



WestConnect Regional Transmission Planning Stakeholder Meeting

November 19, 2020
Webinar

*Non-Public Information has been Redacted
(Contact admin@westconnect.com to request non-redacted version)*



Welcome & Introductions

Heidi Pacini, WestConnect Project Manager

Agenda for Today

- WestConnect Regional Planning Status
- 2020-2021 Regional Planning Cycle Update
 - Review Regional Study Plan
 - Model Development Status
 - Draft Regional Assessment Results
 - 2021 Planning Activities
- Stakeholder Comments
- Subregional Planning Group (SPG) Reports
- Interregional Planning Updates
 - Interregional Transmission Project Submittals
- Stakeholder Comments
- Upcoming Meetings

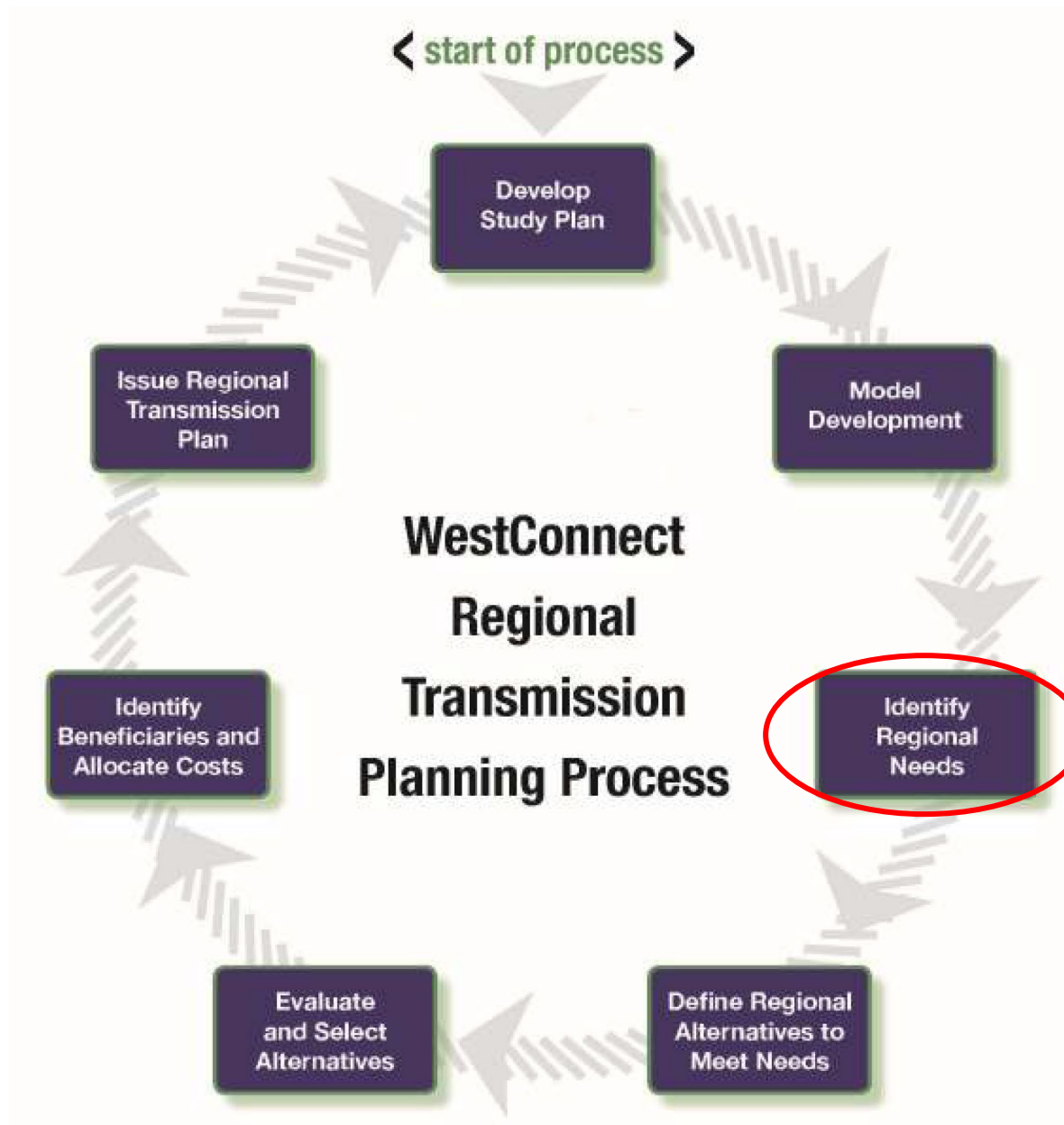


WestConnect Regional Planning Status

Heidi Pacini, WestConnect Project Manager

Regulatory Update

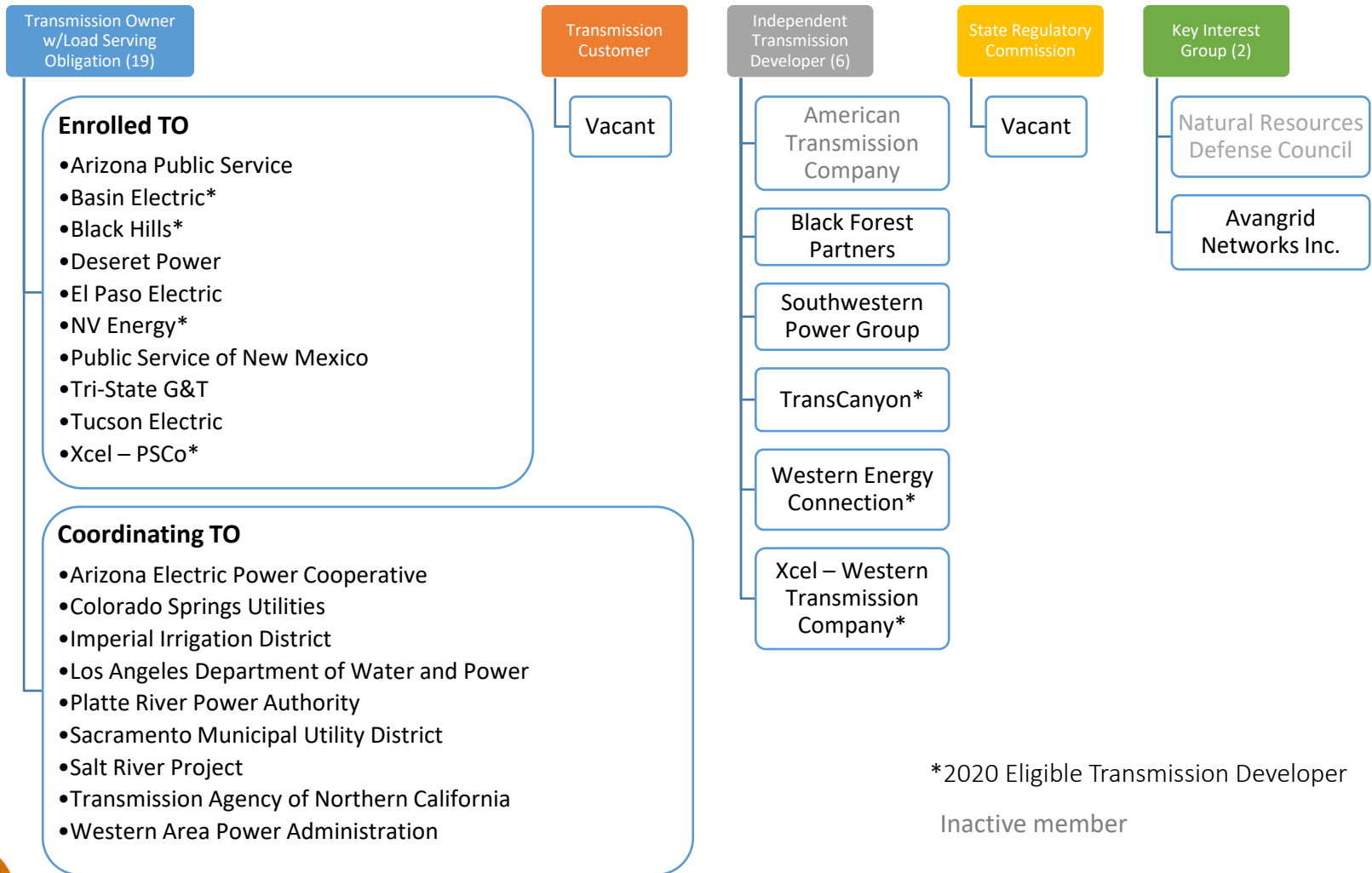
- On August 8, 2016 the 5th Circuit Court of Appeals vacated FERC's compliance orders related to mandates regarding the role of the non-jurisdictional utilities in cost allocation
- On November 16, 2017 FERC upheld its previous compliance orders
- FERC's action is back in front of the 5th Circuit
- An agreement in principle between jurisdictional and non-jurisdictional members has been reached to facilitate changes to the cost allocation provisions for the non-jurisdictional TO members. The entities are now in the process of finalizing the documentation to submit to FERC.



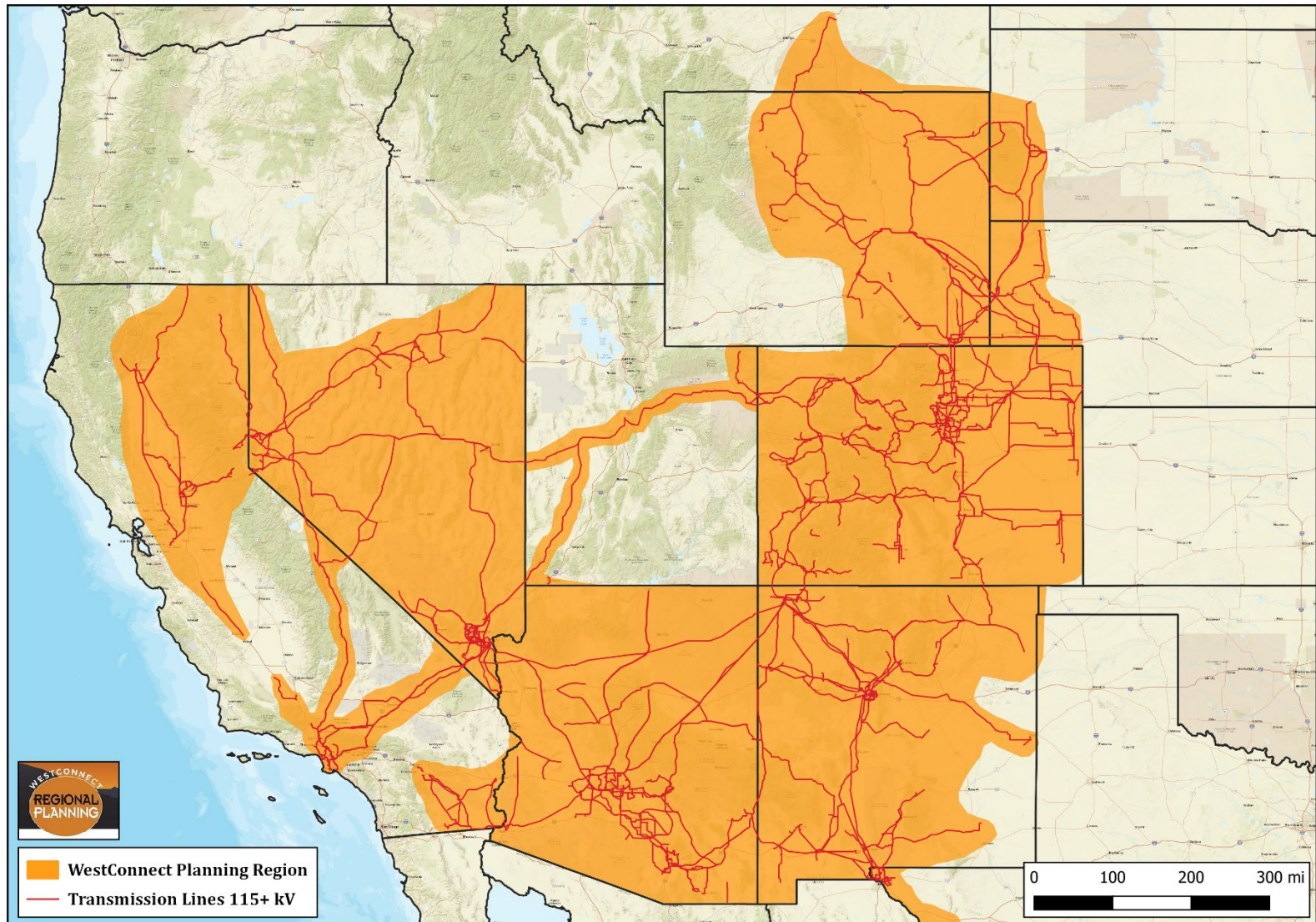
PMC Organization and Activities

- Chaired by Roy Gearhart (WAPA)
 - Vice Chair: Todd Lichtas, TEP
- Comprised of 27 members :
- 19 Transmission Owner with Load Service Obligation (TOLSO) Members
- 6 Independent Transmission Developer Members
- 2 Key Interest Group Member
- Transmission Customer and State Regulatory Commission sectors are vacant

