



# **WESTCONNECT REGIONAL TRANSMISSION PLANNING**

2020-21 PLANNING CYCLE

REGIONAL TRANSMISSION NEEDS ASSESSMENT REPORT

APPROVED BY WESTCONNECT PLANNING MANAGEMENT COMMITTEE ON

FEBRUARY 17, 2021

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1 **1.0 Introduction and Summary**

2 The purpose of this report is to summarize the regional transmission need identification phase of  
3 WestConnect’s 2020-21 Regional Transmission Planning Process (“Planning Process”). With stakeholder  
4 input, the Planning Subcommittee developed this report to document the regional transmission needs  
5 assessment and includes both minority and majority views on decisions and assumptions used in  
6 performing the assessment.

7 The Planning Management Committee (PMC) has decision-making authority in the implementation of  
8 the Planning Process. On [December 16, 2020](#) the PMC approved the Planning Subcommittee’s  
9 recommendation that no regional transmission needs were identified in the 2020-21 Regional Planning  
10 Process. This report provides documentation to the PMC in support of the Planning Subcommittee’s  
11 recommendation with regard to the regional transmission need identification phase of the Planning  
12 Process.

13 **1.1 WestConnect Regional Transmission Planning**  
14 **Process**

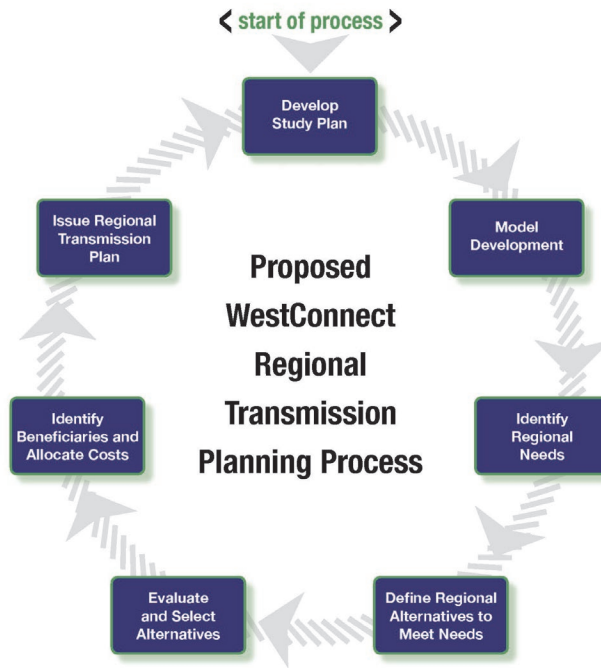
15 The identification of regional needs is the third step in the Planning Process. The planning process was  
16 developed for compliance with Federal Energy Regulatory Commission (FERC) [Order No. 1000](#),  
17 [Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities](#) (Order  
18 No. 1000).<sup>1</sup> The Planning Process is performed biennially, beginning in even-numbered years, and  
19 consists of the seven primary steps outlined in **Figure 1**.

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<sup>1</sup> All references to Order No. 1000 include any subsequent orders.

**Figure 1: WestConnect Regional Transmission Planning Process**



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23 Additional details of the Planning Process can be reviewed in the WestConnect Regional Planning  
 24 Process Business Practice Manual (BPM), posted to the WestConnect website [here](#). Readers can access  
 25 the text of the FERC Order No. 1000 compliance documentation on the WestConnect website [here](#) and  
 26 are encouraged to consult the compliance documentation and BPM for additional process information.

## 27 1.2 WestConnect 2020-21 Regional Study Plan

28 The first step in the Planning Process is the development of a Study Plan. The [2020-21 WestConnect](#)  
 29 [Study Plan](#) (“Study Plan”) was approved by the PMC on March 18, 2020. The Study Plan identifies the  
 30 scope and schedule of planning activities to be conducted during the planning cycle. The Study Plan also  
 31 describes the models and studies to be developed in the model development portion of the Planning  
 32 Process.

## 33 1.3 WestConnect 2020-21 Regional Model Development

34 The second step in the Planning Process is the development of regional models. Two types of studies are  
 35 needed for the Planning Process: reliability (“power flow” and “stability”) and economic (“production  
 36 cost model” or PCM). During the second, third, and fourth quarters of 2020, the Planning Subcommittee  
 37 developed regional models that were used in the identification of regional transmission needs for the  
 38 2020-21 Planning Process. WestConnect conducted an assessment of the region’s transmission needs  
 39 using models developed for the 2030 timeframe, approximately 10 years into the future. WestConnect

40 will also perform information-only scenario studies, as outlined in the Study Plan, which are designed to  
41 evaluate alternate but plausible futures.<sup>2</sup>

42 **Table 1** lists the reliability and economic models developed for the 2020-21 cycle.

