

**WEST  
CONNECT**

Enhancing wholesale  
electricity markets  
in the southwest

**2008**

# **WestConnect Transmission Plan**

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A Report Detailing the  
Electrical Transmission System Expansion Plan  
Within the WestConnect Planning Area  
During the 2009-2018 Timeframe

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## FOREWORD

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KRSA is appreciative of the cooperation and support of the WestConnect planning participants throughout the inaugural 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 an open, transparent and stakeholder driven subregional planning process that was in place prior to formation of the WestConnect planning process.

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## EXECUTIVE SUMMARY

This 2008 WestConnect Transmission Plan (“Plan”) is the second subregional transmission plan coordinated and assembled on behalf of WestConnect subregional planning participants and stakeholders. The WestConnect Transmission Plan area encompasses seven states, three subregional planning areas, fifteen transmission owners and twenty three project sponsors. The 2008 WestConnect Transmission Plan report is intended to give a snapshot of the large number of planned and conceptual transmission projects proposed within its planning area.

2008 was another very active transmission planning year for WestConnect. It marked the publishing of WestConnect’s second annual Transmission Plan report . The 2008 WestConnect Plan contains relatively minor changes to the 2007 Plan. A major conceptual 500 kV transmission plan (Eastern Plains Transmission) was canceled and numerous projects have modified or delayed in-service dates but remained in the plan. Transmission projects were incorporated for WestConnect’s two new planning members: Basin Electric Power Cooperative and Black Hills Power. WestConnect also invited other planned projects meeting WestConnect’s criteria to participate in the Plan. During 2008, WestConnect developed and implemented an online data entry portal for transmission project submittals and project sponsors responded effectively by supplying requested information in a complete and timely manner.

The 2008 WestConnect Transmission Plan entered through the new WestConnect TPM database includes 140 planned new or rebuilt/upgraded transmission projects with a combined approximate length of 6,171 miles, 43 planned transmission substations, and 27 planned transmission class transformers as well as 16 other planned transmission enhancement projects at an estimated 10.2 billion dollar capital cost. Additionally, the 2008 WestConnect Transmission Plan includes 30 conceptual new or rebuilt/upgraded transmission projects with a combined approximate length of 4,298 miles, 3 conceptual transmission class transformers and 5 conceptual transmission substations at an estimated 5.6 billion dollar capital cost.

Planned and conceptual Interstate projects continue to dominate the WestConnect Plan statistics due to the scope and scale of the projects. Additionally in 2008, the data received marked a large reduction in the number of projects, both planned and conceptual, without in-service dates. This vastly improved the reported timing and relevance of projects contained in the Plan.

WestConnect continues to strive to improve and offers the following recommendations for the WestConnect Planning Management Committee’s consideration:

1. The window chosen for the annual data collection process may require reexamination, as the current window ends prior to some WestConnect members’ corporate approval of their plan.

2. Annual revisions to the WestConnect Plan should remain a minimum requirement and consideration should be given to more frequent updates thru the TPM to keep stakeholders abreast of changes in the Plan as they occur.
3. The WestConnect Plan detail and accuracy corresponds directly to the quality of data entered through the TPM. Continuing to improve the detail and accuracy should remain a goal.
4. WestConnect Planning will work to develop tutorial tools for TPM usage to ensure constancy in data entry.
5. Project sponsors should consider and define a standard for providing transmission project detail, including level of detail and common file format. Additionally, development of more detailed common reporting standards would remove ambiguity and inconsistencies among data submittals.
6. Addition of new fields in the TPM data base could allow project status reporting on an ongoing basis. This could improve project status updates at meeting and possibly be accessible via the website map.

## OVERVIEW

The following section provides an introduction and overview to the 2008 WestConnect Transmission Plan report. Included in the overview is a description of the planning authority of WestConnect planning, an overview of the brief history of the report, the purpose, framework and data collection process of the report which details the WestConnect planning area transmission plan during the 2009 thru 2018 timeframe.

## PLANNING AUTHORITY

This 2008 WestConnect Transmission Plan (“Plan”) is the second subregional transmission plan coordinated and assembled on behalf of WestConnect subregional planning participants and stakeholders. The authority and purpose of this WestConnect Transmission Plan is derived from the May 2, 2007 WestConnect Project Agreement for Subregional Transmission Planning (“STP Agreement”).<sup>1</sup> The subregional planning process utilized to develop and coordinate the transmission plans contained in this Plan is documented in a complimentary companion report entitled *2008 WestConnect Transmission Planning Report*.



Figure 1 - WestConnect Planning Area

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<sup>1</sup> The Project Agreement for Subregional Transmission Planning is available at - <http://www.westconnect.com/filestorage/050207RegionalPlanningProjectAgreementExecutionCopy.pdf>

This Plan includes the ten-year transmission plans of the fifteen parties that have signed the WestConnect STP Agreement as shown in **Table 1**. The 2008 Plan also includes transmission plans of other parties that have proposed, studied, presented and sought stakeholder comments on their respective transmission projects during the 2008 subregional planning processes active within the WestConnect Planning Area depicted in **Figure 1**. A Transmission Plan Guide has been developed to establish the prerequisite requirements for inclusion of transmission projects in WestConnect Transmission Plans. The Transmission Plan Guide is enclosed as **Exhibit 1** to this report.

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

**Table 1 – Current WestConnect Planning Management Committee Members**

## HISTORY OF THE WESTCONNECT PLAN

The 2008 WestConnect Transmission Plan is the second annual report documenting the transmission plan within WestConnect planning area for the 2009 thru 2018 timeframe. The first WestConnect Transmission Plan report occurred during 2007.

### 2007 WESTCONNECT PLAN

On December 4, 2007 the first draft of the 2007 WestConnect Transmission Plan was released for the two week public review and comment period on via email, website announcement and posting to the WestConnect website. During the review period, Westconnect Planning received comments from eleven stakeholders. The

comments and concerns were compiled and posted for subsequent comment.<sup>2</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 first annual WestConnect Transmission Plan Report was released to the public. On January 17, 2008 the 2007 WestConnect Transmission Plan Report<sup>3</sup> was unanimously approved by the PMC at the WestConnect Annual Meeting in Las Vegas with the changes reflected within the 2007 WestConnect Transmission Plan Errata.<sup>4</sup>

## PURPOSE AND FRAMEWORK OF 2008 PLAN

The purpose of the 2008 WestConnect Plan (“Plan”) is to provide an overview of the transmission plans within the WestConnect planning area. Each proposed transmission project contained in this Plan is separate and stands on its own merit. A description of each proposed transmission project is provided in the appendix of the project’s respective sponsor and participating parties. However, the nature of the WestConnect Transmission Plan is to look at the aggregation of 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.

This second annual WestConnect Transmission Plan is supported by the planning processes and stakeholder involvement described in the *2008 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 deriving an understanding of how the Plan was compiled and incorporated within this report.

The summary of the WestConnect Transmission Plan looks at the assembled transmission plans and draws generalities and cumulative totals for the entire WestConnect planning area. This first section is primarily a narrative describing the Plan with supporting summary tables and charts. It also provides of a summation of the Plan from a voltage classification, in service date and state perspective.

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<sup>2</sup> Complied Review and Comment 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>3</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>4</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)

The second section of the Plan consists of a variety of Exhibits. **Exhibit 1** is a WestConnect Transmission Plan Guideline<sup>5</sup> developed to establish prerequisites for inclusion of transmission projects in future WestConnect Transmission Plans. **Exhibits 2** through **Exhibit 4** provide a tabular listing of the WestConnect Transmission Plan sorted respectively by voltage class, in service date and state traversed. **Exhibit 5** consists of a series of maps that depicts the WestConnect Transmission Plan in a geographical form. 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 regarding the projects.