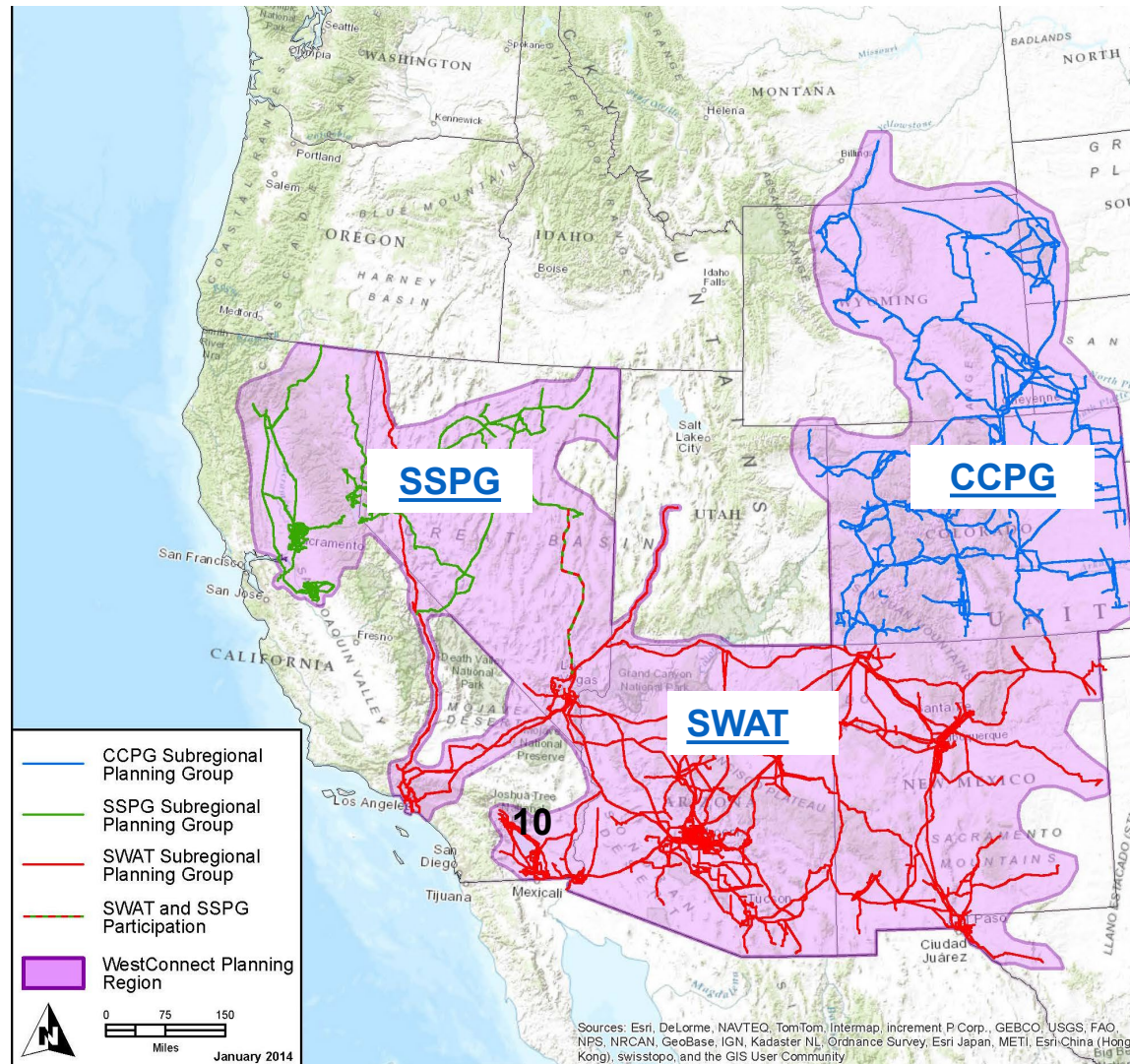
PMC Membership as of 11/1/2020



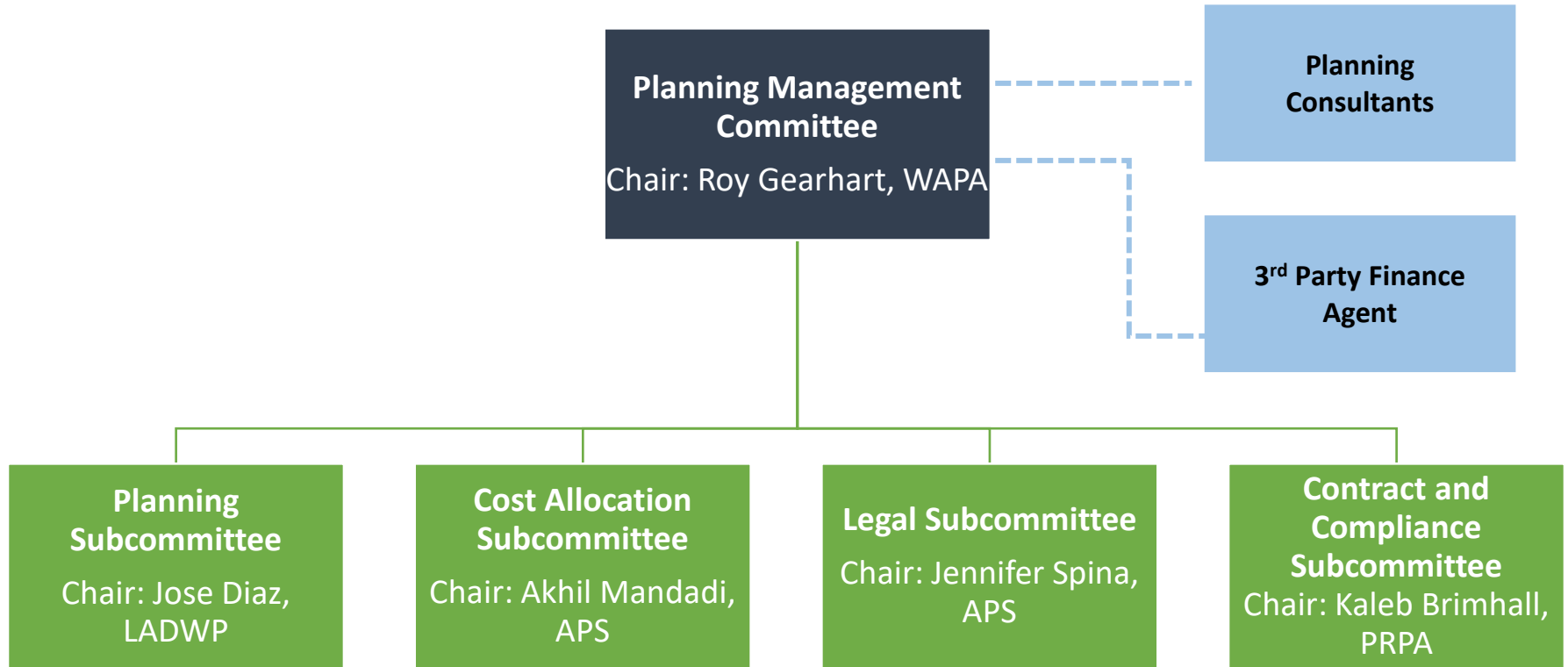
WestConnect Planning Region



Subregional Planning Groups



PMC Organization



PMC Activities

- Monthly in-person meetings held at rotating member facilities
- Meetings are posted to the [WestConnect Calendar](#)
- Manages the Regional Transmission Planning Process
- Currently reviewing the Planning Subcommittee's recommendations regarding regional transmission needs for the 2020-21 planning cycle

Stakeholder Input & Opportunities

- WestConnect holds at least two stakeholder meetings each year
- PMC & Subcommittee meetings are open with opportunity for stakeholder input
- Annual Interregional Coordination Meeting scheduled for the end of February, 2021
- Future WestConnect Stakeholder Meetings at key points of planning cycle – for example:
 - Project submittal window
 - Selection of Projects to meet Regional Needs
 - Draft Regional Transmission Plan Report
 - All as determined by the PMC



2020-21 Regional Planning Cycle Update

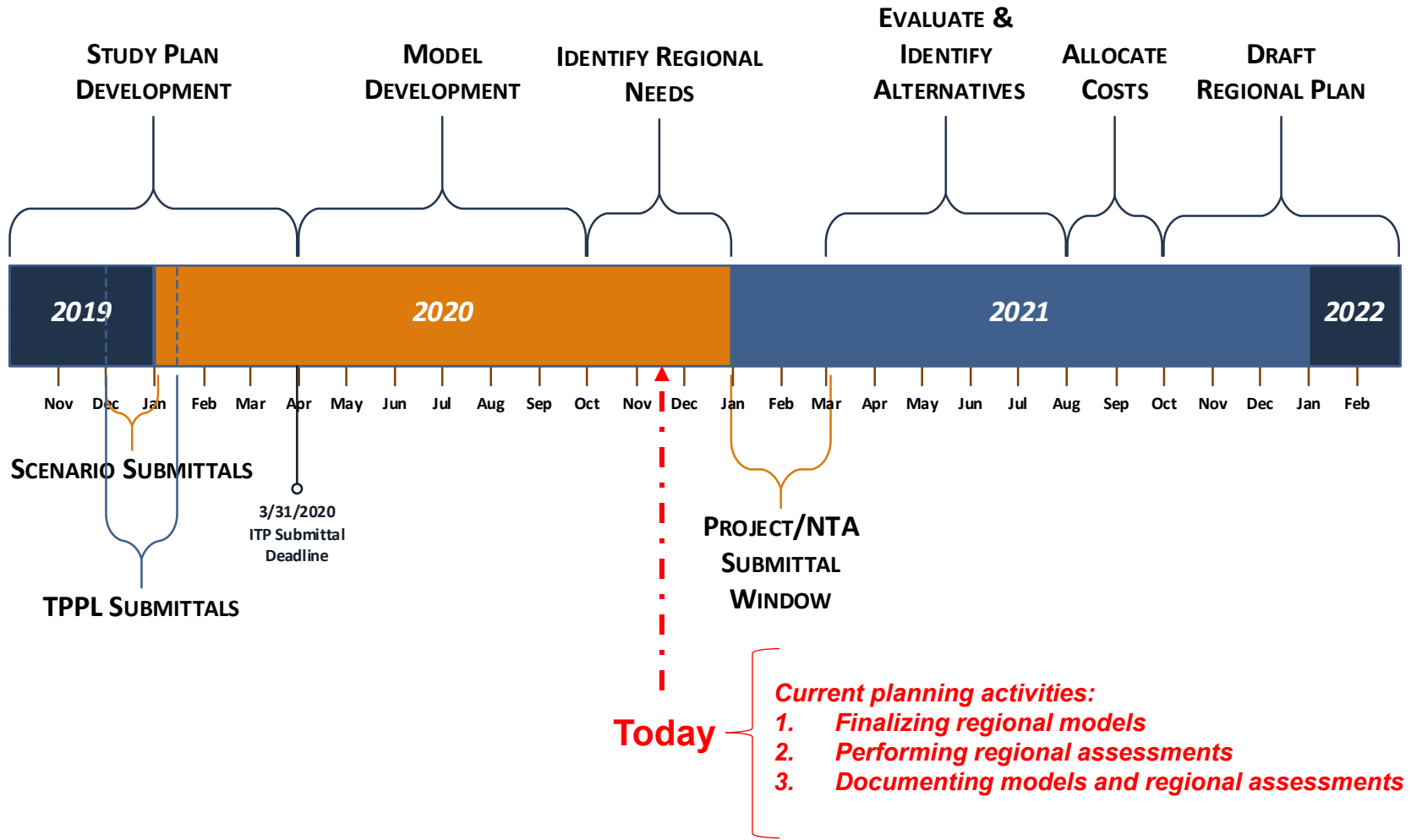
Ben Brownlee, WestConnect Planning Consultant,
Energy Strategies