43  
44

**Table 1: WestConnect Planning Models**

Case Name	Case Description and Scope
<b>2030 Heavy Summer Base Case</b>	Summer peak load conditions during 1500 to 1700 MDT, with typical flows throughout the Western Interconnection.
<b>2030 Light Spring Base Case</b>	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 capacity consistent with any applicable and enacted public policy requirements.
<b>2030 Base Case PCM</b>	Business-as-usual, expected-future case with median load and hydro conditions and representation of resources consistent with enacted public policies.

45

46 For the 2020-21 cycle, the Base Case models were approved by the PMC on [December 16, 2020](#), and the  
47 documentation of the Base Case model development was finalized on [February 17, 2021](#) with the PMC’s  
48 approval of the [2020-21 Model Development Report](#) (MDR). The MDR describes the development  
49 process of the regional base models created with assistance from WestConnect members and other  
50 stakeholders. The report details key model assumptions and parameters such as study timeframe,  
51 horizon, area, the Base Transmission Plan, and how public policy requirements were taken into account.  
52 Along with the MDR, the PMC approved the regional base models for use in assessments.

## 53 **2.0 Regional Transmission Needs Assessment**

54 The third step in the WestConnect regional Planning Process is the regional transmission needs  
55 assessment and identification of regional needs. The following sections outline the methods,  
56 assumptions, and results of the three types of regional need assessments: reliability, economic, and  
57 public policy.

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<sup>2</sup> As stated in the Study Plan, WestConnect regional assessments are centered on Base Cases and Scenarios, which when taken together, provide a robust platform that is used to identify the potential for regional transmission needs and emerging regional opportunities. Base Cases are intended to represent “business as usual,” “current trends,” or the “expected future.” They are based on TO-supplied forecasts for load, generation, public policy resources, and transmission plans. Scenarios are intended to complement Base Cases by looking at alternate but plausible futures. They 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. The scenario assessments will be performed in 2021 and the results of the scenario assessments will be documented in a separate report.

## 58 **2.1 Regional Reliability Needs Assessment**

59 WestConnect conducted the 2020-21 regional reliability assessment on two base cases: the 2030 Heavy  
60 Summer Base Case and the 2030 Light Spring Base Case. These models originated from cases developed  
61 and approved by the Western Electricity Coordinating Council (WECC). The assessment for regional  
62 needs was based on reliability standards adopted by the North American Electric Reliability Corporation  
63 (NERC) [TPL-001-4 Table 1](#) (P0 and P1) and [TPL-001-WECC-CRT-3.2](#) (Transmission System Planning  
64 Performance WECC Regional Criterion), and supplemented with any more stringent Transmission  
65 Owner with Load Serving Obligations (TOLSO) planning criteria based on TOLSO member feedback.  
66 Initial identification of regional issues for further review was defined as system performance issues  
67 impacting or between more than one TO Member system.

### 68 **Study Procedure and Assumptions**

69 The reliability assessment included extensive testing and multiple iterations of model refinements,  
70 simulations, participant review of results, and incorporation of modifications and comments into the  
71 subsequent round of simulations. The base case contingency and transient stability analysis became the  
72 final system assessment.

73 The final evaluation of the base reliability assessment was limited to contingencies meeting specific  
74 voltage and generation criteria, as described below.

### 75 **Steady State Contingency Analysis**

76 Contingency definitions for the steady-state contingency analysis were limited to N-1 contingencies for  
77 elements 230-kV and above, generator step-up transformers for generation with at least 200 MW  
78 capacity, and member-requested N-2 contingencies. All bulk electric system (BES) branches and buses –  
79 i.e., elements above 90-kV – in the WECC model were monitored.