The third section of this report consists of appendices that depict the material supplied by individual utilities or transmission project sponsors in support of this 2008 WestConnect Transmission Plan. Each appendix contains a short summary of the utility's projects followed by a data form for each project as described by that utility. Sponsored projects can either be planned projects or projects that are only in the conceptual stages. Projects are listed within each utility's appendix in order of expected in-service date without consideration to whether the project is planned or conceptual although they are dually noted.

## DATA COLLECTION PROCESS

The information contained with the 2008 WestConnect Plan was gathered thru two primary methods: the WestConnect Annual meeting and the WestConnect Transmission Project Management ("TPM")<sup>6</sup> system.

## WESTCONNECT ANNUAL PLANNING WORKSHOP

A public WestConnect Planning Workshop was held on November 13, 2008 at the Salt River Project's PERA Club in Tempe, Arizona. Transmission Providers and Subregional Planning Groups 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 to promote effective discussion of each presentation.<sup>7</sup> Prior to the Workshop each presenter was provided advance instructions for presentations and questions to be addressed during their presentation as outlined below:

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<sup>5</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.

<sup>6</sup> The WestConnect Transmission Project Management system is located at [www.westconnectplan.com](http://www.westconnectplan.com)

- Referencing the 2007 WestConnect Plan;
  - Highlight changes in your 2008 Plan, focusing on deletions and additions, and
  - Provide a Summary of transmission upgrades
- Questions for entities presenting plans:
  - What stakeholder input and review of your plan has occurred?
  - What technical studies were performed in 2008 to support your transmission plan?
  - What reports exist for the studies performed in 2008?

Each presentation was followed by an open period of discussion including questions and comments from the audience.

## WESTCONNECT TRANSMISSION PROJECT MANAGEMENT SYSTEM

The information included in this 2008 WestConnect Transmission Plan report is the direct input of each project's primary sponsor. WestConnect accomplished this data collection process thru the development of a Transmission Plan Management (TPM) database, an online project data entry portal. This portal allows project sponsors to enter vital information for each project in their ten year plan for which they are the primary sponsor. WestConnect took the following steps to obtain the information as outlined below:

- 2007 WestConnect Plan information was imported to TPM.
- Project sponsors were requested to verify and update information on the TPM website.
- WestConnect ran Structured Query Language ("SQL") queries to gather reporting information.

WestConnect developed this process with the intention on making the information in the TPM data portal publicly available to allow stakeholder to have the most up to date information thru customizable queries of the database on a year round basis. Although this feature is still under development, it is expected to be fully functioning in the first quarter of 2009.

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<sup>7</sup> The WestConnect Workshop agenda and presentation materials are located at <http://westconnect.com/planning.php>

## SUMMARY OF THE WESTCONNECT TRANSMISSION PLAN

The following summary of the WestConnect Transmission Plan includes an overview of the entire WestConnect planning area from a transmission planning perspective. Included in this summary is the total new and upgraded transmission lines planned for the next ten years and the total estimated capital cost of the transmission plans. A complete detailed listing of each transmission project by name, estimated cost, length in miles is provided and sorted by voltage class, year of planned in-service and state traversed in corresponding **Exhibits 2 thru 4**. A series of maps provided in **Exhibit 5** depict the Plan in geographical form.

### 2007 WESTCONNECT TRANSMISSION PLAN RECAP

The 2007 WestConnect Transmission Plan included 106 planned new or rebuilt/upgraded transmission projects with a combined approximate length of 4636 miles, 46 planned transmission substations and 6 planned transmission class transformers at an estimated 7 billion dollar capital cost. Additionally, the 2007 WestConnect Transmission Plan included 22 conceptual new or rebuilt/upgraded transmission projects with a combined approximate length of 1756 miles and 3 conceptual transmission substations at an estimated 6.2 billion dollar capital cost.

### 2008 WESTCONNECT TRANSMISSION PLAN SUMMARY

The 2008 WestConnect Transmission Plan includes 140 planned new or rebuilt/upgraded transmission projects with a combined approximate length of 6,171 miles, 43 planned transmission substations, and 27 planned transmission class transformers as well as 16 other planned transmission enhancement projects at an estimated 10.2 billion dollar capital cost. Additionally, the 2008 WestConnect Transmission Plan includes 30 conceptual new or rebuilt/upgraded transmission projects with a combined approximate length of 4,298 miles, 3 conceptual transmission class transformers and 5 conceptual transmission substations at an estimated 5.6 billion dollar capital cost. These numbers include transmission lines and substations being built and transformers being installed in portions of Arizona, California, Colorado, Nebraska, New Mexico, Nevada, Texas and Wyoming. Some projects do not have accurate cost estimates or line length data at this point in the planning process but have been included in the total number of projects. **Table 2** below displays the above summary in a tabular format.

Type of Project	Number of Planned Projects	Planned Project Mileage	Planned Estimated Investment (2009 Dollars)	Number of Conceptual Projects	Conceptual Project Mileage	Conceptual Estimated Investment (2009 Dollars)	Total Estimated Cost (2009 Dollars)
<i>Substation Projects</i>	43	N/A	\$ 319,505,443	5	N/A	\$ 27,709,000	\$ 347,214,443
<i>Transmission Projects</i>	140	6,171	\$ 6,732,246,530	30	4,298	\$ 5,541,942,475	\$ 12,274,189,005
<i>Transformer Projects</i>	27	N/A	\$ 104,556,063	3	N/A	\$ 13,839,807	\$ 118,395,870
<i>Other Projects</i>	16	N/A	\$ 3,084,900,000	0	N/A	\$ -	\$ 3,084,900,000
<b>Total Projects</b>	<b>226</b>	<b>6,171</b>	<b>\$10,241,208,036</b>	<b>38</b>	<b>4,298</b>	<b>\$ 5,583,491,282</b>	<b>\$ 15,824,699,318</b>

Table 2 – Overview of Reported WestConnect Projects

## MAJOR CHANGES BETWEEN 2008 AND 2007 WESTCONNECT TRANSMISSION PLANS

Major changes occur in transmission planning for a variety of reasons including economic conditions and load forecast adjustments. The intention of this section is not to interpret the reasons for the changes, but rather to summarize the major transmission planning changes that occurred between the 2007 and 2008 planning years. Four primary changes occurred during the 2008 planning year: expected in-service dates changed, projects were added to the Plan, projects were removed from the Plan and projects were placed in-service during 2008.

The following table highlights the 500 kV project additions, removals and status changes to the WestConnect Transmission Plan for 2009-2018. A detailed listing of the Plan changes between the 2007 and 2008 WestConnect Plans are sorted into tabular format based upon the type of Plan change and are listed in **Exhibits 6-1 thru 6-5**.

