

**2011**

# WestConnect Annual Ten-Year Transmission Plan

2011 - 2020

A Report Detailing the  
Electrical Transmission System Expansion Plan  
Within the WestConnect Planning Area  
During 2011-2020



## ACKNOWLEDGEMENTS

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ARIZONA PUBLIC SERVICE COMPANY  
BASIN ELECTRIC POWER COOPERATIVE  
BLACK HILLS ENERGY  
BLACK HILLS POWER  
CATS SUBREGIONAL PLANNING GROUP  
CENTRAL ARIZONA PROJECT  
CHEYENNE LIGHT, FUEL AND POWER  
CLEAN LINE ENERGY PARTNERS  
COLORADO COORDINATED PLANNING GROUP  
DINÉ POWER AUTHORITY  
EL PASO ELECTRIC COMPANY  
ENERGY CAPITAL PARTNERS  
GREAT BASIN TRANSMISSION  
IMPERIAL IRRIGATION DISTRICT  
PLATTE RIVER POWER AUTHORITY  
PUBLIC SERVICE COMPANY OF COLORADO  
PUBLIC SERVICE COMPANY OF NEW MEXICO  
NV ENERGY  
LS POWER  
SALT RIVER PROJECT  
SAN LUIS RIVER COLORADO PROJECT  
SACRAMENTO MUNICIPAL UTILITY DISTRICT  
SIERRA SUBREGIONAL PLANNING GROUP  
SOUTHLINE TRANSMISSION  
SOUTHWEST PUBLIC POWER GROUP  
SOUTHWEST TRANSMISSION COOPERATIVE  
SOUTHWEST AREA TRANSMISSION  
SUNZIA TRANSMISSION PROJECT  
TRANSCANADA  
TRANS-ELECT DEVELOPMENT COMPANY  
TRANSWEST EXPRESS, LLC  
TRES AMIGAS, LLC  
TRI-STATE GENERATION AND TRANSMISSION  
TUCSON ELECTRIC POWER / UNISOURCE ENERGY SERVICES  
WESTERN AREA POWER ADMINISTRATION - DESERT SOUTHWEST REGION  
WESTERN AREA POWER ADMINISTRATION - SIERRA NEVADA REGION  
WESTERN AREA POWER ADMINISTRATION - ROCKY MOUNTAIN REGION  
WYOMING-COLORADO INTERTIE

## FOREWORD

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KRSA is appreciative of the cooperation and support of the WestConnect planning participants throughout the WestConnect subregional planning process. Their attendance at subregional planning meetings, performance of technical studies, and contribution of data and information for this report has been exemplary. This indicates their continued commitment to improve and perfect the open, transparent and stakeholder-driven subregional planning process that was in place prior to institution of the WestConnect planning process.

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## EXECUTIVE SUMMARY

This 2011 WestConnect Transmission Plan ( “the Plan” or “2011 Plan”) is the fourth subregional transmission plan coordinated and assembled on behalf of WestConnect subregional planning participants and stakeholders. The Plan area encompasses portions of nine states and three subregional planning areas. Participants include fifteen transmission owners and an additional fifteen transmission project sponsors. The intent of the Plan is to provide a comprehensive overview of the large number of planned and conceptual transmission projects proposed within the planning area for the ten-year horizon.

2010 marked a Plan reorganization year for the WestConnect planning area. WestConnect incorporated a number of new EHV merchant and interstate transmission projects into the Plan, including multiple major conceptual transmission projects and a number of projects that were modified or whose in-service dates were delayed, but which remained in the Plan. Also during 2010, WestConnect sponsors continued their improvement in Plan data entry consistency and accuracy. This improvement is reflected in a more complete summary data in this Plan. Additionally in 2010, the Planning Management Committee (“PMC”) chose to incorporate a new summary category, Plan data by Subregional Planning Group. This 2011 Plan modification permits an easy identification of transmission projects that interconnect between subregional planning groups both within and outside the WestConnect planning area.

The 2011 Plan includes 138 planned new or rebuilt/upgraded transmission line projects with a combined length of approximately 5,821 miles, 63 planned transmission substations, 31 planned transmission class transformers, and 16 other planned transmission enhancement projects, with an estimated total capital cost of over \$9 Billion.<sup>1</sup> Additionally, the 2011 Plan includes 41 conceptual new or rebuilt/upgraded transmission line projects with a combined length of approximately 5,360 miles, 6 conceptual transmission substations, 4 conceptual transmission class transformers and 7 other planned transmission enhancements, with an estimated total capital cost of just over \$10.9 Billion.<sup>2</sup> Combined, the 2011 Plan includes over 11,100 miles of new/upgraded transmission lines, and other facilities, that require a total capital investment of more than \$19.9 Billion. **Table 1** summarizes the Plan data.

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<sup>1</sup> Approximately 12% of the planned projects do not have cost data

<sup>2</sup> Approximately 61% of the conceptual projects do not have cost data



Type of Project	Number of Planned Projects	Planned Project Mileage	Planned Estimated Investment (2010 Dollars)	Number of Conceptual Projects	Conceptual Project Mileage	Conceptual Estimated Investment (2010 Dollars)	Total Estimated Cost (2010 Dollars)
<i>Substation Projects</i>	63	N/A	\$ 464,703,257	6	N/A	\$ 23,500,000	\$ 488,203,257
<i>Transmission Line Projects</i>	138	5,281	\$ 8,349,918,132	41	5,360	\$ 10,264,731,390	\$ 18,614,649,522
<i>Transformer Projects</i>	31	N/A	\$ 188,750,433	4	N/A	\$ 12,991,263	\$ 199,741,696
<i>Other Projects</i>	16	N/A	\$ 73,036,744	7	N/A	\$ 614,309,000	\$ 687,345,744
<b>Total Projects</b>	<b>248</b>	<b>5,821</b>	<b>\$ 9,074,408,566<sup>3</sup></b>	<b>58</b>	<b>5,360</b>	<b>\$ 10,915,531,653<sup>4</sup></b>	<b>\$ 19,989,940,219</b>

Table 1 – Summary Table - Overview of Reported WestConnect Projects

Within the 2011 Plan, planned and conceptual interstate projects continue to dominate the WestConnect Plan mileage and cost statistics due to the scope and scale of the projects.

Additionally in the 2011 Plan, increased project sponsor involvement and project classification involvement increased the overall comprehensive nature of the Plan.

<sup>3</sup> Approximately 12% of the planned projects do not have cost data

<sup>4</sup> Approximately 61% of the conceptual projects do not have cost data



## OVERVIEW

This section provides an overview of the 2011 WestConnect Transmission Plan report. The overview includes a description of the authority for WestConnect planning, a summary of the history of the WestConnect Transmission Plan, the purpose and framework of the 2011 Plan and the data collection process for this report.

## PLANNING AUTHORITY

This 2011 WestConnect Transmission Plan (“the Plan” or “2011 Plan”) is the fourth subregional transmission plan coordinated and assembled on behalf of WestConnect subregional planning participants and stakeholders.

Figure 1 - WestConnect Planning Area Transmission Lines (depicted in orange)



The authority for preparation of the Plan is derived from the May 2, 2007 WestConnect Project Agreement for Subregional Transmission Planning (“STP Agreement”).<sup>5</sup> The subregional planning process used to develop and coordinate the transmission plans contained in this Plan is documented in a companion report entitled, *2011 WestConnect Transmission Planning Report*.

This 2011 Plan includes the ten-year transmission plans of the fifteen parties that have signed the WestConnect STP Agreement, as displayed in **Table 2**. The 2011 Plan also includes transmission plans of other parties that have proposed, studied, presented and sought stakeholder comments on their respective transmission projects during the 2010 subregional planning processes that are active within the WestConnect Planning Area. The WECC footprint and WestConnect Planning areas are depicted in **Figure 1**. A Transmission Plan Guide was developed to establish the prerequisite requirements for inclusion of transmission projects in WestConnect Transmission Plans. The Transmission Plan Guide is included as **Exhibit 1** to this report.

<sup>5</sup> The Project Agreement for Subregional Transmission Planning is available at - <http://www.westconnect.com/filestorage/050207RegionalPlanningProjectAgreementExecutionCopy.pdf>



Arizona Public Service	Sacramento Municipal Utility District
Basin Electric Power Cooperative	Salt River Project
Black Hills Power	Southwest Transmission Cooperative
El Paso Electric	Transmission Agency of Northern California
Imperial Irrigation District	Tri-State Generation and Transmission Association
NV Energy	Tucson Electric Power Company
Xcel Energy / Public Service Company of Colorado	Western Area Power Administration
Public Service Company of New Mexico	

Table 2 – WestConnect Planning Management Committee Members

## HISTORY OF THE WESTCONNECT PLAN

The 2011 Plan is the fourth annual report documenting the transmission plans within the WestConnect planning area, and addresses the 2011 through 2020 period. Below is a brief overview of the history of the WestConnect Plan. In the 2009 annual report, the title was modified to reflect the upcoming Plan year, not the previous planning year as in previous Plan reports. Hence, the plan derived during the previous year is referred to as the published year’s Plan.

### 2007 WESTCONNECT PLAN

On December 4, 2007 the first draft of the 2007 WestConnect Transmission Plan was released and noticed via email, website announcement and posting to the WestConnect website, for a two-week public review and comment period. During the review period, WestConnect Planning received comments from eleven stakeholders. The comments were complied and posted for subsequent comment.<sup>6</sup> These comments were addressed and integrated into the final draft 2007 WestConnect Transmission Plan Report.

On January 9, 2008, the final draft of the 2007 WestConnect Transmission Plan Report was released to the public. On January 17, 2008, the 2007 WestConnect Transmission Plan Report<sup>7</sup> was unanimously approved by the PMC at the WestConnect Annual Meeting in Las Vegas with changes reflected within the 2007 WestConnect Transmission Plan Errata.<sup>8</sup>

<sup>6</sup> 2007 Draft WestConnect Plan - Complied Comments located at - [http://www.westconnect.com/filestorage/Comments\\_on\\_the\\_Draft\\_WestConnect\\_Transmission\\_Plan\\_Report.doc](http://www.westconnect.com/filestorage/Comments_on_the_Draft_WestConnect_Transmission_Plan_Report.doc)

<sup>7</sup> 2007 WestConnect Transmission Plan Report - [http://www.westconnect.com/filestorage/WestConnect\\_Transmission\\_Plan\\_FINAL.pdf](http://www.westconnect.com/filestorage/WestConnect_Transmission_Plan_FINAL.pdf)

<sup>8</sup> 2007 Errata - [http://www.westconnect.com/filestorage/2007\\_Annual\\_Meeting\\_Errata\\_v2.pdf](http://www.westconnect.com/filestorage/2007_Annual_Meeting_Errata_v2.pdf)

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## 2008 WESTCONNECT PLAN

On December 11, 2008 the first draft of the 2008 WestConnect Transmission Plan was released, via email, website announcement and posting to the WestConnect website, for a two-week public review and comment period. During the review period, WestConnect Planning received comments from six stakeholders. The comments were compiled and posted for subsequent comment.<sup>9</sup> These comments were addressed and integrated into the final draft 2008 WestConnect Transmission Plan Report.

On January 12, 2009, the final draft of the 2008 WestConnect Transmission Plan Report was released to the public. On January 14, 2009, the 2008 WestConnect Transmission Plan Report<sup>10</sup> was unanimously approved by the PMC at the WestConnect Annual Meeting in Las Vegas with the changes reflected within the 2008 WestConnect Transmission Plan Errata.<sup>11</sup>

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## 2010 WESTCONNECT PLAN

On January 18, 2010 the first draft of the 2010 WestConnect Transmission Plan was released, via email, website announcement and posting to the WestConnect website, for a two-week public review and comment period. During the review period, WestConnect Planning received comments from six stakeholders. The comments were compiled and posted for subsequent comment.<sup>12</sup> These comments were addressed and integrated into the final draft 2010 WestConnect Transmission Plan Report.