### 80 **Transient Stability Analysis**

81 The following contingencies were evaluated in the transient stability simulations for both cases:

- 82 1) 1PV: Tripping 1 Palo Verde (PV) generator and its generator step-up (GSU) transformer with 3-  
83 phase fault on the Palo Verde generator terminal bus
- 84 2) Com-DP: Tripping Daniel Park-Comanche 345kv Lines 1 & 2 with fault at the Comanche 345kV  
85 bus
- 86 3) MS-Wind: Fault on Missile Site 345kV Bus, loss of Missile Site – Daniels Park 345kV Line, and  
87 loss of Limon and Missile Site Wind Generation
- 88 4) LRS-Fault: Fault on Laramie River 345kV Bus, loss of Laramie River – Ault 345kV Line, & loss of  
89 Laramie River #3 Generation
- 90 5) JOJOBA-KYRENE: Loss of Jojoba – Kyrene 500kV Line #1 due to 3-phase fault on the end with  
91 the most severe fault
- 92 6) PALOVRDE-RUDD: Loss of Palo Verde – Rudd 500kV Line #1 due to 3-phase fault on the end  
93 with the most severe fault

- 94 7) PALOVRDE-WESTWING: Loss of Palo Verde – West Wing 500kV Line #1 due to 3-phase fault on  
95 the end with the most severe fault
- 96 8) CaptJack-Olinda: Loss of Captain Jack – Olinda 500kV Line #1 due to 3-phase fault on the end  
97 with the most severe fault
- 98 9) Olinda-Tracy: Loss of Olinda – Tracy 500kV Line #1 due to 3-phase fault on the end with the  
99 most severe fault
- 100 10) McCullough-Victorville: Loss of McCullough – Victorville 500kV Line #1 due to 3-phase fault on  
101 the end with the most severe fault

## 102 Study Results

103 Upon a comprehensive review of the regional reliability assessment results, no regional needs were  
104 identified. This conclusion was reached because neither the Heavy Summer nor Light Spring  
105 assessments identified reliability issues that were between two or more WestConnect members or  
106 impacted two or more WestConnect members. Results from the assessment are provided in [Appendix B](#).

## 107 2.2 Regional Economic Needs Assessment

108 WestConnect performed the 2020-21 regional economic assessment by conducting a PCM study on a  
109 2030 Base Case along with four sensitivity case. The goal of the assessment was to test the base case and  
110 the Base Transmission Plan for economic congestion between more than one TOLSO Member’s area. The  
111 WestConnect 2028 PCM from the 2018-19 planning cycle served as the seed case for the WestConnect  
112 economic model 2030 Base Case. The WestConnect 2028 PCM was reviewed and updated by  
113 WestConnect during Quarters 2, 3, and 4 of the 2020-21 planning cycle, and the Quarter 3 updates  
114 included assumptions pulled from the WECC 2030 Anchor Dataset (ADS) interconnection-wide 10-year  
115 PCM ([“2030 ADS PCM V1.0”](#)), dated June 30, 2020. The model was reviewed and updated by  
116 WestConnect members to maintain consistent electric topologies with the reliability base cases within  
117 the WestConnect footprint. Detailed model and data assumptions are described in Section 4 of the MDR.

### 118 Study Procedure and Assumptions

119 The Planning Subcommittee conducted the study and reviewed the 2030 Base Case PCM results for  
120 regional congestion (i.e., number of hours) and congestion cost (i.e., the cost to re-dispatch more  
121 expensive generation because of transmission constraints). As with the reliability assessment, the  
122 economic assessment included extensive testing and multiple iterations of model refinements,  
123 simulations, participant review of results, and incorporation of modifications and comments into the  
124 subsequent round of simulations. Wheeling charge assumptions were further vetted through a  
125 sensitivity analysis described below.

126 Given the regional focus of the WestConnect process, the Planning Subcommittee limited its congestion  
127 analysis to:

- 128 • Transmission elements (or paths/interfaces) between multiple WestConnect member TOs;
- 129 • Transmission elements (or paths/interfaces) owned by multiple WestConnect member TOs; and

- 130 • Congestion occurring within the footprints of multiple TOs that has potential to be addressed by  
131 a regional transmission project or non-transmission alternative.<sup>3</sup>

## 132 Sensitivity Study

133 Models were developed for sensitivity studies on the 2030 Base Case economic model to better  
134 understand whether regional transmission congestion may be impacted by adjusting certain input  
135 assumptions subject to significant uncertainty. The sensitivity analysis is intended to make relatively  
136 minor adjustments that would still remain within the expected future framework of the base models.  
137 The Planning Subcommittee determined four sensitivities of interest, and their assumptions are  
138 summarized below. The detailed assumptions are provided in Section 4.1 of the MDR.