Project Name	Voltage	Plan Modification
TransWest Express	500 kV DC	In-Service changed to 2014 from TBD
Palo Verde - Devers 2 Transmisison Project	500 kV	Added to Plan
Dugas loop-in of Navajo-Westwing Line	500 kV	Added to Plan
Pinal West to Pinal South 500 kV Line	500 kV	Added to Plan
Eastern Nevada Transmission Intertie	500 kV	Added to Plan
Pinal Central (South) - Tortolita 500 kV Line	500 kV	In-Service changed to 2013 from 2011
Sunrise Substation and Line Fold	500 kV	In-Service changed to 2013 from 2012
Palo Verde Hub - Sun Valley 500kV line	500 kV	In-Service changed to 2014 from 2009
Palo Verde Hub - North Gila 500kV #2 line	500 kV	In-Service changed to 2014 from 2012
Sun Valley - TS9 500kV line	500 kV	In-Service changed to 2014 from 2012
Palo Verde Hub - North Gila 500kV #2 line	500 kV	In-Service changed to 2014 from 2012
Project Zeta	500 kV	In-Service changed to 2014 from 2012
Ely Energy Center	500 kV	In-Service changed to 2015 from 2013
SunZia	500 kV	Length expanded
Hassayampa - Pinal West Line	500 kV	Placed in-service
Pinal West 500/345 kV Project	500 kV	Placed in-service
Eastern Plains Transmission Project	500 kV	Removed from Plan
Sugarloaf loop-in of Coronado-Cholla 500kV line	500 kV	VV01 name change to Sugarloaf

Table 3 – Overview of 500 kV 2008 WestConnect Plan Changes



## PLAN SORTED BY VOLTAGE CLASS

Transmission lines projects contained in the 2008 WestConnect Transmission Plan are listed in **Exhibit 2** and are sorted in tabular form by voltage class and grouped by either “planned” or “conceptual”. The following table summarizes the transmission line projects, sorted by voltage class showing the number of projects, miles of transmission line and the estimated capital cost.

Voltage Class	Number of Planned Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
500 kV DC	0	0	\$0.00
500 kV AC	14	2,107	\$4,549,373,000.00
345 kV	10	646	\$469,000,000.00
230 kV	53	1,423	\$1,203,716,483.00
Below 230 kV	62	608	\$559,910,954.00
<b>Total</b>	<b>139</b>	<b>4,784</b>	<b>\$6,782,000,437.00</b>

Table 4 – WestConnect Plan Voltage Class Summary – Planned Transmission Projects

Voltage Class	Number of Conceptual Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
500 kV DC	1	800	\$0.00
500 kV AC	5	2,712	\$5,070,000,000.00
345 kV	4	290	\$265,000,000.00
230 kV	17	479	\$196,000,000.00
Below 230 kV	3	17	\$10,942,475.00
<b>Total</b>	<b>30</b>	<b>4,298</b>	<b>\$5,541,942,475.00</b>

Table 5 – WestConnect Plan Voltage Class Summary – Conceptual Transmission Projects

Currently there are twenty planned or conceptual 500 kV transmission projects within the WestConnect planning area. The WestConnect planning participants will build or upgrade a total of 8,331 miles of 500 kV AC or 500 kV DC transmission lines at an estimated cost of 9.6 billion dollars over the next ten years. This portion of the Plan accounts for 78% of the Plan’s total transmission investment. This voltage class is predominately shaped by three major projects; the High Plains Express Transmission Project, SunZia Project and Project Zeta. The 500 kV AC conceptual High Plains Express Transmission Project originates in Wyoming and is routed thru Colorado and New Mexico to an undetermined terminus in Arizona. The SunZia Project is a 500 kV AC transmission line that is planned to originate in Central New Mexico and route thru Southern New Mexico terminating in Southeastern Arizona. Project Zeta is a Northern California 500 kV AC transmission line that is intended to deliver resources to load centers in central California. Each of these three projects is discussed in detail in the *Interstate, Market and*

merchant Transmission and Generation Projects section of this report. The remaining 16 projects are of the more traditional 500 kV transmission project variety. A complete breakdown of all 500 kV projects is depicted on **Exhibit 2-1 and Exhibit 2-2**.

At the time of this report, there are fourteen planned or conceptual 345 kV transmission projects within the WestConnect planning area. The WestConnect planning participants plan to construct or upgrade a total of 936 miles of 345 kV transmission lines at an estimated cost of 734 million dollars over the next ten years accounting for 6% of the Plan's total estimated transmission investment. A majority of the 345 kV lines will be built in Colorado to help serve local load and interconnect new generation and renewable resources and export excess resources to load growth areas outside of Colorado. It is anticipated that some of these projects may serve as the Colorado collector system for the High Plains Express Project. A complete breakdown of all 345 kV projects is depicted on **Exhibit 2-2**.

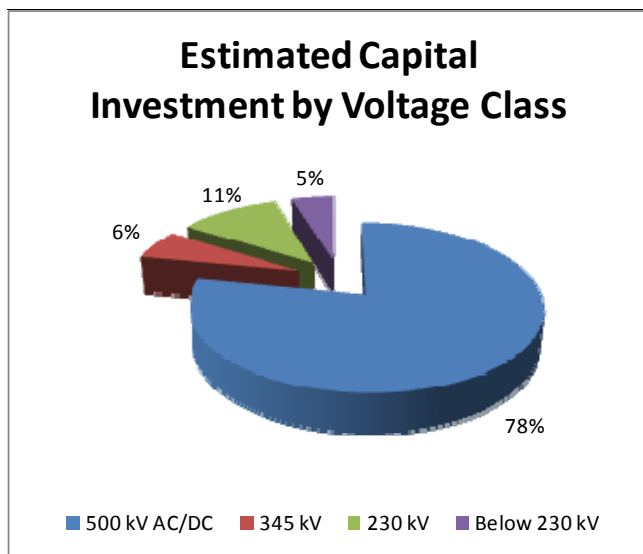


Figure 2 – Cost Distribution by Voltage Class

There are currently seventy planned or conceptual 230 kV transmission projects and sixty five planned or conceptual transmission projects below 230 kV within the WestConnect planning area. Approximately 1,902 miles of new or rebuilt/upgraded 230 kV transmission lines are in planned or conceptual stages with to be built within the next ten years at an estimated cost of nearly 1.4 billion dollars accounting for 11% of the Plan's total estimated transmission investment. A majority of the 230 kV lines will be built in Arizona and Colorado to improve local transmission service. A complete breakdown of all 230 kV projects is depicted on **Exhibit 2-4 thru 2-5**.

Approximately 625 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 570 million dollars accounting for 5% of the Plan's total transmission investment. A majority of the 115-161 kV transmission lines will be built in Southern Arizona and West Texas to help serve local load growth. **Exhibit 2-6 thru Exhibit 2-9** display a detailed breakdown of the WestConnect 138 kV and 115 kV projects for the WestConnect planning area.

## PLAN SORTED BY IN-SERVICE DATE

The 2008 WestConnect Transmission Plan transmission line projects are listed in **Exhibit 3** and are sorted in tabular form by in-service date and grouped by either “planned” or “conceptual”. The following table summarizes the transmission line projects by in-service date showing the number of projects, miles of line and estimated capital cost. The following tables and charts show the planned transmission line projects:

In- Service Year	Number of Planned Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
2008	10	121	\$23,583,755.00
2009	10	346	\$274,752,203.00
2010	33	475	\$601,716,561.00
2011	16	539	\$954,220,883.00
2012	14	760	\$947,900,000.00
2013	15	2,358	\$1,654,584,000.00
2014	22	960	\$1,714,325,483.00
2015	10	204	\$412,676,500.00
2016	4	52	\$43,732,893.00
2017	4	147	\$58,123,452.00
2018	6	111	\$50,000,000.00
TBD	2	117	\$0.00
<b>Total</b>	<b>146</b>	<b>6,190</b>	<b>\$6,735,615,730.00</b>

Table 6 – WestConnect In-Service Date Summary – Planned Transmission Projects

The chart in **Figure 3** graphically displays the number of projects and planned transmission investment (in millions of dollars) by the planned in-service date of the project. Notable is the large reduction in the number of projects without specific in service dates (“TBD”) that are grouped in the final column. WestConnect transmission planning membership worked diligently throughout 2008 to determine probable in-service dates for all planned transmission projects.