On February 12, 2010, the final draft of the 2010 WestConnect Transmission Plan Report was released to the public. Over the course of the week of March 22, 2010 the 2010 WestConnect Transmission Plan Report<sup>13</sup> was unanimously approved by the PMC via email vote with the changes reflected within the 2010 WestConnect Transmission Plan Errata.<sup>14</sup>

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<sup>9</sup> 2008 Draft WestConnect Plan - Compiled Comments located at -

<http://www.westconnect.com/filestorage/2008%20Plan%20Comment%20Report.xls>

<sup>10</sup> 2008 WestConnect Transmission Plan Report - [http://www.westconnect.com/filestorage/Final\\_2008\\_Plan\\_Complete.pdf](http://www.westconnect.com/filestorage/Final_2008_Plan_Complete.pdf)

<sup>11</sup> 2008 Errata - <http://westconnect.com/filestorage/2008%20Annual%20Meeting%20Errata.pdf>

<sup>12</sup> 2010 Draft WestConnect Plan - Compiled Comments located at -

<http://westconnect.com/filestorage/2009%20Plan%20Comment%20Report.xls>

<sup>13</sup> 2010 WestConnect Transmission Plan Report -

[http://westconnect.com/filestorage/wc\\_trans\\_planning\\_2010\\_final\\_rpt\\_041910.pdf](http://westconnect.com/filestorage/wc_trans_planning_2010_final_rpt_041910.pdf)

<sup>14</sup> 2010 Errata - [http://westconnect.com/filestorage/wc\\_2010\\_report\\_errata.pdf](http://westconnect.com/filestorage/wc_2010_report_errata.pdf)

## PURPOSE AND FRAMEWORK OF 2011 PLAN

The purpose of the 2011 Plan is to provide an updated and comprehensive summary of the transmission plans within the WestConnect planning area for the ten-year horizon. Each proposed transmission project described in this Plan is separate and stands on its own merits, but is part of the larger overall plan summarized in the following sections. A description of each proposed transmission project is provided in the Appendix associated with the project's sponsor and participating parties. The WestConnect Transmission Plan views all of the proposed projects as a coordinated transmission-system expansion plan for the entire WestConnect planning area. Therefore, this document presents the transmission projects contained in the Plan from a system perspective, without regard to sponsorship or ownership.

The 2011 Plan is supported by the planning processes and stakeholder involvement described in the *2011 WestConnect Transmission Planning Report*. The Plan has been assembled into three sections: Summary of WestConnect Transmission Plan, Exhibits, and Appendices. Each section is integral to understanding the Plan and how it was compiled.

The *Summary of the WestConnect Transmission Plan* section examines the assembled transmission plans, makes general conclusions, and presents aggregated data for the entire WestConnect planning area. This first section consists of a narrative describing the Plan, with supporting summary tables and charts. It also provides a summation of the Plan from voltage classification, in-service date, location (by state) and subregional planning area.

The second section of the Plan consists of a series of Exhibits. **Exhibit 1** is a WestConnect Transmission Plan Guideline<sup>15</sup> developed to establish prerequisites for inclusion of transmission projects in future WestConnect Transmission Plans. **Exhibits 2, 3, 4 and 5** provide presentations, in tabular form, of the WestConnect Transmission Plan sorted by voltage class, in-service date, state traversed and subregional planning area respectively. **Exhibit 6** consists of a series of maps that depict the WestConnect Transmission Plan geographically. Many of the proposed transmission projects have not yet been through a siting process to establish a specific route. Therefore, the maps do not provide route-specific information. **Exhibit 7** provides a listing of the modification between the 2010 and 2011 Plans.

The third section of this report consists of appendices that report the material supplied by individual utilities or transmission project sponsors in support of this 2011 WestConnect Transmission Plan. Each appendix contains

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<sup>15</sup> [http://www.westconnect.com/filestorage/Transmission\\_Plan\\_Guide.pdf](http://www.westconnect.com/filestorage/Transmission_Plan_Guide.pdf) posted on the WestConnect website on October 24, 2007 and presented at the WestConnect Planning Workshop on November 1, 2007.

a short summary of the indicated entity's projects followed by information pertaining to each project as provided by that entity. The projects are identified to be either planned projects or projects that are in the conceptual stage. Projects are listed within each entity's appendix in order of expected in-service date without regard to whether the project is planned or conceptual, although the status of each is noted.

This report utilizes a number of industry terms and acronyms. Common industry terminology and acronyms are defined in the companion *2011 WestConnect Planning Report*, at **Exhibit 18**. Also included in the *2011 WestConnect Planning Report*, at **Exhibit 7**, is a listing of the references and sources used throughout this document to research specific items in detail outside the scope of this report.



## DATA COLLECTION PROCESS

The information in the 2011 Plan was gathered through two methods: the annual WestConnect Planning Workshop and the WestConnect Transmission Project Management (“TPM”)<sup>16</sup> System.

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### WESTCONNECT ANNUAL PLANNING WORKSHOP

A public WestConnect Planning Workshop was held on November 17, 2010 at the Salt River Project’s PERA Club in Tempe, Arizona. Transmission providers and Subregional Planning Groups (SPG) presented information regarding their respective transmission expansion plans and related planning activities. Merchant transmission and generation developers also reported on their respective development plans.

The Workshop provided an informal setting in which to promote effective discussion of each presentation.<sup>17</sup> Prior to the Workshop, each presenter was provided with instructions for presentations and questions to be addressed during the presentation, referencing the 2010 WestConnect Transmission Plan:

- Highlight changes from the 2010 Plan, focusing on deletions and additions.
- Provide a summary of planned transmission upgrades.

Each presentation was followed by a period of open discussion with an opportunity for questions and comments from the audience.

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### WESTCONNECT TRANSMISSION PROJECT MANAGEMENT SYSTEM

The information included in this 2011 Plan represents the direct input of each project’s primary sponsor. WestConnect accomplished this data collection process through the development of the TPM database, an online data entry portal. This portal allows project sponsors to enter vital information for each project in their ten-year plan. WestConnect took the following steps to obtain the information:

- Project sponsors were requested to verify and update information on the TPM website;
- WestConnect ran Structured Query Language (“SQL”) queries to gather reporting information.

The TPM is the primary source of data for the annual WestConnect Plan and a significant source of information for the industry.

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<sup>16</sup> The WestConnect Transmission Project Management system is located at [www.westconnectplan.com](http://www.westconnectplan.com)

<sup>17</sup> The WestConnect Workshop agenda and presentation materials are located at <http://westconnect.com/planning.php>

## SUMMARY OF THE WESTCONNECT TRANSMISSION PLAN

This section provides an overview of transmission planning across and interconnected with the WestConnect planning area. Included in this summary are new and upgraded transmission lines planned for the next ten years, and the total estimated capital cost of the transmission projects. A complete detailed listing of each transmission project by name, estimated investment, length in miles, sorted by voltage class, year of planned in-service, state traversed and SPG can be found in **Exhibits 2, 3, 4 and 5**, respectively. A series of maps provided in **Exhibit 6** depict the Plan geospatially. The tables provided in **Exhibit 7** provide a summary of the changes to the Plan from the previous year's Plan.

### 2010 WESTCONNECT TRANSMISSION PLAN RECAP

The 2010 Plan included 148 planned new or rebuilt/upgraded transmission line projects with a combined length of approximately 6,255 miles; 58 planned transmission substations; 34 planned transmission class transformers; and 20 other planned transmission enhancement projects. The total estimated capital cost of these projects was \$8.3 Billion. Additionally, the 2010 Plan included 41 conceptual new or rebuilt/upgraded transmission line projects with a combined length of approximately 4,145 miles; 7 conceptual transmission substations; 5 conceptual transmission class transformers; and 2 other conceptual transmission enhancements, with an estimated total capital cost of \$6 Billion.

### 2011 WESTCONNECT TRANSMISSION PLAN SUMMARY

The 2011 Plan includes 138 planned new or rebuilt/upgraded transmission line projects with a combined length of approximately 5,821 miles; 63 planned transmission substations; 31 planned transmission class transformers; and 16 other planned transmission enhancement projects; with an estimated total capital cost of over \$9 Billion.<sup>18</sup> Additionally, the 2011 Plan includes 41 conceptual new or rebuilt/upgraded transmission line projects with a combined length of approximately 5,360 miles; 6 conceptual transmission substations; 4 conceptual transmission class transformers and 7 other planned transmission enhancements; with an estimated total capital cost of just over \$10.9 Billion.<sup>19</sup> Combined, the 2011 Plan includes over 11,100 miles of new/upgraded transmission lines and other facilities that require a total capital investment of more than \$19.9 Billion. **Table 3**, below summarize the Plan data.

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<sup>18</sup> Approximately 12% of the planned projects do not have cost data

<sup>19</sup> Approximately 61% of the conceptual projects do not have cost data



Type of Project	Number of Planned Projects	Planned Project Mileage	Planned Estimated Investment (2010 Dollars)	Number of Conceptual Projects	Conceptual Project Mileage	Conceptual Estimated Investment (2010 Dollars)	Total Estimated Cost (2010 Dollars)
<i>Substation Projects</i>	63	N/A	\$ 464,703,257	6	N/A	\$ 23,500,000	\$ 488,203,257
<i>Transmission Line Projects</i>	138	5,281	\$ 8,349,918,132	41	5,360	\$ 10,264,731,390	\$ 18,614,649,522
<i>Transformer Projects</i>	31	N/A	\$ 188,750,433	4	N/A	\$ 12,991,263	\$ 199,741,696
<i>Other Projects</i>	16	N/A	\$ 73,036,744	7	N/A	\$ 614,309,000	\$ 687,345,744
<b>Total Projects</b>	<b>248</b>	<b>5,821</b>	<b>\$ 9,074,408,566<sup>20</sup></b>	<b>58</b>	<b>5,360</b>	<b>\$ 10,915,531,653</b>	<b>\$ 19,989,940,219<sup>21</sup></b>

Table 3 – Overview of Reported WestConnect Projects

<sup>20</sup> Approximately 12% of the projects do not have cost data

<sup>21</sup> Approximately 61% of the projects do not have cost data



## SIGNIFICANT CHANGES BETWEEN THE 2010 AND 2011 PLAN

Changes occur in transmission plans and the transmission planning process for a variety of reasons, including economic conditions, load forecast adjustments and regulatory policy. The intent of this section is to summarize the major transmission planning changes that occurred between the 2010 and 2011 planning years. Four primary types of changes occurred: Projects were placed in-service; expected in-service dates changed; projects were added to the Plan; and projects were removed from the Plan.

Seventeen projects listed in the 2011 Plan changed their status to in-service. This status change indicates these projects are now operational. The projects placed in-service in during 2010 are listed in **Table 4**.

Project Name	Voltage	Sponsor Name	Plan Modification
MORGAN-PINNACLE PEAK 500KV LINE	500 kV AC	Arizona Public Service	Placed In-Service
MORGAN-RACEWAY-PINNACLE PEAK 230KV LINE	230 kV	Arizona Public Service	Placed In-Service
Blackwater Life Extension	345 kV	Public Service Company of New Mexico	Placed In-Service
Donkey Creek-Pumpkin Buttes 230 kV Line	230 kV	Black Hills Power	Placed In-Service
Rapid City Voltage Support	230 kV	Black Hills Power	Placed In-Service
ECSS 300 MVA 230/92kV transformer addition	230 kV	Imperial Irrigation District	Placed In-Service
Portner 230/13.8kV Substation	230 kV	Platte River Power Authority	Placed In-Service
Chambers 230/115kV Transmission Intertie Project	230 kV	Public Service Company of Colorado	Placed In-Service
Randolph-Browning 230kV	230 kV	Salt River Project	Placed In-Service
Miracle Mile - Ault	230 kV	Western Area Power Administration - RMR	Placed In-Service
Cienega 138/13.8 kV Substation	138 kV	Tucson Electric Power/ Unisource Energy	Placed In-Service
Cienega 138/13.8 kV Transmission Line	138 kV	Tucson Electric Power/ Unisource Energy	Placed In-Service
Tucson 138 kV Yard Reconfiguration	138 kV	Tucson Electric Power/ Unisource Energy	Placed In-Service
Arquea Gulch 115/69 kV Substation	115 kV	Black Hills Energy	Placed In-Service
Ault - Black Hollow Reconductor	115 kV	Western Area Power Administration - RMR	Placed In-Service

Table 4 – Projects Placed In-Service

**Table 5** highlights the 500 kV and 345 kV project additions, deletions and status changes reflected in the WestConnect Transmission Plan for 2011-2020. A detailed listing of the changes between this and the previous year's Transmission Plans, sorted by the Plan modification is found in **Exhibits 7-1 through 7-9**.



