



# **WESTCONNECT REGIONAL TRANSMISSION PLANNING**

2022-23 PLANNING CYCLE

FINAL REGIONAL STUDY PLAN

APPROVED BY WESTCONNECT PMC ON MARCH 16, 2022

---

---

**INTENTIONALLY LEFT BLANK**

# Contents

---

<b>1.0</b>	<b>Introduction</b> .....	<b>4</b>
1.1	Process Background.....	4
<b>2.0</b>	<b>Overview of 2022-23 Regional Transmission Planning Activities</b> .....	<b>6</b>
2.1	Schedule .....	6
2.2	Regional Needs Assessment Background.....	7
2.3	Opportunities for Stakeholder Involvement.....	10
2.4	Interregional Coordination.....	10
<b>3.0</b>	<b>Base Transmission Plan</b> .....	<b>11</b>
3.1	Summarizing the 2022-23 Base Transmission Plan.....	12
<b>4.0</b>	<b>Regional Reliability Assessment</b> .....	<b>12</b>
4.1	Model Development Process.....	13
4.2	Key Assumptions .....	13
4.3	Study Methodology and Criteria.....	14
4.4	Regional Reliability Needs.....	15
<b>5.0</b>	<b>Regional Economic Assessment</b> .....	<b>17</b>
5.1	Model Development Process.....	18
5.2	Key Assumptions .....	18
5.3	Study Methodology and Criteria.....	19
5.4	Regional Economic Needs.....	20
<b>6.0</b>	<b>Public Policy Assessment</b> .....	<b>20</b>
6.1	Public Policy Requirements .....	20
6.2	Study Methodology and Criteria.....	25
6.3	Regional Public Policy-driven Transmission Needs.....	25
<b>7.0</b>	<b>Solutions to Regional Needs</b> .....	<b>25</b>
<b>8.0</b>	<b>Scenario Studies</b> .....	<b>26</b>
8.1	Scenarios Received for the 2022-23 Study Plan.....	27
8.2	High Clean Energy Penetration Scenario Study.....	28
	<b>Appendix A – Base Transmission Plan Process</b> .....	<b>29</b>
	<b>Appendix B – Base Transmission Plan</b> .....	<b>30</b>
	<b>Appendix C – Other Regional Planning Process Activities</b> .....	<b>44</b>

# 1.0 Introduction

The first step of the WestConnect Regional Transmission Planning Process (“Planning Process”) is the development of a Regional Study Plan which identifies the scope and schedule of the study work to be performed during the two-year planning cycle (“planning cycle”). This document reflects the WestConnect Regional Study Plan (“Study Plan”) for the 2022-23 planning cycle. **Table 1** below lists the acronyms used in the document.

**Table 1. List of Acronyms**

Acronym	Meaning
AQCC	Air Quality Control Commission
BPM	WestConnect Regional Business Practice Manual
CAS	WestConnect Cost Allocation Subcommittee
CFE	Carbon Pollution-Free Electricity
DR	Demand Response
EE	Energy Efficiency
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse Gas
GSU	Generator step-up (in context of generator step-up transformers)
IRP	Integrated Resource Plan
ITP	Interregional Transmission Project
NTA	Non-transmission alternative
OWM	Organized Wholesale Market
PMC	WestConnect Planning Management Committee
PPA	Planning Participation Agreement
PS	WestConnect Planning Subcommittee
RES	Renewable Energy Standard
RCT	Reasonable Cost Threshold
RPS	Renewable Portfolio Standard
TO	Transmission Owner
TOLSO	Transmission Owner with Load Serving Obligation
TPPL	Transmission Plan Project List
WECC	Western Electricity Coordinating Council
ZEV	Zero-Emission Vehicle

The WestConnect Planning Management Committee (“PMC”) has overall responsibility for all WestConnect regional planning activities. The Planning Process activities described within this Study Plan will be conducted under the direction of the PMC by the WestConnect Planning Subcommittee (“PS”) and WestConnect Cost Allocation Subcommittee (“CAS”), with input from PMC members and stakeholders, as described in greater detail in subsequent sections of this document.

## 1.1 Process Background

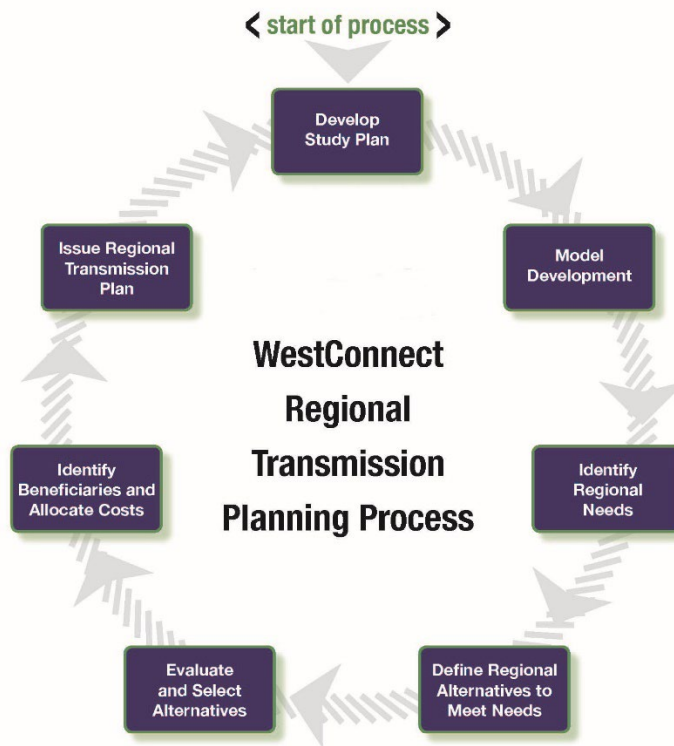
The Planning Process was developed for compliance with Federal Energy Regulatory Commission (“FERC”) Order Number 1000, Transmission Planning and Cost Allocation by Transmission Owning and

16 Operating Public Utilities, (“Order No. 1000”).<sup>1</sup> The Planning Process is performed biennially and  
17 consists of seven primary steps as outlined in **Figure 1**.

18 The Planning Process is in conformance with Order No. 1000 as supplemented by numerous Compliance  
19 Filings and resulting FERC Orders. Readers can access the text of the compliance documentation on the  
20 WestConnect website,<sup>2</sup> and are encouraged to consult the compliance documentation and the  
21 WestConnect Regional Business Practice Manual (“BPM”) for additional process information, which is  
22 posted to the WestConnect website.<sup>3</sup> Also, for Transmission Owner with Load Serving Obligation  
23 (“TOLSO”) members that are jurisdictional to the FERC, their FERC-approved tariff may preside over this  
24 document.

25  
26

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



27

28 The Planning Process commences in even-numbered years, resulting in the development of a Regional  
29 Transmission Plan (“Regional Plan”) every other year. During the first year of the planning cycle,  
30 WestConnect performs system assessments to determine if there are any regional reliability, economic,  
31 or public policy-driven transmission needs, collectively referred to as “regional needs”. If regional needs  
32 are identified, WestConnect will solicit alternatives (transmission or non-transmission alternatives  
33 (NTAs)) from WestConnect members and stakeholders to determine if they have the potential to meet  
34 any identified regional needs. WestConnect will then evaluate those alternatives to determine whether

<sup>1</sup> All references to Order No. 1000 include any subsequent orders (see <http://www.ferc.gov/whats-new/comm-meet/2011/072111/E-6.pdf>)

<sup>2</sup> [www.westconnect.com](http://www.westconnect.com)

<sup>3</sup> WestConnect BPM: <https://doc.westconnect.com/Documents.aspx?NID=17155&dl=1>

any alternatives meet the identified regional needs, and which alternatives provide the more cost-effective or efficient solution. The more efficient or cost-effective solutions will be identified in the Regional Plan. Any alternatives that were submitted for the purposes of regional cost allocation and selected into the Regional Plan may go through the cost allocation process if they are deemed to be eligible for regional cost allocation. During the last quarter of the process WestConnect will develop and finalize the Regional Transmission Plan Report (“Regional Plan Report”) which will describe the process used to identify regional needs, identify transmission facilities or NTAs selected as the more efficient or cost-effective solutions to identified regional needs, and document why projects were included or not included in the Regional Plan.

## 2.0 Overview of 2022-23 Regional Transmission Planning Activities

### 2.1 Schedule

Table 2 below provides an overview of the expected schedule of activities to be conducted as part of the 2022-23 planning cycle. This schedule is subject to change. Changes to the schedule of activities outlined below will be noticed on the WestConnect website, emailed to stakeholder lists, and discussed at committee meetings.

**Table 2: Tentative Schedule for 2022-23 Regional Planning Cycle**

<i>Due Date</i>	<i>Quarter</i>	<i>Activity</i>
February 10, 2022	Q1	WestConnect Stakeholder Meeting to present draft Regional Study Plan
February 11, 2022	Q1	Draft Regional Study Plan posted to WestConnect website
March 4, 2022	Q1	Interregional Coordination Meeting
March 16, 2022	Q1	Final Regional Study Plan approved by PMC
March 31, 2022	Q1	Interregional Transmission Project (“ITP”) submittal deadline <sup>4</sup>
September 2022	Q3	Regional models finalized
November 2022	Q4	Stakeholder meeting to discuss identified regional needs
December 2022	Q4	Regional transmission needs posted to WestConnect website
January 2023	Q5	Submittal window opens for projects to meet the posted regional needs. Submittal window lasts for no less than 30 days
September 2023	Q7	WestConnect posts listing of projects meeting an identified regional need selected for the purposes of cost allocation
November 2023	Q8	Draft Regional Plan Report posted to WestConnect website
November 2023	Q8	Stakeholder meeting to discuss the draft Regional Plan Report

<sup>4</sup> The timing of this ITP submittal deadline being early in 2022, as opposed to after the PMC’s identification of regional transmission needs, is driven by the fact that the Western Planning Regions’ coordination activities require, no later than March 31st, an identification of ITPs submitted into the regional processes of all relevant planning regions. For the WestConnect region, the PMC will not begin evaluating whether an ITP may satisfy an identified regional transmission need in the WestConnect region until after the PMC identifies regional transmission needs at year-end 2022.