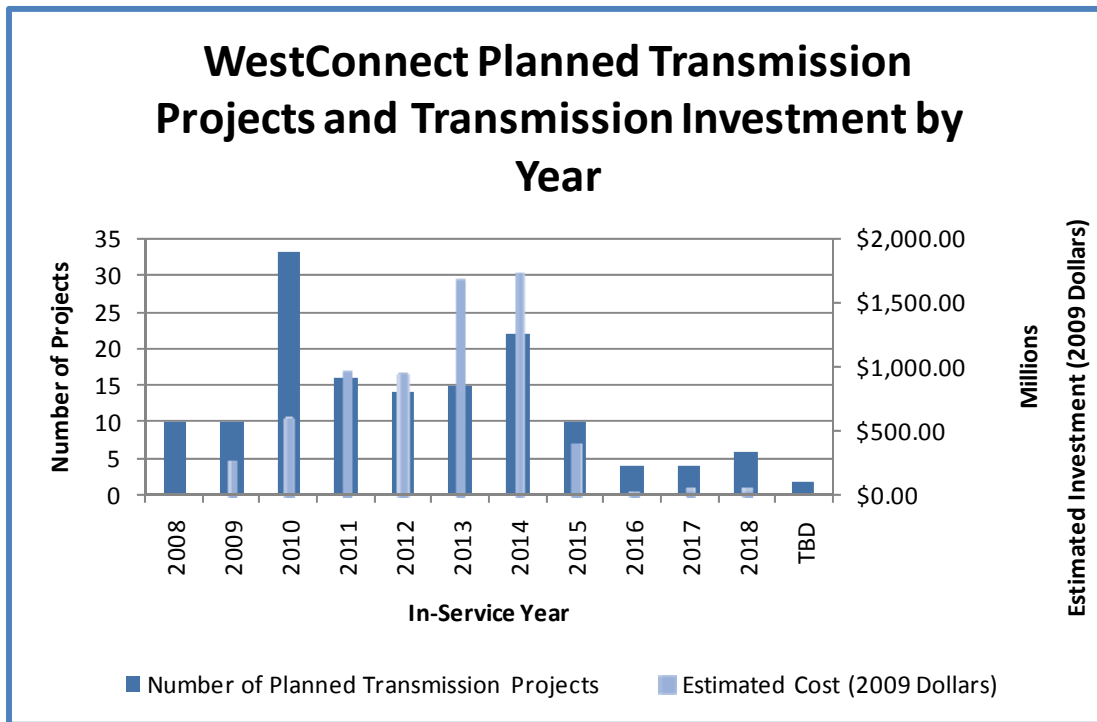


Figure 3 – Number of Planned Transmission Projects and Investment Cost by Year

The following table summarizes the conceptual transmission line projects by in-service date showing the number of projects, miles of line and estimated capital cost. The following tables and charts show the conceptual transmission projects:

In- Service Year	Number of Conceptual Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
2008	0	0	\$0.00
2009	0	0	\$0.00
2010	0	0	\$0.00
2011	3	68	\$9,876,886.00
2012	3	129	\$170,065,589.00
2013	1	0	\$0.00
2014	5	981	\$270,000,000.00
2015	3	318	\$65,000,000.00
2016	0	0	\$0.00
2017	1	2,500	\$5,000,000,000.00
2018	4	64	\$27,000,000.00
TBD	10	148	\$0.00
<b>Total</b>	<b>30</b>	<b>4,208</b>	<b>\$5,541,942,475.00</b>

Table 7 – WestConnect In-Service Date Summary – Conceptual Transmission Projects

The chart in **Figure 4** graphically displays the number of projects and conceptual transmission investment (in millions of dollars) by the planned in-service date of the project. Notable is the large planned transmission investment in 2017 for the High Plains Express project that will cost an estimated five billion dollars. Also notable is the large number of projects without specific in service dates (“TBD”) that are grouped in the final column. These projects are generally projects with an identified long term need and plan, but without specific timelines associated with the projects.

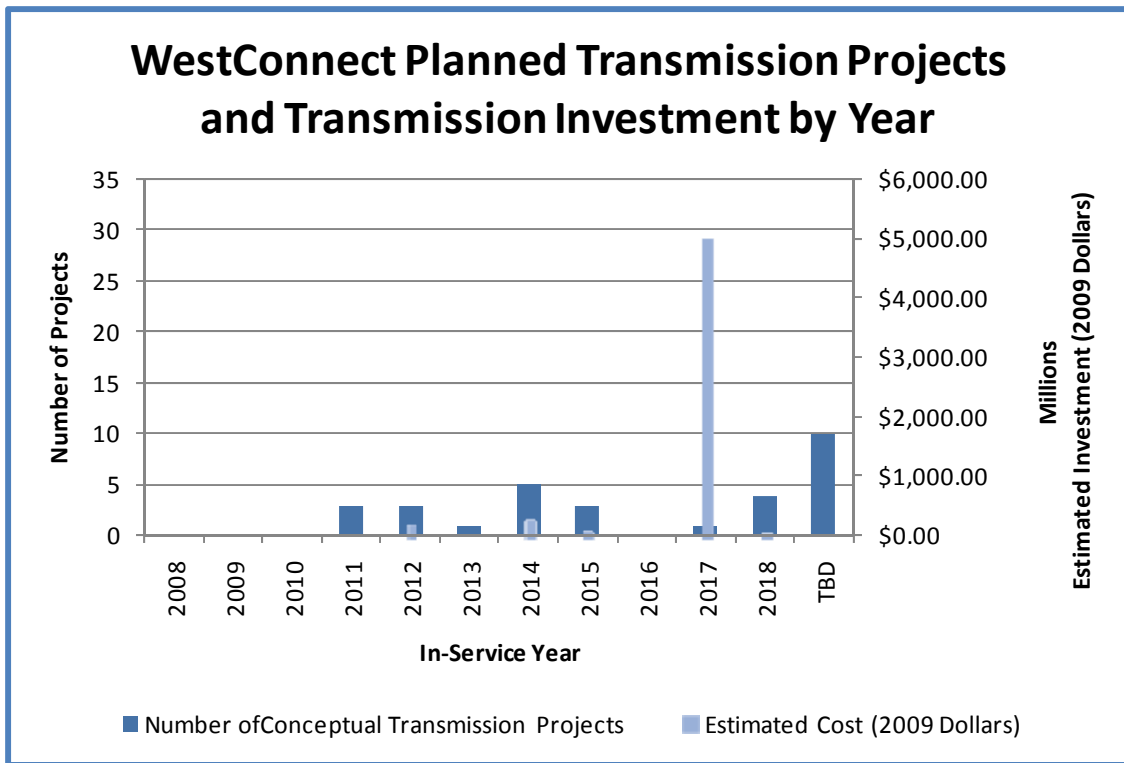


Figure 4 – Number of Conceptual Transmission Projects and Investment Cost by Year

## PLAN SORTED BY STATE TRAVERSED

The 2008 WestConnect Transmission Plan transmission line projects are listed in **Exhibit 4-1 thru Exhibit 4-7** and are sorted in tabular form by state(s) traversed and grouped by either “planned” or “conceptual”. The following tables summarize the transmission line projects by state traversed showing the number of projects, miles of transmission lines and the estimated capital cost. Projects that traverse multiple states are listed as interstate transmission projects requiring siting efforts within multiple states. States impacted by such interstate projects are identified in a separate category in **Exhibit 4-7 thru Exhibit 4-8**.

The table below summarizes the planned transmission project within the WestConnect planning area during the next ten year based upon the state or states the transmission lines traverse.