Project Name	Voltage	Plan Modification
Centennial West Clean Line	600 kV DC	Added to Plan
North Gila - Imperial Valley #2	500 kV	Added to Plan
Las Vegas - Los Angeles Project	500 kV	Added to Plan
Tres Amigas Superstation	345 kV	Added to Plan
Series Capacitor Replacement at Vail (Springerville - Vail)	345 kV	Added to Plan
Willow 345kV Substation	345 kV	Added to Plan
Series Capacitor Replacement at Vail 345kV Substation (Greenlee - Vail)	345 kV	Added to Plan
Series Capacitor Replacement at McKinley 345kV Substation (Bank #1)	345 kV	Added to Plan
Series Capacitor Replacement at McKinley 345kV Substation (Bank #2)	345 kV	Added to Plan
Series Capacitor Replacement at Greenlee 345kV Substation (Springerville - Greenlee)	345 kV	Added to Plan
Southline Transmission Project -- (Afton-Apache)	345 kV	Added to Plan
Delany-Palo Verde 500kV Line	500 kV	In-Service changed to 2013 from 2012
Rio Puerco Phase 2	345 kV	In-Service changed to 2013 from 2012
Mazatzal loop-in of Cholla-Pinnacle Peak 345kV	345 kV	In-Service changed to 2014 from 2013
Wyoming-Colorado Intertie	345 kV	In-Service changed to 2014 from 2013; Sponsor change
RS26 Project	345 kV	In-Service changed to TBD
Second Yah-Ta-Hey 345/115 kV Transformer	345 kV	In-Service changed to 2014 from TBD
SunZia Southwest Transmission Project	500 kV	In-Service changed to 2015 from 2014
Bicknell 345/230 kV Transformer Replacement	345 kV	In-Service changed to 2015 from 2012
Santa Rosa/Test Track 500/230 kV Transformer	500 kV	In-Service changed to 2015 from 2013
Greenlee 2nd 345/230 kV Transformer	345 kV	In-Service changed to 2015 from 2013
Calumet - Comanche Transmission Project	345 kV	In-Service changed to 2016 from 2014
EAST TRACY TO BLACKHAWK TO MIRA LOMA 345 KV LINE	345 kV	In-Service changed to 2018 from 2013
WEST TRACY TO FORT SAGE 345 KV LINE	345 kV	In-Service changed to 2018 from 2015
Vail 345/138kV Transformer T4	345 kV	In-Service changed to TBD from 2014
Morgan-Pinnacle Peak 500kV line	500 kV	Placed In-Service
Willow - Winchester 345kV Line	345 kV	Removed from Plan

Table 5 – Overview of Major Projects 2011 WestConnect Plan Changes



## PLAN SORTED BY VOLTAGE CLASS

Transmission projects, including transmission lines, substations and transformers, contained in the 2011 WestConnect Transmission Plan, sorted by voltage class and “planned” or “conceptual” status, are shown in **Exhibit 2**. The transmission line projects, sorted by voltage class and indicating the number of projects, miles of transmission line and estimated capital cost are summarized in **Table 6** and **Table 7** below and graphically displayed in **Figure 2** on the following page:

Voltage Class	Number of Planned Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
500 kV DC	1	725	\$3,000,000,000
500 kV AC	16	1,836	\$2,628,818,000
345 kV	11	902	\$706,811,000
230 kV	57	1,719	\$1,625,106,483
Below 230 kV	53	639	\$389,182,649
<b>Total</b>	<b>138</b>	<b>5,821</b>	<b>\$8,349,918,132</b>

Table 6 – WestConnect Plan Voltage Class Summary – Planned Transmission Line Projects

Voltage Class	Number of Conceptual Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
500 kV DC	1	800	\$2,500,000,000
500 kV AC	8	3,451	\$6,800,000,000
345 kV	5	462	\$468,000,000
230 kV	20	613	\$477,604,000
Below 230 kV	7	34	\$19,127,390
<b>Total</b>	<b>41</b>	<b>5,360</b>	<b>\$10,264,731,390</b>

Table 7 – WestConnect Plan Voltage Class Summary – Conceptual Transmission Line Projects

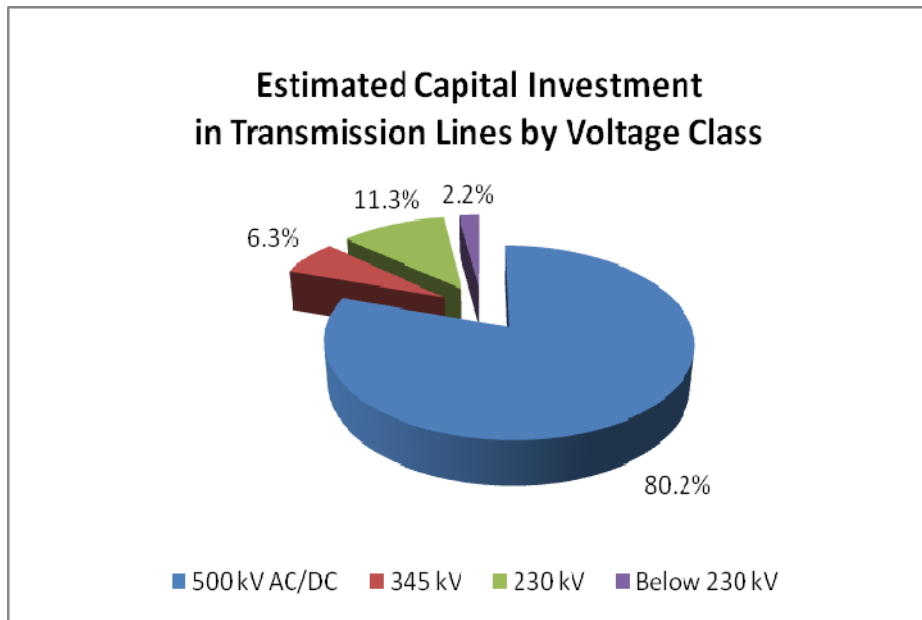
Currently, there are twenty-six planned or conceptual 500 kV transmission line projects within the WestConnect planning area. WestConnect planning participants will build or upgrade a total of 6,812 miles of 500 kV AC or 500 kV DC transmission lines at an estimated cost of over \$14.9 Billion over the next ten years. This portion of the Plan accounts for approximately 80.2% of the Plan’s total transmission line investment.

The 500 kV DC/AC voltage class remains predominately shaped by three major projects: the High Plains Express Transmission Project; the SunZia SouthWest Transmission Project; the Centennial West Clean Line; and the TransWest Express Project. The 500 kV AC conceptual High Plains Express Transmission Project originates in Wyoming and is routed through Colorado and New Mexico to the Phoenix area in Arizona. The SunZia Southwest



Transmission Project (“SunZia”) consists of up to two 500 kV interstate transmission lines approximately 500 miles in length between Arizona and New Mexico. The Centennial West Clean Line Project is a conceptual 600 kV DC transmission line that is planned to originate in north eastern New Mexico, traverses New Mexico and Arizona before terminating in Southern California. TransWest Express is a 600 kV DC transmission line starting in Wyoming and ending in Southern Nevada. Each of these projects are expected to significantly expand access to renewable energy resources and the ability to meet the growing demand for electricity of the entire Western grid. Each of these three projects and other merchant, interstate and market projects, are discussed in detail in the *Interstate, Market and Merchant Transmission and Generation Projects* section of this report. A complete listing of 500 kV projects is located in **Exhibit 2-1 through Exhibit 2-2.**

Figure 2 - Transmission Line Cost Distribution by Voltage Class



There are sixteen planned or conceptual 345 kV transmission projects within the WestConnect planning area. WestConnect planning participants plan to construct or upgrade a total of 1,364 miles of 345 kV transmission lines at an estimated cost of \$1.2 Billion over the next ten years, accounting for 6.3% of the Plan’s total estimated transmission line investment.

Eighty-five percent of the 345 kV lines will be built in Colorado or traverse multiple states to help interconnect new generation and renewable resources and export excess resources to load pockets outside of originating area. A complete listing of 345 kV projects is found in **Exhibit 2-3 through Exhibit 2-4.**

There are currently seventy-seven planned or conceptual 230 kV transmission line projects, and sixty planned or conceptual transmission projects below 230 kV within the WestConnect planning area. Approximately 2,332 miles of new or rebuilt/upgraded 230 kV transmission lines are in planned or conceptual stages to be built within the next ten years at an estimated cost of more than \$2 Billion, accounting for 11.3% of the Plan’s total estimated transmission line investment. Approximately 71% of the 230 kV lines is planned transmission with a majority of

these projects described as rebuild/upgrade (of existing systems) and to increase system imports and exports. Complete listings of 230 kV projects are found in **Exhibits 2-5 through 2-8**.

Approximately 673 miles of new or rebuilt/upgraded 115, 138 and 161 kV transmission lines are in the planned and conceptual stages, and are slated for construction within the next ten years at an estimated cost of \$408 Million. These projects account for 2.2% of the Plan's total transmission line investment. Thirty-eight percent of the 115 kV transmission lines are planned in Wyoming to increase load-serving capability and improve reliability. Over 92% of the 138 kV transmission lines are planned in Southeastern Arizona to increase load-serving capability. **Exhibits 2-9 through 2-14** contain detailed listings of the 138 kV and 115 kV projects planned for the WestConnect planning area.



## PLAN SORTED BY IN-SERVICE DATE

The 2011 Plan transmission projects, grouped according to “planned” or “conceptual” status and sorted by projected in-service date, are listed in **Exhibit 3. Table 8** summarizes the transmission line projects by in-service date, showing the number of projects, miles and estimated capital cost.

In- Service Year	Number of Planned Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
2010	9	126	\$120,222,410
2011	19	490	\$571,936,596
2012	16	389	\$839,800,503
2013	17	662	\$494,363,000
2014	21	990	\$649,823,359
2015	12	1,507	\$4,201,497,500
2016	8	213	\$338,564,452
2017	14	676	\$566,046,000
2018	4	114	\$147,000,000
2019	6	313	\$227,604,829
2020	4	109	\$130,856,000
Beyond 2020	1	52	\$5,700,000
TBD	7	180	\$56,503,483
<b>Total</b>	<b>138</b>	<b>5,821</b>	<b>\$8,349,918,132</b>

Table 8 – WestConnect In-Service Date Summary – Planned Transmission Line Projects

**Table 8** indicates approximately 5% of the planned transmission project in the Plan have in-service dates that are still to-be-determined. This marks a considerable improvement over the Plans prior to 2010, but is a small increase over the 2% low mark set in 2010.

**Figure 3** displays the number of projects and estimated investment by planned in-service date. As typical with planned transmission projects, the majority of the transmission projects are located in the first five-year timeframe. Heavily influencing the transmission-planning year 2015 for the planned transmission projects is the TransWest Express and SunZia projects, accounting for over 95% of the transmission investment for that year.



