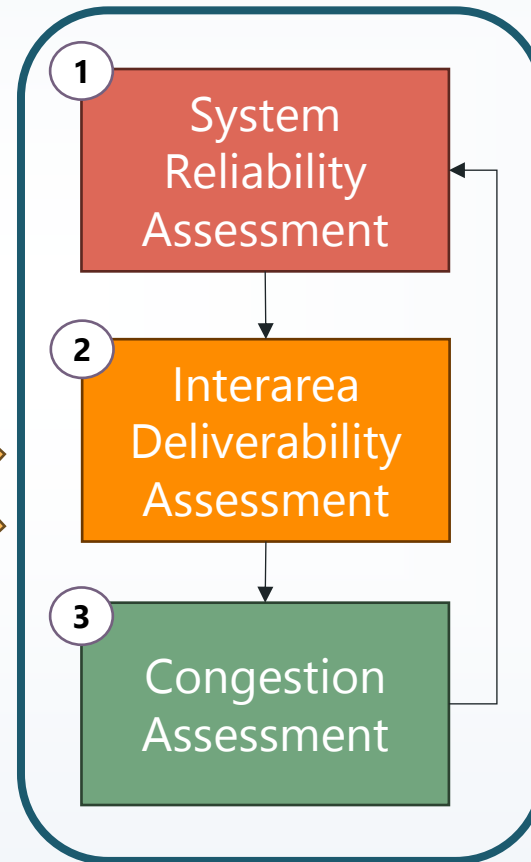
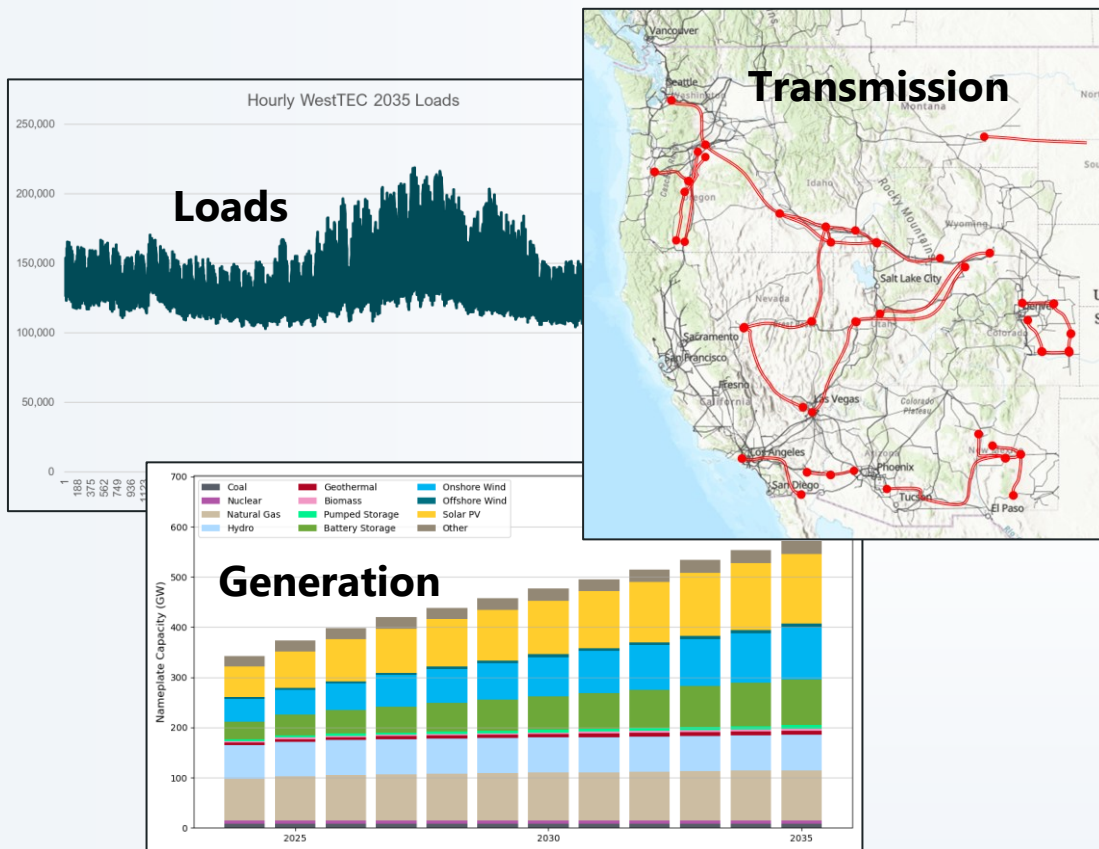
» **Benefits relative to what?**

- » In many cases, limiting transmission yields infeasible or extreme-cost outcomes rather than credible alternatives.