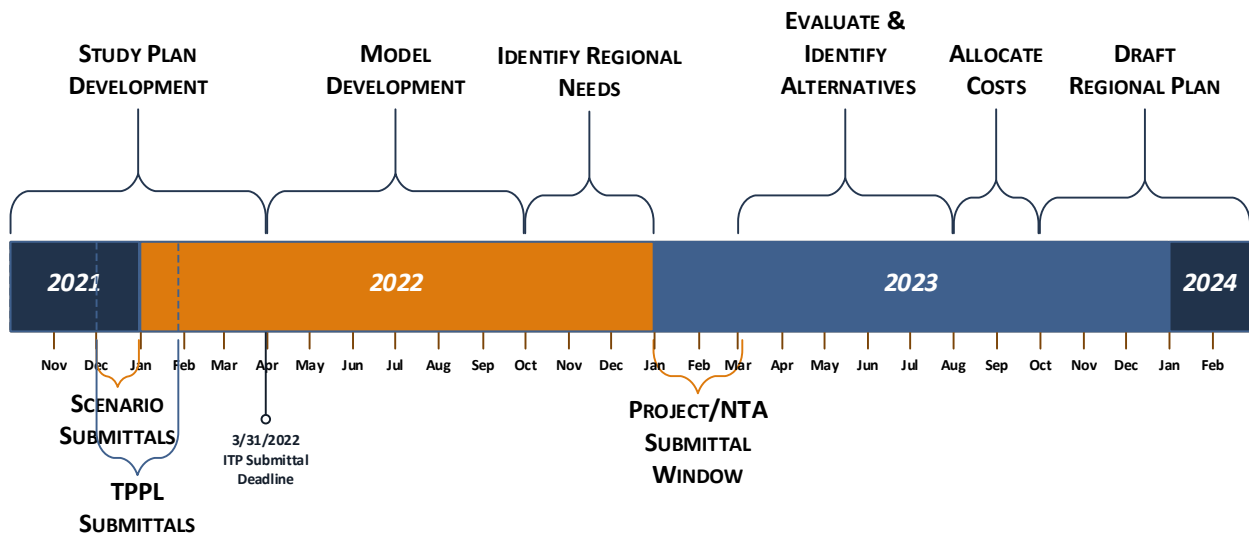
<i>Due Date</i>	<i>Quarter</i>	<i>Activity</i>
Three weeks prior to PMC December 2023 meeting	Q8	Stakeholder comments on draft Regional Plan Report due to WestConnect
December 2023	Q8	Final 2022-23 Regional Plan Report posted to WestConnect website

53 The 2022-23 regional planning cycle timeline is shown in **Figure 2**.

54

55

**Figure 2: 2022-23 Planning Cycle Timeline**



56

## 57 2.2 Regional Needs Assessment Background

58 During Quarters 2 and 3 of the 2022-23 planning cycle, the models that are needed to perform the  
 59 regional transmission assessments will be developed as described in this document. The PMC will  
 60 conduct an assessment of the region’s transmission needs in the 10-year timeframe, using models  
 61 developed for year 2032. Three types of assessments will be performed during the Planning Process:  
 62 reliability (steady state and/or transient), economic (production cost), and public policy. The public  
 63 policy assessment will utilize the reliability and economic planning tools and models.<sup>5</sup> Cases from the  
 64 Western Electricity Coordinating Council (“WECC”) will be used as seed cases and they will include the  
 65 systems of all WECC Transmission Owner (“TO”) entities. These cases are used as the foundation for the  
 66 models that WestConnect will develop and use for the regional transmission need assessments.

67 TOLSO members and other participants will update the WECC models, as described in more detail  
 68 below, to ensure the WestConnect footprint is properly represented.<sup>6</sup> To the extent WestConnect  
 69 receives updated modeling data from TOs outside of the WestConnect planning region during the

<sup>5</sup> Other Public Policy assessment methodologies may be used at the discretion of the PMC.

<sup>6</sup> All parties participating in the model development process, and several other stages of the WestConnect planning process that involve handling of non-public data, are required to execute a non-disclosure agreement (NDA) with WestConnect. The agreement is located here: <https://doc.westconnect.com/Documents.aspx?NID=17191&dl=1>

70 development of the regional models, it will be considered and, if appropriate, incorporated into the  
71 regional models. The PMC will approve the WestConnect models prior to their use in the regional needs  
72 assessment. The PMC will not evaluate regional transmission needs for systems outside of the  
73 WestConnect planning region.

74 After the PS completes the regional transmission assessments (as described in Sections 4.0, 5.0, and 6.0)  
75 for the studies included in the scope of this Study Plan, the PS will identify a list of transmission issues  
76 resulting from the studies, and make a recommendation to the PMC as to which, if any, regional issues  
77 should constitute economic, reliability, or public policy-driven transmission needs. The process for  
78 identifying those regional transmission needs for which a regional transmission (or NTA) solution or  
79 solutions is sought and evaluated shall utilize various communication channels with stakeholders,  
80 including open PMC and PS meetings, stakeholder meetings, and the development of a Regional  
81 Transmission Needs Assessment Report (which will allow for stakeholder comment and input). This  
82 report will be delivered to the PMC for review and approval, and it will contain the PS's  
83 recommendation on regional transmission needs for the planning cycle. The regional transmission  
84 needs will be finalized pending the PMC's approval of the report.

85 **Study Area**

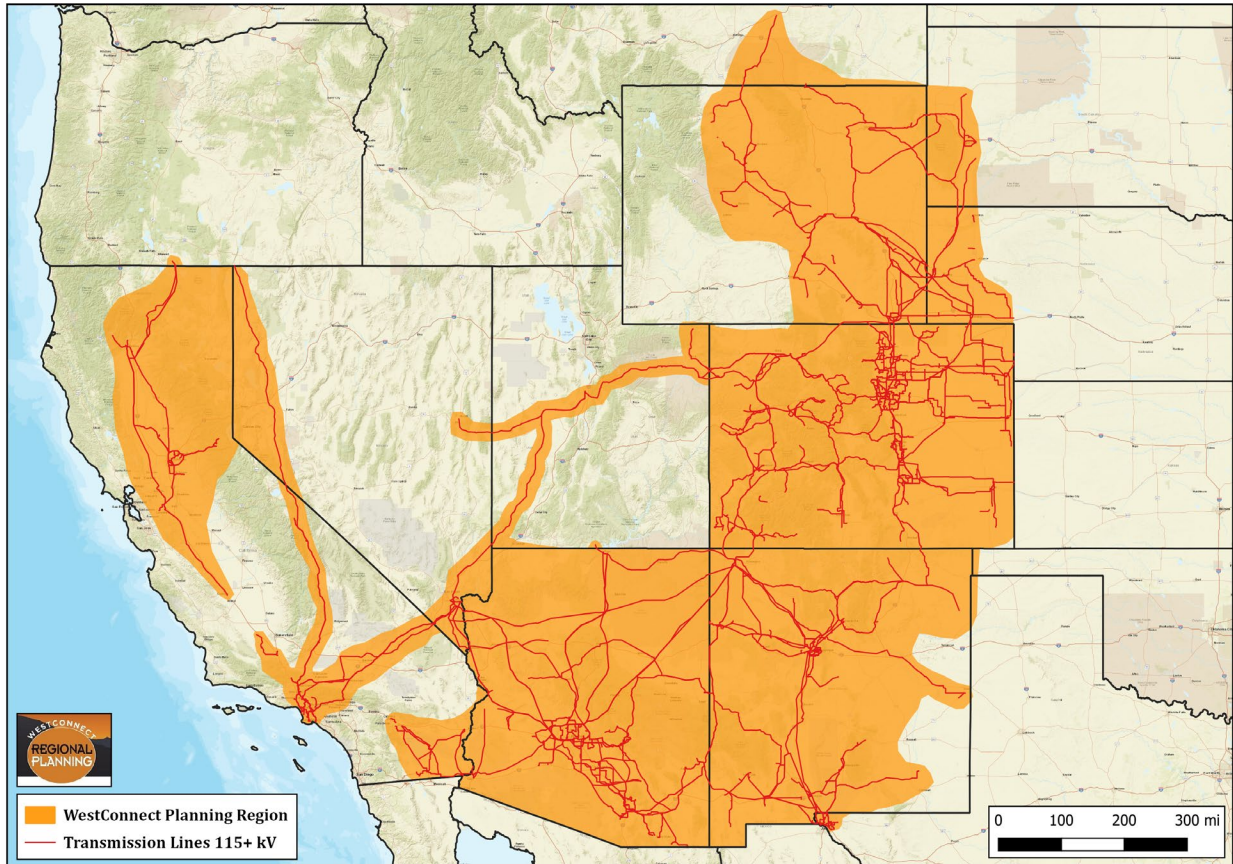
86 The Planning Process evaluates the regional transmission needs of the WestConnect planning region,  
87 which is defined as the combined footprints of signatories to the Planning Participation Agreement  
88 ("PPA") from within the TOLSO member sector. TOLSO members participating in the WestConnect  
89 2022-23 Planning Process and the systems considered in the regional transmission needs assessment  
90 include:

- 91
- Arizona Electric Power Cooperative, Inc.
  - Arizona Public Service
  - Basin Electric
  - Black Hills Energy
  - Colorado Springs Utilities
  - Deseret Generation and Transmission Co-operative
  - El Paso Electric
  - Imperial Irrigation District
  - Los Angeles Department of Water and Power
  - Platte River Power Authority
  - Public Service Company of New Mexico
  - Sacramento Municipal Utility District
  - Salt River Project
  - Tucson Electric Company
  - Transmission Agency of Northern California
  - Tri-State Generation and Transmission
  - Western Area Power Administration (Desert Southwest, Rocky Mountain, Sierra Nevada)
  - Public Service Company of Colorado (Xcel Energy)

92 WestConnect does not conduct FERC Order 1000 regional transmission needs assessments for non-  
93 members. The approximate footprint of TOLSO members and other TOs participating in WestConnect is  
94 shown in **Figure 3**.



**Figure 3: Approximate Footprint of WestConnect TOLSO Members and Participating TOs**



96

97 The following PMC Members from the Independent Transmission Developer Member Sector and Key  
 98 Interest Group also participate in the planning effort:

99

- Black Forest Partners
- Southwestern Power Group
- TransCanyon
- Western Energy Connection, LLC
- Xcel Western Transmission Company
- Natural Resources Defense Council

## 100 **Local versus Regional Transmission Issues**

101 For the purposes of the regional transmission needs assessment, a single-system need impacts only the  
 102 TOLSO-footprint in which it resides. Single TOLSO transmission issues and non-member issues are not  
 103 within the scope of the Planning Process, and are not considered regional transmission needs. However,  
 104 for the sake of completeness and study transparency, the Planning Process will include a review of all  
 105 single-system transmission issues to ensure that in combination, none of the issues are regional in  
 106 nature and/or co-dependent. Any single-system issues are the responsibility of the affected TOLSO to  
 107 resolve, if necessary.

108 Regional needs are generally defined by impacts to more than one TOLSO. However, the PMC may  
 109 determine that in some instances, the multi-TOLSO impacts are local, rather than regional, in nature. In  
 110 such cases, WestConnect will provide an explanation as to how impacts are classified.

## 111 **2.3 Opportunities for Stakeholder Involvement**

112 The Planning Process is performed in an open and transparent manner to attain objective analysis and  
113 results. WestConnect invites and encourages interested parties or entities to participate in and provide  
114 input to the Planning Process at all levels. Stakeholders also have opportunities to participate in and  
115 provide input to local transmission plans as provided for in each TOLSO member’s Open Access  
116 Transmission Tariff.

117 WestConnect planning meetings are open to stakeholders.<sup>7</sup> Stakeholders’ opportunities for timely input  
118 and meaningful participation are available throughout the Planning Process. More specifically,  
119 WestConnect will accept and consider stakeholder comments on the following reports planned for the  
120 2022-23 planning cycle:

- 121 • Study Plan;
- 122 • Model Development Report;
- 123 • Regional Needs Assessment;
- 124 • Alternative Evaluation (if applicable);<sup>8</sup>
- 125 • Cost Allocation (if applicable);<sup>9</sup>
- 126 • Regional Transmission Plan.

127 In addition, WestConnect will conduct at least two stakeholder meetings per year to update  
128 stakeholders on the Planning Process and collect input. Additional meetings may be scheduled as  
129 needed. Notice of all stakeholder meetings and stakeholder comment periods will be posted to the  
130 WestConnect website.

## 131 **2.4 Interregional Coordination**

132 WestConnect will coordinate planning data and information with the two other established Planning  
133 Regions in the Western Interconnection (California ISO and NorthernGrid) by:

- 134 • Participating in annual interregional coordination meetings;
- 135 • Distributing regional planning data or information such as:
  - 136 ○ Draft and Final Regional Study Plan
  - 137 ○ Regional Transmission Needs Assessment Report
  - 138 ○ List of Interregional Transmission Projects (“ITPs”) submitted to WestConnect
  - 139 ○ Assessments and selection of ITPs into Regional Plan
  - 140 ○ Draft and Final Regional Plan

---

<sup>7</sup> Administrative, legal, and/or contractual matters (and from time to time, matters involving the handling and protection of non-public information) are non-public in nature and are discussed outside of public planning meetings

<sup>8</sup> The Alternative Evaluation will only occur if a regional need is identified

<sup>9</sup> Cost Allocation will only occur if a project seeking cost allocation is identified and chosen as the more efficient or cost-effective alternative to meet an identified regional need

- 141           • Sharing planning assumptions if and when requested and subject to applicable  
142           confidentiality requirements; and
- 143           • Participating in a coordinated ITP evaluation process, as necessary, when an ITP is  
144           submitted to WestConnect as an alternative to meet an identified regional need.