- 139 1. **2030 High Load Sensitivity Case:** The hourly load shapes of the Balancing Authority Areas  
140 (BAAs) within WestConnect were scaled up so their annual peak and energy was beyond their  
141 values in the 2030 Base Case. The WestConnect BAAs total coincident annual peak load and load  
142 energy in this case ended up being higher than the 2030 Base Case by 8,644 MW (14%) and  
143 45,591 GWh (15%), respectively.
- 144 2. **2030 Low Hydro Sensitivity Case:** The hydro modeling was replaced with WECC’s 2001-based  
145 hydro modeling developed by WECC in conjunction with their 2024 Common Case PCM dataset.  
146 The system-wide hydro generation of this case ended up being lower than in the 2030 Base Case  
147 by 40,249 GWh (17%).
- 148 3. **2030 High Gas Price Sensitivity Case:** All the natural gas prices were increased to 140% of  
149 their value in the 2030 Base Case.
- 150 4. **2030 System-Wide Carbon Emission Cost Sensitivity Case:** Applied CO<sub>2</sub> emission charges to  
151 all generators in WECC.

## 152 Study Results

153 The objective of the economic needs assessment was to arrive at a set of congested elements that  
154 warranted testing for the economic potential for a regional project solution, recognizing that the  
155 presence of congestion does not always equate to a regional need for congestion relief at a particular  
156 location.

157 There was no significant congestion to identify a regional need in the base case. For completeness, the  
158 Planning Subcommittee conducted the sensitivity studies described above to confirm that the wheeling  
159 charge assumptions were not hiding potential regional congestion.

160 The Planning Subcommittee determined the congestion results for the base case did not result in the  
161 identification of regional needs. The congestion results for the base case and the sensitivity case PCM  
162 and detailed explanations are provided in [Appendix C](#).

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<sup>3</sup> Congestion within a single TO’s footprint (and not reasonably related or tied to other TO footprints) is out of scope of the regional planning effort and is alternatively subject to Order 890 economic planning requirements.



164 **2.3 Public Policy Needs Assessment**

165 The WestConnect Regional Planning Process is intended to identify regional needs and the more  
166 efficient or cost-effective solutions to satisfy those needs. Enacted public policy was considered in the  
167 Planning Process as a part of the base case development. Non-enacted or proposed public policies were  
168 considered as part of the scenario planning process. In this context, enacted public policies are state or  
169 federal laws or regulations, meaning enacted statutes (i.e., passed by the legislature and signed by the  
170 executive) and regulations promulgated by a relevant jurisdiction, whether within a state or at the  
171 federal level. Enacted public policies were incorporated into the base models through the roll-up of local  
172 TO plans and their associated load, resource, and transmission assumptions. Given this, regional public  
173 policy needs can be identified one of two ways:

- 174 1) New regional economic or reliability needs driven by enacted Public Policy Requirements; or  
175 2) Stakeholder review of local TO Public Policy Requirements-driven transmission projects and  
176 associated suggestions as to whether one or more TO projects may constitute a public policy-  
177 driven regional transmission need.

178 **Study Procedure and Assumptions**

179 WestConnect began the evaluation of regional transmission needs driven by public policy requirements  
180 by identifying a list of enacted public policies that impact local TO plans in the WestConnect planning  
181 region. This list was developed by the Planning Subcommittee in public meetings and posted in meeting  
182 materials. It was agreed that enacted public policies driving local TO transmission including, but not  
183 limited to, state RPS and distributed generation goals/set-asides would be represented in the base cases.  
184 Stakeholders were invited to suggest possible regional public policy-driven transmission needs based on  
185 the enacted public policies driving local transmission needs and the associated list of local public policy-  
186 driven transmission projects, presented via the [November 19, 2020 Stakeholder Meeting slides](#).

187 **Study Results**

188 In conducting the regional reliability and economic assessments (see above) the Planning Subcommittee  
189 did not find any regional issues driven by enacted public policy requirements. Furthermore,  
190 stakeholders did not suggest or recommend the identification of a regional public policy-driven  
191 transmission need based on this information. Based on these two findings, there are no identified public  
192 policy needs in the WestConnect 2020-21 regional Planning Process.

193 **3.0 Stakeholder Involvement**

194 The Planning Process is performed in an open and transparent manner. The Planning Subcommittee and  
195 PMC meetings held in support of the regional transmission needs assessment were open to the public,  
196 and each meeting provided an opportunity for stakeholder comment. Notice of all stakeholder meetings  
197 and stakeholder comment periods were posted to the WestConnect website<sup>4</sup> and distributed via email.