State(s) Traversed	Number of Planned Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
Arizona	71	1,511	\$1,594,430,352.00
California	11	691	\$1,633,700,000.00
Colorado	15	2,112	\$849,875,000.00
Nevada	6	630	\$1,001,000,000.00
New Mexico	14	214	\$56,933,789.00
Texas	19	96	\$37,307,389.00
Wyoming	1	47	\$36,000,000.00
Multi-State	3	870	\$1,523,000,000.00
<b>Total</b>	<b>140</b>	<b>6,171</b>	<b>\$6,732,246,530.00</b>

Table 8 – WestConnect State Location Summary – Planned Transmission Projects

The chart in **Figure 5** graphically displays percentage of planned project transmission investment (in millions of dollars) by state(s) traversed by the project. Notable is the large percentage of planned capital investment in Arizona, California and interstate transmission projects; which account for 71% of the planned transmission investment during the next ten year.

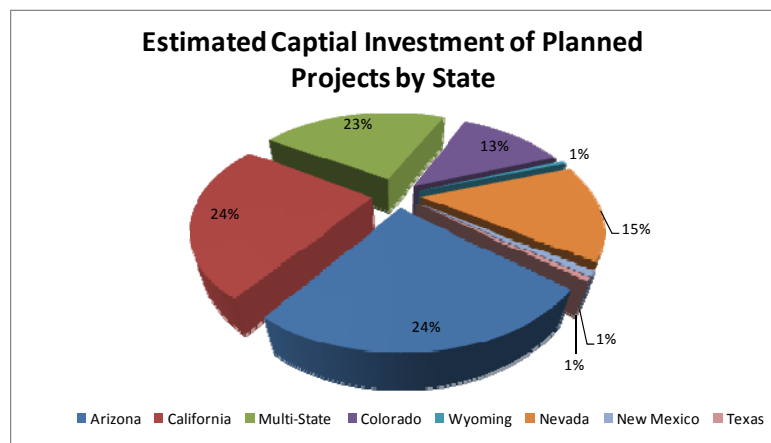


Figure 5 – Planned Project Investment by State

The table below summarizes the conceptual transmission project within the WestConnect planning during the next ten years area based upon the state or states the transmission lines traverse.

State(s) Traversed	Number of Planned Transmission Projects	Length (Miles)	Estimated Cost (2009 Dollars)
Arizona	20	478	\$210,942,475.00
California	2	73	\$66,000,000.00
Colorado	8	342	\$65,000,000.00
Nevada	1	31	\$70,000,000.00
New Mexico	1	0	\$0.00
Texas	0	0	\$0.00
Wyoming	0	0	\$0.00
Multi-State	3	3,374	\$5,130,000,000.00
<b>Total</b>	<b>35</b>	<b>4,298</b>	<b>\$5,541,942,475.00</b>

Table 9 – WestConnect State Location Summary – Conceptual Transmission Projects

The chart in **Figure 6** graphically displays percentage of conceptual project transmission investment (in millions of dollars) by state(s) traversed by the project. Prominently displayed is the large percentage of conceptual interstate transmission projects. It should be pointed out that this chart is greatly influenced by the conceptual High Plains Express project discussed in previous sections.

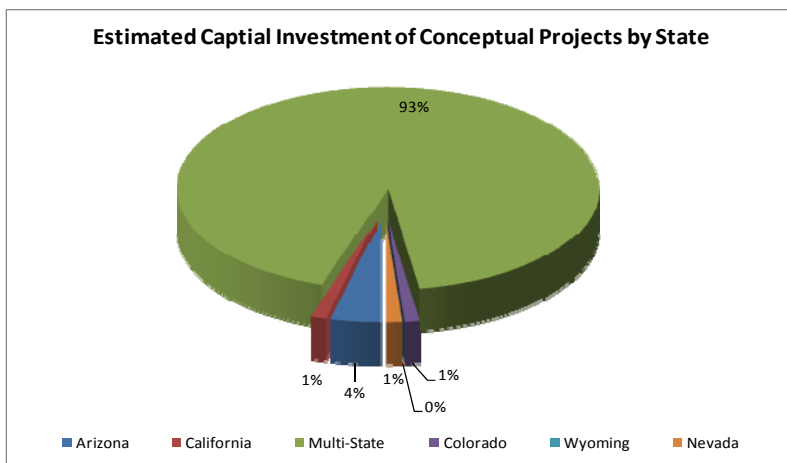


Figure 6 – Conceptual Project Investment by State

The following section provides details on the specific state or states the transmission lines traverse and the changes between the 2007 and 2008 WestConnect Transmission Plans.

## WESTCONNECT TRANSMISSION PROJECTS IN ARIZONA

During 2007 the WestConnect Plan reported eighty one planned or conceptual transmission projects within Arizona. These projects were reported as approximately 1,689 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Arizona by 2017 at an estimated cost of 2.5 billion dollars.

The 2008 WestConnect Plan indicates there are ninety one planned or conceptual transmission projects within Arizona. Approximately 1,989 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Arizona in the next ten years at an estimated cost of 1.8 billion dollars. The primary reason for the change in the data between 2007 and 2008 is addition of the SPPR TTP and improved project cost estimates. Maps provided as **Exhibits Maps 1, 4, 9 and 10** depict these Arizona transmission projects.

## WESTCONNECT TRANSMISSION PROJECTS IN CALIFORNIA

During 2007 the WestConnect Plan reported eleven planned or conceptual transmission projects within California. These projects were reported as approximately 777 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in California by 2017 at an estimated cost of 1.6 billion dollars.

The 2008 WestConnect Plan indicates fifteen planned or conceptual transmission projects within California. Approximately 764 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in California by 2018 at an estimated cost of 1.7 billion dollars. Maps provided as **Exhibits Maps 1, 3 and 8** depict these California transmission projects.

## WESTCONNECT TRANSMISSION PROJECTS IN COLORADO

During 2007 the WestConnect Plan reported fourteen transmission projects within Colorado. These projects were reported as approximately 1760 miles of new or rebuilt/upgraded lines are listed to be in-service in Colorado by 2017 at an estimated cost of just below 2 billion dollars.

The 2008 WestConnect Plan indicates twenty transmission projects within Colorado. These projects were reported as approximately 2,452 miles of new or rebuilt/upgraded lines are listed to be in-service in Colorado in the next ten years at an estimated cost of just below 1 billion dollars. The primary reason for the change in the data between 2007 and 2008 is removal of the Eastern Plains Transmission Project and the addition of Platte River

Power Authority, Basin Electric Power Cooperative, and Black Hills Power transmission plans. Maps provided as **Exhibits Maps 1, 2 and 6** depict these Colorado transmission projects.

#### WESTCONNECT TRANSMISSION PROJECTS IN NEVADA

During 2007 the WestConnect Plan reported six planned or conceptual transmission projects located within Nevada. These projects were reported as approximately 446 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Nevada by 2017 at an estimated cost of 934 million dollars.

The 2008 WestConnect Plan indicates seven planned or conceptual transmission projects located within Nevada. Approximately 661 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Nevada in the next ten years at an estimated cost of just over a billion dollars. The primary reason for the change in the data between 2007 and 2008 is addition of the Ely Energy Center to Robinson Summit 500 kV transmission line to the transmission plan. Maps provided as **Exhibits Maps 1, 3, 4 and 11** depict these Nevada transmission projects.

#### WESTCONNECT TRANSMISSION PROJECTS IN NEW MEXICO

During 2007 the WestConnect Plan reported six planned or conceptual transmission projects located in New Mexico. Approximately 188 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in New Mexico by 2017 at an estimated cost of 262 million dollars.

The 2008 WestConnect Plan indicates fifteen planned or conceptual transmission projects located in New Mexico. Approximately 214 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in New Mexico in the next ten years at an estimated cost of 56 million dollars. The primary reason for the change in the data between 2007 and 2008 is removal of the Northern New Mexico Transmission Line and Rio Puerco Phase 1 Projects. Maps provided as **Exhibits Maps 1, 4 and 5** depict these New Mexico transmission projects.