Figure 3 - Number of Planned Transmission Line Projects and Investment Cost by Year

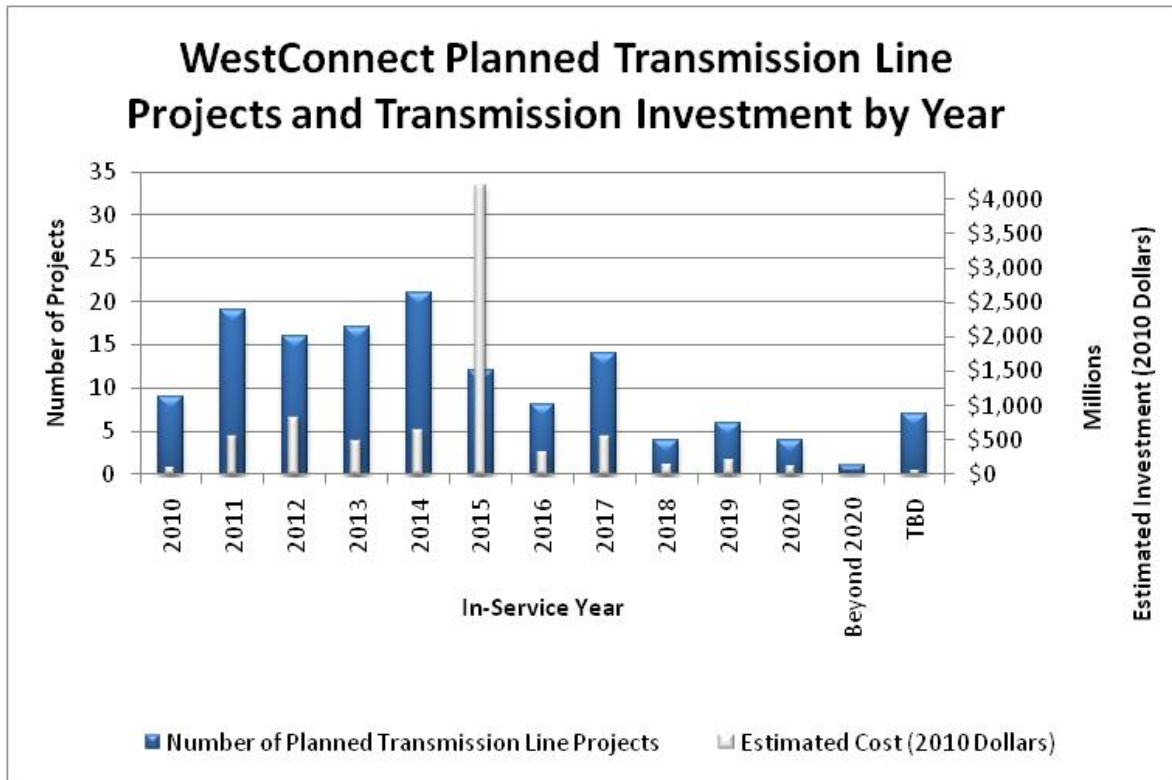


Table 9 summarizes the conceptual transmission line projects by in-service date, showing the number of projects, miles and estimated capital cost.

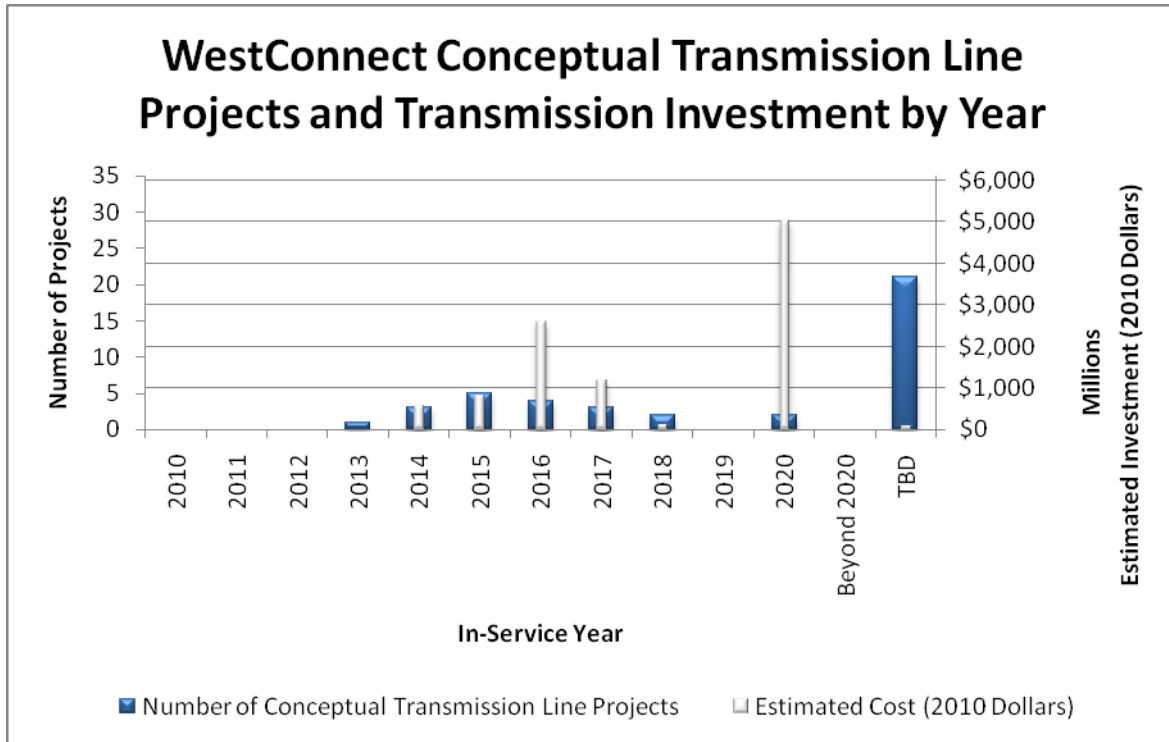
In- Service Year	Number of Conceptual Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
2010	0	0	\$0
2011	0	0	\$0
2012	0	0	\$0
2013	1	90	\$0
2014	3	358	\$551,889,788
2015	5	439	\$804,341,602
2016	4	913	\$2,577,000,000
2017	3	443	\$1,165,000,000
2018	2	64	\$105,000,000
2019	0	0	\$0
2020	2	2,500	\$5,007,500,000
Beyond 2020	0	0	\$0
TBD	21	553	\$54,000,000
<b>Total</b>	<b>41</b>	<b>5,360</b>	<b>\$10,264,731,390</b>

Table 9 - WestConnect In-Service Date Summary – Conceptual Transmission Line Projects



**Figure 4** displays the number of conceptual projects and estimated investment by projected in-service date. As typical with conceptual transmission projects, the majority of the transmission projects are located in the five to ten-year timeframe or with in-service dates yet undetermined. Also typical in transmission planning is to withhold cost estimate data, resulting in the limited cost estimate data provided for the conceptual projects.

Figure 4 - Number of Conceptual Transmission Line Projects and Investment Cost by Year



## PLAN SORTED BY STATE TRAVERSED

The 2011 Plan transmission projects, grouped according to “planned” or “conceptual” status and sorted by state(s) traversed are shown in **Exhibits 4-1 through 4-19**. The following tables summarize the planned and conceptual transmission line projects by state traversed, showing the number of projects, miles of transmission lines and estimated capital cost. Projects that traverse more than one state are shown as multi-state transmission projects. Such projects are subject to the siting requirements and processes of each state traversed. States impacted by such interstate projects are identified in a separate category in **Exhibit 4-19**.

**Table 10** summarizes the WestConnect members planned transmission line projects within the WestConnect planning area during the next ten years based upon the state or states the transmission lines traverse

State(s) Traversed	Number of Planned Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
Arizona	69	1,683	\$1,918,589,798
California	7	175	\$155,200,000
Colorado	24	1,147	\$1,001,334,000
Nebraska	0	0	\$0
Nevada	6	460	\$1,021,000,000
New Mexico	10	99	\$90,919,205
Texas	9	44	\$16,443,129
South Dakota	0	0	\$0
Wyoming	8	394	\$135,032,000
Multi-State	5	1,819	\$4,011,400,000
<b>Total</b>	<b>138</b>	<b>5,821</b>	<b>\$8,349,918,132</b>

Table 10 - Planned Transmission Line Investment by State

The chart in **Figure 5** displays the percentage of planned transmission line investment by state(s) traversed. Notable are the large percentages of planned capital investment in Arizona, as well as the percentage associated with multi-state transmission line projects. Together, these projects account for almost 70% of the planned transmission line investment over the next ten years.



Figure 5 - WestConnect State Location Summary – Planned Transmission Line Projects

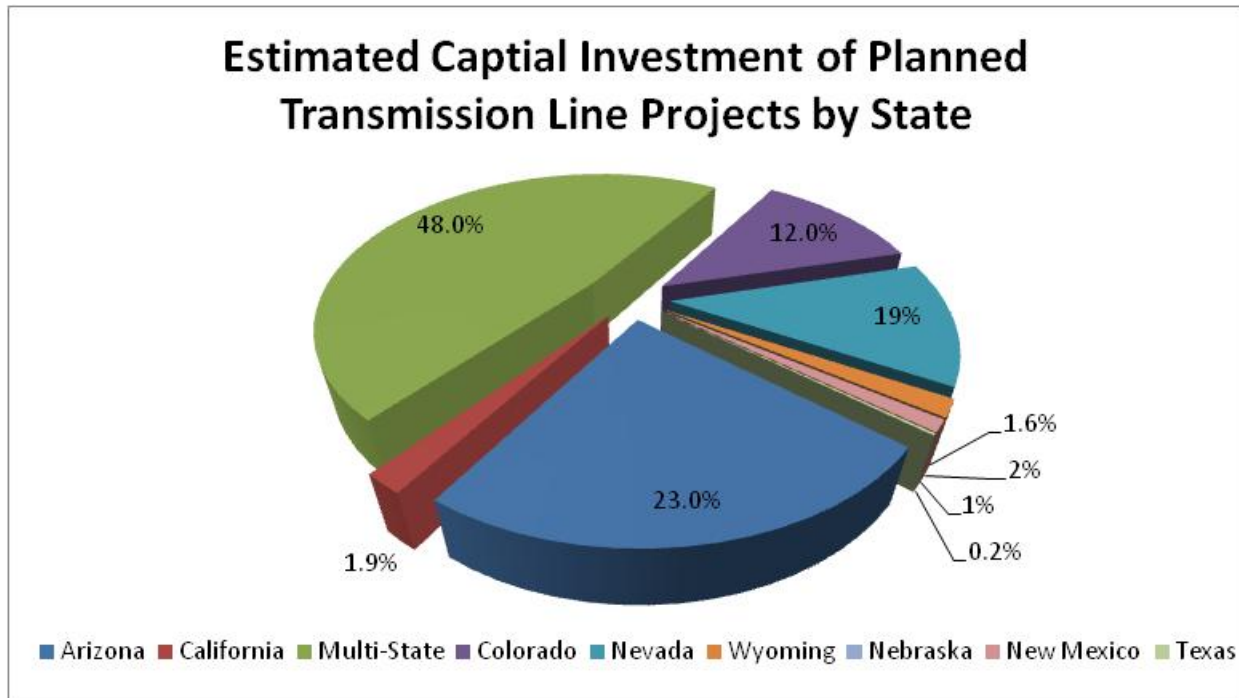


Table 11 summarizes the conceptual transmission line projects within the WestConnect planning area during the next ten years based on state or states traversed.

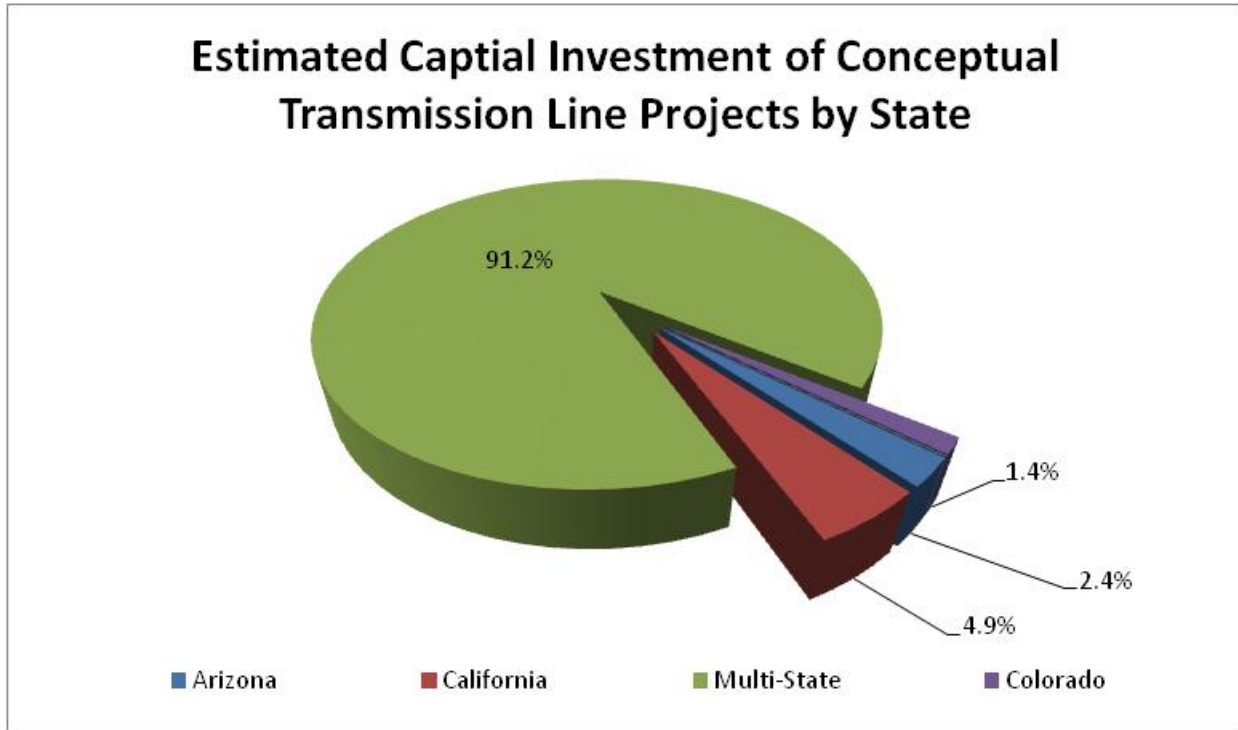
State(s) Traversed	Number of Conceptual Transmission Line Projects	Length (Miles)	Estimated Cost (2010 Dollars)
Arizona	27	820	\$242,127,390
California	3	158	\$481,000,000
Colorado	2	214	\$142,000,000
Nebraska	1	5	\$2,000,000
Nevada	2	311	\$378,000,000
New Mexico	0	0	\$0
South Dakota	0	0	\$0
Texas	1	7	\$0
Wyoming	0	0	\$0
Multi-State	5	3,845	\$9,019,604,000
<b>Total</b>	<b>41</b>	<b>5,360</b>	<b>\$10,264,731,390</b>