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<sup>4</sup> WestConnect Regional Planning meeting calendar: [http://regplanning.westconnect.com/calendar\\_rp.htm](http://regplanning.westconnect.com/calendar_rp.htm)  
Stakeholder Comments webpage: [http://regplanning.westconnect.com/stakeholder\\_comments.htm](http://regplanning.westconnect.com/stakeholder_comments.htm)

198 An open stakeholder meeting to discuss the WestConnect regional transmission needs assessment was  
199 conducted on November 19, 2020 and on February 18, 2021. The meetings were announced through  
200 WestConnect’s stakeholder distribution lists, and all stakeholders were invited to attend.

201 There was an open stakeholder comment window between November 19, 2020 and December 3, 2020  
202 for stakeholders to comment on the Draft 2020-21 Regional Needs Assessment, as presented via the  
203 [November 19, 2020 Stakeholder Meeting slides](#). No stakeholder comments were received.

## 204 **4.0 Conclusions and Next Steps**

205 Based on the findings from the 2020-21 cycle analysis performed for reliability, economic, and public  
206 policy transmission needs as described in this Regional Needs Assessment Report, no regional  
207 transmission needs were identified in the 2020-21 needs assessment.

208 Since no regional transmission needs were identified, the PMC will not collect transmission or non-  
209 transmission alternatives for evaluation as there are no regional transmission needs to evaluate the  
210 alternatives against.

211 **5.0 Appendix A: Information Confidentiality**

212  
213 The Planning Subcommittee handled confidential information in accordance with the protocols outlined  
214 in the BPM. Although the Regional Planning Process is open to all stakeholders, stakeholders are  
215 required to comply at all times with certain applicable confidentiality measures necessary to protect  
216 confidential information, proprietary information, or Critical Energy Infrastructure Information (CEII).

217 As it related to the model development portion of the process, confidentiality protections were accorded  
218 for the following:

- 219 • WestConnect power flow models are considered CEII. Based on this, during the case  
220 development process, only those entities having signed the appropriate Non-Disclosure  
221 Agreement (NDA) with WECC were granted access to the model. This iteration does not contain  
222 any information that is different from what would be typically contained in the original WECC  
223 base case.
- 224 • Certain generator procurement and contract information gathered during the RPS evaluation  
225 was considered commercially sensitive. Based on this assessment, that data was considered  
226 confidential and was not shared.
- 227 • WestConnect PCM and power flow models are subject to the [WestConnect Confidentiality](#)  
228 [Agreement](#), and their distribution was limited to signatories of that agreement.

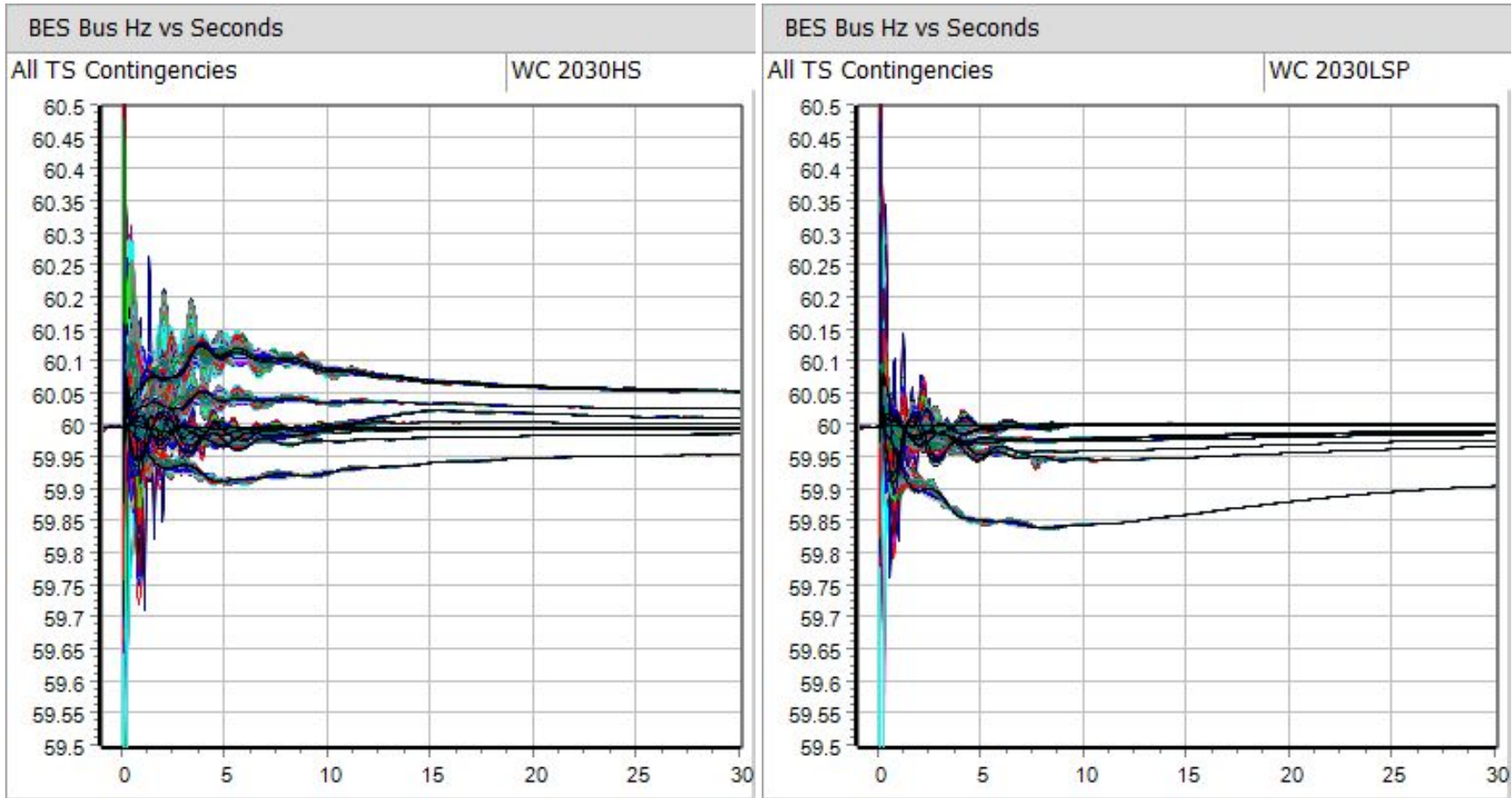
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230 **6.0 Appendix B: Results of Reliability Needs Assessment**