20-Year Horizon: Study Update

WestTEC Study Framework

Regionally consistent forecasts of....

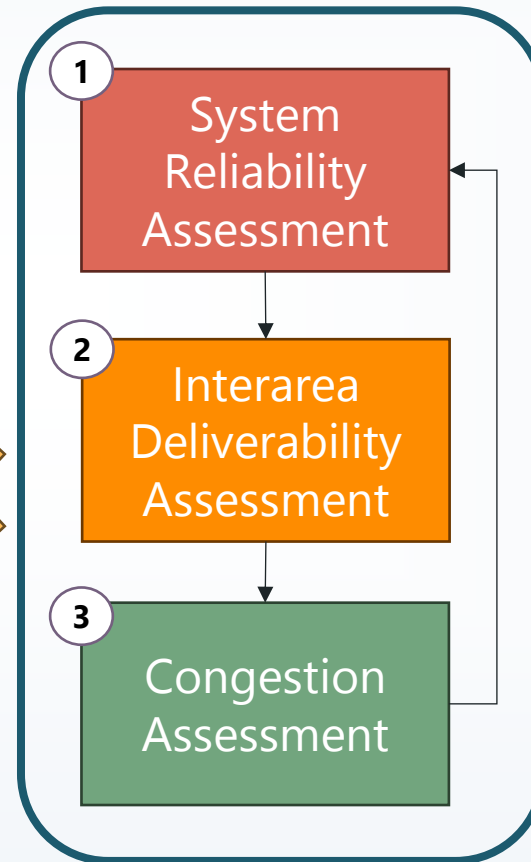
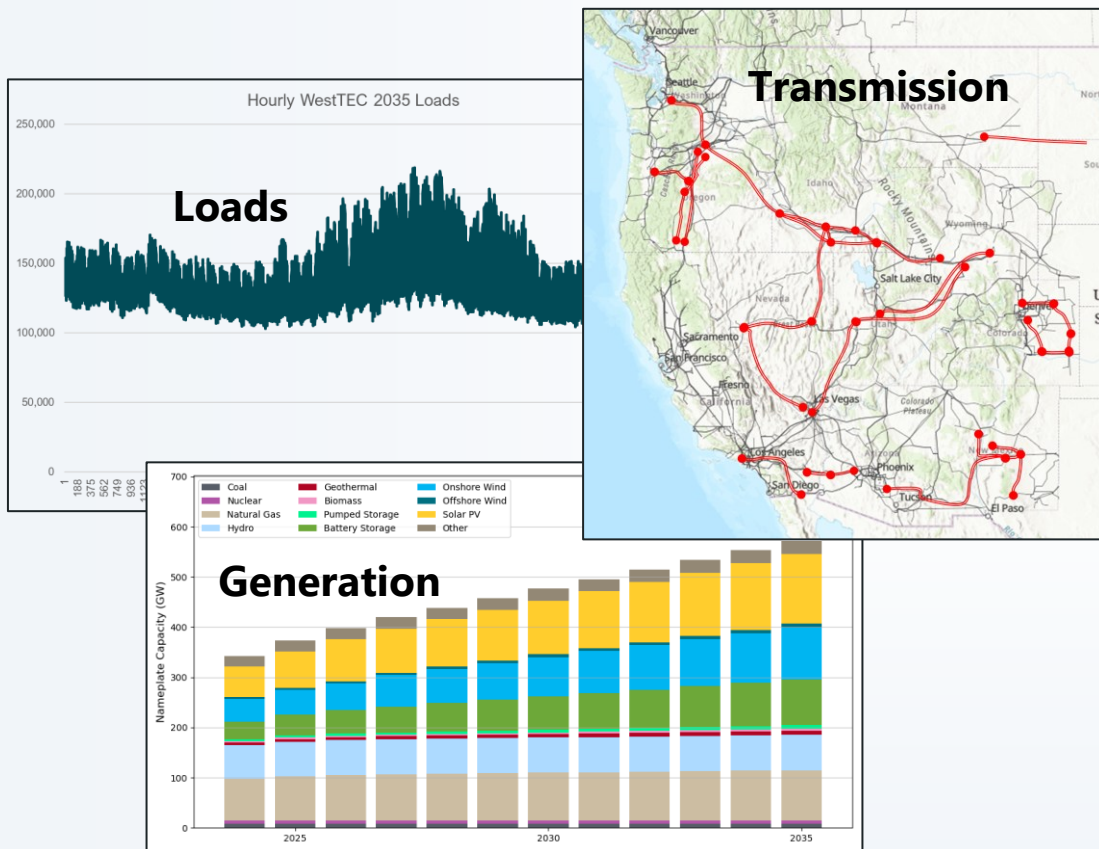