Table 11 – WestConnect State Location Summary – Conceptual Transmission Line Projects

The chart in Figure 6 displays percentage of conceptual transmission line investment by state(s) traversed. The large percentage of the total projected investment that is associated with multi-state transmission projects remain prominent. The conceptual High Plains Express Project continues its heavy influence on the Plan. The High

Plains Express project accounts for over 50% of the multi-state conceptual project investment. The following paragraphs discuss, in detail, the changes between the 2010 and 2011 WestConnect Transmission Plans, on a state-by-state basis.

Figure 6 - WestConnect State Location Summary – Conceptual Transmission Line Projects



#### WESTCONNECT TRANSMISSION PROJECTS IN ARIZONA

The 2010 Plan included 102 planned or conceptual transmission line projects projected to go into service within the State of Arizona during the 2010-2019 period. These projects involved approximately 2,403 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$1.7 Billion.

The 2011 Plan includes 96 planned or conceptual transmission line projects projected to be put into service within Arizona during the 2011-2020 period. These projects involve approximately 2,503 miles of new or rebuilt/upgraded transmission lines and an estimated cost of over \$2.1 Billion. The Arizona projects are depicted on maps provided as **Exhibit 6, Maps 1, 4, 9 and 10**.



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## WESTCONNECT TRANSMISSION PROJECTS IN CALIFORNIA

The 2010 Plan included 8 planned or conceptual transmission line projects projected to go into service within the California portion of the WestConnect planning area during the 2010-2019 period. These projects involved approximately 183 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$216 Million.

The 2011 Plan includes 10 planned or conceptual transmission line projects projected to go into service within the State of California during the 2011-2020 period. These projects involved approximately 333 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$636 Million. The California projects are depicted on maps provided as **Exhibit 6, Maps 1, 3 and 8.**

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## WESTCONNECT TRANSMISSION PROJECTS IN COLORADO

The 2010 Plan included 24 transmission projects projected to go into service within the State of Colorado during the 2010-2019 period. These projects involved approximately 1,457 miles of new or rebuilt/upgraded lines and an estimated cost of just over \$1.3 billion.

The 2011 Plan includes 26 transmission line projects projected for service within the State of Colorado during the 2011-2020 period. These projects involve approximately 1,361 miles of new or rebuilt/upgraded lines and an estimated cost of over \$1.1 Billion. Colorado projects are depicted on maps provided as **Exhibit 6, Maps 1, 2 and 6.**

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## WESTCONNECT TRANSMISSION PROJECTS IN NEBRASKA

The 2010 Plan did not include any transmission line plans within the State of Nebraska.

The 2011 Plan includes a single conceptual transmission line project projected for service within the State of Nebraska during the 2011-2020 period. This project involves approximately 5 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$2 Million dollars. The Nebraska projects are depicted on the map provided as **Exhibit 6, Map 12.**

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## WESTCONNECT TRANSMISSION PROJECTS IN NEVADA

The 2010 Plan included 8 planned or conceptual transmission line projects projected for service within the State of Nevada during the 2010-2019 period. These projects involved approximately 771 miles of new or rebuilt/upgraded transmission lines and an estimated cost of approximately \$1 .4 Billion.



The 2011 Plan includes 8 planned or conceptual transmission line projects for service within the State of Nevada during the 2011-2020 period. These projects involve approximately 771 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$1.4 billion dollars. The Nevada projects are depicted on maps provided as **Exhibit 6, Maps 1, 3, 4 and 11.**

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#### WESTCONNECT TRANSMISSION PROJECTS IN NEW MEXICO

The 2010 Plan included 12 planned or conceptual transmission line projects projected for service within the State of New Mexico during the 2010-2019 period. These projects involved approximately 154 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$97 Million.

The 2011 Plan includes 10 planned or conceptual transmission line projects projected for service within the state of New Mexico during the 2011-2020 period. These projects involve approximately 99 miles of new or rebuilt/upgraded transmission lines and an estimated cost of over \$90 Million. The New Mexico projects are depicted on maps provided as **Exhibit 6, Maps 1, 4 and 5.**

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#### WESTCONNECT TRANSMISSION PROJECTS IN SOUTH DAKOTA

The 2010 Plan did not include any transmission line plans within the State of South Dakota. The 2011 Plan also indicates no planned or conceptual transmission line projects located in South Dakota, but does include 2 planned substations. The South Dakota projects are depicted on maps provided as **Exhibit 6, Maps 2 and 12.**

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#### WESTCONNECT TRANSMISSION PROJECTS IN WEST TEXAS

The 2010 Plan included 20 planned or conceptual transmission line projects projected to go into service within the West Texas portion of the planning area over the 2010-2019 period. These projects involved approximately 103 miles of new or rebuilt/upgraded transmission lines and an estimated cost of \$37 Million.

The 2011 Plan includes 10 planned or conceptual transmission line projects projected to go into service within the West Texas portion of the planning area during the 2011-2020 period. These projects involved approximately 51 miles of new or rebuilt/upgraded transmission lines and an estimated cost of over \$16 Million. **Exhibit 6, Maps 1, 4 and 7** depict the Texas projects.



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## WESTCONNECT TRANSMISSION PROJECTS IN WYOMING

The 2010 Plan included 7 planned or conceptual transmission line projects projected for service within the State of Wyoming during the 2010-2019 period. These projects involved approximately 564 miles of new or rebuilt/upgraded transmission lines and an estimated cost of over \$177 Million.

The 2011 Plan includes 8 planned or conceptual transmission line projects projected for service within the State of Wyoming during the 2011-2020 period. These projects involve approximately 394 miles of new or rebuilt/upgraded transmission lines and an estimated cost of over \$135 Million. The Wyoming projects are depicted on maps provided as **Exhibit 6, Maps 2 and 12.**

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## WESTCONNECT TRANSMISSION PROJECTS TRAVERSING MULTIPLE STATES

Projects that traverse multiple states require extensive planning efforts that usually take place over periods of several years and can cost hundreds of millions of dollars. These multi-state transmission projects are typically high profile projects that are critical to the long-term WestConnect Plan. The following section of this report, *Independent Transmission and Generation Projects*, includes a brief discussion of the multi-state transmission projects in the 2010 Plan. Below is a summary of the data supplied to WestConnect concerning these projects for the 2010 and in 2011 Plans.

The 2010 Plan reported 8 planned or conceptual transmission line projects that traverse multiple states and were projected for service during the 2010-2019 period. These projects involved approximately 4,765 miles of new or rebuilt/upgraded transmission lines and an estimated cost approximately \$8.7 Billion.

The 2011 Plan includes 10 planned or conceptual transmission projects that traverse multiple states and are projected for service over the 2011-2020 period. These projects involve approximately 5,664 miles of new or rebuilt/upgraded transmission lines and an estimated cost over \$13 Billion. These interstate projects statistics are significantly impacted by the High Plains Express project with 2,500 miles of transmission and \$5 Billion estimated cost. The multi-state projects are depicted on maps provided as **Exhibit 6, Maps 1 through 4.**

## PLAN SORTED BY SUBREGIONAL PLANNING GROUP

The 2011 Plan transmission projects, grouped according to “planned” or “conceptual” status and sorted by subregional planning group, are shown in **Exhibits 5-1 through 5-9.** The following tables summarize the planned and conceptual transmission line projects by SPG, showing the number of projects, miles of transmission lines and estimated capital cost. Projects that traverse more than SPG are defined as “intra-WestConnect SPGs” projects or “regional” projects. Projects that traverse two or more subregional planning groups within WestConnect are

defined as intra-WestConnect projects. Projects that traverse a SPG within the WestConnect planning area and an area outside the WestConnect planning area are regional projects.

**Table 12** summarizes the WestConnect members planned transmission line projects within the WestConnect planning area during the next ten years based upon the SPG or interconnecting groups.

Table 12- WestConnect Subregional Planning Group Summary – Planned Transmission Line Projects

Subregional Planning Group (SPG) Traversed	Planned Transmission Projects	Length (Miles)	Estimated Cost (2010 Dollars)
CCPG	33	1,616	\$1,147,766,000
SSPG	3	252	\$144,000,000
SWAT	95	2,471	\$3,102,152,132
Intra-WestConnect SPGs	5	418	\$956,000,000
Regional	2	1,064	\$3,000,000,000
<b>Total</b>	<b>138</b>	<b>5,821</b>	<b>\$8,349,918,132.00</b>

The chart in **Figure 7** displays the percentage of planned transmission lines in WestConnect by SPG traversed. Notable is the large percentage of planned transmission projects within the SPG Southwest Area Transmission Group (SWAT). Heavily influencing the number of planned transmission projects in SWAT are the detailed submittals by El Paso Electric and Tucson Electric Power. Heavily influencing the mileage of planned transmission projects in SWAT are the SunZia Southwest and Centennial West Clean Line projects.