145   The process WestConnect intends to utilize to conduct its interregional coordination activities is  
146   described in the WestConnect Regional Planning Process BPM posted to the WestConnect website.

## 147   **Interregional Transmission Project Submittals**

148   An ITP is defined in the common tariff language developed for the Order 1000 interregional compliance  
149   filings as a proposed new transmission project that would directly interconnect electrically to existing or  
150   planned transmission facilities in two or more planning regions and that is submitted into the regional  
151   transmission planning processes of all such planning regions. If an ITP proponent desires to have their  
152   project evaluated to meet an identified regional need, they must submit their project to WestConnect via  
153   the WestConnect Regional Project Submittal Form no later than March 31, 2022, at which time they  
154   need not identify which regional transmission need the project proposes to address. ITP proponents can  
155   also have their project evaluated for inclusion in the Base Transmission Plan by participating in the  
156   process described in Appendix A.<sup>10</sup>

## 157   **3.0   Base Transmission Plan**

158   WestConnect creates the regional base transmission plan at the beginning of each planning cycle to  
159   establish the transmission network topology that is reflected in the regional planning models for the 10-  
160   year timeframe and evaluated in the regional needs assessments. The base transmission plan consists of  
161   the “planned” incremental transmission facilities included by TOLSOs in local transmission plans,<sup>11</sup> as  
162   well as regional transmission facilities identified in previous regional transmission plans that are not  
163   subject to reevaluation.<sup>12</sup> It also includes any assumptions TOLSO members may have made with regard  
164   to other incremental regional transmission facilities in the development of their local transmission  
165   plans. As defined by WestConnect, planned facilities include projects that are expected to be in-service  
166   during the approaching 10 years and meet one of the following criteria: (1) are required to meet public  
167   policy requirements, (2) have a sponsor and are incorporated in an entity’s regulatory filings or capital  
168   budget, or (3) have an agreement committing entities to participate and construct. “Conceptual”  
169   transmission projects are not included in the base transmission plan.

170   The base transmission plan may also include transmission projects under development by independent  
171   transmission companies in the WestConnect planning region, to the extent there is sufficient likelihood  
172   associated with these projects to warrant their inclusion in the base transmission plan. A description of  
173   the criteria used to identify projects for inclusion can be found in the WestConnect BPM.

174   The base transmission plan is developed using project information collected via the WestConnect  
175   Transmission Plan Project List (“TPPL”), which serves as a project repository for TOLSO member and TO  
176   participant local transmission plans as well as independent transmission company projects. The TPPL

---

<sup>10</sup> Additional details regarding the ITP submittal and evaluation process can be found in the WestConnect Business Practice Manual

<sup>11</sup> Developed in accordance with Order No. 890 local planning processes

<sup>12</sup> There were no regional transmission projects identified to meet regional need(s) in the 2020-21 Planning Cycle

177 data used for the 2022-23 planning cycle was based on updates submitted as of January 31, 2022, with  
 178 subsequent updates to the data made by members in the following weeks. The list of base transmission  
 179 plan projects and details about the process used to identify the 2022-23 Base Transmission Plan are  
 180 summarized in Appendix A and Appendix B.

### 181 **3.1 Summarizing the 2022-23 Base Transmission Plan**

182 As part of the planned activities for 2022, WestConnect intends to create summary information  
 183 regarding the base transmission plan. The summary information will be developed using both data in  
 184 the TPPL and other information, such as:

- 185 • Cost information;
- 186 • Line mileage information;
- 187 • Voltage information;
- 188 • State-level summaries;
- 189 • Information on how the 2022-23 Base Transmission Plan has changed as compared with the  
 190 2022-21 Regional Transmission Plan, including a list of projects that have gone into service,  
 191 new projects added to the Base Transmission Plan, and other summary statistics.

192 The 2022-23 Base Transmission Plan summary information will be included in the 2022-23 Model  
 193 Development Report, which is scheduled to be completed by the end of Q3, 2022. When the 2022-23  
 194 Regional Plan Report describes the planned projects in the region, this summary information will be  
 195 used and, if necessary, updated to include any additional regional projects selected into the plan as the  
 196 more efficient or cost-effective solution to a regional need.

## 197 **4.0 Regional Reliability Assessment**

198 The regional reliability needs assessment will be performed on power flow models developed by  
 199 WestConnect. The study cases to be used for the regional reliability assessment are summarized in  
 200 **Table 3.**

201 **Table 3: Power Flow Cases for Regional Reliability Assessment**

WestConnect Base Case Name	Case Description	Seed Case
<b>2032 Heavy Summer</b>	Summer peak load conditions during 1500 to 1700 MDT in summer months of June, July, and August, with typical flows throughout the Western Interconnection.	WECC 2032 Heavy Summer 1 Planning Base Case (32HS1)
<b>2032 Light Spring</b>	Light load conditions during 1200 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.	WECC 2033 Light Spring 1 Specialized Base Case (33LSP1S)

202 The process and scope for regional model development and the regional reliability assessment is  
 203 described further in this section. The models will be developed during Quarters 2 and 3 of the planning

204 cycle. The PMC will approve the regional power flow models and the contingency list used to assess  
205 regional reliability transmission needs. The regional reliability assessment will take place in Quarter 4.

## 206 **4.1 Model Development Process**

207 WestConnect will review and modify the WECC seed cases<sup>13</sup> identified in this Study Plan through  
208 coordination with Subregional Planning Group (SPGs) and TOLSO members.<sup>14</sup>

209 After collecting initial updates through the process described above, WestConnect will compile the  
210 regional power flow models through a phased approach:

- 211 1. Review and revise WECC power flow base case topology, including transmission lines,  
212 transformers, connectivity, reactive devices and corresponding power flow data. These changes  
213 do not include load magnitudes and resource levels or status.
- 214 2. Review and revise interchange flows and schedules, iterating between any loads and resources  
215 revisions. Importantly, the light spring WECC seed case represents a system condition in year  
216 2033 so the PS will determine how best to migrate that representation to a system condition in  
217 year 2032.
- 218 3. Provide remedial action schemes (RAS) and contingency definitions based on modeled  
219 topology.<sup>15</sup>

220 The process utilized for model development, including coordinating with the TOLSO members,  
221 independent transmission developers, and other stakeholders in the development of these cases, will be  
222 conducted and managed by WestConnect’s planning consultant at the direction of the PS. Once the cases  
223 have been vetted, the PS will initiate the regional reliability assessment.

## 224 **4.2 Key Assumptions**

225 In developing the models for use in the regional reliability assessment, WestConnect must make a  
226 number of assumptions as it relates to generation, transmission, and load modeling. Descriptions of the  
227 assumptions that will be used in developing the study cases are provided below:

- 228 • **Transmission Assumptions** – Existing transmission system plus 2022-23 Base Transmission  
229 Plan, with TOLSO members confirming the inclusion/exclusion of projects through the process  
230 described above.
- 231 • **Demand Forecasts** – Provided by TOLSO members and embedded in WECC seed cases, specific  
232 to season and condition of study case. May be updated as necessary by TOLSO members.
- 233 • **Generation Projects** – Existing and planned generation facilities. Specifically, generation  
234 consistent with TOLSOs’ approved resource plans as of March 2022<sup>16</sup>, developed through an

---

<sup>13</sup> The regional power flow models will be developed in a format accessible by users of the GE PSLF, Siemens PTI PSS/E, or PowerWorld Simulator power flow applications.

<sup>14</sup> The WestConnect Subregional Planning Groups consist of the Southwest Transmission Planning Group (SWAT), the Sierra Subregional Planning Group (SSPG), and the Colorado Coordinated Planning Group (CCPG).

<sup>15</sup> When submitting contingencies, PSLF or PowerWorld users should use the WECC RAS and Contingency File Format while PSS/E users should use “CON” files or spreadsheet format.

<sup>16</sup> Modifications to modeling assumptions may be updated during the model development phase of the planning cycle, subject to PMC approval.

235 integrated resource planning (IRP) or similar process. The governance for these resource plans  
236 varies by the type of utility (PUC regulated, municipal, cooperative), but in all cases should be  
237 open, rigorous, and prescriptive.

238 • **Public Policy Requirements** – Public Policy Requirements are reflected in the study cases  
239 through local planning assumptions (e.g., load, generation, demand response, etc.), to the extent  
240 a plan for compliance with the Public Policy Requirements has been completed by the TOLSO  
241 member.

242 • **Major Path Flows and Interchange** – Path flows and interchange will be established based on  
243 the generation, load, and system condition being modeled in the study case.

244 • **Operating Procedures** – Any special operating procedures required for compliance with NERC  
245 reliability standards will be considered and included in the power flow cases.

246 • **Protection Systems** – The impact of protection systems including RAS required for compliance  
247 with NERC reliability standards will be included in the power flow cases.

248 • **Control Devices and Reactive Resources** – Any special control devices or reactive resources  
249 will be included in the power flow cases, including shunt capacitors/reactors, static var  
250 compensators, synchronous condensers and other voltage control devices.

251 • **Contingency List** – Participants will provide the contingency list in the WECC RAS and  
252 Contingency Format (available in GE PSLF and PowerWorld Simulator). A list of contingencies to  
253 be studied will be developed by the TOLSO members and SPGs and provided to the PMC  
254 concurrent with the final review of the base cases. The PS along with the PMC can add to the list  
255 if needed. Contingencies will be limited to N-1 (TPL Category P1 and P2) contingencies for  
256 elements 230-kV and above, generator step-up (“GSU”) transformers for generation with at least  
257 200 MW capacity, and member-requested N-2 (TPL Category P4, P5 and P7) contingencies. If a  
258 participant provides justification as to why lower voltage contingencies might impact the system  
259 in a regional manner, the PS may decide to include those contingencies.

260 • **Facilities with Multiple Owners** – the TOLSO members will verify which buses, lines, and  
261 transformers have multiple owners. This data will be maintained either directly in the power  
262 flow models (when possible) and/or in a spreadsheet, and will be used when processing the  
263 results of the reliability and economic assessments described in Sections 4.3 and 5.3, and to help  
264 the PS focus on issues with the highest potential for being a regional reliability-driven  
265 transmission need.

## 266 **4.3 Study Methodology and Criteria**

267 An assessment of the WestConnect regional power flow cases will be conducted to ensure the  
268 WestConnect planning region as a whole is in compliance with applicable North American Electric  
269 Reliability Corporation (NERC) standards and WECC regional criteria for the 2032 planning horizon. The  
270 assessment will include steady state contingency analysis and transient stability analysis. The following  
271 standards and criteria are applicable for the assessment:



272 • Table 1 Planning Events from NERC TPL-001-4 Transmission System Planning Performance  
273 Requirements;<sup>17</sup> and

274 • WECC TPL-001-WECC-CRT-3.2 Transmission System Planning Performance.<sup>18</sup>

275

276 Monitoring and violation reporting will be performed for transmission elements above 90-kV outside of  
277 the WestConnect footprint and member-identified elements within or bordering the WestConnect  
278 footprint.

## 279 **Steady State Contingency Analysis**

280 Power flow contingency analyses will be performed for all power flow areas within the WestConnect  
281 planning footprint. More specifically, the assessment will evaluate performance of the regional system  
282 under Normal system conditions consistent (TPL Category P0) with normal ratings and voltage ranges  
283 and under certain emergency system conditions and planning event contingencies (TPL Category P1, P2,  
284 P4, P5 and P7) with appropriate post-contingency ratings and voltage range at 20 seconds post-  
285 disturbance.<sup>19</sup> The power flow solution options will only enable control systems reasonably able to  
286 intervene within 20 seconds, meaning that SVC Control will be enabled while the other control options  
287 (Switched Shunt Control, LTC Transformer Control, and Phase Shifter Control) will be disabled.