Jose Diaz, Planning Subcommittee Chair, LADWP

Overview

- Review of 2020-21 Study Plan
 - *Document was in draft form at the last Stakeholder meeting*
- Update on development of models used to perform Regional Assessment
 - *On-going planning activity*
- Draft results of Regional Assessment
 - *On-going planning activity*
- Next steps and schedule for remainder of planning cycle, including 2021
- Opportunities for stakeholder engagement

2020-21 Process Timeline





2020-21 REGIONAL STUDY PLAN

2020-21 Study Plan Review

- Study Plan identifies the scope and schedule of the study work to be performed during the planning cycle
- [2020-21 Study Plan](#) was approved by PMC on **March 18, 2020**
 - Numerous iterations and public drafts made available to stakeholders for comment
 - Final version is available on WestConnect website
- Study Plan identifies reliability and economic Base Cases (which inform the Regional Assessment), the Base Transmission Plan, and the scope of the Regional Assessments
 - It also identifies two scenario studies that will take place – these studies are information-only and do not result in the identification of regional needs
- The Study Plan also defines Regional Needs and explains the difference between local and regional transmission issues, and explains why regional issues are the focus of the Order 1000 planning process

Base Transmission Plan

- Base Transmission Plan is the transmission network topology that is reflected in the regional planning models.
 - Base Transmission Plan = **Planned TO Projects** + **High probability ITD Projects**
- Inclusion is based on project information gathered in WestConnect's Transmission Plan Project List for the 2020-21 cycle - this was collected in early 2020 and updated during Model Development process
- The Model Development Report will provide details about what the 2020-21 Base Transmission Plan represents

Project Type	Number of Projects
Substation	66
Transmission Line	74
Transmission Line and Substation	29
Transformer	24
Other	19
Total Projects	212

Base Transmission Plan: TO Breakdown

TOLSO	Below 230 kV	230 kV	345 kV	500 kV	TBD	Total
Arizona Electric Power Cooperative	2	1	-	-	-	3
Arizona Public Service	-	7	-	-	-	7
Black Hills Energy	8	-	-	-	-	8
Black Hills Power	-	5	-	-	-	5
Cheyenne Light Fuel and Power	4	-	-	-	-	4
El Paso Electric Company	24	-	3	-	-	27
Imperial Irrigation District	1	1	-	-	-	2
Los Angeles Department of Water and Power	1	16	-	5	1	23
NV Energy	11	6	4	-	-	21
Platte River Power Authority	-	2	-	-	-	2
Public Service Company of Colorado/ Xcel Energy	4	3	1	-	-	8
Public Service Company of New Mexico	1	-	2	-	-	3
Sacramento Municipal Utility District	-	2	-	-	-	2
Salt River Project	2	1	-	1	-	4
Tri-State Generation and Transmission Association	16	7	2	-	-	25
Tucson Electric Power	46	2	7	1	-	56
Western Area Power Administration - DSW	5	-	-	-	-	5
Western Area Power Administration - RMR	4	3	-	-	-	7
Western Area Power Administration - SNR	-	-	-	-	-	
Total Projects	129	56	19	7	1	212

Base Transmission Plan: Changes from Last Cycle

Projects placed in-service between the 2018-19 & 2020-21 Cycle

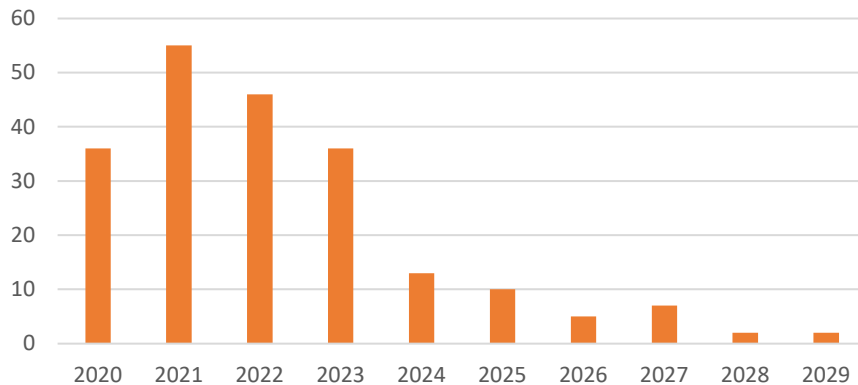
Project Type	Number of Projects
Substation	10
Transmission Line	16
Transmission Line and Substation	3
Transformer	3
Other	3
Total Projects	35

Projects starting construction between the 2018-19 & 2020-21 Cycle

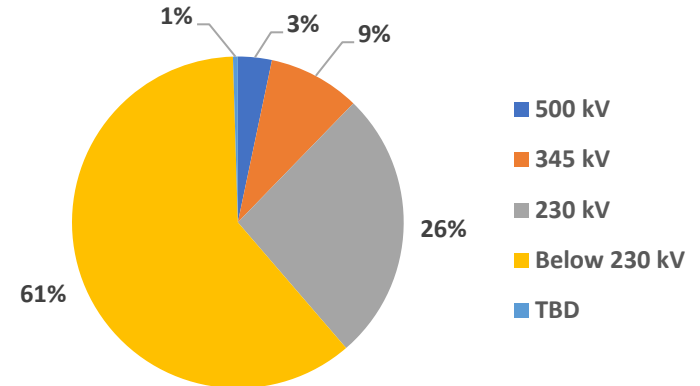
Project Type	Number of Projects
Substation	5
Transmission Line	5
Transmission Line and Substation	2
Transformer	1
Other	1
Total Projects	14

Base Transmission Plan: Timing of Projects

Planned Projects sorted by In-Service Year
(Number of Projects)



2020-21 Regional Base Transmission Plan Projects by
Voltage, based on the TPPL data

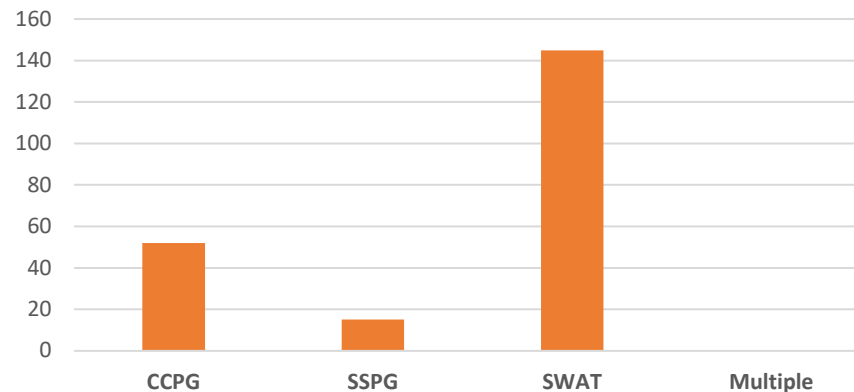


Base Transmission Plan: Geography and Drivers

State	Number of Projects
Arizona	74
California	27
Colorado	38
Nevada	20
New Mexico	18
South Dakota	4
Texas	15
Wyoming	9
Multiple	7
Total Projects	212

Driver	Number of Projects
Reliability	183
Economic	4
Public Policy	6
Reliability/Economic	7
Reliability/Public Policy	10
Economic/Reliability	0
Economic/Public Policy	0
Public Policy/Reliability	2
Public Policy/Economic	0
Total Projects	212

Planned Projects sorted by Subregional Planning Group
(Number of Projects)



Base Cases defined in Study Plan are being used to perform Regional Needs Assessment

Reliability Base Cases

WestConnect Base Case Name	Case Description	WECC Seed Case
2030 Heavy Summer	Summer peak load conditions during 1500 to 1700 MDT, with typical flows throughout the Western Interconnection.	WECC 2030 Heavy Summer 1 ADS Planning Base Case (30HS1)
2030 Light Spring	Light load conditions during 1000 to 1400 MDT in spring months of March, April, and May with solar and wind serving a significant but realistic portion of the Western Interconnection total load. Case includes renewable resource <i>capacity</i> consistent with any applicable and enacted public policy requirements.	WECC 2030 Light Spring 1-S Base Case (30LSP1S)

Economic Base Cases

WestConnect Base Case Name	Case Description	WECC Seed Case
2030 Base Case	Business-as-usual, expected-future case with median load and hydro conditions and representation of resources consistent with enacted public policies.	WECC 2030 Heavy Summer 1 ADS Planning Base Case (30HS1) and WestConnect 2028 PCM from 2018-19 planning cycle*

*Several WECC Anchor Dataset (ADS) PCM's may be used, based on PS direction, including the 2028 ADS PCM Phase 1 V2.2 posted 2/28/19, the 2028 ADS PCM Phase 2 V2.0 posted 6/19/19, and the 2030 ADS PCM which may be available in mid-2020.

Public Policy Requirements in Study Plan

- TO members represent enacted public policies in base models.
- If a Regional Need is identified, and is determined to be caused by public policy implementation, then the need is defined as a Public Policy-driven Regional Transmission Need.

Enacted Public Policy Requirements in Study Plan (revised further during Model Development)

Enacted Public Policy	Description
Arizona Renewable Energy Standard	Requires IOUs and retail suppliers to supply 15% of electricity from renewable resources by 2025), with a minimum of 30% of the renewable resources provided by distributed generation
California SB100	Requires IOUs and municipal utilities to meet a 60% renewable portfolio standard (“RPS”) by 2030
California SB350	Requires IOUs and municipal utilities to meet a 50% RPS by 2030 and also requires the establishment of annual targets for energy efficiency savings
California AB398/SB32	Requires the California State Air Resources Board to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to ensure that statewide greenhouse gas emissions are reduced to at least 40% below the 1990 level by 2030.
Colorado SB 07-100	Requires IOUs to identify Energy Resource Zones, plan transmission to alleviate constraints from those zones, and pursue projects according to the timing of resource development in those zones
Colorado HB10-1001	Established Colorado Renewable Energy Standard (RES) to 30% by 2020 for IOUs (Xcel & Black Hills)
Colorado SB13-252	Requires cooperative utilities to generate 20% of their electricity from renewables by 2020
Colorado HB10-1365	Requires rate regulated utilities in CO with coal-fired generation to reduce emissions on the smaller of 900 MW of generation of 50% of a company’s coal generation fleet. Full implementation to be achieved by 12/31/2017.
Colorado SB 18-009 (“Energy Storage Rights Bill”)	Protects the rights of Colorado electricity consumers to install, interconnect, and use energy storage systems on their property without the burden of unnecessary restrictions or regulations and without unfair or discriminatory rates or fees.
Colorado HB 19-1261 and SB 1261 (“GHG Reduction Bills”)	HB 19-1261 requires the Air Quality Control Commission (“AQCC”) to promulgate rules and regulations for statewide greenhouse gas (“GHG”) pollution abatement. Section 1 of SB 1261 states that Colorado shall have statewide goals to reduce 2025 greenhouse gas emissions by at least 26%, 2030 greenhouse gas emissions by at least 50%, and 2050 greenhouse gas emissions by at least 90% of the levels of statewide greenhouse gas emissions that existed in 2005. A clean energy plan filed by a utility is deemed approved if the plan demonstrates an 80% reduction by 2030.
Colorado SB 19-236 (“PUC Sunset Bill”)	The primary purpose of this bill is to reauthorize the CPUC, by appropriations, for a seven-year period to September 1, 2026. Reauthorization is required by the sunset process. Additionally, the bill carries numerous requirements for utilities and the CPUC to achieve an affordable, reliable, clean electric system. Included in the bill are requirements to reduce the qualifying retail utility’s carbon dioxide emissions associated with electricity sales to the qualifying retail utility’s electricity customers by eighty percent from 2005 levels by 2030, and that seeks to achieve providing its customers with energy generated from one-hundred-percent clean energy resources by 2050. The bill also subjects co-ops to Colorado Public Utility Commission rulemaking.
Colorado SB 19-077 (“Electric Vehicles Bill”)	The bill enables a regulatory approval process for electric utilities to invest in charging facilities and provide incentive rebates; thus, the investments and rebates may earn a return at the utility’s authorized weighted-average cost of capital. Where approved, the costs for the investments and rebates may be recovered from all customers of the electric utility similar to recovery of distribution system investments. Natural gas public utilities may provide fueling stations for alternative fuel vehicles as non-regulated services only.
Colorado HB 18-1270 (“Energy Storage Procurement Act”)	Directs the Commission to develop a framework to incorporate energy storage systems in utility procurement and planning processes. See C.R.S. § 40-2-201, et seq. The legislation broadly addresses resource acquisition and resource planning, and transmission and distribution system planning functions of electric utilities. Energy storage systems may be owned by an electric utility or any other person. Benefits include increased integration of energy into the grid; improved reliability of the grid; a reduction in the need for increased generation during periods of peak demand; and, the avoidance, reduction, or deferral of investment by the electric utility