Figure 7 - Percentage of Planned Transmission Lines by Subregional Planning Group

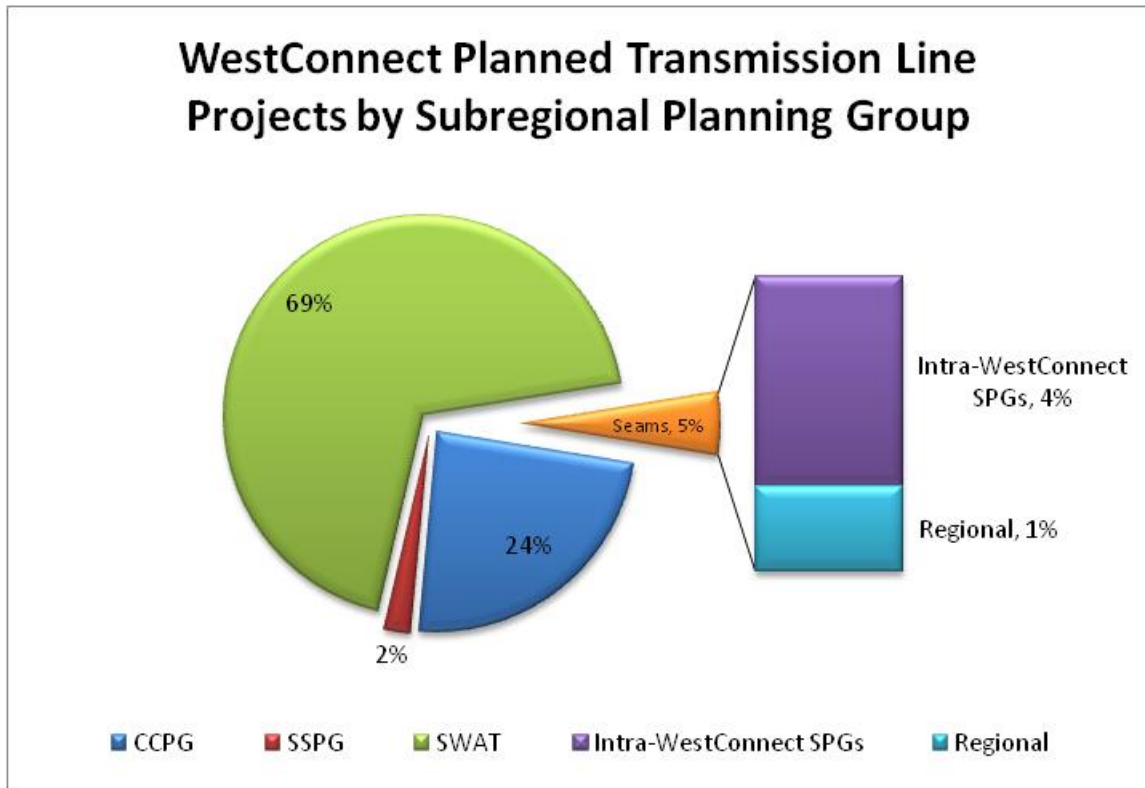


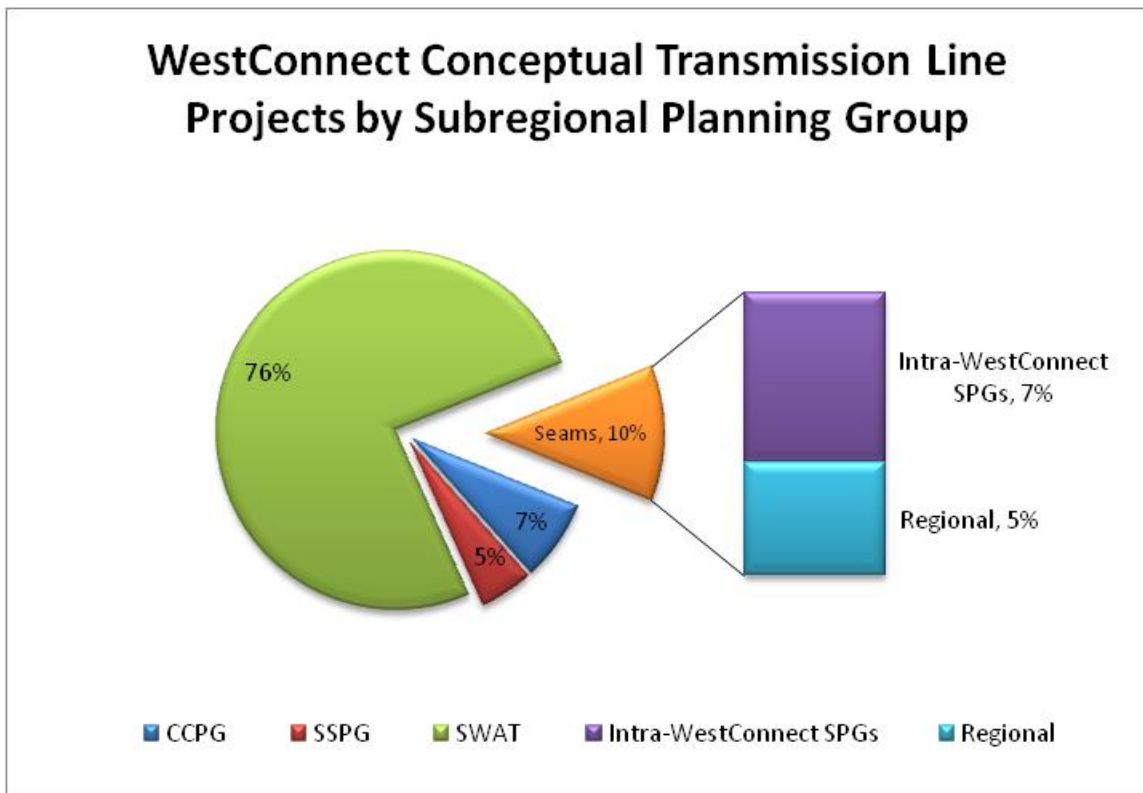
Table 13 - WestConnect Subregional Planning Group Summary – Conceptual Transmission Line Projects

Subregional Planning Group (SPG) Traversed	Conceptual Transmission Projects	Length (Miles)	Estimated Cost (2010 Dollars)
CCPG	3	219	\$144,000,000
SSPG	2	101	\$132,000,000
SWAT	31	1,870	\$3,094,127,390
Intra-WestConnect SPGs	3	2,835	\$5,094,604,000
Regional	2	335	\$1,500,000,000
<b>Total</b>	<b>41</b>	<b>5,360</b>	<b>\$9,964,731,390</b>

Table 13 above, summarizes the WestConnect members conceptual transmission lines in WestConnect by SPG traversed. The chart in Figure 8 displays the percentage of conceptual transmission lines in WestConnect by SPG. Notable is the large percentage of conceptual transmission projects defined as “Intra-WestConnect SPGs.”

As with other conceptual transmission portions of the report, this is significantly impacted by the conceptual High Plains Express project. As with the planned transmission chart and figure (previous section), the number of conceptual transmission projects in SWAT is heavily influenced by the detailed project submittals by El Paso Electric and Tucson Electric Power. Similarly, the mileage of conceptual transmission projects in SWAT are heavily influenced the SunZia Southwest and Centennial West Clean Line projects.

Figure 8 - Percentage of Conceptual Transmission Lines by Subregional Planning Group



## INTERSTATE, MARKET AND MERCHANT TRANSMISSION AND GENERATION PROJECTS

In the Western Interconnection, interstate transmission is essential to enabling access to the wholesale market for power purchases and sales. Interstate and market-driven transmission projects facilitate a more robust and viable wholesale market. Interstate and merchant transmission projects complement utilities' electric infrastructure and allow for additional import/export points. Such projects are essential for local load-serving entities and new merchant power plants. These projects permit access to the wholesale market without reliance on transmission services over existing transmission providers' systems, which may have limited long-term available transmission capacity. This section of the 2011 Plan report highlights the status of 12 such proposed projects that affect the WestConnect planning area during the next ten years. Vital details of each project are included with in the WestConnect Plan appendices.

### SUNZIA SOUTHWEST TRANSMISSION PROJECT

The SunZia Southwest Transmission Project ("SunZia") consists of up to two 500 kV interstate transmission lines approximately 500 miles in length between Arizona and New Mexico. The proposed line is a joint participation project between SouthWestern Power Group, Salt River Project, Shell WindEnergy, Tucson Electric Power and Tri-State Generation and Transmission Association, Inc. The expected power transfer capacity of SunZia is estimated at more than three gigawatts ("GW") if constructed with two alternating current ("AC") lines or up to 4.5GW with a hybrid configuration of one AC and one direct current ("DC") line.

An overview map showing the general routing of the line is included as **Appendix W-2**. As stated in the June 2, 2008, SunZia press release, "SunZia will provide new delivery paths to electricity markets for existing and developing energy resources, primarily renewable resources such as wind, solar and geothermal projects in both states. Through strategic interconnections, customers in Arizona, New Mexico, Nevada and California will have access to these new resources to help meet their local power needs. SunZia will also substantially improve the efficiency and reliability of power transfers across the transmission grid in the West."<sup>22</sup>

SunZia reports that it is actively involved in the regional and subregional planning process through the following forums and activities:

SunZia submitted a right of way application to the Bureau of Land Management ("BLM") in September 2008. In 2009, BLM initiated the development of an Environmental Impact Statement ("EIS"), which is being conducted pursuant to the National Environmental Policy Act (NEPA). As part of the NEPA process, nine public

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<sup>22</sup> [SunZia Southwest Transmission Project Press Release](#), WestConnect Website, June 2, 2008



scoping meetings were held in locations across New Mexico and Arizona in June and July 2009. In response to public comments requesting expansion of the study area and consideration of additional routes in New Mexico, a second set of scoping meetings were held in three New Mexico locations. The second scoping period closed in late November 2009. Additional public comments necessitated a third round of public scoping meetings for additional routes in the areas of Tucson, AZ, and Socorro, NM. The third scoping period closed in August of 2010. BLM expects to finalize the Draft EIS by early spring 2011.

SunZia will continue the project development and planning processes begun during 2008 and continuing through 2010. SunZia will continue to participate in stakeholder meetings and will provide regular updates at WECC, SWAT and WestConnect meetings in 2011.

WestConnect Planning received a ten-year plan submittal for this project previously for the 2010 Plan and again on December 2, 2010 for the 2011 Plan. The project details and any changes for SunZia have been incorporated into the 2011 Plan summary.

## DINÉ NAVAJO TRANSMISSION PROJECT

The Navajo Transmission Project (“NTP”) is a merchant 500 kV transmission line project with an approximate total length of 478 miles. The line will extend from a new substation located near the Four Corners Power Plant in northwestern New Mexico to the Marketplace Substation southwest of Boulder City, Nevada. The new Desert Rock coal fired power plant will interconnect to the line in New Mexico near Four Corners. The NTP will be constructed in three segments that traverse Arizona. An overview map showing the general routing of the project is included as **Appendix I-2**.

- *Segment 1* – 198 mile 500 kV single circuit transmission line from Desert Rock Generating Facility in northwestern New Mexico to the proposed Red Mesa West Substation in northern Arizona. The WECC path rating process began in January 2006 for Segment 1 of NTP. In-service date for Segment 1 is the fourth quarter of 2011.
- *Segment 2* – 62 mile 500 kV single circuit transmission line from a new Red Mesa West substation to the existing Moenkopi Substation. This segment generally parallels the existing Glen Canyon to Flagstaff 345 kV transmission line corridor. The project schedule is yet to be determined.
- *Segment 3* – 218 mile 500 kV single circuit transmission line from the existing Moenkopi Substation to the existing Marketplace Substation. Segment 3 generally parallels an existing Moenkopi to El



Dorado 500 kV transmission line corridor. The project schedule is yet to be determined, but the Arizona Certificate of Environmental Compatibility (“CEC”) will terminate in 2010 if not extended.

NTP has participated at stakeholder meetings, including the WECC processes, the Arizona Biennial Transmission Assessment (“BTA”) and WestConnect Planning Workshops. WestConnect received a ten-year plan submittal for the first segment of this project. Therefore, only the first segment project details have been incorporated into the WestConnect Transmission Plan summary.

On September 22, 2008, the NTP received a final Bureau of Land Management (“BLM”) Record of Decision (“ROD”) and right of way (“ROW”) grant for the transmission lines through BLM lands. This decision was followed on October 8, 2008 with the Bureau of Indian Affairs (“BIA”) issuing a ROD for the transmission lines traversing Indian lands. However, later in 2009 the Interior Board of Land Appeals (“IBLA”) and Interior Board of Indian Appeals (“IBIA”) requested the EIS for NTP to identify energy sources, including renewable, and reflect new information regarding impacts to endangered species and critical habitats. They assert that NTP is a connected action with the Desert Rock power plant. BLM and BIA have withdrawn their ROD while the concerns are addressed.

During 2010, Diné Power Authority applied for and received the AZ ACC 10-year Certificate of Environmental Compatibility (“CEC”) extension of time limitation. Additionally at the WestConnect Planning meeting in November, Diné Power Authority remarked that NTP *Segment 1* was contemplated for transmission of fossil-fuel based power generation but the entire line may now be developed for renewable energy power projects and that NTP *Segments 1 and 3* is expected to be built before *Segment 2*.

During 2011, Diné Power Authority will make a final determination to cross or go around the Hualapai Reservation along with additional fieldwork. Additionally, Diné Power Authority will work to obtain the DOI/BLM and DOI/BIA Records of Decision and Rights-of-way grants.

## HARCUVAR TRANSMISSION PROJECT

Harcuvar Transmission Project (“HTP”) is a proposed 230 kV transmission project located approximately 60 miles west of the Palo Verde Hub, sponsored by Central Arizona Water Conservation District (“CAWCD”). An overview map showing the general routing is included as **Appendix F-2**. The proposed project is a result of the Central Arizona Project’s (“CAP”) desire to improve its system reliability and Southern California Edison’s (“SCE”) desire to construct a transmission line from Palo Verde – Devers 2 (“PVD-2”) transmission line. The project could provide access to Arizona renewable generation, as well as providing transmission access to the Palo Verde Hub and to California.