## 288 **Transient Stability Analysis**

289 The transient stability performance of the regional system will be studied consistent with the standards  
290 and criteria provided above to identify any occurrences of under frequency load shedding, sufficient  
291 frequency recovery (e.g., undamped oscillations), and general instability (e.g., cascading trips). WECC  
292 criterion will be used to define acceptable voltage recovery and system performance within the first 30  
293 seconds post-disturbance.

294 WestConnect members will determine the specific contingencies for inclusion in the transient stability  
295 analysis. These contingencies will be limited to those that may have a regional impact, including but not  
296 limited to major generator and transmission trips with and without faults.

## 297 **4.4 Regional Reliability Needs**

298 When conducting the regional reliability assessment, violations of standards or criterion creating  
299 reliability issues that the PMC determines to be regional in nature will be identified as a regional  
300 reliability need. By definition, regional reliability needs are identified by reliability issues that impact  
301 more than one TOLSO member system. Specifically, in the event a simulated outage produces one or  
302 more NERC TPL violations in more than one TOLSO member system, those violations may result in the  
303 identification of a regional reliability-driven transmission need.

304 If a single-system reliability violation is identified, the violation will be referred back to the appropriate  
305 TOLSO for resolution. The affected TOLSO will have an opportunity to identify mitigation for the  
306 violation, and will submit the modeling data associated with the mitigation to the PS. The PS will review  
307 the mitigation and make a recommendation to the PMC regarding whether or not to include the  
308 mitigation in the study. Upon approval by the PMC, the modeling for the mitigation will then be

---

<sup>17</sup> <http://www.nerc.com/files/TPL-001-4.pdf>

<sup>18</sup> <https://www.wecc.org/Reliability/TPL-001-WECC-CRT-3.2.pdf>

<sup>19</sup> P4, P5 and P7 contingencies are optional and must be volunteered by TO members

309 incorporated back into the regional power flow model. Single-system reliability violations typically do  
 310 not cause a regional reliability-driven transmission need.<sup>20</sup> In the event a simulated outage produces  
 311 NERC TPL violations in more than one TOLSO member system, that violation will first be referred to the  
 312 affected TOLSO members and discussed with the PS to determine if the violation is local in nature.  
 313 However, issues that impact more than one TOLSO member may result in the identification of a regional  
 314 reliability-driven transmission need. Once finalized, regional reliability needs will be posted to the  
 315 WestConnect website and described in the Regional Needs Assessment documentation. The PMC will  
 316 concurrently approve the base models and the results of the regional reliability assessment.

317 **Table 4** provides examples of the ownership of affected elements involved with various examples of  
 318 reliability issues that may be caused by a contingency and whether they are (1) likely a single-system  
 319 reliability violation (“Local” in the table); (2) potentially a regional reliability-driven transmission need  
 320 (“Regional Potential” in the table); or (3) in need of further review before a determination can be made  
 321 (“Flag for Further Review” in the table).

322  
 323

**Table 4. Reliability Assessment Regional vs Local Needs Matrix**

<b>Ownership<sup>21</sup> of the Element(s)<sup>22</sup> with Reliability Issue(s)</b>	<b>Example of Reliability Issue(s) and Affected Element(s)</b>	<b>Regional or Local?</b>
Single-owner bus	Bus with voltage issue has only one owner	Local
Single-owner line	Overloaded line has only one owner	Local
Single-owner transformer	Overloaded transformer has only one owner	Local
Multiple single-owner buses	Multiple buses have voltage issues and are each owned by different owners	Regional Potential
Multiple single-owner lines	Multiple overloaded lines are owned by different owners	Regional Potential
Multiple single-owner transformers	Multiple overloaded transformers are owned by different owners	Regional Potential
Multi-owner bus	Bus with voltage issue is owned by multiple owners	Regional Potential
Multi-owner line	Overloaded line is owned by multiple owners	Regional Potential
Multi-owner transformer	Overloaded transformer is owned by multiple owners	Regional Potential
Single-owner bus & different Single-owner line	Bus with voltage issue has one owner & an overloaded line has a different owner	Regional Potential

<sup>20</sup> There may be certain exceptions, such as when a jointly owned contingency causes reliability issues in a single area

<sup>21</sup> "Ownership" refers to the entity or entities whose permission is needed to replace, update, or remove the affected element(s)

<sup>22</sup> "Line" and "Transformer" are inclusive of adjacent facilities not explicitly modeled in the power flow case (e.g., breakers, bus-ties, wave traps)



Ownership <sup>21</sup> of the Element(s) <sup>22</sup> with Reliability Issue(s)	Example of Reliability Issue(s) and Affected Element(s)	Regional or Local?
Single-owner line with one <b>or both</b> terminal buses having a different single-owner	<ul style="list-style-type: none"> <li>Overloaded line and one of its terminal buses have one owner while the other terminal bus has a different owner, or</li> <li>Overloaded line has one owner while its terminal buses have a different owner</li> <li>Overloaded line has one owner, one of its terminal buses has a different owner, and the other terminal bus has a separate owner (different than the owners of the line or other terminal bus)</li> </ul>	Flag for Further Review
Single-owner line with both terminal buses having multiple, different owners	Overloaded line has one owner and both terminal buses have multiple, owners which are difference from the line's owner	Flag for Further Review
Single-owner line & multi-owner terminal bus or buses	Overloaded line has one owner; one of its terminal buses has multiple, different owners; and the other terminal bus multiple, different owners.	Flag for Further Review
Single-owner bus & different single-owner transformer	Bus with voltage issue has one owner & an overloaded transformer has a different owner	Regional Potential
Single-owner transformer with one <b>or both</b> terminal buses having a different single-owner	<ul style="list-style-type: none"> <li>Overloaded transformer and one of its terminal buses have one owner while the other terminal bus has a different owner, or</li> <li>Overloaded transformer has one owner while its terminal buses have a different owner</li> <li>Overloaded transformer has one owner, one of its terminal buses has a different owner, and the other terminal bus has a separate owner (different than the owners of the transformer or other terminal bus)</li> </ul>	Flag for Further Review
Single-owner transformer with both terminal buses having multiple, different owners	Overloaded transformer has one owner and both terminal buses have multiple, owners which are difference from the line's owner	Flag for Further Review
Single-owner transformer & one or more multi-owner terminal buses	Overloaded line has one owner; one of its terminal buses has multiple, different owners; and the other terminal bus multiple, different owners.	Regional Potential

324 **5.0 Regional Economic Assessment**

325 The regional economic needs assessment will be performed using a production cost model (PCM)  
326 developed by WestConnect. The cases to be used for the regional economic assessment is summarized in  
327 **Table 5.**

Table 5: Production Cost Model Case Summary

WestConnect Base Case Name	Case Description	Seed Cases
<b>2032 Base Case</b>	Business-as-usual, expected-future case with (1) median load, (2) median hydro conditions and (3) representation of resources consistent with TOLSOs' approved resource plans as of March 2022 <sup>23</sup>	WECC 2032 Heavy Summer 1 Planning Base Case (32HS1) and WestConnect 2030 Base Case from the 2020-21 planning cycle <sup>24</sup>

329 The process used by WestConnect to develop the regional PCM is described in the following section. The  
 330 analysis used to perform the regional economic assessment is also included. The model will be  
 331 developed during Quarters 2 and 3 of the 2022-23 planning cycle. The PMC will approve the regional  
 332 economic model used to assess regional economic transmission needs. The regional economic  
 333 assessment will take place in Quarter 4.

## 334 5.1 Model Development Process

335 The WestConnect 2030 PCM will be reviewed and updated by WestConnect during Quarters 2 and 3 of  
 336 the 2022-23 planning cycle consistent with the process described below in order to create the  
 337 WestConnect 2032 Base Case.

338 The PS will initiate and coordinate a review of the data and assumptions contained within the  
 339 WestConnect 2030 PCM by the WestConnect members, participants, and stakeholders. Once the data  
 340 and assumptions have been reviewed by the TOLSO members, WestConnect will compile any changes  
 341 submitted by the TOLSO members to create the 2032 Base Case. Once compiled, the PS will perform a  
 342 series of initial test and benchmarking studies with the goal of validating the output of the WestConnect  
 343 2032 Base Case. Comparisons with historical path flows, typical wind/solar operation, historical  
 344 generator dispatch, and other study results/models will be performed at the discretion of the PS to help  
 345 vet the PCM results. Comparisons with the WestConnect 2032 power flow cases will be used to keep  
 346 assumptions synced between the reliability and economic models. Once the WestConnect 2032 Base  
 347 Case has been vetted, the PS will initiate the regional economic assessment. The PS will also develop and  
 348 conduct sensitivities, as discussed in more detail in Section 5.3.

## 349 5.2 Key Assumptions

350 Specific data and assumptions to be reviewed by the TOLSO members will include, but are not limited  
 351 to:

- 352 • Changes needed to make data and assumptions consistent with the 2032 Heavy Summer and  
 353 Light Spring power flow cases described earlier in the Study Plan;

<sup>23</sup> Modifications to modeling assumptions may be updated during the model development phase of the planning cycle, subject to PMC approval.

<sup>24</sup> Several WECC Anchor Dataset (ADS) related models may be used, based on PS direction, including the 2030 ADS PCM V2.3 dated 5/7/21, the 2032 ADS Power Flow Reference Case which may be available in early 2022, and the 2032 ADS PCM which may be available in mid-2022.

- 354 • Consistent with the key assumptions of the reliability models (Section 4.2), the load, generation,  
355 and transmission are reflected in the model based on local planning assumptions (e.g., load,  
356 generation, demand response (DR), energy efficiency (EE), etc.), based on the planning  
357 information provided by Members. PS may choose to perform spreadsheet-based analyses to  
358 verify the assumptions included in the model (e.g., accounting of renewable generation);
- 359 • Branch switching throughout the year;
- 360 • Fuel price assumptions and related assumptions (e.g., carbon pricing or other environmental  
361 impact costs);
- 362 • Unit operating characteristics;
- 363 • Load, resource, and transmission bus assignments to balancing authorities; and
- 364 • Wheeling charge approach to appropriately represent inter-Balancing Authority interactions.

### 365 **5.3 Study Methodology and Criteria**

366 To evaluate the potential for regional economic needs in the WestConnect planning footprint,  
367 WestConnect identifies congested elements through forward-looking production cost modeling. Using  
368 results from base case model runs and sensitivities,<sup>25</sup> the PS will review metrics such as congested hours  
369 and congestion cost for regional transmission elements greater than 90-kV and WECC transfer paths (or  
370 other defined interfaces in the WestConnect footprint) along with any TOLSO member-specified lower  
371 voltage BES elements.

372 Regional transmission facilities or paths/interfaces with significant congestion are identified and  
373 verified through PS review, historical benchmarking, and follow-up study. Given the regional focus of the  
374 Planning Process, the PS will limit their analysis to:

- 375 • Transmission (or paths/interfaces) between multiple TOLSO member systems;
- 376 • Transmission (or paths/interfaces) owned by multiple TOLSO members; and
- 377 • Congestion occurring within the footprint of multiple TOLSO members (congestion in one  
378 TOLSO Member footprint reasonably related or tied to congestion in another TOLSO Member  
379 footprint) that has potential to be addressed by a regional transmission project or NTA.<sup>26</sup>

### 380 **Sensitivities**

381 WestConnect will also conduct sensitivity studies on the 2032 Base Case economic model to better  
382 understand whether regional transmission congestion may be impacted by adjusting certain input  
383 assumptions subject to significant uncertainty. The sensitivity analysis is intended to make relatively  
384 minor adjustments that would still remain within the expected future framework of the base models.  
385 This sensitivity analysis may include variables such as:

- 386 • Load forecast;

---

<sup>25</sup> In this document, the term “sensitivity” has the same meaning as “scenario” in the common tariff under the section that describes cost allocation for economic projects.