 **WestTEC transmission portfolio**

Three Transmission Needs Assessment Methods

WestTEC Study Framework

Regionally consistent forecasts of....



Which transmission investments are necessary to maintain reliability during typical heavy loading conditions?

Which investments deliver power from where it is produced to where it is consumed during times of critical need?

WestTEC transmission portfolio

Which investments enable load to be served with lower-cost generation?

Three Transmission Needs Assessment Methods

WestTEC 20-Year Scenarios

	Reference	Flux	Core
Narrative	A baseline scenario reflecting reasonably anticipated trends in load growth, technology, and policy	A high-growth scenario reflecting rapid changes in power demand and technology innovation	A moderate-growth scenario with select technology breakthroughs
Load Growth (2025-2045)	2.2% per year (56% increase)	3% per year (80% increase)	2% per year (48% increase)
Technology Costs	Moderate innovation trajectory	Advanced innovation trajectory	Conservative innovation trajectory* (No Tax Credits) *Breakthroughs in Storage, Advanced Geothermal, Nuclear SMRs, and CCS
GHG Policies	Statutory	Statutory & voluntary	Statutory with 5-year compliance delay

Model Status

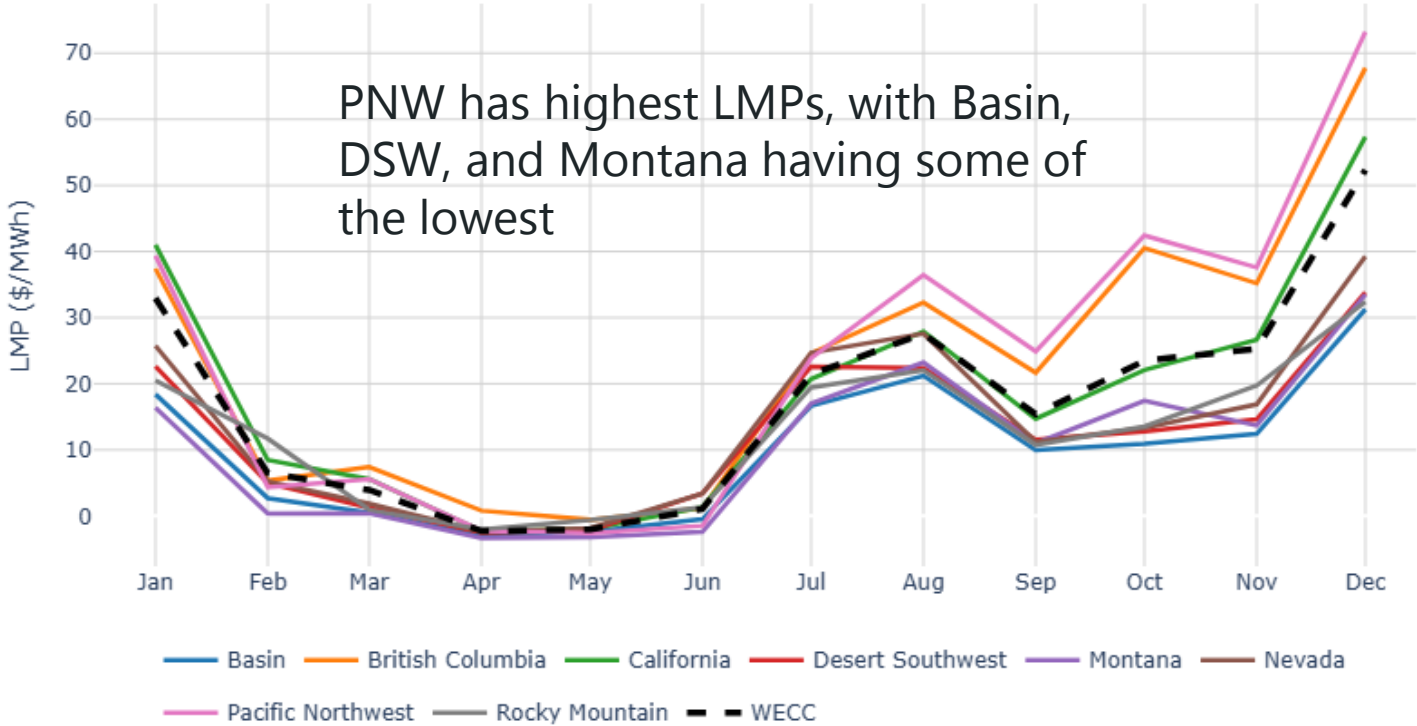
Assessment	Model	Reference	Flux	Core
Congestion	SCED	Complete	Draft/review	Draft/review
SRA	Heavy Summer	Draft/review	Not started	Not started
SRA	Heavy Winter	Draft/review	Not started	Not started
SRA	High Wind	Under construction	Not started	Not started
SRA	High Solar	Under construction	Not started	Not started
IDA	TBD #1	Under construction	Not started	Not started
IDA	TBD #2	Under construction	Not started	Not started
IDA	TBD #3	Under construction	Not started	Not started
IDA	TBD #4	Under construction	Not started	Not started
IDA	TBD #5	Under construction	Not started	Not started