The project will utilize existing federal right of way and designated utility corridors for a majority of its route. Nevertheless, HTP is dependent upon the presence of the planned PVD-2 500 kV line and the following new transmission elements:

- Interconnection to both Palo Verde to Devers 500 kV lines at a proposed Salome Substation with participation and ownership in the PVD-2 transmission line from the tie back to the Palo Verde Hub.
- Five miles of new 230 kV transmission line from the Salome Substation to CAWCD's existing Little Harquahala Substation.
- A new 115/230 kV double circuit transmission tie between the existing CAWCD Bouse Hills and Little Harquahala Substations (following the existing Central Arizona Project right-of-way).

WestConnect Planning received a ten-year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary.

Studies for HTP are being managed by the Colorado River Transmission ("CRT") subregional planning study group within SWAT. In 2008, feasibility study work for HTP was completed with a number of study scenarios based upon a power flow case approved by the nine CRT study team participants. The results of these feasibility studies are outlined in the Harcuvar presentation<sup>23</sup> for the BTA Workshop.

HTP representatives, through the CRT subcommittee presented and provided updates through multiple open stakeholder forums, including CRT and SWAT Renewable Transmission Task Force ("RTTF") subcommittee meetings and the Arizona BTA and WestConnect workshops. On November 7, 2008, HTP announced an open season to solicit project participants interested in renewable and fossil fuel generation interconnection.<sup>24</sup> The open season revealed nine entities representing over 2,500 mega-watts ("MW") of generation interconnection interest.

2011 could continue to present obstacles to HTP viability. The joint ownership in a segment of SCE's proposed PVD2 500 kV line is critical to the success of the HTP; the HTP must await either the return of SCE's Devers-Palo Verde 2 or another project offering equivalent capacity and functionality. With uncertainty of the HTP proceeding, participants are pursuing other opportunities to enhance the transmission capacity available.

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<sup>23</sup> [2008 BTA Workshop I, Harcuvar Presentation, May 22, 2008](#)

<sup>24</sup> HTP Open Season Announcement - [http://www.westconnect.com/filestorage/HTP\\_Open\\_Season\\_Announcement.pdf](http://www.westconnect.com/filestorage/HTP_Open_Season_Announcement.pdf)



## HIGH PLAINS EXPRESS INITIATIVE

The High Plains Express (“HPX”) Initiative is a participant led, multi-state, 500 kV transmission plan spanning Wyoming to Arizona. Currently, Xcel Energy and LS Power Development Company are co-managing the participant’s efforts and committee coordination. An overview map showing the general routing and interconnection points for this project are included as **Appendix P-3**.

The HPX Initiative is a proactive plan for the expansion and reinforcement of the transmission grid in the states of Wyoming, Colorado, New Mexico and Arizona. The goal of the High Plains Express Initiative is to develop a high-voltage backbone transmission system that will enhance reliability, potentially provide economic benefits to consumers, increase access to renewable and other diverse generation resources within regional energy resource zones, and complement and coordinate with other regional transmission projects.

High Plains Express currently has eleven participants, including state organizations, identified in **Table 14**.

Xcel Energy	Colorado Springs Utilities
Public Service Company of New Mexico	Black Hill Corporation
Tri-State Generation and Transmission	Wyoming Infrastructure Authority
Western Area Power Administration	New Mexico Renewable Energy Transmission Authority
State of Colorado – Governor’s Energy Office	LS Power Development Company
Salt River Project	NextEra Energy Resource

Table 14 - High Plains Express Participants

WestConnect Planning received a ten-year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary.

During the third and fourth quarters of 2010, the HPX Initiative finished stage two committee studies, had an executive meeting and prepared draft reports. HPX Initiative schedules for 2011 is to finalize the stage 2 report and hold a stage 2 stakeholder meeting. The participants plan on beginning stage 3 evaluations.

## TRANSWEST EXPRESS

The TransWest Express Transmission Project (TWE Project)<sup>25</sup> is being developed as a 600 kV direct current (DC) bi-pole transmission line from Wyoming to the Eldorado Valley in Southern Nevada. The proposed transmission line will be approximately 725 miles in length and have a rating of approximately 3,000 MW, with a targeted in-service date in 2015. TransWest Express, LLC (TWE) an affiliate of The Anschutz Corporation, is developing the TWE Project.

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<sup>25</sup> [TransWest Express Transmission Project](#)



An overview map showing the general routing of the line is included as **Appendix X-2**. WestConnect Planning did receive a ten-year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary.

In January 2010, TransWest Express entered into an agreement with Western Area Power Administration (Western) under the Transmission Infrastructure Program. This agreement provides for Western to become a 50% equity owner in the TransWest Express Project using its borrowing authority under the ARRA. Western and the Bureau of Land Management (BLM) are joint lead agencies in the preparation of an Environmental Impact Statement (EIS). In February 2010, the TransWest Express Project was accepted into Phase 2 of the WECC path rating process with a Planned Rating of 3,000 MW north to south. TWE plans to complete the Phase 2 studies and be granted an Accepted Rating in 2011.

In January 2011, Western and the BLM issued a Notice of Intent to prepare an EIS for the TWE Project. Public scoping meetings for the EIS have been scheduled between January and March 2011. Following the 90-day Public Scoping period, the agencies will work on developing a Draft EIS.

## SOUTHWEST PUBLIC POWER RESOURCES - THREE TERMINAL PLAN

Santa Cruz Water and Power District ("SCWPD") included three transmission projects associated with a Southwest Public Power Resources ("SPPR") group generation project. The combined projects are referred to as the Three Terminal Plan ("TTP"). SPPR is a diverse group of thirty-nine entities spread widely across Pinal County and other locations in Arizona that are participating in resource development. SCWPD is a participant in SPPR's resource development and associated transmission improvement efforts. WestConnect received a ten-year plan submittal for this project. The project details have been incorporated into the 2011 WestConnect Plan summary.

The TTP transmission project is needed to interconnect SPPR's Generation Project No. 1, located in Pinal County, and deliver power to the SPPR participants. The SPPR Generation Project No. 1 is tentatively planned as a 2-on-1 combined cycle gas-fired generating plant rated at approximately 620 MW. An overview map showing the general routing and interconnection points of this transmission project are included as **Appendix U-2**. The TTP project will be developed in a phased approach with a complete project in-service date to be determined. TTP consists of the following transmission elements:

- *Circuit- 1: Santa Rosa/Test Track – ED5 230 kV*
  - From Santa Rosa/Test Track to Thornton Road, a second circuit will be added on the Southeast Valley ("Abel") 500 kV line at 230 kV.



- From Thornton Road to ED5, a portion of Western’s Casa Grande to Empire to Saguaro 115 kV line will be converted to a double-circuit 230 kV line. Western’s circuit will continue to operate at 115 kV.
- *Circuit-2: ED5 – Marana 230 kV*
  - The remaining portion of Western’s 115 kV line from Empire to Saguaro and its 115 kV line from Saguaro to Marana Tap will be converted to a double circuit 230 kV line. Western’s circuit will continue to operate at 115 kV.
- *Circuit-3: ED5 – Pinal Central 230 kV*
  - Western’s ED5 to ED4 to ED2 115 kV line will be converted to a double circuit 230 kV line. Western’s circuit will continue to operate at 115 kV.

The SPPR TTP has participated in multiple stakeholder forums from 2008 through 2010, including the SATS subcommittee meeting and the Arizona BTA and WestConnect workshops. Power flow studies were filed with Arizona Corporation Commission (“ACC”) Staff on June 30, 2008, for that portion of the TTP project that would be subject to Condition 23 of Decision No. 68093. In addition, extensive resource planning studies, several purchased power solicitations and a comprehensive siting study have been performed. Detailed power flow analyses have been performed for three short-listed generation sites. Preliminary short circuit and stability analyses have been performed for two of the potential sites. Results of these additional studies will remain confidential pending final site selection.

SPPR will continue project development, including the interconnection and siting processes. SPPR anticipates filing a formal interconnection request with Western Area Power Administration – Desert Southwest Region. SPPR will continue to provide timely updates and will continue to participate in regional stakeholder meetings and forums throughout 2011.

## WYOMING-COLORADO INTERTIE

The Wyoming-Colorado Intertie (“WCI”) project is an approximately 180-mile long, 345 kV transmission line between southeast Wyoming and the Colorado front range. The WCI is being developed through a public-private partnership involving the Wyoming Infrastructure Authority and LS Power with additional assistance from the Western Area Power Administration. The project is designed to deliver high quality southeastern Wyoming wind



resources across the TOT 3 transmission constraint<sup>26</sup>. Initial transmission studies have indicated a capacity of approximately 900 MW. The WCI can be in-service as early as early as 2014.

In recent years, the WCI developers have completed a number of technical, permitting, routing, cost and economic feasibility studies that have shown justification for the project. In 2009, Wyoming Colorado Intertie, LLC was established as a transmission provider when the WCI Open Access Transmission Tariff was approved by the FERC. A weak market and uncertain regulatory environment have caused the WCI developers to delay the planned in-service date until the 2015 timeframe.

WCI participates in stakeholder meetings and forums including the WECC process, Colorado Coordinated Planning Group (“CCPG”) meetings and WestConnect workshops. WestConnect Planning did receive a ten-year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary. An overview map showing the general routing and interconnection points of this transmission project are included as **Appendix EE-2**.

WCI activities expected for 2011 include monitoring market fundamentals and conducting with WECC Phase 2 path rating studies.

## SOUTHWEST INTERTIE PROJECT

The Southwest Intertie Project (“SWIP”) consists of a 500 kV interstate transmission line spanning 500+ miles between Southern Idaho and Southern Nevada, sponsored by Great Basin Transmission, LLC.<sup>27</sup> The expected power transfer capacity of SWIP is estimated at over 2 GW. According to a recent report by Energy Strategies, LLC indicated, “The SWIP will provide a host of benefits to both the Northwest and the Southwest energy markets. The SWIP will facilitate renewable energy development in the Western Interconnection by providing transmission access to generators and load serving entities in the Northwest and the Southwest. Furthermore, the SWIP will enhance resource and load diversity and reliability benefits between the regions.”<sup>28</sup>

An overview map showing the general routing of the line is included as **Appendix L-2**. NV Energy and Great Basin Transmission have signed a definitive agreement to jointly own the first 235-mile segment of the proposed transmission line in Nevada, which will be renamed the One Nevada Transmission Line (ON Line). Construction is expected to begin in Q1 2011. Great Basin Transmission continues to develop the remainder of the SWIP

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<sup>26</sup> TOT3 is also known as WECC Path 36

<sup>27</sup> Southwest Intertie Project Website - <http://www.swipos.com/>

<sup>28</sup> “The Southwest Intertie Project: Assessment of Potential Benefits”, Energy Strategies, LLC, November 2008, [http://www.swipos.com/News/SWIP\\_Assessment\\_Nov\\_2008.pdf](http://www.swipos.com/News/SWIP_Assessment_Nov_2008.pdf)



WestConnect Planning received a ten-year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary.

## ZEPHYR AND CHINOOK PROJECT

TransCanada<sup>29</sup> is proposing to construct two 500 kV high-voltage direct current (HVDC) transmission projects (Zephyr and Chinook<sup>30</sup>); each project would have a capacity of 3,000 MW. The Zephyr project would originate in southeast Wyoming, while the Chinook project would originate in south central Montana. Both projects would terminate in the Eldorado Valley south of Las Vegas.

The proposed Zephyr and Chinook projects would transport significant amounts of wind-generated electricity from the high-quality wind resources in Wyoming and Montana to markets in the U.S. Southwest, including California, Nevada and Arizona. Zephyr and Chinook are important new transmission infrastructure projects that would directly benefit the states they cross and consumers in the southwest U.S. and make a substantial contribution to achieving state RPS and federal climate change objectives.

On February 19, 2009 the Zephyr and Chinook projects received precedent-setting FERC rulings authorizing negotiated rate authority.