<sup>26</sup> Congestion within a single TOLSO Member’s footprint (and not reasonably related or tied to other TOLSO Member footprints) is out of scope of the regional planning effort and is alternatively subject to Order 890 economic planning requirements.

- 387 • Hydro conditions (e.g., wet vs. dry);
- 388 • Natural gas prices;
- 389 • Emissions cost (e.g., CO<sub>2</sub>); and
- 390 • Other modeling parameters.

391 By adjusting individual input assumptions subject to uncertainty, the sensitivity assessment will help  
392 WestConnect understand how sensitive the economic performance of the Base Transmission Plan is to  
393 key variables. The PS will make recommendations to the PMC regarding how sensitivity analysis will be  
394 incorporated into the study process.

## 395 **5.4 Regional Economic Needs**

396 The process to assess congestion will include a vetting of any congested elements to allow the PS to  
397 make a determination as to whether congestion issues are regional in nature. After this vetting process,  
398 the PS will produce a list of the congested elements that were identified in the base case. The PMC may  
399 further evaluate that list of congested elements and determine which should constitute regional  
400 economic needs. The objective is to arrive at a set of congested transmission elements that warrant  
401 being tested for the economic potential for a regional project solution, recognizing that the presence of  
402 congestion does not always equate to a regional need for congestion relief at a particular location. Once  
403 finalized, regional economic needs will be posted to the WestConnect website and described in the  
404 Regional Needs Assessment documentation. The PMC will concurrently approve the base models and  
405 the results of the regional economic assessment.

## 406 **6.0 Public Policy Assessment**

407 WestConnect will first solicit members to identify Public Policy Requirements in the region and identify  
408 if any of the Public Policy Requirements are driving local projects in the TOLSOs' local transmission plan  
409 that are incorporated in the base case models used in the WestConnect planning process. An initial list of  
410 Public Policy Requirements is provided in this section and will be further refined in public WestConnect  
411 meetings.

412 In an effort to engage stakeholders, the list of Public Policy Requirements in the region and local projects  
413 in the TOLSOs' local transmission plans that are driven by Public Policy Requirements will be provided  
414 to stakeholders. Stakeholders will be asked to review the information and suggest to WestConnect  
415 possible regional public policy-driven transmission needs. An open stakeholder comment window will  
416 be announced via posting on the WestConnect website and through an email to the WestConnect  
417 stakeholder distribution list for the purposes of collecting suggestions of possible regional public policy-  
418 driven transmission needs.

### 419 **6.1 Public Policy Requirements**

420 Public Policy Requirements means those requirements enacted by state or federal laws or regulations,  
421 including those enacted by local governmental entities, such as a municipality or county. **Table 4** lists  
422 the Public Policy Requirements that have been identified and will be considered in the WestConnect  
423 2022-2023 planning cycle. To the extent a plan for compliance with the Public Policy Requirements was  
424 completed prior to the model development phase of the WestConnect 2022-23 planning cycle, the

425 WestConnect 2032 economic and reliability models will reflect these public policies' conditions for the  
 426 study year 2032. Each TOLSO member will provide confirmation in this regard as part of the model  
 427 development phase of the WestConnect 2022-23 planning cycle. Company goals, although not Public  
 428 Policy Requirements, such as the PNM Commitment to Carbon Free by 2040<sup>27</sup>, may also be considered  
 429 in the development of the base models but will not be used in the evaluation of public policy-driven  
 430 transmission needs.

431  
 432

**Table 4: Public Policy Requirements for Consideration in the WestConnect 2022-2023 Planning Process**

Public Policy Requirement	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 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
California SB100	Requires Investor-owned utilities (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 requires the establishment of annual targets for energy efficiency savings
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

<sup>27</sup> Public Service of New Mexico plans to produce 100% carbon free energy by 2040. Source: <https://www.pnm.com/our-commitment>

Public Policy Requirement	Description
Colorado HB 19-1261 and SB 1261 (“GHG Reduction Bills”)	<p>HB 19-1261 requires the Air Quality Control Commission (“AQCC”) to promulgate rules and regulations for statewide greenhouse gas (“GHG”) pollution abatement.</p> <p>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.</p>
Colorado HB10-1001	Established Colorado Renewable Energy Standard (“RES”) to 30% by 2020 for IOUs (Xcel & Black Hills)
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 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 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 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 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.

Public Policy Requirement	Description
Colorado SB13-252	Requires cooperative utilities to generate 20% of their electricity from renewables by 2020
Colorado SB21-072	This bill requires electric transmission utilities in Colorado to join an organized wholesale market (“OWM”) by January 1, 2030, provided that the OWM meets certain criteria set forth in the statute. This bill also creates the Colorado Electric Transmission Authority, a governmental entity that is authorized to independently develop and finance transmission projects.
Colorado HB21-1266	This bill is a broad policy measure to promote environmental justice in disproportionately impacted communities through the creation of an Environmental Justice Task Force. The bill requires wholesale generation and transmission cooperatives to file with the Public Utilities Commission a Clean Energy Plan to achieve 80% emissions reductions by 2030.
Colorado SB 21-246	The primary purpose of this bill is to direct the approval of plans for the electrification of buildings that use fossil fuel-based systems through existing demand side management programs.
Colorado HB21-1238	The primary purpose of this bill is to update the PUC’s rules and decision-making process with respect to natural gas demand-side management programs including the use of the Social Cost of Carbon and Social Cost of Methane.
Colorado SB21-272	The primary purpose of this bill is to update the PUC’s rules and decision-making process to better incorporate the impacts and benefits to underserved or disproportionately impacted communities and groups including workforces impacted by generation acquisition and retirement. Other requirements include how utilities finance resources or investments, the retirement of renewable energy credits, and the inclusion of the Social Cost of Carbon in resource planning decisions.

Public Policy Requirement	Description
<p>Executive Order 14057 (<a href="#">EO 14057</a>), Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability (Dec. 8, 2021)</p>	<p>The President’s executive order directs the federal government to use its scale and procurement power to achieve five ambitious goals:</p> <ul style="list-style-type: none"> <li>• 100 percent carbon pollution-free electricity (“CFE”) by 2030, at least half of which will be locally supplied clean energy to meet 24/7 demand;</li> <li>• 100 percent zero-emission vehicle (“ZEV”) acquisitions by 2035, including 100 percent zero-emission light-duty vehicle acquisitions by 2027;</li> <li>• Net-zero emissions from federal procurement no later than 2050, including a Buy Clean policy to promote use of construction materials with lower embodied emissions;</li> <li>• A net-zero emissions building portfolio by 2045, including a 50 percent emissions reduction by 2032; and</li> <li>• Net-zero emissions from overall federal operations by 2050, including a 65 percent emissions reduction by 2030.</li> </ul>
<p>New Mexico Efficient Use of Energy Act</p>	<p>Require utilities to include cost-effective energy efficiency (“EE”) and demand response (“DR”) programs in their resource portfolios and establish cost-effectiveness as a mandatory criterion for all programs</p>
<p><a href="#">New Mexico Energy Transition Act (2019 SB 489)</a></p>	<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"> <li>• By 2020, 20% for public utilities and 10% for cooperatives</li> <li>• By 2025, 40% for public utilities and cooperatives</li> <li>• By 2030, 50% for public utilities and cooperatives</li> <li>• By 2040, 80% for public utilities with provisions associated with carbon free generation</li> <li>• 100% carbon-free by 2045 for public utilities and by 2050 for cooperatives</li> </ul>
<p><a href="#">SRP Sustainable Energy Goal</a></p>	<p>Reduce the amount of CO<sub>2</sub> emitted per megawatt-hour (MWh) by 65% from 2005 levels by 2035 and by 90% by fiscal year 2050.</p>
<p>Texas RPS</p>	<p>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</p>
<p>Texas Substantive Rule 25.181 (Energy Efficiency Rule)</p>	<p>Require utilities to meet certain energy efficiency targets</p>



433

## 434 **6.2 Study Methodology and Criteria**

435 Regional public policy-driven needs are evaluated in the following ways:

- 436 1. New regional economic or reliability needs identified during the regional economic and  
437 reliability needs assessments are further evaluated to determine if they were driven by Public  
438 Policy Requirements; and
- 439 2. Stakeholders are given an opportunity to review a list of Public Policy Requirements impacting  
440 the WestConnect region and a map representation of the local projects driven by those Public  
441 Policy Requirements. Stakeholder can then suggest to WestConnect which Public Policy  
442 Requirements may result in possible regional public policy-driven transmission needs.

443 For the second component above, the WestConnect regional public policy needs assessment leverages  
444 WestConnect and stakeholders in determining if a Public Policy Requirement (or set of Public Policy  
445 Requirements) may drive a regional public policy transmission need that is appropriate to address in  
446 that planning cycle. WestConnect will provide stakeholders with (1) the list of Public Policy  
447 Requirements impacting the WestConnect region and (2) a list of local public policy-driven transmission  
448 projects and a map representation of the projects. Stakeholders review the information and make  
449 suggestions as to whether a regional need may be driven by Public Policy Requirements

450 The PMC will then select which, if any, of the proposed regional needs driven by Public Policy  
451 Requirements will be evaluated in the 2022-2023 planning cycle. The PMC will make this selection by  
452 considering factors, including, but not limited to:

- 453 1. whether the Public Policy Requirement is driving a regional transmission need that can be  
454 reasonably identified in the current planning cycle;
- 455 2. the feasibility of addressing the regional transmission need driven by the Public Policy  
456 Requirement in the current planning cycle;
- 457 3. the factual basis supporting the regional transmission need driven by the Public Policy  
458 Requirement; and
- 459 4. whether a Public Policy Requirement has been identified for which a regional transmission need  
460 has not yet materialized, or for which there may exist a regional transmission need but the  
461 development of a solution to that need is premature

## 462 **6.3 Regional Public Policy-driven Transmission Needs**

463 If any regional public policy needs are identified, the needs will be identified and described in the  
464 Regional Need Assessment report and posted to the WestConnect website. It is possible that a specific  
465 model will be developed to evaluate the specific public policy need and associated solutions.

## 466 **7.0 Solutions to Regional Needs**

467 After the Regional Need Assessment Report is finalized, regional needs will be posted to the  
468 WestConnect website and a project solution submittal window will open. Upon closure of the submittal

469 window, WestConnect will initiate an evaluation of the benefits and costs of the proposed solutions to  
470 identify if any is a more efficient or cost-effective regional solution.

471 If no project solutions are submitted, WestConnect will seek to develop solutions to the regional needs.

472 In the event that no regional transmission needs are identified, the PMC will not collect transmission or  
473 non-transmission alternatives for evaluation (as there will be no regional transmission needs to  
474 evaluate the alternatives against).

## 475 **8.0 Scenario Studies**

476 In addition to the regional needs assessment, WestConnect also conducts information-only scenario<sup>28</sup>  
477 studies that look at alternate but plausible futures. They represent futures with resource, load, and  
478 public policy assumptions that are different in one or more ways than what is assumed in the Base  
479 Cases.

480 Proposals for scenarios enter into the Planning Process through a 30-day open submittal window, which  
481 opens during Quarter 8 of the previous planning cycle. During the open window, stakeholders may  
482 provide proposals for specific scenarios they would like for WestConnect to include in its Study Plan for  
483 the upcoming planning cycle. The PMC and PS can also develop scenarios for inclusion in the Study Plan.

484 Once the scenario proposals are received, the PS evaluates the scenarios and makes a recommendation  
485 (documented through the Study Plan) to the PMC on which ones should be evaluated in the planning  
486 cycle. The PS may work with individual requestors to clarify the intent of the scenarios. The PS may also  
487 recommend combining scenarios that appear to have common goals, themes, or modeling assumptions.