Not started
Under construction
Draft/review
Complete

System-wide Perspective

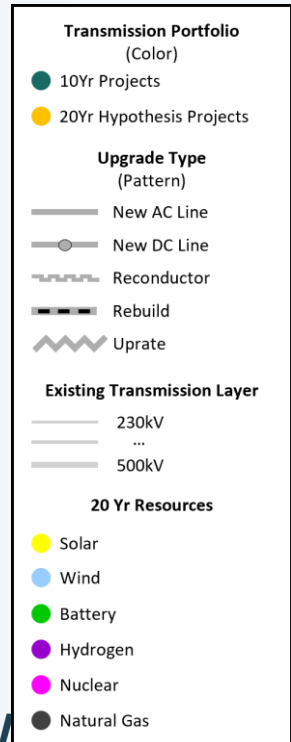
While intraregional issues may occur year-around, interregional transmission limitations are most common in winter

WestTEC 2045 Load-Weighted LMP by Zone



Summary of Broad System Needs

Draft and Conceptual

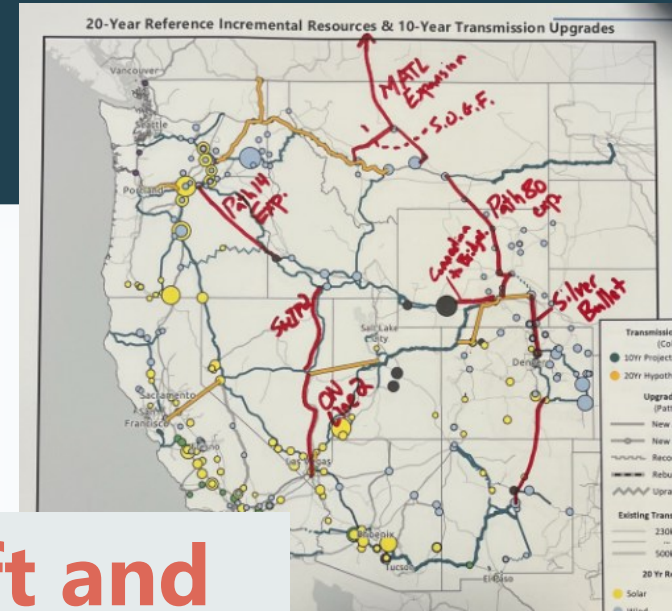
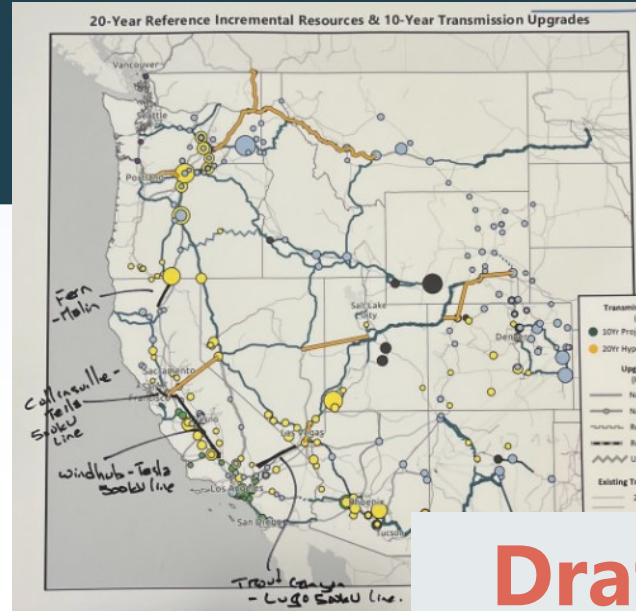