231 The single-TO issues are provided in the slides of the [PMC meeting on December 16, 2020](#).

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**Figure 2. Frequency at All WestConnect Load Buses with WECC Voltage Criteria, for All Transient Stability Simulated Contingencies in Each Reliability Base Case**



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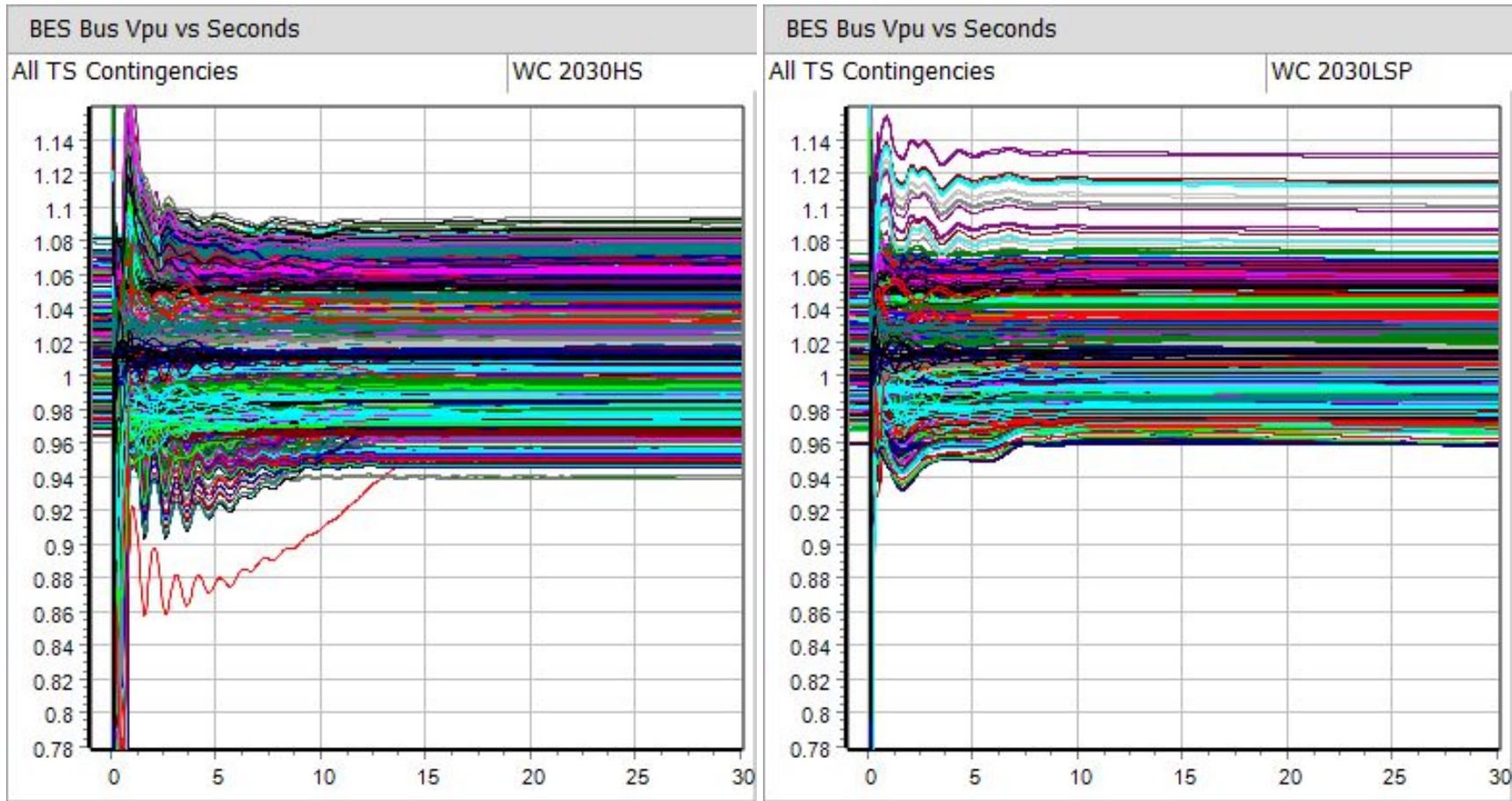
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**Figure 3. Per Unit Voltage at All WestConnect Load Buses with WECC Voltage Criteria, for All Transient Stability Simulated Contingencies in Each Reliability Base Case**