488 The PMC also has ultimate authority to determine how to treat regional transmission issues that are  
489 identified in the information-only scenario studies. They will determine whether an issue identified in a  
490 scenario—whether it be reliability, economic, or public-policy based—constitutes additional  
491 investigation by the PS. Since the assessment of a scenario is different than an “expected future” base  
492 case such assessments may provide useful information for future planning cycles, especially if the  
493 scenario appears likely to become an expected future for the region. Also, results from the scenario  
494 assessments may help the region identify emerging opportunities for infrastructure (generation,  
495 transmission, or otherwise). Any transmission issues that might come to light as a result of the  
496 WestConnect scenario assessments are not to be confused with the WestConnect task under Order No.  
497 1000 to identify regional transmission needs and to solicit for proposals to more cost effectively or  
498 efficiently satisfy such needs. In other words, the WestConnect scenario assessments do not obligate  
499 TOLSO members to any responsibility outside the scope of Order No. 1000.

500 WestConnect also provides the opportunity for stakeholders to provide suggestions that might allow for  
501 more efficient or cost-effective alternatives to the regional plans. These types of suggestions may be  
502 different from the scenarios mentioned above. They may also be different than proposals to meet  
503 identified regional needs. These types of suggestions may be submitted at any time, but have the most  
504 potential to contribute to the Planning Process if they are presented through the scenario submission  
505 window. The PMC will consider such suggestions on a case-by-case basis to determine if any such  
506 suggestions warrant analyses, and how to incorporate any analyses into the Planning Process.

---

<sup>28</sup> The term “scenario” may be used differently in other documents, including the cost allocation section of the common tariff.

507 Stakeholders submitting such suggestions are expected to provide evidence as to how their proposals  
 508 might result in a more efficient or cost-effective regional plan. As with scenarios, the PMC will determine  
 509 whether the PS should assess any suggestions.

## 510 **8.1 Scenarios Received for the 2022-23 Study Plan**

511 WestConnect held an open window from December 1, 2021 through January 3, 2022. **Table 5** below  
 512 lists the scenarios received during the open window.

513 **Table 5: Scenarios Received During Open Window**

Requestor	Description/Name
Clean Energy Advocate (CEA)	Updated clean energy targets and requirements (2032)
CEA	Thermal retirements (2032)
CEA	Electrification (2032)
CEA	Transmission line sensitivity analysis (2032)
CEA	20-year economy wide plan (2042)
CEA	Market sensitivity analysis (2032)
Lucky Corridor	New Mexico Renewable Energy Transmission (NM RETA) Export 2032
Ron Belval	Carbon Neutral Phase 1: 2032 Gap Analysis
Ron Belval	Carbon Neutral Phase 2: Carbon Neutral Study in WestConnect 2024-25 Cycle (2035, 2045, 2050 or other horizon models)
Xcel Energy	Carbon Free 2050
Xcel Energy	DC Macro Grid 2032
Xcel Energy	New Western Market Study 2032

515  
 516 These scenario requests were reviewed by the PS on January 11, 2022. A representative for each  
 517 scenario request provided a presentation to the PS to summarize the request and answer questions. The  
 518 PS also made attempts to consolidate the requests. Following the meeting, the PS conducted a survey to  
 519 collect feedback from members on their preferred scenarios. During the PS meetings on January 25,  
 520 2022 and February 8, 2022 the PS reviewed member feedback and further discussed the scenarios and  
 521 the number of scenarios that would be appropriate to study. The conversation led to the development of

522 a single scenario study involving two (2) scenario cases, which is summarized below and included in this  
523 Study Plan.

## 524 **8.2 High Clean Energy Penetration Scenario Study**

525 The purpose of the High Clean Energy Penetration Scenario Study is to evaluate the regional congestion  
526 in and reliability of a 2032 future in which the renewable and clean energy target-focused Public Policy  
527 Requirements<sup>29</sup> of that study year are satisfied within the WestConnect footprint, as well as use the  
528 models representing this future to understand the gap between this future and a future in which the  
529 WestConnect footprint is carbon free. The study will begin with updating the assumptions within the  
530 WestConnect 2032 Base Case PCM in order to develop a 2032 High Clean Energy Penetration PCM case  
531 whose results reasonably satisfy the renewable and clean energy target-focused Public Policy  
532 Requirements applicable to year 2032, confirmed by TOLSO Members.<sup>30</sup> Next, a reliability model will be  
533 developed based on a WestConnect Member-selected system condition from the 2032 High Clean  
534 Energy Penetration PCM simulation. The development of these models and the analyses they will  
535 undergo are described in more detail below.

536 It is expected that the 2032 High Clean Energy Penetration PCM case will be developed through several  
537 iterative rounds of review by the WestConnect Members. Given the numerous ways in which some of the  
538 Public Policy Requirements can be complied with, the final assumptions of the case are expected to  
539 contain simplifications in many instances and will be extremely important for Members and  
540 stakeholders to keep this in mind during the course of the study. Even more so than in the Regional  
541 Assessments, the focus will be on regional impacts rather than local issues. Whenever possible,  
542 WestConnect will look to leverage WestConnect Members' internal studies or other recent assessments  
543 that have investigated strategies for compliance with Public Policy Requirements, including, but not  
544 limited to, thermal generation retirements, generation and/or storage additions, demand-side  
545 programs, or local transmission expansion focused on new resource delivery. TOLSO Members will be  
546 asked to consider any gap identified between the Public Policy Requirements in the WestConnect 2032  
547 Base Case PCM and provide assumptions to reasonably fill the gap.

548 The 2032 High Clean Energy Penetration PCM case results will be evaluated in two ways. First, the  
549 congestion in the case will be evaluated using the same method as the Regional Economic Assessment  
550 (described in Section 5.3). As in the Regional Economic Assessment, WestConnect may choose to  
551 conduct sensitivity studies on the 2032 High Clean Energy Penetration PCM. Second, the results of the  
552 simulation will be used to perform a "carbon free gap analysis", which will involve an accounting of the  
553 carbon emissions attributed to the WestConnect footprint in the 2032 High Clean Energy Penetration  
554 PCM in order to approximate the amount of further carbon reduction that would be necessary to make  
555 the WestConnect footprint carbon free by 2032.

556 The reliability of the system condition exported from the 2032 High Clean Energy Penetration PCM case  
557 will be evaluated using the same steady state contingency analysis as the Regional Reliability  
558 Assessment (described in Section 4.3).

---

<sup>29</sup> Exclusions will include, but are not limited to, requirements to join an organized market, requirements for energy efficiency or demand response, or requirements for electric vehicles. Members will review each Public Policy Requirement and decide the appropriate inclusions and exclusions.

<sup>30</sup> Public Policy Requirements are reflected in the WestConnect 2032 Base Case PCM through local planning assumptions (e.g., load, generation, demand response, etc.), to the extent a plan for compliance with the Public Policy Requirements has been completed by the TOLSO member. This scenario study presumes there will be gaps to fill, but should be revisited if that turns out to not be the case.

## 559 **Appendix A – Base Transmission Plan Process**

560 To identify transmission projects for inclusion in the 2022-23 Base Transmission Plan, the PS reviewed  
561 the transmission project lists submitted to WestConnect by the TOLSO members and participants via the  
562 TPPL, inclusive of the project status (e.g., planned, conceptual). All TOLSO member projects designated  
563 with a “planned” project status are included in the base transmission plan. As defined by WestConnect,  
564 planned facilities include projects that are expected to be in-service during the approaching 10 years  
565 and are required to meet public policy requirements, have a sponsor and are incorporated in an entity’s  
566 regulatory filings or capital budget, or have an agreement committing entities to participate and  
567 construct. Individual members and participants reviewed the TPPL data and provided any necessary  
568 updates with regard to the project status.

569 The PS also reviewed the list of non-TOLSO projects submitted via the TPPL submittal window to see if  
570 any of those projects met the threshold identified by the PMC for inclusion in the base transmission plan.  
571 These meetings were open to the public and noticed accordingly. Upon reviewing the project  
572 information submitted by the project sponsors, the PS did not identify any non-TOLSO projects that  
573 warranted inclusion in the 2022-23 Base Transmission Plan.

### 574 **California ISO Projects**

575 WestConnect received confirmation from the California ISO on February 25, 2022 indicating that all  
576 California ISO board-approved transmission projects, as of their [2020-2021 Transmission Plan](#), are  
577 represented appropriately in the WECC 2032 Heavy Summer Base Case and the WECC 2033 Light Spring  
578 Specialized Base Case.<sup>31</sup>

---

<sup>31</sup> The PS did not make any judgment with regard to any interregional aspects of the California ISO board-approved transmission projects. They were not submitted for the purposes of cost allocation.

579  
580  
581  
582  
583  
584

## Appendix B – Base Transmission Plan

The tables below include the planned projects that are slated for inclusion in the Base Transmission Plan. The tables are organized by SPG.

### SWAT Base Transmission Plan Projects for 2022-23 Regional Planning Cycle

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Arizona Electric Power Cooperative	Marana Substation Capacitor Bank	Planned	115 kV	Yes	2024
Arizona Electric Power Cooperative	Marana Substation Rebuild	Planned	115 kV	No	2024
Arizona Public Service	Avery 230/69kV Substation	Planned	230 kV	No	2022
Arizona Public Service	Broadway 230kV Lines	Planned	230 kV	Yes	2024
Arizona Public Service	Chevelon Butte Wind Generation Tie Line Project	Planned	345 kV	No	2023
Arizona Public Service	Contrail 230kV Lines	Planned	230 kV	Yes	2024
Arizona Public Service	Jojoba-Rudd or TS21 500 kV Line	Planned	500 kV AC	No	2028
Arizona Public Service	North Gila - Orchard 230kV Line	Planned	230 kV	Yes	2022
Arizona Public Service	Relocation of the Morgan-Pinnacle Peak 230kV and 500 kV Lines	Planned	500 kV AC	No	2022
Arizona Public Service	Runway 230kV Lines	Planned	230 kV	No	2022
Arizona Public Service	Runway Additional 230kV Lines	Planned	230 kV	No	2024
Arizona Public Service	Stratus 230kV Lines	Planned	230 kV	Yes	2022
Arizona Public Service	Three Rivers 230kV Transmission Line Project	Planned	230 kV	Yes	2024
Arizona Public Service	TS17 230kV Lines	Planned	230 kV	Yes	2025
Arizona Public Service	TS2 230kV Lines	Planned	230 kV	Yes	2024

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Arizona Public Service	TS22 500 and 230kV Lines	Planned	500 kV AC	No	2024
El Paso Electric Company	Add 345 kV ring bus to VADO substation. Split Newman 345 kV to Afton_N 345 kV line tapping in-and-out to VADO 345 kV bus.	Planned	345 kV	Yes	2030
El Paso Electric Company	Afton North (Two) 224 MVA 345/115 kV Autotransformers (New)	Planned	345 kV	No	2025
El Paso Electric Company	Afton North-Airport 115 kV Line (New)	Planned	115 kV	No	2025
El Paso Electric Company	Afton North-Vado 115 kV Double Bundled Line (New)	Planned	115 kV	No	2026
El Paso Electric Company	Afton-Afton North 345 kV Double Bundled Line (New)	Planned	345 kV	No	2025
El Paso Electric Company	Apollo-Cox Line 69 kV to 115 kV (Moongate-Apollo Portion - Rebuild)	Planned	115 kV	No	2024
El Paso Electric Company	Arroyo-Cox 69 kV to 115 kV (Arroyo-Moongate Portion - Reconductor)	Planned	115 kV	No	2023
El Paso Electric Company	Caliente-MPS 16700 115 kV Line (Reconductor)	Planned	115 kV	No	2027
El Paso Electric Company	CE2 Capacitor Banks (New)	Planned	115 kV	No	2025
El Paso Electric Company	CE-2 Substation (New) and Related 115 kV West Loop Line Reconfiguration	Planned	115 kV	No	2025
El Paso Electric Company	CE-3 Substation (New) and Related 115 kV West Loop Line Reconfiguration	Planned	115 kV	No	2027
El Paso Electric Company	CE4 Capacitor Banks (New)	Planned	115 kV	No	2027
El Paso Electric Company	CE-4 Substation (New) and Related 115 kV West Loop Line Reconfiguration	Planned	115 kV	No	2027
El Paso Electric Company	Coyote-Pine 115 kV Line (Reconductor)	Planned	115 kV	No	2026
El Paso Electric Company	In-and-Out into Otero 345 kV and In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line (Amrad to Otero)	Planned	345 kV	No	2023