#### WESTCONNECT TRANSMISSION PROJECTS IN WEST TEXAS

During 2007 the WestConnect Plan reported five planned or conceptual transmission projects in West Texas. These projects were reported as approximately 50 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in west Texas by 2017 an estimated cost of 24.2 million dollars.

During 2008 the WestConnect Plan reported nineteen planned or conceptual transmission projects above 115 kV in West Texas. Approximately 96 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in west Texas in the next ten years at an estimated cost of over 37 million dollars. The primary reason for the change in the data between 2007 and 2008 is increase in the quantity of 115 kV transmission projects. Maps provided as **Exhibits Maps 1, 4 and 7** depict these West Texas transmission projects.

## WESTCONNECT TRANSMISSION PROJECTS IN WYOMING

During 2007 the WestConnect Plan reported two planned or conceptual transmission projects in Wyoming. These projects were reported as approximately 132 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Wyoming by 2017 an estimated cost of 60 million dollars.

During 2008 the WestConnect Plan reported a single planned or conceptual transmission projects in Wyoming. This project was reported as approximately 47 miles of new or rebuilt/upgraded transmission lines are listed to be in-service in Wyoming in the next ten years at an estimated cost of 36 million dollars. The primary reason for the change in the data between 2007 and 2008 is the removal of the Miracle Mile to Dave Johnston Project from the Plan. Maps provided as **Exhibits Maps 1 and 2** depict these Wyoming transmission projects.

## WESTCONNECT TRANSMISSION PROJECTS TRAVERSING MULTIPLE STATES

Projects that traverse multiple states require extensive planning efforts that usually occur over multiple years and costing hundreds of millions dollars. The *2008 WestConnect Planning Report, Independent Transmission and Generation Projects*, discusses each of the transmission projects that traverse multiple states and describes the planning efforts. Below is a summary these project's combined vital data supplied to WestConnect in both 2007 and 2008.

During 2007 the WestConnect Plan reported three planned or conceptual transmission projects that span multiple states. These projects were reported as approximately 3850 miles of new or rebuilt/upgraded transmission lines that will span multiple states within the WestConnect planning area by 2017 at an estimated cost approximately 5.8 billion dollars.

During 2008 the WestConnect Plan reported six planned or conceptual transmission projects that span multiple states. These projects were reported as approximately 4,244 miles of new or rebuilt/upgraded transmission lines that will span multiple states within the WestConnect planning area in the next ten years at an estimated cost over 6.6 billion dollars. The primary reason for the change in the data between 2007 and 2008 is

removal of the Eastern Plains Transmission Project and the addition of the Palo Verde to Devers 2 Project. Maps provided as **Exhibits Maps 1 thru 4** depict these interstate transmission projects.

## INTERSTATE, MARKET AND MERCHANT TRANSMISSION AND GENERATION PROJECTS

In the Western Interconnection interstate transmission is essential to enabling a state's utilities access to the wholesale market for purchases and sales. Interstate and market driven transmission projects facilitate a more robust and viable wholesale market. Interstate and merchant transmissions projects complement the states' utilities electric infrastructure and allow for additional import/export points. Several market access projects and merchant transmission projects are discussed in this WestConnect Planning Report. 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 WestConnect Planning report highlights the status of ten such proposed projects that affect the WestConnect planning area during the next ten years.

### SUNZIA TRANSMISSION PROJECT

SunZia consist of up to two 500 kV interstate transmission lines spanning 460 miles between Arizona and New Mexico sponsored by Southwestern Power Group. The expected power transfer capacity of SunZia is estimated at over 3 gig-watts, or higher with the direct current ("DC") option. An overview map showing the general routing of the line is included as **Appendix O-2**. As stated in the June 2, 2008 SunZia press release<sup>8</sup>, "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."

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

- *WECC* — Regional Project Planning was initiated on December 15, 2006. A draft Regional Planning Project Report ("RPPR") was issued on March 16, 2007, and a final RPPR was issued to WECC on May 17, 2007. WECC issued acceptance of RPPR on July 12, 2007.
- *Subregional Planning* — Regular project updates are provided to SWAT and its subcommittees.

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<sup>8</sup> [SunZia Southwest Transmission Project Press Release](#), WestConnect Website, June 2, 2008

- *Open Season* — An Open Season was announced on December 15, 2006, and attracted thirty interested parties. An initial meeting was held on February 16, 2007. A participation agreement was signed by five parties and reported on June 2, 2008.<sup>9</sup>

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

SunZia continued providing status updates at open transmission planning forums during 2008. Additionally during 2008, SunZia continued feasibility studies; the current feasibility studies are investigating one of the 500 kV transmission lines as a 500 kV DC facility. Also during 2008, SunZia is has remained active in development of Pinal Central - Tortolita 500 kV Project study plan and memorandum of agreement (“MOA”) as well as initiating the baseline agreements with Bureau of Land Management (“BLM”) for National Environmental Policy Act / Environmental Impact Study (“NEPA/EIS”) process including: the Cost Recovery Agreement and Memorandum of Understanding (“MOU”).

SunZia will continue the project development and planning processes begun during 2008. With the BLM, SunZia intends to submit a draft Notice of Intent and Public Scoping of meetings in the first quarter of 2009. Additionally in the third quarter of 2009, and SunZia will initiate the design and construction phase. SunZia will continue to participate in stakeholder meeting and providing updates at SWAT and WestConnect meetings in 2009.

## DINE 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 south of Boulder City, Nevada. A 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 which traverse Arizona.

- *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. Segment 1 will begin construction in 2009 and the planned in-service date for Segment 1 is the fourth quarter of 2011.

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<sup>9</sup> <http://www.sunzia.net/news.php>

- *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 an existing Glen Canyon to Flagstaff 345 kV transmission line corridor. 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. Project schedule is yet to be determined, but Arizona CEC will terminate in 2010 if not extended.

NTP has participated at stakeholder meetings, including the WECC processes, the Arizona BTA and WestConnect Planning Workshops. WestConnect did not receive a ten year plan submittal for this project. Therefore, the project details have not been incorporated into the WestConnect Plan summary.

On September 22, 2008, the NTP received a final BLM Record of Decision (“ROD”) and right of way (“ROW”) grant for the transmission lines thru BLM lands. This decision was followed shortly after on October 8, 2008 with the Bureau of Indian Affairs (“BIA”) issuing a ROD for the transmission lines traversing Indian lands. Additionally, prior to the end of 2008, NTP is expecting a final report of the WECC path rating for the project.

<<Need information on the activities expected to occur during 2009 – asked jerry smith to follow up>>

## HARCUVAR TRANSMISSION PROJECT

Harcuvar Transmission Project (“HTP”) is a proposed 230 kV transmission project located approximately 60 miles west of the Palo Verde Hub and is sponsored by Central Arizona Water Conservation District (“CAWCD”). An overview map showing the general routing and is included as **Appendix C-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 the PVD-2 transmission line. The project could provide access to Arizona renewable generation as well as transmission access to the Palo Verde Hub and to California.

A vast majority of the project will utilize existing federal right of way and designated utility corridors. Nevertheless, HTP is dependent upon the presence of the planned PVD2 500 kV line and the following new transmission elements:

- Interconnection to both Palo Verde to Devers 500 kV lines at a proposed Salome Substation and participation/ownership in the PVD2 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 did receive 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 CRT subregional planning study group. In 2008, feasibility study work for HTP was completed with a number of study scenarios based upon a power flow case approved by nine CRT study team participants. The result of these feasibility studies is outlined in the Harcuvar presentation<sup>10</sup> for the BTA Workshop. A report detailing the study results will be prepared by the CRT study team prior to 2009.