Enacted Public Policy Requirements in Study Plan (revised further during Model Development)

Enacted Public Policy	Description
Nevada SB123	To reduce emissions from coal-fired generators, requires reduction of at least 800 MW generation capacity from coal-fired generation plants, addition of at least 350 MW of generating capacity from renewable energy facilities, and construction of at least 550 MW of generating capacity from other types of generating plants by 2020.
Nevada SB374	Requires net metering be available to each customer-generator who submits a request to the company.
Nevada Renewable Portfolio Standard	<p>The portfolio standard must require each provider to generate, acquire or save electricity from portfolio energy systems or efficiency measures in an amount** that not less than specific percentages (listed below) of the total amount of electricity sold by the provider to its retail customers in this State during that calendar year.</p> <ul style="list-style-type: none"> • For calendar years 2015 through 2019, inclusive, 20%. • For calendar year 2020, 22%. • For calendar year 2021, 24%. • For calendar years 2022 and 2023, 29%. • For calendar years 2024 through 2026, inclusive, 34%. • For calendar years 2027 through 2029, inclusive, 42%. • For calendar year 2030 and for each calendar year thereafter, 50%. <p>**Is calculated based on number of renewable energy credits; reference Nevada Revised Statute (“NRS”) 704.7821: Establishment of portfolio standard; requirements; treatment of certain solar energy systems; portfolio energy credits; renewable energy contracts and energy efficiency contracts; exemptions; regulations.</p>
Nevada SB146 (2017)	Requires NV Energy to submit a Distributed Resource Plan (DRP) and evaluate all projects for Non-Wires Alternatives
Nevada SB254 (2019)	Sets statewide greenhouse gas reduction goals in line with the 2015 Paris Agreement
Nevada SB299 (2019)	Creates an electric school bus pilot program
New Mexico Efficient Use of Energy Act	Require utilities to include cost-effective EE and DR programs in their resource portfolios and establish cost-effectiveness as a mandatory criterion for all programs.
New Mexico Energy Transition Act (SB 489)	<p>Subject to the Reasonable Cost Threshold (“RCT”), the Energy Transition Act defines renewable energy requirements that are a percentage of a utility’s retail energy sales and the type of utility:</p> <ul style="list-style-type: none"> • By 2020, 20% for public utilities and 10% for cooperatives • By 2025, 40% for public utilities and cooperatives • By 2030, 50% for public utilities and cooperatives • By 2040, 80% for public utilities with provisions associated with carbon free generation • 100% carbon-free by 2045 for public utilities and by 2050 for cooperatives
PNM Commitment to Carbon Free by 2040	Public Service of New Mexico plans to produce 100% carbon free energy by 2040.
SRP 2020 20% Sustainable Energy Goal	SRP has established a goal that by 2020, SRP will meet a target of 20% of its expected retail energy requirements with sustainable resources. Among them are a diversified resource mix of wind, geothermal, large hydro and low-impact hydro, and solar.
Texas RPS	Texas RPS requires a total renewable capacity of 5,880 MW (which has already been achieved) by 2025 be installed in the state which is in turn converted into a renewable energy requirement. The renewable energy requirements are allocated to load serving entities based on their amount of retail energy sales as a percent of the total Texas energy served.

2020-21 Scenario Studies

- In addition to the regional needs assessment, WestConnect also conducts information-only scenario studies that look at alternate but plausible futures.
- Scenarios represent futures with resource, load, and public policy assumptions that are different in one or more ways than what is assumed in the Base Cases.

Committed Uses Scenario Study

Purpose: Improve PCM results.

Assumptions: WestConnect Members will work to explicitly model existing contracts – based on OASIS and member-submitted data – for both generator off-take and transmission uses to determine impacts on WestConnect economic study findings. May involve removal or adjustment of certain wheeling charge assumptions. Only firm long-term (month or longer) commitments that are under contracts should be included, such that any requests under study or received (and not currently under contract) would be excluded.

New Mexico Export Stress Study

Purpose: Evaluate the reliability of the WestConnect regional system when power flows east-to-west from New Mexico

Assumptions: Simulation results from the WestConnect 2030 Base Case PCM with New Mexico exports high levels of east-to-west flow across WestConnect will be exported into a reliability model for evaluation.



2020-21 REGIONAL MODEL DEVELOPMENT

Overview of 2020-21 Model Development

- In order to perform the regional needs assessment, WestConnect develops regional planning models for the 10-year timeframe
- On September 23, 2020 the Planning Subcommittee notified the PMC that the Base Cases were essentially complete and ready for the regional assessments
- The Base Cases have been undergoing minor updates as the assessment results are vetted
- On October 21, 2020, the Planning Subcommittee recommended, and PMC accepted, four sensitivity cases as part of the economic assessment:
 1. High Load
 2. Low Hydro
 3. System-wide Carbon Emission Cost
 4. High Gas Price
- The following materials summarize key assumptions made in developing the regional models

Reliability Base Cases:

2030 Heavy Summer Base Case

- Designed to test regional system performance under heavy summer loading and flow conditions
 - Condition: Hours of 1500 to 1700 MDT during June – August
 - Dispatch: 56,610 MW of thermal and hydro resources, and 14,613 MW of wind and solar resources in WestConnect
 - Solar/wind dispatch increased 159% from last cycle and thermal/hydro dispatch decreased 6%
 - Demand: Aggregate coincident peak for WestConnect was 67,257 MW, an increase of 3% from last cycle
- Seed Case: WECC 2030 Heavy Summer 1 ADS Planning Base Case dated October 28, 2019 (30HS1)
 - Updated by WestConnect
- Included Base Transmission Plan topology

Reliability Base Cases:

2030 Light Spring Base Case

- Designed to test regional system performance under “expected” light-load conditions with planned solar and wind serving significant portion of WestConnect load
 - Condition: Hours of 1000 to 1400 hours MDT during spring
 - Dispatch: 3,887 MW of wind and 7,601 MW of solar, remainder thermal/hydro
 - In the hour of study, 28% of WestConnect’s total demand is served by wind/solar
 - Demand: Aggregate coincident demand for WestConnect was 40,701 MW, which is 61% of the peak demand in the Heavy Summer Base Case
- Seed Case: WECC 2030 Light Spring 1 Scenario Case dated December 9, 2019 (30LSP1-S)
 - Updated by WestConnect
- Included Base Transmission Plan topology

2030 Light Spring Base Case Wind & Solar Dispatch Targets

The case description of the WECC 30LSP1-S included wind and solar dispatch targets shown below.

Area	Average Dispatch (% of Cap), Weighted by Cap, Type and Area		
	Wind Turbine	Solar PV	Solar Thermal
Alberta	40%		
Arizona	41%	84%	99% ²
B.C.Hydro	20%		
El Paso		82%	
Idaho	62%	64%	
IID		97%	
LADWP	45%	94%	
Mexico-CFE	42%	80%	
Montana	47%	47%	
Nevada		86%	79%
New Mexico	46%	80%	
Northwest	57%	50%	
PACE	48%	63%	
PG&E	61%	90%	
PSCo	37%	72%	
San Diego	48%	91%	
Sierra	52%	91%	79%
SCE	41%	91%	100% ²
WAPA R.M.	49%	47%	
WAPA U.W.		47%	

² For percent values near or at 100% of nameplate capacity, Data Submitters should provide the maximum recorded output of any existing Wind Turbine, Solar PV and Solar Thermal resources in their area if 100% of nameplate capacity is not feasible. Future resources should be modeled with the expected maximum dispatch value.

Economic 2030 Base Case

- Designed to represent a likely, median 2030 future appropriate for an evaluation of transmission congestion on WestConnect regional transmission system
 - Generation
 - Load
 - Other Assumptions
- Seed case: WestConnect 2028 Base PCM from 2018-19 Cycle
 - Updated by WestConnect
 - Also pulled from WECC 2028 ADS PCM Phase 2 V2.0 posted 6/19/19 and WECC 2030 ADS PCM V1.0 posted 6/30/20
- Included Base Transmission Plan topology

Highlights of Work Plan accepted by [PMC on March 18, 2020](#):

- Reasonable Inter-Area Wheeling Charges
- Emphasize the review of bus-area mapping assumptions along area borders with an eye towards wheeling charge “pancaking”
- No "Merchant" generator exemptions to wheeling charges unless there's an expressed good reason
- Scrutinize heat rate, fuel price, and VOM cost assumptions
- Avoid “must run” setting for dispatchable thermals unless expressed good reason
- Model “must take” thermals (bio/geo-fueled, QF, & select co-gens) with historical monthly shapes or, preferably, per contract terms
- Leverage historical data to inform nuclear capacity de-rates
- Implement realistic generator capabilities so as not to overestimate available supply, i.e., model “real world economic maximum capability”

Public Policy Verification

- Public Policy Requirements: state or federal laws or regulations, enacted statutes (i.e., passed by the legislature and signed by the executive) and regulations promulgated by a relevant jurisdiction, whether within a state or at the federal level.
 - Based on language from the final rule on FERC order 1000 [published by FERC](#): “...and allow for consideration of transmission needs driven by public policy requirements established by state or federal laws or regulations (Public Policy Requirements). By “state or federal laws or regulations,” we mean enacted statutes (i.e., passed by the legislature and signed by the executive) and regulations promulgated by a relevant jurisdiction, whether within a state or at the federal level.”
- TOLSO Confirmation: have received responses from all members
 - As part of Section 6 of WestConnect’s [2020-21 Study Plan](#), each TOLSO must verify they meet all enacted public policies that apply to them.
 - Enacted public policy ... is considered in the regional planning process through its inclusion in regional planning models.
 - The regional base models, including both power flow and production cost, will reflect the enacted public policies...
- Renewable Energy Check: High-level RPS energy vs. load comparisons are planned using PCM results from last & current cycles

Enacted public policies driving local transmission needs

Enacted Public Policy	Description
California SB100	Requires IOUs and municipal utilities to meet a 60% renewable portfolio standard (“RPS”) by 2030
California SB350	Requires IOUs and municipal utilities to meet a 50% RPS by 2030 and also requires the establishment of annual targets for energy efficiency savings
California AB398/SB32	Requires the California State Air Resources Board to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to ensure that statewide greenhouse gas emissions are reduced to at least 40% below the 1990 level by 2030.
Colorado HB10-1001	Established Colorado Renewable Energy Standard (RES) to 30% by 2020 for IOUs (Xcel & Black Hills)
Colorado SB13-252	Requires cooperative utilities to generate 20% of their electricity from renewables by 2020
Colorado HB10-1365	Requires rate regulated utilities in CO with coal-fired generation to reduce emissions on the smaller of 900 MW of generation of 50% of a company’s coal generation fleet. Full implementation to be achieved by 12/31/2017.
New Mexico Efficient Use of Energy Act	Require utilities to include cost-effective EE and DR programs in their resource portfolios and establish cost-effectiveness as a mandatory criterion for all programs.
Texas Substantive Rule 25.181 (Energy Efficiency Rule)	Require utilities to meet certain energy efficiency targets.
New Mexico Energy Transition Act (SB 489)	<p>Subject to the Reasonable Cost Threshold (“RCT”), the Energy Transition Act defines renewable energy requirements that are a percentage of a utility’s retail energy sales and the type of utility:</p> <ul style="list-style-type: none"> • By 2020, 20% for public utilities and 10% for cooperatives • By 2025, 40% for public utilities and cooperatives • By 2030, 50% for public utilities and cooperatives • By 2040, 80% for public utilities with provisions associated with carbon free generation • 100% carbon-free by 2045 for public utilities and by 2050 for cooperatives
Texas RPS	Texas RPS requires a total renewable capacity of 5,880 MW (which has already been achieved) by 2025 be installed in the state which is in turn converted into a renewable energy requirement. The renewable energy requirements are allocated to load serving entities based on their amount of retail energy sales as a percent of the total Texas energy served.