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**Table 2. Summary of Transient Stability Simulations Which Show No Violations. The Unrestored Load & Tripped Generation Reported by The Simulations Is Acceptable Per TPL standards<sup>5</sup>**

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
WestConnect	WestConnect	Base	0	0	0	0	0	0	0	0
ARIZONA	APS, City of LA, EPE, IID, PNM, SRP, SCE, SCPPA	1PV	0	0	0	0	0	0	406	0
PSCOLORADO	Xcel/PSCO	DP-Com	0	160	0	0	0	54	0	0
PSCOLORADO	Xcel/PSCO	MS-Wind	0	132	126	0	0	52	222	0
WAPA R.M.	BEPC, TSGT	LRS-Fault	0	20	0	0	0	7	96	0
SRP	Salt River Project	JOJOBA-KYRENE	0	1010	0	0	0	195	310	0
SRP	Salt River Project	PALOVRDE-RUDD	0	2368	0	0	0	466	324	0
APS, SRP	Salt River Project	PALOVRDE-WESTWING	0	2478	0	0	0	466	324	0
NORTHWEST, PG AND E	Bonneville Power Admin, California-Oregon Trans. Project, Pacific Gas and Electric, WAPA - SNR	CaptJack-Olinda	0	553	0	0	0	45	160	0
PG AND E	California-Oregon Trans. Project, Pacific Gas and Electric, WAPA - SNR	Olinda-Tracy	0	21	0	0	0	2	160	0
LADWP	City of Los Angeles	McCullough-Victorville	0	0	0	0	0	0	0	0

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<sup>5</sup>See TPL-001-4 references noted below:

- Note "b." in [TPL-001-4](#): Consequential Load Loss as well as generation loss is acceptable as a consequence of any event excluding P0.
- 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.

244 **7.0 Appendix C: Results of Economic Needs Assessment**

245 The single-TO issues are provided in the slides of the [PMC meeting on December 16, 2020](#).

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**Table 3: Results of Regional Economic Needs Assessment**

Element Information		Congestion Hours (% Hrs) / Cost (\$) [& Penalty Cost Component of Congestion Cost (if any)]					Regional Need	Determination
		Base Case	Sensitivity Cases (Results filtered to only show changes to the congestion in the Base Case)					
Owner/ Operator(s)	Branch/Path Name	2030 Base Case	High Gas Price Sensitivity	High Load Sensitivity	Low Hydro Sensitivity	System-wide Carbon Emission Cost Sensitivity		
PSColorado Tri-State G&T	STORY - PAWNEE 230kV Line #1 (73192_70311_1)	434 (5%) / 5,997K	379 (4%) / 6,116K	385 (4%) / 4,518K	395 (5%) / 4,751K	970 (11%) / 22,410K	<b>NO</b>	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.
Gila River Power, LP Sundevil Power Holdings, LLC Salt River Project Arizona Public Service	GILARIVR - PANDA 500/230kV Transformer #1 (159970_14238_1)	154 (2%) / 5,164K	177 (2%) / 6,837K	399 (5%) / 29,345K* *Penalty Cost: \$4,036K (14%)	159 (2%) / 5,889K	146 (2%) / 8,630K	<b>NO</b>	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.