### Zephyr

On May 20, 2010, TransCanada announced the results of the Zephyr open season and the full allocation of 3,000 MW of transmission capacity. After a FERC approved open season, Zephyr is fully subscribed by creditworthy wind developers. The successful wind developers are:

- Pathfinder Renewable Wind Energy            2100 MW
- BP Wind Energy North America                500 MW
- Horizon Wind Energy                              400 MW

Zephyr's successful open season is an industry first for an interstate merchant transmission line and is a clear indication of wind developer support for significant export transmission capacity for renewable energy out of Wyoming.

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<sup>29</sup> Zephyr and Chinook web site [www.transcanada.com/zephyr](http://www.transcanada.com/zephyr)

<sup>30</sup> Zephyr and Chinook presentation to SWAT Oversight Committee, Bill Hosie, November 16, 2010. [http://www.westconnect.com/filestorage/02p\\_q\\_SWAT%2020101116.pdf](http://www.westconnect.com/filestorage/02p_q_SWAT%2020101116.pdf)



The decision to proceed with the regulatory/permitting phase and the \$3 billion construction phase is predicated on a favourable regulatory environment and the ability of the Wyoming wind generators to secure power purchase agreements, which TransCanada and the wind developers are currently pursuing in a coordinated manner.

Concurrently, TransCanada is performing certain pre-application environmental planning activities with state and federal agencies to facilitate an efficient, timely and coordinated siting and permitting process.

## CENTENNIAL WEST CLEAN LINE

The Centennial West Clean Line (“Centennial West”) is a high-voltage direct current (“HVDC”) transmission line that will efficiently connect clean wind energy produced in eastern New Mexico to communities in Southern California or Southern Nevada. As proposed, the Centennial West Clean Line will be a  $\pm 600$ kV transmission line capable of carrying 3500MW of power over a distance of approximately 800 miles. The project will have an approximate capital cost of \$2.5 Billion. An overview map showing the general routing of the line is included as **Appendix H-2**.

Clean Line Energy Partners LLC is developing the Centennial West project. The Clean Line Energy Partners LLC development team responsible for Centennial West includes experienced professionals who have managed, built and financed ambitious projects in the renewable and traditional energy sectors, as well as senior policy professionals who have shaped energy policy and advanced renewable energy programs at the state and national levels.

The Centennial West transmission line will make possible “billions of dollars of investment in new renewable energy projects that could not otherwise be built due to the limitations of the existing electric transmission grid. The electricity generated by these projects will be efficiently transported to markets with a strong demand for renewable energy. This project will bring about tremendous rural economic development, create thousands of permanent and temporary jobs, incentivize manufacturing of wind turbines and components and enable significant financial contributions to local communities through employment opportunities, property taxes and landowner royalties.”<sup>31</sup>

The Centennial West project has submitted a preliminary SF-299 application for right-of-way to the Bureau of Land Management, and looks forward to securing all necessary state and federal environmental permits. Additionally, Centennial West has entered the WECC path rating process to ensure that the project contributes to improved power grid reliability in the region. Varieties of siting and reliability studies are underway as part of these

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<sup>31</sup> Email Correspondence, Daniel Hodges-Copple, Clean Line Energy Partners, December 20, 2010



processes. Clean Line will continue to participate in stakeholder meetings and will provide regular updates at WECC, SWAT and WestConnect meetings in 2011.

WestConnect Planning received a ten-year plan submittal for this project for the 2011 Plan. The project details have been incorporated into the WestConnect 2011 Plan summary.

## THE SOUTHLINE PROJECT

The Southline Transmission Project (the "Southline Project") is an interstate EHV transmission project designed to create a bi-directional connection between New Mexico and Arizona, specifically the El Paso region and the Palo Verde market hub outside Phoenix. The purpose of the Southline Project is to create an economic path to market for stranded generation, including renewable generation resources in Southern New Mexico and Arizona, to improve the load serving capabilities of regional entities, and to strengthen the reliability of the local systems.

The preliminary plan of service is a combination of three segments:

- *First Section* - a new-build 345 kV line originating at the Afton station outside Las Cruces, New Mexico and terminating at the Apache station in southeastern Arizona.
- *Second Section* - a proposed upgrade of Western's existing 115 kV line to a double circuit 230 kV from Apache to Saguaro.
- *Third Section* - from Saguaro to Palo Verde is currently envisioned as a contractual acquisition of existing capacity or participation in the existing plans of other project sponsors.

An overview map showing the general routing of the line is included as **Appendix T-2**. Depending on final design choices, the Southline Project will be seeking a rating in the 750MW to 1500MW of bi-directional transfer capability, with an estimated in-service date of fourth quarter 2014 and estimated costs of \$325 Million for the Afton-Apache segment and \$225 Million for the Apache-Saguaro segment. Total cost estimate is \$550 Million for the two Southline sponsored segments.

The Southline Project has multiple receipt and delivery points along its proposed path. Southline is working with regional transmission owners to upgrade existing facilities, which should create a broad distribution of potential benefits. The Southline Project "provides bi-directional use with east to west renewable



generation delivery and west to east load serving capability, which makes the project more economically viable and electrically efficient.”<sup>32</sup>

The siting strategy of the project is unique. The new-build section is within and/or parallels an abandoned railroad right-of-way through primarily BLM land; the upgrade section utilizes existing rights-of-way of smaller capacity lines; and the last section maximizes efficiency by expanding existing capacity.

The Southline Project is sponsored by Southline Transmission, L.L.C., a subsidiary of Hunt Power, L.P., an entity that develops and invests in entrepreneurial electric and gas utility opportunities, and is part of a larger privately-owned group of entities managed by the Ray L. Hunt family that engages in oil and gas exploration and production, refining, power, real estate, ranching and private equity investments. Black Forest Partners, L.P. is the manager of the Southline Project.

The Southline Project has been actively involved with WestConnect planning entities for over one year. These efforts led to the formation of a joint study group, Southline-SATS Project Coordination Review Group (PCRG) within SWAT. Active transmission providers in the PCRG include El Paso Electric, Public Service of New Mexico, Southwest Transmission Cooperative, Tucson Electric Power, Western Area Power Administration, Salt River Project and Arizona Public Service. Other participants include environmental groups, renewable generation developers, military and tribal representatives. The PCRG kicked off technical studies in May 2010, reviewed initial results in September 2010, and results in December 2010. “Preliminary results suggest the Southline Project can enable over 2000 MW of new generation in southern New Mexico and Arizona to be collected and delivered to the markets, while improving the load serving capabilities of the regional entities and strengthening the reliability of the underlying system.”<sup>33</sup>

The Southline Project expects to enter the WECC rating process and initiate EIS work in December 2010. Southline will continue the project development and planning processes throughout 2011. Southline will continue to participate in stakeholder meetings and will provide regular updates at WECC, SWAT and WestConnect meetings in 2011.

WestConnect Planning received a ten-year plan submittal for this project for the 2011 Plan. The project details have been incorporated into the WestConnect 2011 Plan summary.

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<sup>32</sup> Email Correspondence, Doug Patterson, Black Forest Partners, December 21, 2010

<sup>33</sup> Ibid.



## LAS VEGAS TO LOS ANGELES PROJECT

The Las Vegas to Los Angeles (“LV-LA”) Project is proposed as a double-circuit 500 kV AC line (although HVDC will also be examined) from the Eldorado Valley area in southern Nevada towards the load centers of Los Angeles, California. The project is currently being sponsored by Energy Capital Partners, LLC (“ECP”) along with PDS Consulting, PLC (“PDS”). The LV-LA Project would become a component of the WECC Path 46 known as the West of River (“WOR”) path. It is expected that the LV-LA Project would add up to 3,000 MW of additional transfer capability to the WOR.

While specific routing studies have not yet been completed, the LV-LA Project is expected to follow a routing that would head due south out of the Eldorado Valley (towards I-40 and Iron Mountain) and avoid the critical congestion area south of Lugo. At or near the Iron Mountain area, the Project would propose to have a 500/230kV substation to allow for additional collection of solar resources in the area between I-40 and I-10. From Iron Mountain, the proposed routing would ideally be towards Rancho Vista or a potential new 500/230kV station in the San Bernardino area (but past the Devers area and well into the load center). An overview map showing the general routing of the line is included as **Appendix K-3**.

During 2010, ECP and PDS have jointly submitted this project to the Western Area Power Administration (“Western”) Transmission Infrastructure Program (“TIP”) as part of the Recovery Act efforts. PDS, ECP and Western have executed a Memorandum of Understanding through which their involvement in the LV-LA Project may be evaluated further. Western is currently leading an effort, known as Sonoran-Mojave Renewable Transmission (“SMRT”) to provide a technical review of the LV-LA Project as a sensitivity with potential upgrades to the area south of Mead on its respective underlying high voltage transmission system. Preliminary results have shown that the LV-LA Project can deliver 1,500MW to 3,000MW of additional transfer capability from the Eldorado Valley area.

ECP and PDS have also been active with the SWAT-sponsored Eldorado Valley Study Group (“EVSG”) to “provide a conceptual framework for a coordinated expansion of the transmission infrastructure within the Eldorado Valley (“EV”) area.” The Project proponents believe that additional capacity on the WOR path will be required in the long term as multiple transmission projects are looking to terminate into the Eldorado Valley area from the northern portion of the WECC.<sup>34</sup>

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<sup>34</sup> Email Correspondence, Mark Etherton, PDS Consulting, December 21, 2010

WestConnect Planning received a ten-year plan submittal for this project for the 2011 Plan. The project details have been incorporated into the WestConnect 2011 Plan summary.

## TRES AMIGAS PROJECT

The Tres Amigas Project is a multipoint AC/DC convertor station located in Clovis NM announced to the public August 2009. There will be a series of converters connected to the three national synchronous grids within the 22.5 square miles footprint of the Tres Amigas Superstation. Tres Amigas, LLC will unite the nation's electric grid. Utilizing the latest advances in power grid technology, Tres Amigas is focused on providing the first common interconnection of America's three power grids to help the country achieve its renewable energy goals and facilitate the smooth, reliable and efficient transfer of green and conventional power from region to region. In addition, by acting as a gateway between regions, Tres Amigas allows for increased reliability by providing the ability for transfer of reserves and voltage support among grids. Tres Amigas will facilitate the following:

1. Integration of renewable resources by taking advantage of diversity between geographical regions and time zones and varying needs and abilities of multiple Balancing Authorities (BAs). In addition, Tres Amigas provides for the ability to match intermittent resource output with dispatchable generation resources to ensure that output of the combined facilities is a constant volume that can be reliably scheduled and delivered to load serving entities.
2. Adding value to planned transmission expansion (both AC and DC) in the New Mexico and Texas areas by increasing access between generation resources and transmission facilities

Tres Amigas plans to operate as a BA in WECC, which includes coordination with Reliability Coordinators, and BAs within WECC and the Eastern and ERCOT regions to facilitate the delivery of energy, reserves, voltage support and reliability support from one grid to the other.

To date Tres Amigas has filed with FERC and received approval for market based rates for transmission services. Currently Tres Amigas is engaged with the Public Service of New Mexico (PNM) and Xcel with regard to interconnection. Additionally Tres Amigas has contracted with the international firms of CH2M Hill, Burns and McDonnell, Power Engineers, and Alstom Grid for design and procurement of the equipment.



## CONCLUSIONS

The following conclusions provide a summary of the 2010 Plan activity and WestConnect Planning's recommendations to the Planning Management Committee for the continued improvement of the WestConnect Transmission Plan and its supporting processes.

## 2010 ACTIVITY SUMMARY

2010 marked a Plan reorganization year for the WestConnect planning area. WestConnect incorporated a number of new EHV merchant and interstate transmission projects into the Plan, including multiple major conceptual transmission projects and a number of projects that were modified or whose in-service dates were delayed, but which remained in the Plan. Also during 2010, WestConnect sponsors continued their improvement in Plan data entry consistency and accuracy. This improvement is reflected in a more complete summary data in this 2011 Plan. Additionally in 2010, the Planning Management Committee chose to incorporate a new summary category, plan data by Subregional Planning Group. This 2011 Plan modification permits an easy identification of transmission projects that interconnect between Subregional Planning Groups both within and outside of the WestConnect planning area.