Renewable Energy Check

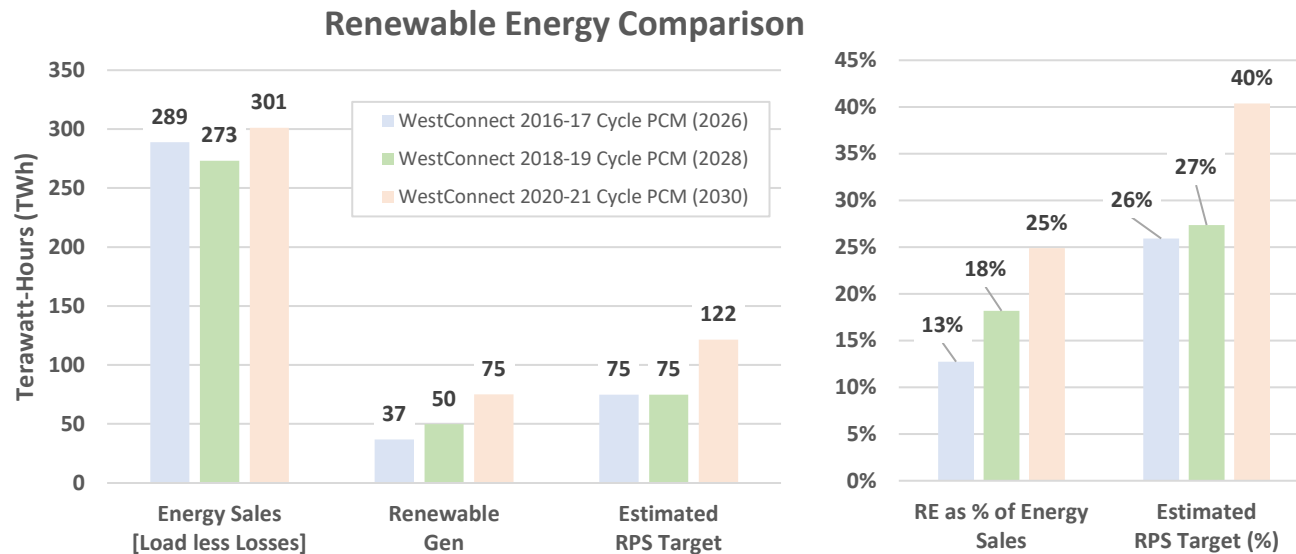
There was interest in seeing whether the WestConnect economic models indicated a renewable energy penetration trajectory consistent with enacted public policies. To address this interest a high-level accounting and comparison of each PCM Area's energy sales and renewable energy was conducted via the process outlined below.

1. Annual generation of Bio, Geothermal, Solar PV, Solar Thermal, & Wind were summed for each PCM Load Area as "Renewable Energy" (RE). The RE for the SRP PCM Area also included specific hydro and a combined solar & battery generation in the SRP PCM Area was counted as RE based on SRP's plan to meet its public policy requirements, but hydro was otherwise not counted as RE. The Reserve Capacity Distribution settings in 2030 Base Case PCM were used to allocate resources to their appropriate remote load area.
2. Each PCM Load Area's "Energy Sales" was determined by taking the "Served Load Includes Losses", subtracting losses, adding the magnitude of negative generation (e.g., pumping loads with hourly profiles), and subtracting behind-the-meter generation (e.g., distributed generator or DG-BTM, energy efficiency or EE, demand response or DR)
3. The "Renewable Energy" was divided by the "Energy Sales" as the "RE as % of Energy Sales" for the 2030 Base Case PCM and compared with these same values from the 2028 Base Case PCM and the 2026 Base Case PCM from the previous two cycles (to allow for comparison between cycles).

Only the single year results from each study year were used in the RE check and no banking of renewable energy from other years was assumed.

Draft Renewable Energy Check

- WestConnect renewable generation in 2030 PCM is a 50% increase from the 2028 PCM
- RPS-related generation in 2030 PCM represents more than half of the estimated 2030 RPS target for the WestConnect footprint



Renewable Energy Check Next Steps

1. PS Member review to ensure accounting accuracy.
2. Inclusion in Draft Model Development Report



2020-21 REGIONAL NEEDS ASSESSMENT

Regional Needs Assessment Background

- The PMC is conducting needs assessments using models developed for year 2030
- The PMC will not evaluate regional transmission needs for systems outside of the WestConnect planning region
 - Local vs. regional transmission issues
- After the assessments, the Planning Subcommittee (PS) identifies a list of transmission issues resulting from the studies and makes a recommendation to the PMC as to which, if any, regional issues should constitute economic, reliability, or public policy-driven transmission needs.
 - Includes development of a Regional Transmission Needs Assessment Report (which will allow for stakeholder comment and input)
- The PMC will make a final determination on regional needs in December 2020 based on the PS's recommendation regarding regional needs and stakeholder comments collected following this meeting.
- Regional needs will be posted to the WestConnect website no later than December 31, 2020.
- A report will be finalized by the PMC in early 2021, and it will contain the complete needs assessment results and the PMC's determination regarding regional transmission needs for the study cycle.

Reliability Assessment

- Conducted to ensure the WestConnect planning region as a whole is in compliance with applicable North American Electric Reliability Corporation (NERC) standards and WECC regional criteria for the 2030 planning horizon.
- Assessment will include steady state contingency analysis and transient stability analysis.
- Transmission elements of 100 kV and above will be monitored for system performance along with any Member specified lower voltage Bulk Electric System (BES) elements.
 - *Monitoring was updated to elements greater than 90kV to include all BES in WestConnect*

WestConnect Base Case Name	Case Description	WECC Seed Case
2030 Heavy Summer	Summer peak load conditions during 1500 to 1700 MDT, with typical flows throughout the Western Interconnection.	WECC 2030 Heavy Summer 1 ADS Planning Base Case (30HS1)
2030 Light Spring	Light load conditions during 1000 to 1400 MDT in spring months of March, April, and May with solar and wind serving a significant but realistic portion of the Western Interconnection total load. Case includes renewable resource <i>capacity</i> consistent with any applicable and enacted public policy requirements.	WECC 2030 Light Spring 1-S Base Case (30LSP1S)

Draft 6rev1 Models' Reliability Assessment Contingency Analysis

Draft 6rev1 Contingency Analysis Methodology

- Procedure for Developing the Contingency Definitions
 1. Started with 2018-19 planning cycle member submitted multi-element contingency definitions (e.g. breaker to breaker N-1)
 2. Auto-inserted every 230kV and above single branch and GSU's > 200 MW Pgen
 3. Added in new member-submitted contingencies, protection systems, and operating procedures
 4. Removed any auto-inserted single branches contained in member-submitted definitions (unless they were N-2 definition)
- 1,554 contingency runs
 - 1,459 auto-inserted N-1's:
 - 992 lines and 374 single- & 3-winding transformers 230-kV and above
 - 98 generator step-up (GSU) transformers for generation with at least 200 MW
 - 95 member-submitted contingencies
- Flagged branch loadings and bus voltages using member-submitted criteria
 - BES monitored only
 - Default for bus voltage is WECC criteria unless superseded by member submitted criteria

Summary of Draft 6rev1 Contingency Analysis Results

■ HS case

- No Contingency (P-0)
 - **No (from 0)** branch loading issues
 - **No (from 2)** flagged high bus voltages
 - **No (from 0)** flagged low bus voltages
- Contingencies (**3 from 20**) flagged issues)
 - **No (from 0)** failed solutions
 - **3 (from 7)** flagged loadings above Rating B (SRP 3)
 - **No (from 4)** flagged high voltages
 - **No (from 4)** flagged low bus voltages
 - **No (from 5)** flagged voltage deviations

■ LSP Case

- No Contingency (P-0)
 - **No (from 0)** branch loading issues
 - **No (from 9)** flagged high bus voltage issues
 - **No (from 0)** flagged low bus voltage issues
- Contingencies (**None (from 1)**) flagged issues)
 - **No** failed solutions
 - **No (from 0)** flagged loadings above Rating H
 - **No (from 0)** flagged low bus voltages
 - **No (from 1)** flagged high voltages

Color Key

Black: No change from D5

Red: increase from D5

Green: decrease from D5

Blue: Multi-TO - NONE

Reference: 201102_WC_2030HS+LSP_BasePFs_D6_Associated_Materials.xlsm
in 201102_WC_2030HS+LSP_BasePFs_D6.zip (<https://wcenergygroup1.egnyte.com/>)

Draft 6rev1 Contingency Analysis – Issues with No Disturbance

- No BES Bus Voltage Flags in HS and LSP
- No BES Branch Loading Flags in HS and LSP

*Reference: 201102_WC_2030HS+LSP_BasePFs_D6_Associated_Materials.xlsm
in 201102_WC_2030HS+LSP_BasePFs_D6.zip (<https://wcenergygroup1.egnyte.com/>)*

Draft 6rev1 Contingency Analysis – Issues with Disturbances

- No BES Branch Loading or Bus Voltage Contingency Flags for LSP
- Table below shows BES Branch Loading or Bus Voltage Contingency Flags for HS
- **No Multi-Owner Issues**











Case	Disturbance				Affected Element						
	Entities Involved	PF Branch Owner(s)	PF Bus Owner(s)	Element	Entities Involved	PF Branch Owner(s)	PF Bus Owner(s)	Element	Value due to Disturbance	Limit	Issue
HS	SRP	Salt River Project	Salt River Project	████	SRP	Salt River Project	Salt River Project	BROWNING - BROWNIN2 500/230kV Transformer Winding #1B	████	████	Branch MVA
				████				ORME - RUDD 230kV Line #1	████	████	Branch Amp
				████				ORME - RUDD 230kV Line #2	████	████	Branch Amp

Reference: 201102_WC_2030HS+LSP_BasePFs_D6_Associated_Materials.xlsm
in 201102_WC_2030HS+LSP_BasePFs_D6.zip (<https://wcenergygroup1.egnyte.com/>)

Draft 6rev1 Models' Reliability Assessment Transient Stability Analysis

Draft 6rev1 Test Transient Stability Runs

(Re-Run of D6 with Tstall=9999 for APS & SRP)