Element Information		Congestion Hours (% Hrs) / Cost (\$) [& Penalty Cost Component of Congestion Cost (if any)]					Regional Need	Determination
		Base Case	Sensitivity Cases (Results filtered to only show changes to the congestion in the Base Case)					
Owner/ Operator(s)	Branch/Path Name	2030 Base Case	High Gas Price Sensitivity	High Load Sensitivity	Low Hydro Sensitivity	System-wide Carbon Emission Cost Sensitivity		
Intermountain Power Agency   Sierra Pacific Power Co.	P29 Intermountain-Gonder 230 kV Interface	139 (2%) / 894K	185 (2%) / 1,027K	85 (0.97%) / 556K	208 (2%) / 1,257K	11 (0.13%) / 110K	<b>NO</b>	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 transfer capacity with Path 32 (+Pavant-Gonder line) - so this looks like "inter-regional" issue
Basin Electric Power Coop.   Tri-State G&T   PacifiCorp - East	DAVEJOHN - LAR.RIVR 230kV Line #1 (65420_73107_1)	24 (0.27%) / 795K	25 (0.29%) / 617K	30 (0.34%) / 3,255K* *Penalty Cost: \$933K (29%)	20 (0.23%) / 629K	38 (0.43%) / 1,602K	<b>NO</b>	TSGT: Only 24 hours of congestion is very minor (<1% of the year) and can be considered noise
WAPA L.M.   DG&T   Tri-State G&T	P30 TOT 1A Interface	33 (0.38%) / 499K	42 (0.48%) / 821K	198 (2%) / 57,779K	10 (0.11%) / 54K	47 (0.54%) / 723K	<b>NO</b>	TSGT: Only 33 hours of congestion is very minor (<1% of the year) and can be considered noise
Tri-State G&T   WAPA L.M.   PSColorado   Basin Electric Power Coop.	P36 TOT 3 Interface	4 (0.05%) / 295K	4 (0.05%) / 402K	35 (0.40%) / 60,897K* *Penalty Cost: \$25,965K (43%)	4 (0.05%) / 218K	4 (0.05%) / 559K	<b>NO</b>	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.



Element Information		Congestion Hours (% Hrs) / Cost (\$) [& Penalty Cost Component of Congestion Cost (if any)]					Regional Need	Determination
		Base Case	Sensitivity Cases (Results filtered to only show changes to the congestion in the Base Case)					
Owner/ Operator(s)	Branch/Path Name	2030 Base Case	High Gas Price Sensitivity	High Load Sensitivity	Low Hydro Sensitivity	System-wide Carbon Emission Cost Sensitivity		
TSGT New Mexico EPE El Paso Electric Company	UVAS - ALTLUNTP 115kV Line #1 (11193_12195_1)	14 (0.16%) / 108K	34 (0.39%) / 284K	266 (3%) / 6,106K	15 (0.17%) / 101K	23 (0.26%) / 379K	<b>NO</b>	TSGT & EPE: Only 14 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.
Intermountain Power Agency Sierra Pacific Power Co.	P32 Pavant-Gonder InterMtn-Gonder 230 kV Interface	12 (0.14%) / 79K	4 (0.05%) / 46K	14 (0.16%) / 140K		26 (0.30%) / 891K	<b>NO</b>	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.
WAPA L.M. PSColorado	MIDWAYPS - MIDWAYBR 230kV Line #1 (70286_73413_1)	1 (0.01%) / 2K		2 (0.02%) / 14K	1 (0.01%) / 11K	10 (0.11%) / 85K	<b>NO</b>	PSCo: this level of congestion does not warrant a regional need. Cost and hours are insignificant and would not justify capital investment.

<b>Multi-Owner Total Congestion Cost:</b>	<b>\$13,833,021</b>	<b>\$16,149,951</b>	<b>\$162,610,075</b>	<b>\$12,910,321</b>	<b>\$35,389,165</b>
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