Key interregional limitations

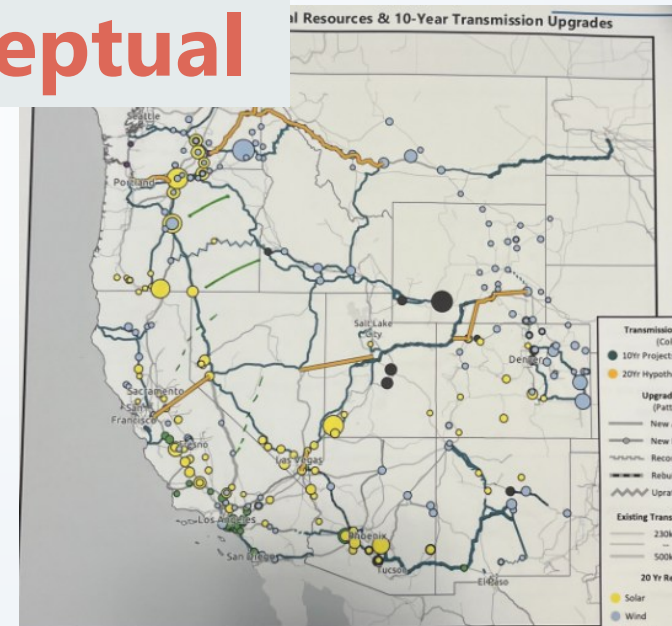
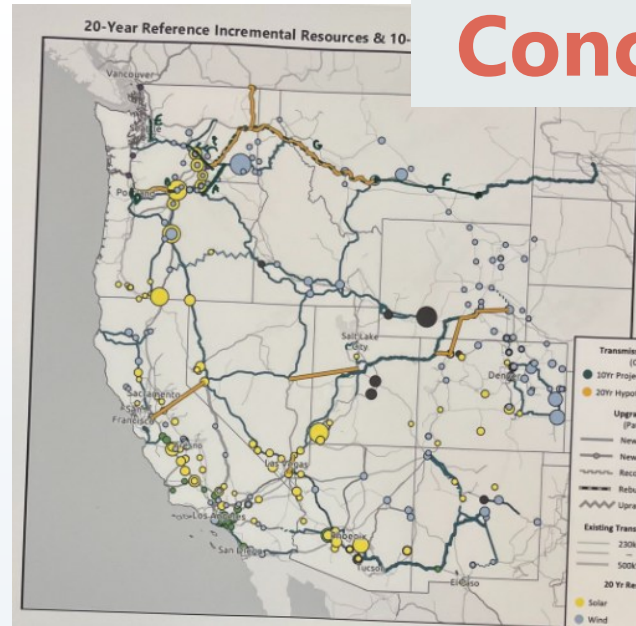
Intraregional issues have been screened out of these results, focusing initially on major interregional transmission needs *in addition* to current hypothesis map

Committee-Led Concepts

- » Interactive dashboards developed for WestTEC Committee members that enable review & comparison of:
 - » System operations
 - » Marginal prices
 - » Regional imports and exports
 - » Interregional flow patterns
- » These results drove a 45-minute breakout session at the April All-Committees meetings in which committee member groups identified “hypothesis” projects



Draft and Conceptual



Benefits Assessment

- » Quantifying transmission benefits is a key part of making the 20-Year study “actionable”
 - » Intended to support discussions regarding development opportunities
 - » Not intended to be sufficient for cost allocation or the equitable distribution of benefits
- » Study plan did not prescribe specific quantification methodologies