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

Draft 6rev1 Test Transient Stability Runs: Summary

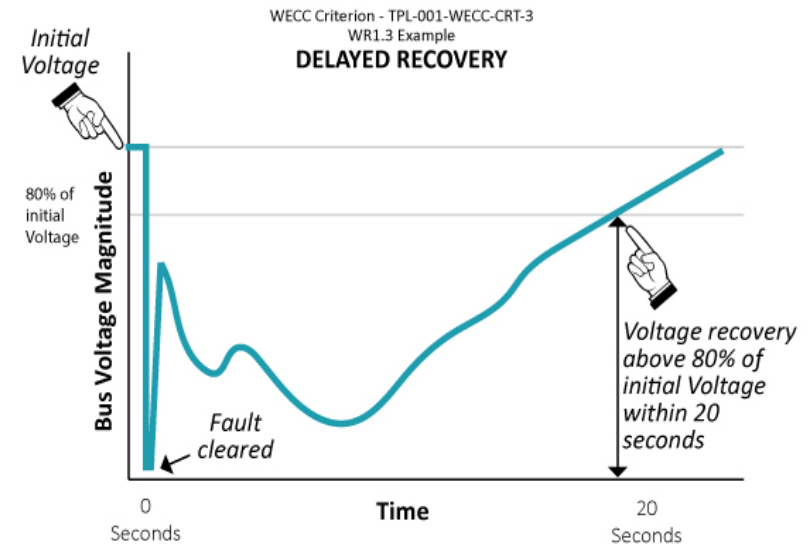
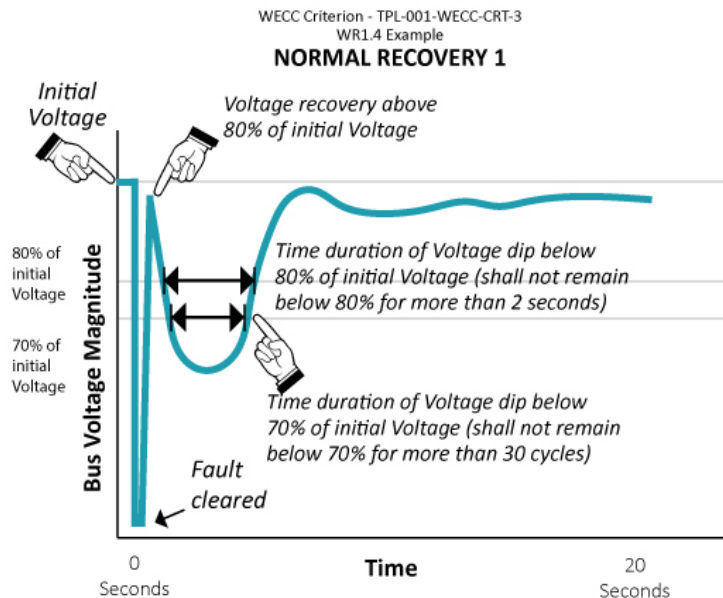
Disturbance			HS Summary				LSP Summary			
Area Name	Owner Name	Name	Violations	Tripped Load (Unrestored)	Tripped Gen	Islanded Load	Violations	Tripped Load (Unrestored)	Tripped Gen	Islanded Load

No Violations, & the unrestored load & tripped gen reported by the simulations is acceptable per TPL standards (see Table 1 in [TPL-001-4](#))

- Note “c.” in [TPL-001-4](#): Simulate the removal of all elements that Protection Systems and other controls are expected to automatically disconnect for each event.
- Note “b.” in [TPL-001-4](#): Consequential Load Loss as well as generation loss is acceptable as a consequence of any event excluding P0.

Transient stability analysis – Refresher on WECC Criteria

- Recovery should be stable (not volatile)
- Oscillations (if any) should be damped
- Above plots show acceptable recovery of BES bus serving load



Draft 6rev1 Transient Stability Runs: All Contingencies

Heavy Summer

Light Spring

BES Bus
Freq
(Hz)

BES Bus
Voltage
(per unit)

Reference: 201102_WC_2030HS+LSP_BasePFs_D6_Associated_Materials.xlsm
in 201102_WC_2030HS+LSP_BasePFs_D6.zip (<https://wcenergygroup1.egnyte.com/>)

Economic Assessment

- Assessment will include review of metrics such as congested hours and congestion cost for regional transmission elements greater than 200 kV and WECC transfer paths (or other defined interfaces in the WestConnect footprint) along with any Member specified lower voltage BES elements
 - *Monitoring was updated to elements greater than 90kV in WestConnect and greater than 200 kV outside of WestConnect*
- Regional transmission with significant congestion are identified and verified through Planning Subcommittee review, historical benchmarking, and follow-up study
- WestConnect will also conduct sensitivity studies on the 2030 Base Case
 - *Sensitivities: High Load, Low Hydro, System-wide Carbon Emission Cost, and High Gas Price*

WestConnect Base Case Name	Case Description	WECC Seed Case
2030 Base Case	Business-as-usual, expected-future case with median load and hydro conditions and representation of resources consistent with enacted public policies.	WECC 2030 Heavy Summer 1 ADS Planning Base Case (30HS1) and WestConnect 2028 PCM from 2018-19 planning cycle*

High Gas Price & Low Hydro Sensitivity Assumptions

- High Gas Price: Increase all natural gas prices to 140% of their value in the Base PCM.
- Low Hydro: Replaced hydro modeling with WECC's 2001-based hydro modeling data developed by WECC in conjunction with their 2024 Common Case PCM dataset.

High Load Sensitivity Assumption

- Scale up the hourly load shape of BAAs within WestConnect so their annual peak and energy is a 100%+ percentage of their value in the Base PCM:
 - AZPS: 107.03% of peak; 110.38% of energy
 - 630 MW increase to peak; 4,460,962 MWh increase to energy
 - BANC: increases to SMUD's 65% share:
 - January-May: 106.5% of peak; 107.15% of energy
 - June-September: 100.65% of peak; 103.9% of energy
 - October-December: 107.15% of peak; 107.8% of energy
 - EPE: 101.26% of both peak and energy
 - NEVP & SPPC: 102.5% of both peak and energy
 - PNM: 116% of peak; 118% of energy
 - Others: Default* of 120% of both peak and energy
 - IID, LDWP, PSCO, SRP, TEPC, WACM, WALC

**NOTE: 140% was originally the default assumption; however, it was reduced to 120% given the feedback received was all well under 140%.*

System-wide Carbon Emission Cost Sensitivity Assumption

- Apply the California Carbon Price assumption for the generation in coastal states (California, Oregon, and Washington)
- Keep the AB and BC carbon prices as-is
- Remove the carbon emission wheeling charges from all California borders except with Baja California (CFE)
- For all the rest of the West: Carbon price of \$45/metric ton CO₂e (2020 dollars)

Base PCM Assumption	Value for 2030	Source	Assumption
California Carbon Price (2020\$/metric ton CO ₂ e)	64.293	CEC's 2019 IEPR Revised Carbon Price Projections	\$78.02/MT in 2030 in nominal dollars
Alberta Carbon Price (2020\$/metric ton CO ₂ e)	31.742	Osler article RE Alberta carbon pricing	Implement \$30/metric ton in 2017\$ from 2017 onward based on
British Columbia Carbon Price (2020\$/metric ton CO ₂ e)	49.015	British Columbia's Carbon Tax	\$40/metric ton in 2019\$ for 2019, \$45/metric ton in 2020\$ for 2020, \$50/metric ton in 2021\$ for 2021, and assume the 2021 price onward
Default Emission Factor MT CO ₂ e/MWh - California	0.428	CARB Unofficial Electronic Version of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions	Emission rate from Unspecified Sources: 0.428 MT of CO ₂ e/MWh
BPA Reduced Emission Factor MT CO ₂ e/MWh - California	0.0117	CARB Mandatory GHG Reporting - Asset Controlling Supplier	0.0117 MT CO ₂ e per MWh for Data Year 2020

Draft 6 Base & Sensitivity PCM Annual Congestion Results

Branch & Path Congestion					Congestion Hours (% Hrs) / Cost (K\$) [& Penalty Cost Component of Congestion Cost (if any)]					
					BaseD6rev2 (San Juan 4 retired and Intermountain-Gonder line rating updated to 402 MVA)	Base	Sensitivities run on original Base (Draft 6)			
Assumed Grouping	Branch PF Owner(s)	Bus PF Owner(s)	Branch or Path Name	Limit (MW)			High Gas Price	High Load	Low Hydro	System-wide Carbon Emission Cost
Multiple WC Entities	PSColorado	Tri-State G&T PSColorado	STORY - PAWNEE 230kV Line #1 (73192_70311_1)	■	398 (5%) / 5,561	386 (4%) / 5,320	346 (4%) / 5,920	367 (4%) / 3,748	343 (4%) / 4,401	982 (11%) / 21,529
	Gila River Power, LP Sundevil Power Holdings, LLC	Salt River Project Arizona Public Service	GILARIVR - PANDA 500/230kV Transformer #1 (159970_14238_1)	■	151 (2%) / 5,113	161 (2%) / 5,053	173 (2%) / 6,842	396 (5%) / 27,358* *Penalty Cost: \$3,515K (13%)	156 (2%) / 5,946	134 (2%) / 7,912
	Intermountain Power Agency	Intermountain Power Agency Sierra Pacific Power Co.	P29 Intermountain-Gonder 230 kV Interface	■	137 (2%) / 753					
	Intermountain Power Agency	Intermountain Power Agency Sierra Pacific Power Co.	INTERMT - GONDER 230kV Line #1 (26041_64056_1)	■		380 (4%) / 2,003	444 (5%) / 2,288	236 (3%) / 1,128	475 (5%) / 2,438	22 (0.25%) / 202
	TSGT New Mexico	TSGT New Mexico PN2 New Mexico	BERNARDO - BELEN_PG 115kV Line #1 (12008_12007_1)	■	142 (2%) / 1,597	162 (2%) / 1,709	199 (2%) / 2,390	146 (2%) / 1,220	194 (2%) / 2,032	32 (0.37%) / 379
	Basin Electric Power Coop. Tri-State G&T	PacifiCorp - East Basin Electric Power Coop.	DAVEJOHN - LAR.RIVR 230kV Line #1 (65420_73107_1)	■	33 (0.38%) / 939	29 (0.33%) / 888	26 (0.30%) / 575	32 (0.37%) / 3,206* *Penalty Cost: \$1,402K (44%)	21 (0.24%) / 624	41 (0.47%) / 1,562
	WAPA L.M. DG&T	DG&T Tri-State G&T WAPA L.M.	P30 TOT 1A Interface	■	24 (0.27%) / 426	25 (0.29%) / 409	42 (0.48%) / 768	177 (2%) / 55,041	5 (0.06%) / 31	51 (0.58%) / 814
	Tri-State G&T WAPA L.M.	WAPA L.M. PSColorado Tri-State G&T Basin Electric Power Coop.	P36 TOT 3 Interface	■	4 (0.05%) / 232	3 (0.03%) / 144	5 (0.06%) / 273	34 (0.39%) / 61,220* *Penalty Cost: \$26,002K (42%)	4 (0.05%) / 158	4 (0.05%) / 630
	Intermountain Power Agency Sierra Pacific Power Co.	Intermountain Power Agency Sierra Pacific Power Co.	P32 Pavant-Gonder InterMtn-Gonder 230 kV Interface	■	11 (0.13%) / 109	10 (0.11%) / 136	2 (0.02%) / 26	16 (0.18%) / 168	1 (0.01%) / 0.93	30 (0.34%) / 990
	CSU	Tri-State G&T CSU	MONUMENT - FLYHORSE N 115kV Line #1 (73414_78664_1)	■	23 (0.26%) / 65	20 (0.23%) / 58	13 (0.15%) / 80	52 (0.59%) / 239	21 (0.24%) / 75	
	TSGT New Mexico	EPE El Paso Electric Company TSGT New Mexico	UVAS - ALTLUNT 115kV Line #1 (11193_12195_1)	■	11 (0.13%) / 62	10 (0.11%) / 49	8 (0.09%) / 52	195 (2%) / 3,119	9 (0.10%) / 29	23 (0.26%) / 285
	WAPA L.M.	PSColorado WAPA L.M.	MIDWAYPS - MIDWAYBR 230kV Line #1 (70286_73413_1)	■	1 (0.01%) / 3	1 (0.01%) / 9		4 (0.05%) / 16	1 (0.01%) / 4	13 (0.15%) / 116