HTP, through the CRT subcommittee has presented and provided updates thru multiple open stakeholder forums, including CRT and SWAT 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>11</sup> The open season revealed nine entities representing over 2,500 megawatts ("MW") of generation interconnection interest.

The next HTP step will be finalization and formalization of parties' interest during 2009. During 2009, HTP will establish technical specifications for both the transmission and generation interconnection and work with SCE and WAPA to initiate interconnection feasibility studies. Prior to the project entering WECC Regional Planning Phase 2, formal MOUs and funding process will need development and approval. With the completion of the MOUs, detailed engineering and ROW acquisition can begin potentially during the fourth quarter of 2009 or 2010.

## HIGH PLAINS EXPRESS INITIATIVE

The High Plains Express ("HPX") is a participant led, multi-state, 500 kV transmission initiatives from Wyoming to Arizona. Currently Xcel Energy and Trans-Elect Development Company are co-managing the participant's efforts and committee coordination. An overview map showing the general routing and interconnection points of this project are included as **Appendix G-3**.

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<sup>10</sup> [2008 BTA Workshop I, Harcuvar Presentation, May 22, 2008](#)

<sup>11</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)

The High Plains Express transmission project is envisioned to provide the primary regional benefits of reliability improvements, access to multiple locations of generation resources in several states and provides a roadmap for regional transmission expansion. High Plains Express is considering possible inclusion of SunZia, the New Mexico Wind Collector System and the Wyoming-Colorado Intertie projects as components of its project. High Plains Express currently has eight participant utilities and three state organizations, identified in the table below.

Xcel Energy	Colorado Springs Utilities
Public Service Company of New Mexico	Colorado CEDA
Tri-State Generation and Transmission	Wyoming Infrastructure Authority
Western Area Power Authority	New Mexico EMNRD <sup>12</sup>
Platte River Power Authority	Trans-Elect Development Company
Salt River Project	

Table 10 - High Plains Express Participants

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

During 2008, the High Plains Express project completed a preliminary technical and an economic feasibility study for a 3,500 MW project with two separate 500 kV transmission lines. A preliminary feasibility study final report was issued in June 2008.<sup>13</sup>

In 2009, the High Plains Express Initiative is to perform a more advanced feasibility evaluation that includes geographic study areas, sequential development, operational modeling, public regulatory policies, further quantification of costs and benefits, cost recovery mechanisms, business structures, and continued stakeholder involvement. The High Plains Express Initiative has entered into WECC Phase 2 studies that are expected to be completed in the fourth quarter of 2009.

## PALO VERDE – DEVERS 2

<sup>12</sup> New Mexico EMNRD is New Mexico’s Energy, Mineral, and Natural Resources Department

<sup>13</sup> HPX Feasibility Study located at -

[http://www.rmao.com/wtpp/HPX/HighPlainsExpress%20First%20Stage%20Feasibility%20Report%2006\\_08.pdf](http://www.rmao.com/wtpp/HPX/HighPlainsExpress%20First%20Stage%20Feasibility%20Report%2006_08.pdf)

The Palo Verde to Devers No. 500 kV Project is a SCE sponsored interstate transmission project. This project traverses a DOE NIETC corridor and would provide congestion relief. An overview map showing the general routing of the PVD2 transmission line is included as **Appendix L-2**. This project consists of two major transmission line segments:

➤ *Segment 1 - Delany to Devers* - A new 500 kV transmission line between Arizona and California; Delany<sup>14</sup> to Devers Substations respectively. This segment is approximately 230 miles long. Approximately 102 miles is in Arizona and the remaining 128 miles are located in California. The planned transmission line routing parallels the existing Palo Verde to Devers 500 kV transmission line.

➤ *Segment 2 - Devers to Valley No. 2* - A new 500 kV transmission line connecting SCE's Devers and Valley Substations (located entirely in California). This segment is approximately 41.6 miles long. The planned transmission line routing parallels the existing Devers to Valley 500 kV transmission line.

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

On June 6, 2007, the Arizona Corporation Commission denied SCE's application for a CEC for the PVD2 transmission line.<sup>15</sup> Despite that CEC denial, SCE states its first priority and preference is to gain regulatory approval for the proposed transmission project from the ACC. In support of a new CEC filing, SCE is working with stakeholders, regional utilities and planning groups in Arizona to develop a mutually acceptable alternative plan to present to the ACC for approval of the project. SCE is working with Arizona stakeholders to reconfigure PVD2 to provide tangible Arizona benefits. SCE is performing new technical studies in the SWAT CRT forum to consider interconnection of a western Arizona substation to integrate renewable energy projects and connect with Central Arizona Project pump load. Feasibility studies have been completed as described in the Harcuvar Transmission Project Section of this report.<sup>16</sup> Steps are now being taken to determine Arizona benefits associated with the western Arizona interconnection with the PVD2 project.

SCE is simultaneously pursuing a second approach to secure regulatory approval. On May 16, 2008, it filed a pre-filing application with Federal Energy Regulatory Commission ("FERC") under Section 50.6 - Transmission Line Siting process. This filing triggers a project-wide NEPA review, preparation of a preliminary draft EIS, and a public

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<sup>14</sup> Delany Substation was previously known as Harquahala Junction

<sup>15</sup> ACC Decision No. 69638

<sup>16</sup> Feasibility Study results summarized in 2008 BTA Workshop I, [Harcuvar Presentation](#), May 22, 2008

notice process along the entire right-of-way. Open house meetings concerning the revised scope of the project commenced in Arizona in June 2008. The Arizona Corporation Commission has responded to this FERC filing.<sup>17</sup>

SCE continued to attend open stakeholder meetings during 2008 to provide presentations and updates; including updates at SWAT, Westconnect and Arizona BTA forums in addition to filing ten year plans with the ACC. Arizona utilities continue meetings with stakeholders to pursue Arizona benefit enhancements for the PVD2 project; including discussions that will be occurring according to a “Meet and Confer” process as ordered by the ACC.

During 2009, SCE will continue to work with Arizona stakeholders and the ACC to work toward gaining ACC approval of the PVD2 line or SCE will file a formal FERC “Backstop” application; the decision will be made in the first quarter of 2009. Additionally during 2009, Arizona utilities will continue meetings with stakeholders to pursue Arizona benefit enhancements for the PVD2 project; including discussions that will occur according to a “Meet and Confer” process as ordered by the ACC.

SCE will begin technical studies including studying the Harcuvar Transmission Project and WECC East of River (“EOR”) and WECC West of River (“WOR”) studies.

## TRANSWEST EXPRESS

The TransWest Express Transmission Project is currently conceptualized as a 500 kV bi-polar transmission line from Wyoming to the Desert Southwest region originally proposed in 2005. The proposed 500 kV DC line would be approximately 850 miles in length and have a rating of approximately 3,000 MW, with a targeted in-service date in 2015. An overview map showing the general routing of the line is included as **Appendix R-2**. The project has focused on regional needs and contemplated transmission service between Wyoming and Nevada, California and Arizona. WestConnect Planning did receive a ten year plan submittal for this project. The project details have been incorporated into the WestConnect Plan summary.

TransWest Express was being developed by APS, the Wyoming Infrastructure Authority (“WIA”) and National Grid. In July 2008, acquisition of the rights to the TransWest Express Transmission Project by Anschutz Corporation has resulted in National Grid and Wyoming Infrastructure Authority (“WIA”) choosing to withdraw from the TransWest Express project and APS to remain involved in a more limited fashion. Anschutz Corporation formed TransWest Express, LLC which is the current sponsor of the TransWest Express Project.