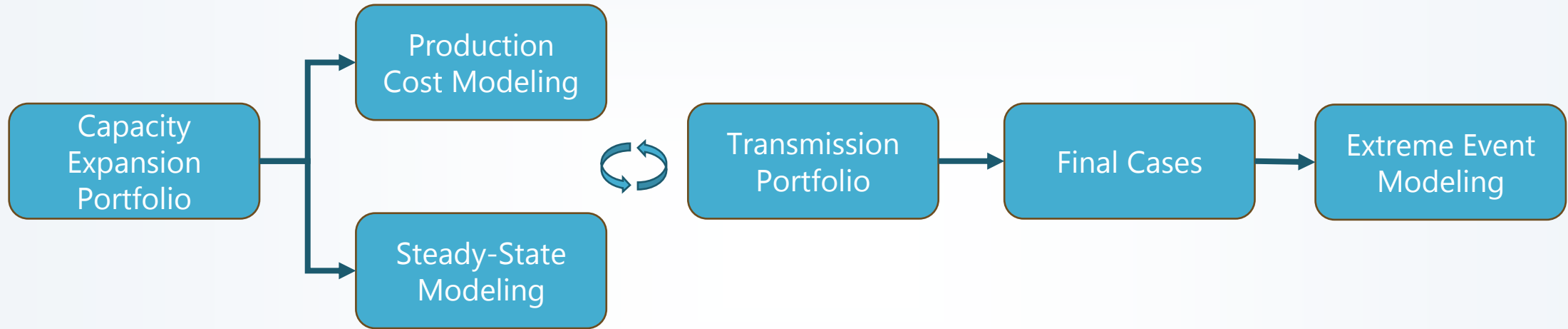
Benefits Outlined in WestTEC Study Plan

Benefit	Description (Similar to WestTEC Study Plan)
Operational & Congestion Efficiencies	Change in annual adjusted production cost (APC), capturing reductions in short-run generation production costs to serve load due to reduced congestion and/or curtailment (including reduced transmission energy losses; can be enhanced to reflect outage-related impacts if modeled).
Improved Resource Adequacy (reduced loss of load probability)	Load diversity savings from greater inter-area transfer capability, enabling balancing areas to share resources that could otherwise be constrained and potentially avoid construction of capacity resources.
Capacity Savings from Reduced Peak Energy Losses	Savings in capacity costs from reduced peak energy losses, lowering the total generation capacity required to meet peak demand.
Extreme Event Mitigation (resilience benefits)	Change in cost of unserved load and/or production under tail-event stressed conditions (high loads, generation unavailability, transmission outages, weather and other factors); valued using VOLL for avoided load curtailments.
Increased Resource Access	Savings from accessing higher-value resources due to transmission expansion; estimated via counterfactual scenarios and reflected as reductions in capital costs of the resource portfolio.
Avoided Emissions	GHG emission reductions due to transmission expansion and enabled resources, quantified using carbon cost and discount rate analysis.
Avoided or Deferred Reliability Upgrades	Avoided cost of reliability upgrades that would otherwise be needed; identified via powerflow results comparing facility loading (near/over thermal limits) with and without the transmission portfolio and estimating upgrade/replacement costs.