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
El Paso Electric Company	In-and-Out into Otero 345 kV and In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line (Otero to Picante)	Planned	345 kV	No	2023
El Paso Electric Company	In-and-Out into Otero 345 kV and In-and-Out into Picante 345 kV Substation from Caliente-Amrad 345 kV Line (Picante to Caliente)	Planned	345 kV	No	2023
El Paso Electric Company	In-and-Out into Vado 345 kV Substation from Afton North-Newman 345 kV Line	Planned	345 kV	No	2026
El Paso Electric Company	Jornada-Arroyo 115 kV Line (Reconductor/Rebuild)	Planned	115 kV	No	2024
El Paso Electric Company	Leasburg Capacitor Banks (New)	Planned	115 kV	No	2026
El Paso Electric Company	Leasburg Substation	Planned	115 kV	No	2026
El Paso Electric Company	McCombs Substation (New) and Related 115 kV Line Reconfiguration	Planned	115 kV	No	2023
El Paso Electric Company	Move Sparks 115/69 kV autotransformer to Felipe substation	Planned	115 kV	Yes	2024
El Paso Electric Company	New Amrad SVC/STATCOM device connecting on high-voltage side to Amrad 345 kV side using its own dedicated step-up step up transformer.	Planned	345 kV	No	2026
El Paso Electric Company	NW2 (Verde) Substation 50 MVA Transformer	Planned	115 kV	Yes	2026
El Paso Electric Company	Patriot Substation Transformer (T2) Addition	Planned	115 kV	Yes	2023
El Paso Electric Company	Pine Switching Station 115 kV (New)	Planned	115 kV	No	2026
El Paso Electric Company	Pine-Seabeck 115 kV Line (New)	Planned	115 kV	No	2026
El Paso Electric Company	Pipeline Substation 2x50 MVA Transformer Additions	Planned	115 kV	Yes	2021
El Paso Electric Company	San Felipe Capacitor Banks (New)	Planned	115 kV	No	2025
El Paso Electric Company	San Felipe Substation 115/69 kV (New)	Planned	115 kV	No	2025
El Paso Electric Company	Seabeck Switching Station 115 kV (New)	Planned	115 kV	No	2025



Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
El Paso Electric Company	Seabeck-Horizon 115 kV Line (New)	Planned	115 kV	No	2025
El Paso Electric Company	Seabeck-San Felipe 115 kV Line (New)	Planned	115 kV	No	2024
El Paso Electric Company	Sparks-San Felipe Line (Conversion/Reconductor) 69 kV to 115 kV	Planned	115 kV	No	2026
El Paso Electric Company	Uvas Substation 24 MVA Transformer Addition	Planned	115 kV	Yes	2030
El Paso Electric Company	Vado 224 MVA Vado 345/115 kV Autotransformer (New)	Planned	345 kV	No	2026
El Paso Electric Company	Vado Substation 115 kV (New)	Planned	115 kV	No	2026
El Paso Electric Company	Vado-Anthony 115 kV Line Double Bundled (Reconductor)	Planned	115 kV	No	2027
El Paso Electric Company	Vado-Salopek 115 kV Double Bundled Line (Reconductor)	Planned	115 kV	No	2027
Imperial Irrigation District	92kV "R" Line Network Upgrades	Planned	Below 115 kV	Yes	2023
Imperial Irrigation District	Path 42 RAS Revision and Rating Increase	Planned	230 kV	No	2023
Los Angeles Department of Water and Power	Add voltage support at Toluca Station	Planned	230 kV	Yes	TBD
Los Angeles Department of Water and Power	Adelanto-Rinaldi Line 1 Clearance Mitigation	Planned	500 kV AC	No	2025
Los Angeles Department of Water and Power	Apex-Crystal Transmission Line	Planned	500 kV AC	Yes	2024
Los Angeles Department of Water and Power	Barren Ridge Voltage Support	Planned	230 kV	Yes	2022
Los Angeles Department of Water and Power	Clearance Mitigation Upgrade for Adelanto-Toluca Line 1	Planned	500 kV AC	No	2026
Los Angeles Department of Water and Power	Clearance Mitigation Upgrade for Victorville Rinaldi Line 1	Planned	500 kV AC	No	2023

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Los Angeles Department of Water and Power	Haskell Bank H (PP1-Haskell L1)	Planned	230 kV	Yes	2022
Los Angeles Department of Water and Power	McCullough-Victorville series cap upgrade	Planned	500 kV AC	Yes	2024
Los Angeles Department of Water and Power	New Receiving Station X (LAX)	Planned	230 kV	Yes	2023
Los Angeles Department of Water and Power	New Rosamond Station	Planned	230 kV	Yes	2025
Los Angeles Department of Water and Power	Reconductor Barren Ridge - Haskell Canyon 230 kV Line 1	Planned	230 kV	Yes	TBD
Los Angeles Department of Water and Power	Re-conductor Rinaldi-Tarzana 230kV Line 1 & 2	Planned	230 kV	Yes	2024
Los Angeles Department of Water and Power	Re-conductor Valley-Toluca 230 kV Lines 1&2	Planned	230 kV	Yes	TBD
Los Angeles Department of Water and Power	Scattergood-Olympic Cable B	Planned	230 kV	Yes	2022
Los Angeles Department of Water and Power	Tarzana-Olympic 1A & 1B 138 kV conversion to 230 kV	Planned	230 kV	Yes	2025
Los Angeles Department of Water and Power	Upgrade Circuit Breakers at Victorville 500kV	Planned	500 kV AC	No	2023
Los Angeles Department of Water and Power	Upgrade Lugo-Victorville Line 1 & terminal equipment	Planned	500 kV AC	Yes	2024
Los Angeles Department of Water and Power	Upgrade Toluca-Hollywood Line 1 Underground Cable	Planned	230 kV	No	2025
Public Service Company of New Mexico	Belen Phase Shifting Transformer	Planned	115 kV	No	2023
Public Service Company of New Mexico	Dagger Point Switching Station	Planned	345 kV	No	2023

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Public Service Company of New Mexico	Rio Puerco Switching Station update for Proxy RPS	Planned	345 kV	Yes	2027
Salt River Project	Abel - Pfister - Ball 230kV	Planned	230 kV	No	2023
Salt River Project	Browning 500/230 kV Transformer 3	Planned	500 kV AC	No	2024
Salt River Project	Browning 500/230 kV Transformer 4	Planned	500 kV AC	No	2027
Salt River Project	Coolidge - Hayden Reroute 115kV	Planned	115 kV	Yes	2024
Salt River Project	Coolidge Expansion Project	Planned	500 kV AC	No	2024
Salt River Project	High-Tech Interconnect Project (HIP)	Planned	230 kV	No	2024
Salt River Project	Palo Verde – Hassayampa 18 ohm series reactor addition on each of the three lines	Planned	500 kV AC	Yes	2023
Salt River Project	Project Huckleberry	Planned	230 kV	No	2024
Salt River Project	Reconductor Anderson - Kyrene 230 kV	Planned	230 kV	No	2027
Salt River Project	Reconductor Corbell - Santan 230 kV	Planned	230 kV	No	2027
Salt River Project	Reconductor Orme - Rudd 230 kV #1	Planned	230 kV	No	2027
Salt River Project	Reconductor Orme - Rudd 230 kV #2	Planned	230 kV	No	2027
Salt River Project	Red Hawk 230kV	Planned	230 kV	No	2023
Salt River Project	Southeast Power Link	Planned	230 kV	Yes	2023 (Ph1), 2027 (Ph2)
Salt River Project	Superior - Silver King 115kV Reroute	Planned	115 kV	Yes	2027
Tri-State Generation and Transmission Association	Breaker Addition at Escalante Substation	Planned	230 kV	Yes	2023
Tri-State Generation and Transmission Association	Frontier Reactor Addition	Planned	115 kV	Yes	2023
Tri-State Generation and Transmission Association	Hernandez 115/69kV T2 Transformer Replacement	Planned	115 kV	Yes	2024
Tucson Electric Power	500/345kV Transformer addition at Pinal West	Planned	500 kV AC	No	2022

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Tucson Electric Power	500/345kV Transformer addition at Westwing	Planned	500 kV AC	No	2022
Tucson Electric Power	Bopp-Donald 138/13.8kV Substation	Planned	138 kV	No	2026
Tucson Electric Power	Bopp-Donald to Midvale 138kV line	Planned	138 kV	No	2027
Tucson Electric Power	Catron 345/34.5 kV Substation	Planned	345 kV	Yes	2022
Tucson Electric Power	Catron Loop-in to Springerville-Greenlee 345 kV line	Planned	345 kV	Yes	2023
Tucson Electric Power	Corona 138/13.8 kV Substation	Planned	138 kV	Yes	2029
Tucson Electric Power	Cottonwood to Bopp-Donald 138kV line	Planned	138 kV	No	2026
Tucson Electric Power	Craycroft-Barril 138/13.8 kV Substation	Planned	138 kV	Yes	2027
Tucson Electric Power	DMP 138 kV, Conversion to breaker-and-a-half substation	Planned	138 kV	Yes	2024
Tucson Electric Power	DMP 230/138kV Transformers	Planned	230 kV	No	2025
Tucson Electric Power	DMP to Vail 230kV line	Planned	230 kV	No	2027
Tucson Electric Power	East Loop 138kV Conversion to breaker-and-a-half substation	Planned	138 kV	No	2027
Tucson Electric Power	Golden Valley 230kV Transmission Line	Planned	230 kV	No	2027
Tucson Electric Power	Greenlee Capacitor Additions	Planned	345 kV	Yes	2023
Tucson Electric Power	Greenlee Loop-in to Springerville-Vail 345 kV line	Planned	345 kV	Yes	2023
Tucson Electric Power	Hartt 138/13.8 kV Substation	Planned	138 kV	Yes	2024
Tucson Electric Power	Irvington - East Loop 138 kV Transmission Line	Planned	138 kV	Yes	2022
Tucson Electric Power	Kantor Capacitor Bank Addition for Hermosa	Planned	138 kV	No	2023
Tucson Electric Power	Lago Del Oro 138/13.8 kV Substation	Planned	138 kV	Yes	2028
Tucson Electric Power	Marana 138/13.8 kV Substation	Planned	138 kV	Yes	2024
Tucson Electric Power	Marana 138-kV Transmission Line	Planned	138 kV	Yes	2024
Tucson Electric Power	Naranja 138/13.8 kV Substation	Planned	138 kV	Yes	2028
Tucson Electric Power	Naranja Capacitor Bank Addition	Planned	138 kV	Yes	2028