Reference for Draft 6 & Sensitivities: _02_Summary Branch & Path Congestion_D6 Base and Sensitivity PCMs.xlsm
in 201110_WC_2030_D6_SensitivityPCMs_Results-SelectReviewTools.zip (<https://wcenergygroup1.egnyte.com/>)

PS Determinations on Economic Assessment using Draft 6rev2 Base PCM

Planning Subcommittee Determination		Draft 6 Rev2 PCM Results			
Narrative	Regional in Nature?	Branch or Path Name	Limit (MW)	Congestion Hours (% Hrs) / Cost (K\$) [& Penalty Cost Component of Congestion Cost (if any)]	Total Annual Shadow Price (\$/MW)
PSCo & TSGT: observed congestion on this line does not warrant establishing this as a regional need. The total congestion hours are low and historic flow for this line on BA Peak day has been well below line capacity. Further, there are concerns with the confidence level of having a singular data point. PSCo would encourage multiple futures and years to allow for averaging of results. Additionally, the line itself and the Pawnee terminal are fully owned by PSCo. The Story terminal equipment has mixed ownership, with PSCo having full ownership of some equipment. This makes the congestion on this facility more similar to a single TO facility in nature.	No	STORY - PAWNEE 230kV Line #1 (73192_70311_1)	■	398 (5%) / 5,561	9,419
APS & SRP: Minimal hours of congestion. Further, this specific transformer is unique in that APS has no ownership, however APS has 100% rights for the entire transformer capacity. Further, the congestion manifesting itself here is a result of market energy sales since APS has not ownership in Gila River generation.	No	GILARIVR - PANDA 500/230kV Transformer #1 (159970_14238_1)	■	151 (2%) / 5,113	10,764
LADWP: The observed congestion is insignificant both by hours and by cost. NVE: defer to LADWP (Congestion is relatively small). PACE's generation is one of the contributors+ path 29 effectively shares tran capacity with #32 (+Pavant-Gonder line) - so this looks like "inter-regional" issue	No	P29 Intermountain-Gonder 230 kV Interface	■	137 (2%) / 753	3,011
PNM: this is a modeling issue and does not represent true congestion. TSGT: This line is an underlying load serving 115kV line with a very low rating. This does not constitute a major transfer path between Tri-State and PNM. The line itself is fully owned by Tri-State. PNM only owns terminal equipment at the Belen substation. Congestion hours are relatively low.	No	BERNARDO - BELEN_PG 115kV Line #1 (12008_12007_1)	■	142 (2%) / 1,597	22,724
TSGT: Only 33 hours of congestion is very minor (<1% of the year) and can be considered noise	No	DAVEJOHN - LAR.RIVR 230kV Line #1 (65420_73107_1)	■	33 (0.38%) / 939	2,069
TSGT: Only 24 hours of congestion is very minor (<1% of the year) and can be considered noise	No	P30 TOT 1A Interface	■	24 (0.27%) / 426	828
TSGT: Only 4 hours of congestion is very minor (<1% of the year) and can be considered noise. PSCo: this level of congestion does not warrant a regional need. Cost and hours are insignificant and would not justify capital investment.	No	P36 TOT 3 Interface	■	4 (0.05%) / 232	126
LADWP: The observed congestion is insignificant both by hours and by cost. NVE: Congestion is very small. Also there's a potential for rating increase of P32 W-E (>235MW) if needed. Pavant-Gonder line is between Sierra & PacifiCorp (NG) - so this looks like "inter-regional" issue.	No	P32 Pavant-Gonder InterMtn-Gonder 230 kV Interface	■	11 (0.13%) / 109	463
TSGT & CSU: Only 23 hours of congestion is very minor (<1% of the year) and can be considered noise	No	MONUMENT - FLYHORSE N 115kV Line #1 (73414_78664_1)	■	23 (0.26%) / 65	420
TSGT & EPE: Only 11 hours of congestion is very minor (<1% of the year) and can be considered noise. Furthermore, the 115 kV UVAS substation interconnection proposed in EPE's future transmission plans will be constructed under the auspices of the EPE/Tri-State Interconnection Agreement. Therefore, any mitigations on the EPE and/or Tri-State systems required for this 115 kV interconnection will be evaluated and constructed under that Agreement.	No	UVAS - ALTLUNTP 115kV Line #1 (11193_12195_1)	■	11 (0.13%) / 62	1,381
PSCo: this level of congestion does not warrant a regional need. Cost and hours are insignificant and would not justify capital investment.	No	MIDWAYPS - MIDWAYBR 230kV Line #1 (70286_73413_1)	■	1 (0.01%) / 3	7

Next Draft of Base PCM

Further changes to the Base PCM are planned to primarily investigate the single entity, multi-regional congestion issues, but also to implement other modeling updates that have come out from the review of the Draft 6 and Draft 6rev2 results.

The PS does not expect this to change its recommendation for regional needs determination.

- Correct rating of IS TAP - MERCRYSW 138kV Line #1 (18073_189101_1) to compensate for the overestimation of flow in the approximated DC power flow used in the PCM simulation.
- Correct definition of the Path 78 interface (TOT 2B1) to only include the Pinto - Four Corners 345 kV line.
- Unbypass all series reactors in WestConnect footprint to test whether or not the below congestion issues are relieved.
 - BERNARDO - BELEN_PG 115kV Line #1 (12008_12007_1)
 - MONUMENT - FLYHORSE N 115kV Line #1 (73414_78664_1)
- Correct topology around Gila River.

Public Policy Assessment

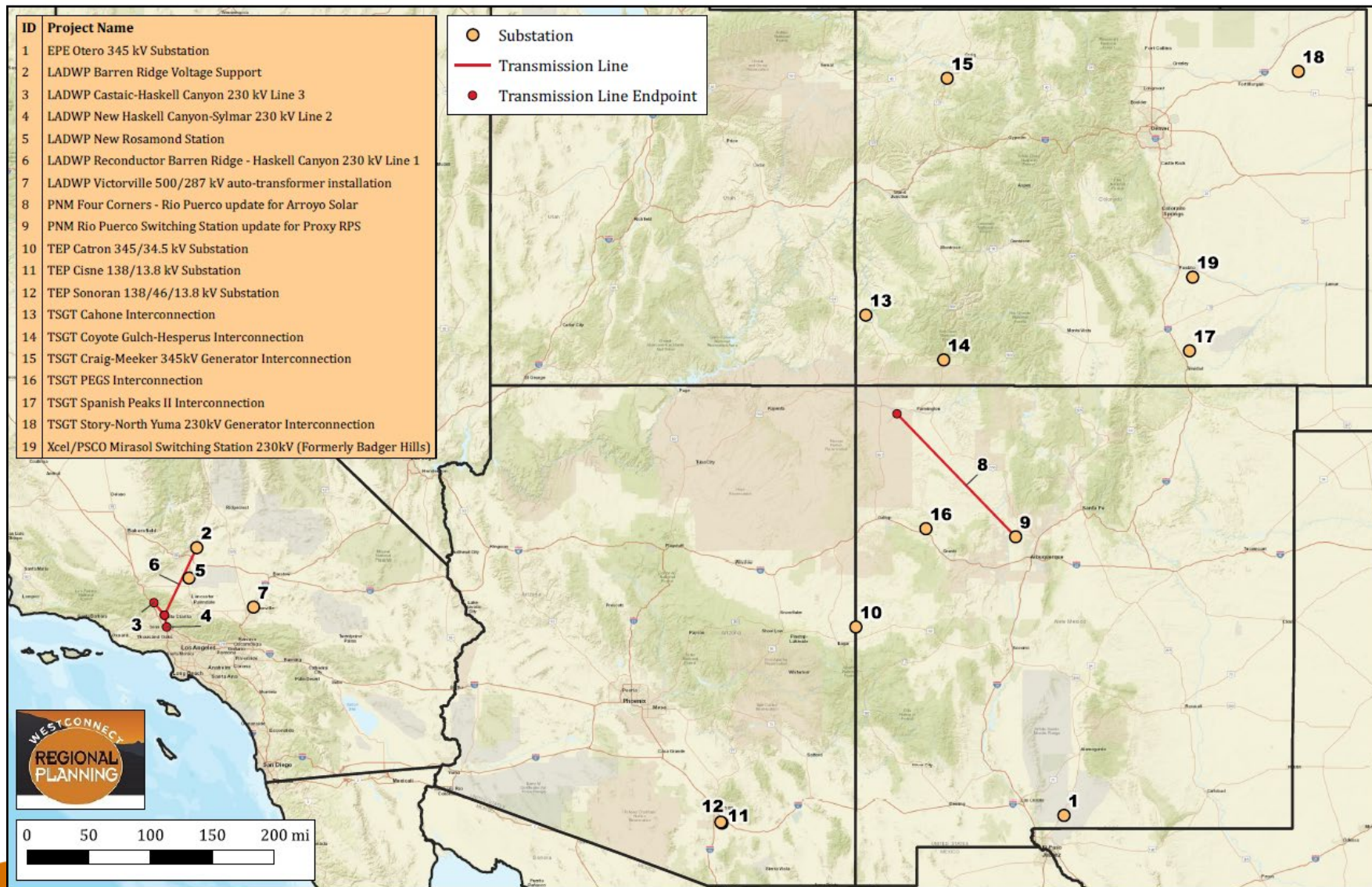
- WestConnect begins evaluation by identifying a list of enacted public policies that impact the local TOs (see study plan)
- The regional base models reflect the enacted public policies driving local transmission needs
- If the assessments identify regional issues that are related to enacted public policy these may constitute a public policy-driven transmission need
- There is also an opportunity to make suggestions as to whether a TO's local policy-driven project may constitute a regional public policy-driven transmission need
 - Stakeholders are invited to make a recommendation to the Planning Subcommittee
 - ***Stakeholders are asked to review the local public policy-driven transmission projects outlined on the next two slides and submit any suggestions regarding potential regional public policy-driven transmission needs to the PMC via the Comment Form posted with the meeting slides. All comments must be received by the end-of-business Thursday, December 3rd.***

Local public policy-driven transmission projects

Sponsor	Project Name	Description	Primary/Secondary Driver	Voltage	In-Service Year
El Paso Electric Company	Otero 345 kV Substation	Substation to interconnect on existing Amrad-Caliente 345 kV line.	Public Policy/Reliability	345 kV	2022
Los Angeles Department of Water and Power	Barren Ridge Voltage Support	Install new SVD at Barren Ridge 230kV Station	Reliability/Public Policy	230 kV	2021
	Castaic-Haskell Canyon 230 kV Line 3	Addition of 230 kV circuit from Haskell Canyon to the Castaic Power Plant	Public Policy	230 kV	2020
	New Haskell Canyon-Sylmar 230 kV Line 2	Add a new 230 kV line between Haskell Canyon Station and Sylmar Station	Public Policy	230 kV	2022
	New Rosamond Station	Build a new 230 kV Station in Kern County	Public Policy	230 kV	2023
	Reconductor Barren Ridge - Haskell Canyon 230 kV Line 1	Reconductor line 1 between Barren Ridge and Haskell Canyon Stations	Public Policy	230 kV	2022
	Victorville 500/287 kV auto-transformer installation	Installing new auto-transformer at Victorville 500/287kV Transformer Bank K	Reliability/Public Policy	500 kV	2020
Public Service Company of New Mexico	Four Corners - Rio Puerco update for Arroyo Solar	Four Corners - Rio Puerco Update for Arroyo Solar	Public Policy/Economic	345 kV	2022
	Rio Puerco Switching Station update for Proxy RPS	Renewable Resource Additions	Public Policy/Reliability	345 kV	2027
Tri-State Generation and Transmission Association	Cahone Interconnection	New bay at existing Cahone substation for Dolores Canyon Solar Interconnection	Reliability/Public Policy	115 kV	2022
	Coyote Gulch-Hesperus Interconnection	New switching station along Coyote Gulch-Hesperus 115kV for Coyote Gulch Solar Interconnection	Reliability/Public Policy	115 kV	2022
	Craig-Meeker 345kV Generator Interconnection	New switching station sectionalizing Craig-Meeker 345kV for Axial Basin Solar Interconnection	Reliability/Public Policy	345 kV	2022
	PEGS Interconnection	New bay at existing PEGS substation for Escalante Solar Interconnection	Reliability/Public Policy	230 kV	2023
	Spanish Peaks II Interconnection	Adding to bay to the Planned Spanish Peaks Interconnection sub (Valent Canyon substation) for Spanish Peaks II Solar Interconnection	Reliability/Public Policy	230 kV	2022
	Story-North Yuma 230kV Generator Interconnection	New switching station sectionalizing Story-North Yuma 230kV for Niyol Wind Interconnection	Reliability/Public Policy	230 kV	2021
Tucson Electric Power	Catron 345/34.5 kV Substation	New 345/34.5 kV Substation, loop-in of Springerville - Greenlee 345 kV line	Public Policy	345 kV	2021
	Cisne 138/13.8 kV Substation	New Substation connected to Sonoran Substation	Public Policy	138 kV	2021
	Sonoran 138/46/13.8 kV Substation	New Substation tapped to Irvington to South 138-kV line and Irvington to Vail 138kV line.	Reliability/Public Policy	138 kV	2021
Public Service Company of Colorado/ Xcel Energy	Mirasol Switching Station 230kV (Formerly Badger Hills)	New switching substation tapping the Comanche - Midway 230 kV line.	Reliability/Public Policy	230 kV	2022