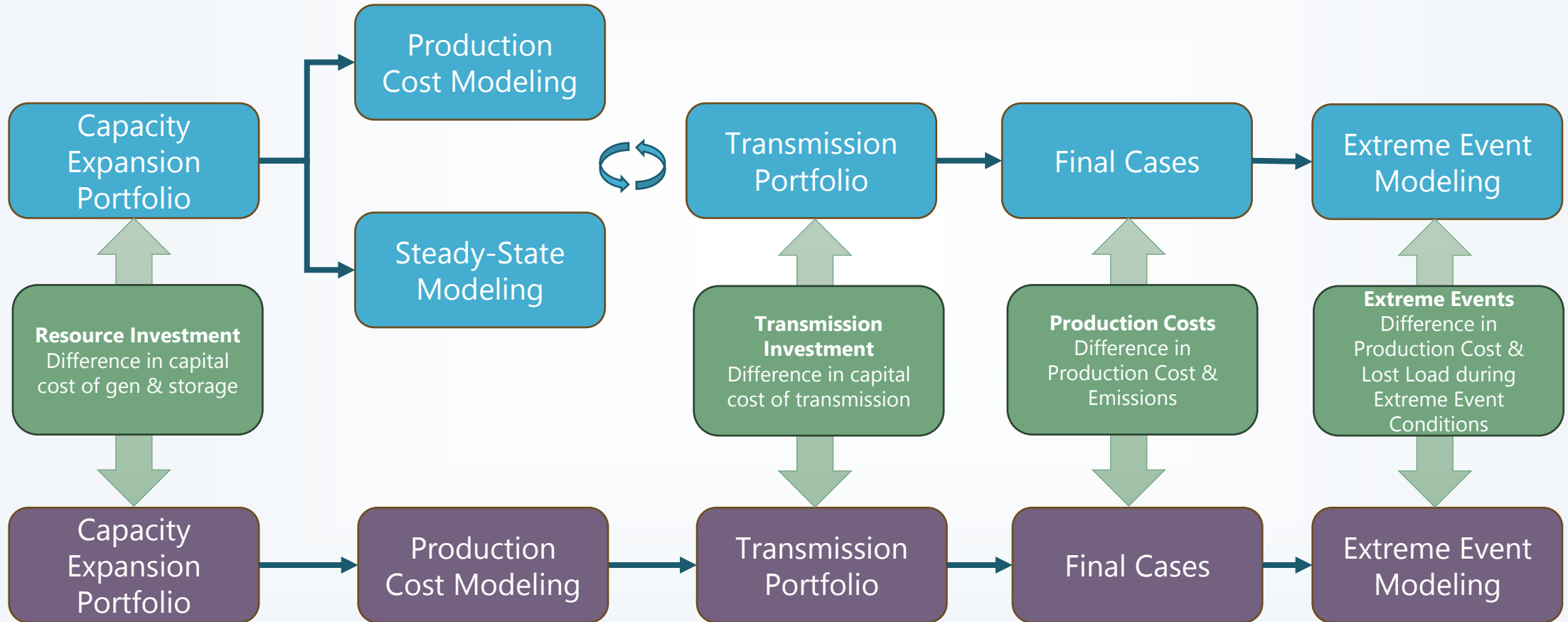
Benefits Assessment Update

- » Consultants have been working with WATT, REC, and the newly formed sub-group to develop and refine the approach
 - » Benefits will be assessed for a portfolio of persistent interregional transmission projects, including some projects from the 10-year
 - » A counterfactual model will identify the resources and intra-regional transmission portfolio required to meet the systems needs under “anticipated trends”
 - » Same load growth, technology cost assumptions, fuel prices, and policy constraints as the reference case
 - » Portfolio-wide benefits will be quantified by comparing capital and operational costs between the Reference and Counterfactual models