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Tucson Electric Power	New 138kV line North Loop to Naranja to La Canada	Planned	138 kV	Yes	2028
Tucson Electric Power	New 230kV Yard at DMP Substation	Planned	230 kV	No	2025
Tucson Electric Power	New 230kV Yard at Tortolita Substation	Planned	230 kV	No	2025
Tucson Electric Power	New 230kV Yard at Vail Substation	Planned	230 kV	No	2027
Tucson Electric Power	Olsen 138/13.8 kV Substation	Planned	138 kV	Yes	2030
Tucson Electric Power	Orange Grove Capacitor Bank Addition	Planned	138 kV	No	2025
Tucson Electric Power	Patriot 138/13.8 kV Substation	Planned	138 kV	Yes	2022
Tucson Electric Power	Rancho Vistoso - Lago Del Oro 138kV Line	Planned	138 kV	Yes	2028
Tucson Electric Power	Rillito 138kV Conversion to breaker-and-a-half substation	Planned	138 kV	No	2025
Tucson Electric Power	Rio Rico 138kV Switchyard	Planned	138 kV	Yes	2023
Tucson Electric Power	Rio Rico Capacitor Bank Addition	Planned	138 kV	Yes	2023
Tucson Electric Power	Sears Wilmot 138/13.8 kV Substation	Planned	138 kV	Yes	2025
Tucson Electric Power	Springerville-Catron 345 kV Circuits 1 and 2 Uprate	Planned	345 kV	Yes	2023
Tucson Electric Power	TEPTDA 138kV Substation	Planned	138 kV	No	2027
Tucson Electric Power	Tortolita 500/230kV Transformers	Planned	500 kV AC	No	2025
Tucson Electric Power	Tortolita to DMP 230kV line	Planned	230 kV	No	2025
Tucson Electric Power	Vail 345/230kV Transformers	Planned	345 kV	No	2027
Tucson Electric Power	Vine 138/13.8 kV Substation (was UA North)	Planned	138 kV	Yes	2024
Tucson Electric Power	Whetstone 138kV Substation	Planned	138 kV	No	2022
Tucson Electric Power	Winchester to Vail 345kV line uprate	Planned	345 kV	Yes	2023
Western Area Power Administration - DSW	Bouse – Kofa	Planned	161 kV	Yes	2025
Western Area Power Administration - DSW	Dome Tap-Gila	Planned	161 kV	Yes	2022

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Western Area Power Administration - DSW	Kofa – Dome Tap	Planned	161 kV	Yes	2025
Western Area Power Administration - DSW	Parker – Blythe	Planned	161 kV	No	2026

585

586  
587

**CCPG Base Transmission Plan Projects for 2022-23 Regional Planning Cycle**

<b>Sponsor</b>	<b>Project Name</b>	<b>Development Status as of February 2022</b>	<b>Voltage</b>	<b>In 2020-21 Regional Transmission Plan?</b>	<b>In-Service Date</b>
Black Hills Energy	Rodriguez 115/13.2 kV Distribution Substation	Planned	115 kV	Yes	2023
Black Hills Energy	West Station - Hogback 115kV	Planned	115 kV	Yes	2023
Black Hills Power	Lookout - Wyodak 230 kV rebuild.	Planned	230 kV	Yes	2022
Black Hills Power	Rapid City DC Tie RAS Redesign	Planned	230 kV	Yes	TBD prior to 2026
Cheyenne Light Fuel and Power	Allison Draw - Campstool 115 kV Line	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Allison Draw - CPGS 115 kV Line	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Allison Draw 115 kV Substation	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Bison - Orchard Valley 115 kV Line	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Bison - West Cheyenne 115 kV Line	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Bluffs 230 kV Substation	Planned	230 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Orchard Valley - King Ranch 115 kV Line	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Orchard Valley 115 kV Substation	Planned	115 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Sweetgrass - Bluffs 230 kV Line	Planned	230 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	Sweetgrass - South Cheyenne kV 115 kV Line	Planned	115 kV	No	2023

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Cheyenne Light Fuel and Power	Sweetgrass 115 kV Substation	Planned	115 kV	No	2023
Cheyenne Light Fuel and Power	Sweetgrass 230 kV Substation	Planned	230 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	West Cheyenne - Sweetgrass 230 kV Line	Planned	230 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	West Cheyenne - Windstar 230 kV Line	Planned	230 kV	No	TBD prior to 2026
Cheyenne Light Fuel and Power	West Cheyenne 230 kV Substation	Planned	230 kV	No	TBD prior to 2026
Colorado Springs Utility	Central System Improvement - Kelker Substation Rebuild - New Kelker-Southplant 115kV Line	Planned	115 kV	No	2026
Colorado Springs Utility	Claremont Transformer	Planned	230 kV	No	2024
Colorado Springs Utility	Flying Horse Flow Mitigation	Planned	115 kV	No	2024
Colorado Springs Utility	Flying Horse Power Transformer	Planned	115 kV	No	2025
Colorado Springs Utility	Kettle Creek 115/12.5kV Power Transformer Addition	Planned	115 kV	No	2023
Colorado Springs Utility	New Horizon Substation and Transformer Addition	Planned	230 kV	No	2023
Colorado Springs Utility	North System Improvement - Briargate Sub Expansion	Planned	230 kV	No	2023
Platte River Power Authority	Drake - Timberline 115kV Line Rebuild	Planned	115 kV	No	2025
Platte River Power Authority	Longs Peak 230/115kV T1 Transformer Replacement	Planned	230 kV	No	2025
Platte River Power Authority	Timberline 230/115kV Transformer T3 Replacement	Planned	230 kV	Yes	2024
Public Service Company of Colorado/ Xcel Energy	Ault-Cloverly Transmission Project	Planned	115 kV	Yes	2024



Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Public Service Company of Colorado/ Xcel Energy	Avery Substation	Planned	230 kV	Yes	2022
Public Service Company of Colorado/ Xcel Energy	Colorado's Power Pathway	Planned	345 kV	No	2027
Public Service Company of Colorado/ Xcel Energy	Daniels Park to Prairie Reconductor 230kV	Planned	230 kV	No	2023
Public Service Company of Colorado/ Xcel Energy	Gilman-Avon 115 kV Transmission Line	Planned	115 kV	Yes	2024
Public Service Company of Colorado/ Xcel Energy	Greenwood - Denver Terminal 230kV transmission line	Planned	230 kV	Yes	2022
Public Service Company of Colorado/ Xcel Energy	Midway Transformer Upgrade	Planned	230 kV	No	2023
Public Service Company of Colorado/ Xcel Energy	Mirasol Switching Station 230kV (Formerly Badger Hills)	Planned	230 kV	Yes	2022
Public Service Company of Colorado/ Xcel Energy	Stagecoach Switching Station	Planned	230 kV	No	2024
Tri-State Generation and Transmission Association	Archer - Stegall Sectionalization Project	Planned	115 kV	No	2024
Tri-State Generation and Transmission Association	Badger Creek - Big Sandy 230 kV	Planned	230 kV	No	2028
Tri-State Generation and Transmission Association	Big Sandy - Burlington 230 kV Uprate	Planned	230 kV	No	2028
Tri-State Generation and Transmission Association	Boone - Huckleberry 230 kV	Planned	230 kV	No	2026
Tri-State Generation and Transmission Association	Breaker Addition at Cahone Substation	Planned	115 kV	Yes	2023
Tri-State Generation and Transmission Association	Breaker Addition at Redtail Substation	Planned	115 kV	No	2022

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Tri-State Generation and Transmission Association	Burlington - Burlington (KCEA) 115kV Line Rebuild	Planned	115 kV	Yes	2024
Tri-State Generation and Transmission Association	Burlington - Lamar 230 kV	Planned	230 kV	No	2025
Tri-State Generation and Transmission Association	Cahone - Empire Uprate	Planned	115 kV	No	2023
Tri-State Generation and Transmission Association	Milk Creek Switchyard on Craig-Meeker 345kV line	Planned	345 kV	Yes	2023
Tri-State Generation and Transmission Association	Rolling Hills Substation	Planned	115 kV	Yes	2026
Tri-State Generation and Transmission Association	Shaw Ranch Substation	Planned	115 kV	Yes	2026
Tri-State Generation and Transmission Association	Slater Double Circuit Project	Planned	115 kV	No	2024
Tri-State Generation and Transmission Association	Valent Switchyard on Walsenburg - Gladstone 230 kV line	Planned	230 kV	No	2022
Western Area Power Administration - RMR	Blue Mesa	Planned	115 kV	Yes	2026
Western Area Power Administration - RMR	Brush KY1A	Planned	115 kV	No	2025
Western Area Power Administration - RMR	Estes-Flatiron 115-kV rebuild	Planned	115 kV	Yes	2023
Western Area Power Administration - RMR	Glendo Podolak upgrade	Planned	115 kV	No	2024
Western Area Power Administration - RMR	Golden Prairie Sectionalizing	Planned	115 kV	Yes	2027
Western Area Power Administration - RMR	Midway KV1A Replacement	Planned	230 kV	Yes	2022

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Western Area Power Administration - RMR	Sand Creek Tap	Planned	115 kV	Yes	2025
Western Area Power Administration - RMR	Stegall Bus Sectionalization	Planned	230 kV	Yes	2025
Western Area Power Administration - RMR	Weld KV1A	Planned	230 kV	No	2023
Western Area Power Administration - RMR	Wiggins KY1A	Planned	115 kV	No	2025

588  
589  
590

**SSPG Base Transmission Plan Projects for 2022-23 Regional Planning Cycle**

Sponsor	Project Name	Development Status as of February 2022	Voltage	In 2020-21 Regional Transmission Plan?	In-Service Date
Sacramento Municipal Utility District	Hurley 230 kV bus-tie breaker	Planned	230 kV	Yes	Summer 2023
Sacramento Municipal Utility District	SVEC 230 kV Switching Station	Planned	230 kV	No	Fall 2023

591

592 **Appendix C – Other Regional Planning Process**  
 593 **Activities**

594  
 595 The PMC will identify transmission developers eligible to utilize cost allocation developed in the  
 596 Regional Planning Process using the Transmission Developer Qualification Criteria, which are  
 597 outlined in the [Transmission Developer Qualification Application](#) posted on the WestConnect  
 598 website. Transmission developers seeking eligibility for potential designation as the entity eligible  
 599 to use the regional cost allocation for a transmission project selected in the Regional Plan for  
 600 purposes of cost allocation must submit to the PMC information as outlined in the [Transmission](#)  
 601 [Developer Qualification Application](#). The submittal window for this information as part of the 2022-  
 602 23 planning cycle will be determined and announced by the PMC.

603 Once projects have been selected for inclusion in the Regional Plan, WestConnect will select an  
 604 eligible transmission developer (as determined by the Transmission Developer Qualification  
 605 Criteria mentioned above) to utilize the cost allocation developed for each project selected for the  
 606 purposes of regional cost allocation.

607 For details on the developer selection process, refer to the WestConnect BPM or the member tariffs,  
 608 which are posted on the Open Access Same-Time Information System (OASIS) website – links below.

609

<b>WestConnect Enrolled TOLSO Member</b>	<b>OASIS Link</b>
Arizona Public Service Company	<a href="http://www.oasis.oati.com/azps/index.html">http://www.oasis.oati.com/azps/index.html</a>
Basin Electric Power Cooperative	<a href="http://www.oatioasis.com/bepw/index.html">http://www.oatioasis.com/bepw/index.html</a>
Black Hills Power, Inc.	<a href="http://www.oatioasis.com/BHBE/index.html">http://www.oatioasis.com/BHBE/index.html</a>
Black Hills Colorado Electric Utility Company, LP	<a href="http://www.oatioasis.com/bhct/index.html">http://www.oatioasis.com/bhct/index.html</a>
Cheyenne Light Fuel & Power Company	<a href="http://www.oatioasis.com/CLPT/index.html">http://www.oatioasis.com/CLPT/index.html</a>
Deseret Generation and Transmission	<a href="http://www.oasis.oati.com/DGT/index.html">http://www.oasis.oati.com/DGT/index.html</a>
El Paso Electric Company	<a href="http://www.oatioasis.com/epe/index.html">http://www.oatioasis.com/epe/index.html</a>
Public Service Company of New Mexico	<a href="http://www.oatioasis.com/pnm/index.html">http://www.oatioasis.com/pnm/index.html</a>
Tri-State Generation and Transmission	<a href="https://www.oasis.oati.com/tsgt/index.html">https://www.oasis.oati.com/tsgt/index.html</a>
Tucson Electric Power Company	<a href="http://www.oatioasis.com/tepc/index.html">http://www.oatioasis.com/tepc/index.html</a>
UNS Electric, Inc.	<a href="http://www.oatioasis.com/UNST/index.html">http://www.oatioasis.com/UNST/index.html</a>
Xcel Energy – Public Service Company of Colorado	<a href="http://www.oasis.oati.com/psco/index.html">http://www.oasis.oati.com/psco/index.html</a>

610