Map of local public policy-driven transmission projects

WestConnect 2020-21 Public Policy Driven Projects



PS Recommendations for Regional Needs Determination

- Planning Subcommittee has determined there are no reliability or economic issues that are regional in nature based on a review of the below results and does not recommend that the PMC identify any regional needs.
 - Contingency and transient stability analysis results from the Draft 6rev1 power flow Base Cases
 - Congestion results from the Draft 6rev2 production cost model Base Case



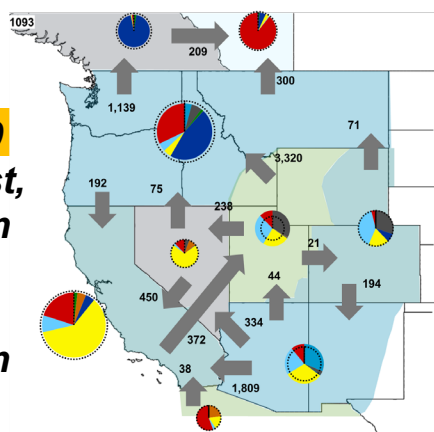
2020-21 SCENARIO ASSESSMENT

Progress on Committed Uses Scenario Study

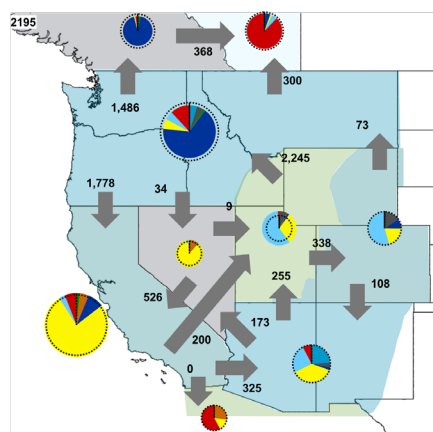
- On October 9, 2020, a draft whitepaper was sent to the Planning Subcommittee and Cost Allocation Subcommittee to solicit a group of experts to develop the modeling assumptions for the WestConnect Committed Uses Scenario Study
- On October 15, 2020, Committed Uses Study Work Group was formed with participants from APS, Belval Connections, CSU, Deseret G&T, Grid Reliability Consulting, LADWP, PNM, SRP, TransCanyon, and Xcel Energy.
- On October 26, 2020, the Committed Uses Study Work Group met to discuss and finalize the draft whitepaper.
- ***Next Steps:***
 - Release revised draft whitepaper for Planning Subcommittee review
 - **Deadline for objections is planned for December 7, 2020**
 - Continue processing OASIS data to determine proposed assumptions for inter-BAA Firm ATC, TTC, and EIM transfer capabilities

Date	Hour	TOU	NM Export Calculated from PNM Exports except those to EPE	P48 Northern New Mexico (NM2)	P47 Southern New Mexico (NM1)	P46 West of Colorado River (WOR)	P49 East of Colorado River (EOR)
2/15/2030	13	OnPeak	1,902	-2,378	-13	7,769	2,102
4/2/2030	11	OnPeak	2,034	-2,547	88	6,168	-136
4/2/2030	14	OnPeak	1,993	-2,592	159	5,471	-905
4/2/2030	15	OnPeak	2,072	-2,572	9	5,875	79
4/2/2030	16	OnPeak	1,922	-2,358	-69	4,962	-233
4/7/2030	10	OffPeak	1,923	-2,525	413	4,743	56

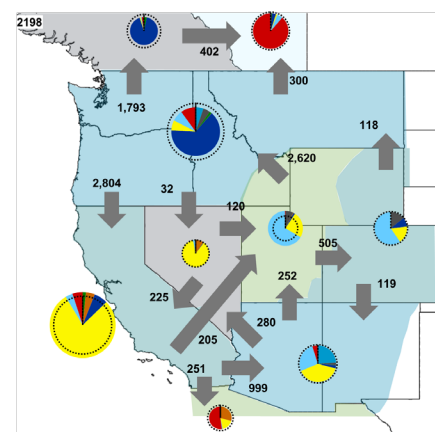
Higher P46 & P49 flow:
2/15/30 13:00 MST



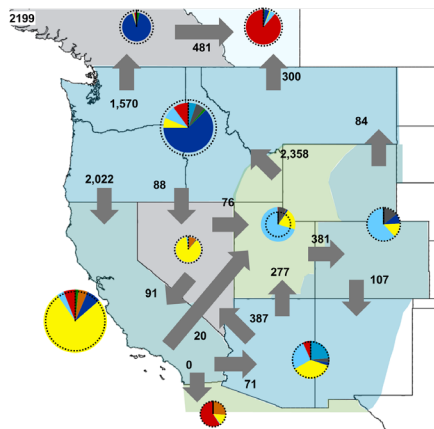
Higher P46 & Reverse P49
flow: 4/2/30 11:00 MST



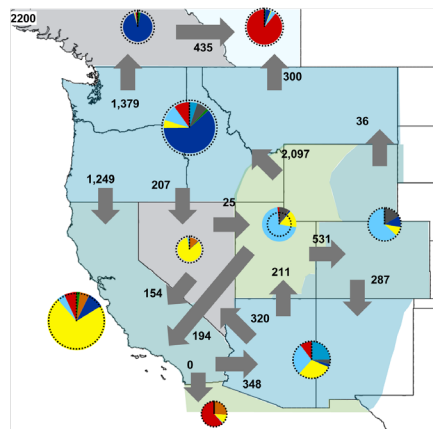
Highest P48 S->N:
4/2/30 14:00 MST



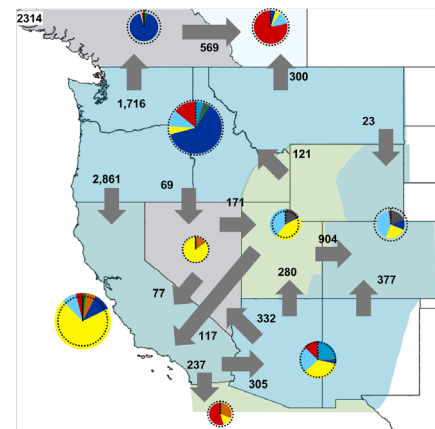
Highest NM Export:
4/2/30 15:00 MST



P47 S->N:
4/2/30 16:00 MST



Higher P47 N->S:
4/7/30 10:00 MST



PS Consensus:
Hour 14 on 4/2/30
is of most interest,
but final selection
will be at the
December PS
meeting based on
next draft PCM
results

2020-21 PLANNING PROCESS NEXT STEPS AND SCHEDULE

Next Steps for Planning Process

1. **Stakeholder comment period between now and December 3, 2020:**
 - Comment on reliability and economic needs assessment results and PS recommendation for needs determination
 - Suggest possible regional public policy-driven transmission needs based on review of the enacted public policies driving local transmission needs and the associated list of local public policy-driven transmission projects
2. December PMC meeting: PMC approves regional need determinations and release/posting of regional needs (if any)
3. Tasks for 2021:
 - Finalize and approval of Model Development Report & Regional Needs Assessment Report
 - Perform scenario studies;
 - Compile 2020-21 Regional Transmission Plan

Stakeholder comment period between now and December 3, 2020

- The PMC is inviting the following feedback based on stakeholder review of the preceding slides:
 - Comment on reliability and economic needs assessment results and PS recommendation for needs determination
 - Suggest possible regional public policy-driven transmission needs based on review of the enacted public policies driving local transmission needs and the associated list of local public policy-driven transmission projects
- A comment form has been posted on the WestConnect meeting calendar for today's meeting. Please use this form to submit comments to WestConnect, and please reference your comments to the associated slide number in this slide deck.

The background of the slide features a stylized landscape. It includes dark blue silhouettes of mountains and a prominent electrical transmission tower with power lines. A large, bright yellow sun is positioned on the right side, partially obscured by the mountains, against an orange sky.

Stakeholder Comments

Open Discussion



Subregional Planning Group Reports

Roy Gearhart, WAPA, CCPG Chair
Alex Fratkin, NVE, Outgoing SSPG Chair
Benjamin Borowiak, AEPCO, SWAT Chair



Interregional Coordination Updates

Heidi Pacini, WestConnect
Gary DeShazo, CAISO
Dave Angell, NorthernGrid

Interregional Coordination Activities

- Annual Interregional Coordination Meeting
 - Tentatively scheduled for the end of February, 2021
 - Webinar format
 - Hosted by NorthernGrid
- Interregional Transmission Project (ITP) Submittals
 - ITP Evaluation Process Plans have been posted to the websites of the Relevant Planning Regions
 - WestConnect Interregional Coordination [webpage](#)

2020 ITP Submittals

Project Name	Company	Project Submitted To	Submitted in 2018? Lead Planning Region	Seeking Cost Allocation from WestConnect
<u>Cross-Tie Project</u>	TransCanyon, LLC	WestConnect CAISO NTTG & NorthernGrid (NG)	Yes WestConnect	Yes
<u>Northwest Tie Upgrade</u>	GridLiance West	WestConnect CAISO	No WestConnect	Yes
<u>SWIP North</u>	Western Energy Connection, LLC	WestConnect CAISO NTTG (transferred to NG)	Yes NorthernGrid	Yes
<u>TransWest Express – Multiple configurations</u>	TransWest Express, LLC	CAISO NTTG (transferred to NG)	In-part CAISO	No

- The lead planning region takes the lead developing the Evaluation Process Plan for the given ITP. The lead planning region will also organize and facilitate interregional coordination meetings involving the ITP and track action items and outcomes of those meetings.
- ITP Evaluation Process Plans for each of the above ITPs were posted to the WestConnect website on June 12th. Links to these plans are provided in the table above.

The top of the slide features a horizontal banner with a landscape illustration. It shows a dark blue mountain range under an orange sky with a large yellow sun on the right. A power line tower is visible in the center of the landscape.

Stakeholder Comments

Open Discussion



Upcoming Meetings

Heidi Pacini, WestConnect Project Manager

Next Meetings

- **December 2020 Meetings:** *all meetings are scheduled as webinars*
 - **PS meeting:** Monday, December 14th, 1:00 p.m. – 3:00 p.m. MST - Tuesday, December 15th, 9:00 a.m. - 11:00 a.m. MST
 - **PMC meeting:** Wednesday, December 16, 9:00 a.m. - 12:00 p.m. MST
- 2021 meetings are in the process of being posted to the WestConnect calendar

ADJOURNMENT

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