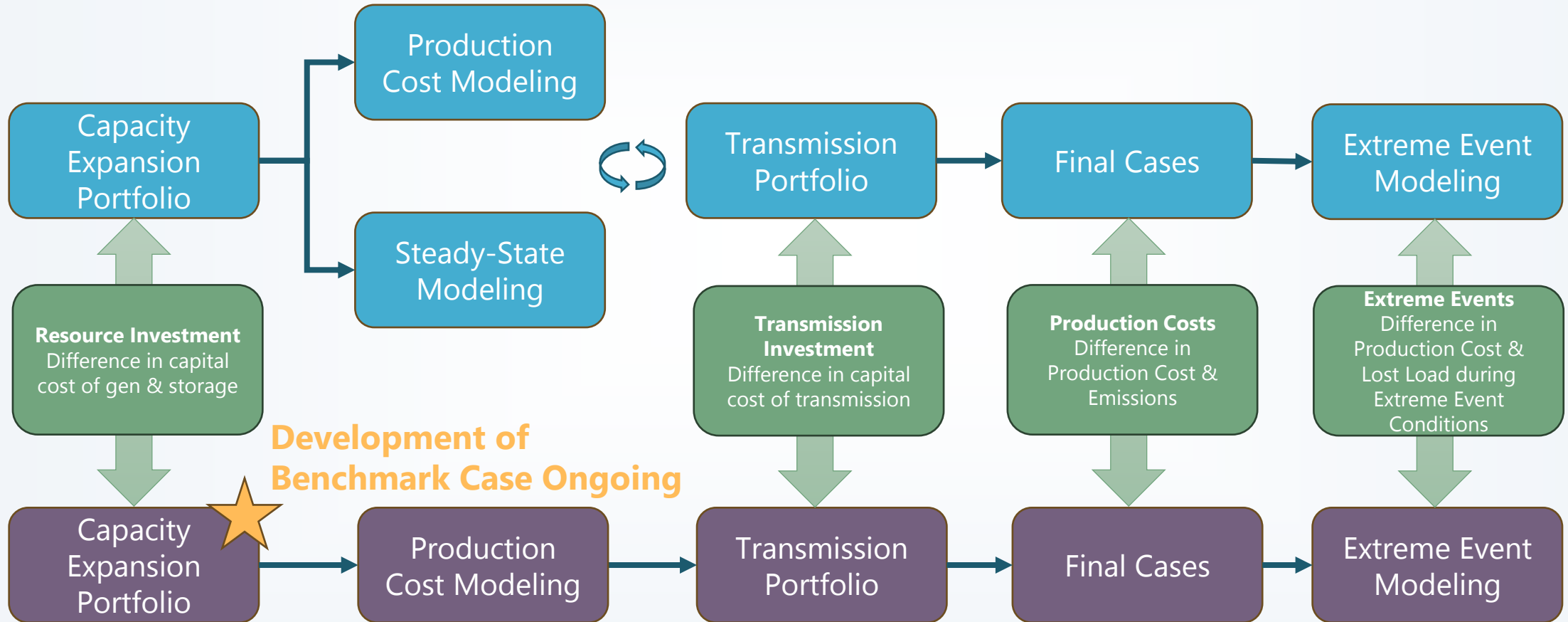
Benefits Types & Calculation Methods



Benefits Types & Calculation Methods



Benefits Types & Calculation Methods



Counterfactual Case Setup

- » E3 is performing capacity expansion modeling for the WestTEC 20-year Counterfactual.
- » Same as Reference scenario model, except:
 - » No inter-regional transmission expansion allowed across the study area
 - » Modifications to planned transmission builds
 - » Modifications to CAISO TPP out-of-state resource minimum-build requirements
 - » Reduction in PRM footprints to represent resource adequacy needs being met locally
 - » Transfers between zones capped at 2045 reference case levels

	Reference	Counterfactual
Narrative	A baseline scenario reflecting reasonably anticipated trends in load growth, technology, and policy	A baseline reflecting anticipated trends, without most inter-regional transmission expansion
Load Growth (2025-2045)	2.2% per year	Same as Reference
Technology Costs	Moderate innovation trajectory	
GHG Policies	Statutory	

Preliminary Observations from Counterfactual Modeling

- » Model must meet capacity needs, especially in the PNW, with a different resource mix.
 - » Model identifies combination of offshore wind, geothermal, solar, and storage resources to meet RA needs while still complying with state policies
- » If hydrogen enabled, model selects primarily hydrogen (a clean dispatchable) resource to meet these needs
- » Consultants are running additional tests to better understand model behavior and will be presenting an update to WATT and the benefits subgroup

Benefits Subgroup Update

Benefits Assessment Background

- » The 20-year report will include an assessment of benefits which was not part of the 10-year analysis
- » Because this is new for the 20-year report, a subgroup of WATT and REC members was created to provide additional input on the value assessment.
- » The scope of this assessment was determined prior to the 1920 policy from the Federal Energy Regulatory Commission (FERC) guiding regulated transmission planning and related cost allocation
- » The West has some unique considerations that were some of the original drivers of the WestTEC project, these also impact how benefits are considered

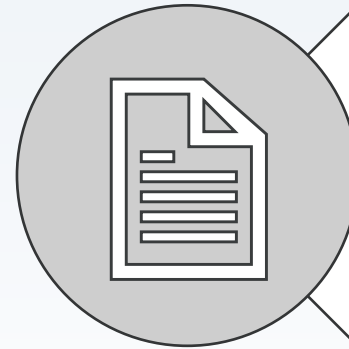
Key Topics for the Subgroup

- » Gain awareness of industry approaches for assessing transmission benefits
- » Review counterfactual approach and provide input
- » Document key global assumptions, methodology, and tradeoffs
- » Check for alignment with established scope and objectives
- » Categorize benefits and where they are captured to avoid double counting, document what could and couldn't be quantified
- » Provide input to final report and documentation to support transparency and actionability of the plan and any future iterations

Discussion/Q&A

Admin-WTEC@westernpowerpool.org

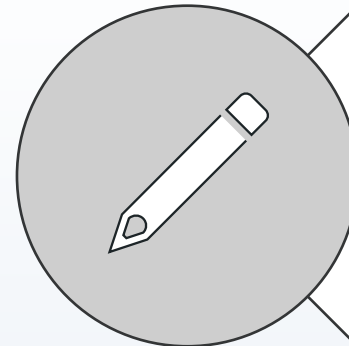
Action Items & Next Steps



Finalize Transmission Portfolio development for Reference Case



Begin Transmission Portfolio Development for Scenarios



Refine Benefit & Extreme Event Assessment Methods

Wrap-Up

- » This webinar has been recorded and will be posted along with this presentation to the WestTEC website in the coming days at [WPP](#)
- » Look for the next Public Webinar to be scheduled in Q3 2026
- » Thank you for your support and participation!