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<sup>17</sup> <http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=11687511:0> and <http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=11709962:0>

TransWest Express completed the WECC Regional Planning Project Review (“RPPR”) in May 2008<sup>18</sup> including project stakeholder meetings and receiving input from regional and sub-regional groups. TransWest Express also completed a conceptual technical analysis that included review and refinement of design parameters, evaluation of alternative configurations for TransWest Express and Gateway South projects and conceptual scope development and cost estimates.<sup>19</sup> Additionally TransWest Express completed an economic analysis of the western United States called *The West’s Renewable Energy Future*.<sup>20</sup>

During 2008, TransWest Express initiated Phase 1 of the WECC Path Rating Process for the TransWest Express project and completed a draft study plan for the process. During the first quarter of 2009 TransWest Express is planning NEPA process public scoping meetings. TransWest Express is expecting to complete the WECC Rating Process Phase 1 technical studies during 2009. TransWest Express will continue to actively participate in regional planning efforts and stakeholder meetings.

## SOUTHWEST PUBLIC POWER RESOURCES - THREE TERMINAL PLAN

Santa Cruz Water and Power District (“SCWPD”) includes a transmission project associated with a Southwest Public Power Resources (“SPPR”) group generation project; combined are referred to as the Three Terminal Plan (“TTP”). SPPR is a diverse group of thirty nine entities widely spread 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 did receive a ten year plan submittal for this project. The project details have been incorporated into the 2008 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 M-2**. The TTP project will be developed in a phased approach with a complete project in-service date of 2014. TTP consists of the following transmission elements:

- *Circuit- 1: Santa Rosa/Test Track – ED5 (new substation) 230 kV*

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<sup>18</sup> TransWest Express reports are available at <https://transwest.azpsosis.com/Reports.aspx>

<sup>19</sup> Ibid

<sup>20</sup> *The West’s Renewable Energy Future* available at [http://transwestexpress.net/downloads/The%20West's%20Renewable%20Energy%20Future%20Final%20Draft%2007\\_28\\_08.pdf](http://transwestexpress.net/downloads/The%20West's%20Renewable%20Energy%20Future%20Final%20Draft%2007_28_08.pdf)

- From Santa Rosa to Thornton Road, a second circuit will be added on the Southeast Valley (“SEV”) 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 – 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.
- *Circuit-3: 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.

The SPPR TTP has participated in multiple stakeholder forums throughout 2008, including the SATS subcommittee meeting and the Arizona BTA and WestConnect workshops.

Power flow studies were filed with Arizona Corporation Commission 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 all these additional studies will remain confidential pending final site selection. The SPPR Group members who are also participants in the SEV transmission project have requested that SRP perform a study of new generation in the general proximity of Pinal Central and the planned TTP transmission project. SRP reported at the BTA Workshop II that any needed studies would be performed by the CATS HV study group.

During 2009, 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 in the first quarter of 2009. In the second quarter of 2009, SPPR anticipates filing formal siting documents with the Arizona Corporation Commission. SPPR will continue to provide timely updates and will continue to participate in regional stakeholder meetings and forums throughout 2009.

## WYOMING-COLORADO INTERTIE

The Wyoming-Colorado Intertie (“WCI”) project is a partnership consisting of Wyoming Infrastructure Authority (“WIA”), Trans-Elect Development Company (“Trans-Elect”), and Western Area Power Administration

("Western" or "WAPA") that was formed to consider the expansion of transmission capacity located along the Wyoming-Colorado border. The WCI project is a 180 mile long 345 kV transmission line that would link the high-quality wind resources of southeastern Wyoming to Colorado loads across the TOT 3 transmission constraint. It is planned for about 850 MW of capacity with an expected 2013/2014 COD. It is being developed by a public/private partnership involving Trans-Elect, the Wyoming Infrastructure Authority, and Western Area Power Administration.

WCI is active in open stakeholder meetings and forums including the WECC process, CCPG meeting 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 P-2**.

During 2008, Feasibility studies relative to Power Flow Analysis, Permitting Requirements, Corridor Analysis, ROW acquisition and Project Cost Study have been completed. On behalf of the partnership, in November of 2005, Western posted a solicitation of interest in the Federal Register to gain a measure of interest in the project. On the basis of the robust response to the Western posting the parties were sufficiently encouraged to proceed with studies that culminated in an "Open Season" process for transmission capacity that was held in 2008. The open season concluded with 70% of the line's capacity subscribing to wind developer shippers via a FERC-compliant open season process. Additionally during 2008 WCI achieved completion of Phase 1 of the WECC path rating process.

In 2009, the WCI project will continue to stay involved in stakeholder meetings and forums providing updates. Additionally during 2009, the WCI planned activities include the following:

- Phase 2 WECC Path Rating approval process
- Completion of interconnection studies and agreements for interconnecting at Pawnee and Laramie River Station
- Posting of remaining 265 MW of capacity via the WCI's OATT
- FERC filing for approval of the Open Season results
- Route selection, permitting, and right-of-way acquisition

## TRANSMISSION AGENCY OF NORTHERN CALIFORNIA – PROJECT ZETA

The Transmission Agency of Northern California ("TANC") and its Members are currently evaluating three transmission projects as part of the TANC Transmission Program, which will enhance the operations and reliability of the COTP and the northern California electric system; the largest of which is Project Zeta. As TANC proceeds with the development of this Program, its planning process satisfies applicable principles included in FERC Order

890 as well as other planning requirements with which it must comply. The WECC Regional Planning Process provides an open forum for both WECC members and nonmembers alike, including various regional planning groups. TANC's Transmission Program plans are included in the WestConnect Annual Report. In addition, TANC has established a Technical Review Committee open to interested parties. TANC welcomes stakeholder participation in these forums.

There are two unique elements comprising the ZETA Project of TANC's Transmission Program: ZETA North and ZETA South, as described in detail below:

- *Zeta North* - The ZETA North section consists of two new 500-kV overhead transmission lines in separate corridors that are proposed for development between a new substation near Ravendale, California and a new substation near Round Mountain, California, a distance of about 90- miles. From the proposed substation near Round Mountain, a new transmission line will be developed towards the southwest, interconnecting to the COTP's existing Olinda Substation. These lines are necessary to increase system reliability and provide additional transmission capacity between northeastern California and the Olinda Substation.
- ZETA South - As a continuation of the ZETA North Project, a new 500-kV overhead transmission line is being planned for development between the existing Olinda Substation and a new substation to be located near the COTP's existing Tracy Substation. Another aspect of this project includes the development of a new substation in the Dillard Road area near Highway 99, which will interconnect the ZETA South project with the electric system of the Sacramento Municipal Utility District.<sup>21</sup>

An overview map showing the general routing and interconnection points of this transmission project are included as **Appendix Q-2**.

During 2008, TANC Transmission Program created a subregional planning project review group and held four meetings. Participants include: TANC and the participating TANC Members, Western Area Power Administration, Pacific Gas & Electric, Nevada Energy, the California ISO, the US Bureau of Reclamation, the California Department of Water Resources and Bonneville Power Administration.

Studies completed during 2008 are based on the WECC 2014 summer peak case and have included: "Base" scenario studies both without and with the TTP and "Sensitivity" studies to assess how the addition of the TTP supports the development of renewable generation in the ISO's generation interconnection queue. 2009 study work will also be performed to assess system impacts and benefits if:

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<sup>21</sup> Information related to Project Zeta obtained from <http://www.tanc.us/content/blogsection/7/48/>

- An interconnection between the TTP and the NV Energy system in northeastern California was developed
- An interconnection between the TTP and proposed new transmission facilities in southern Oregon was developed

During the first quarter of 2009, all study work is planned to be completed.

## SAN LUIS RIO COLORADO PLANT AND NORTH BRANCH TRANSMISSION PROJECT

A Mexican company called Generadora del Desierto, a wholly owned subsidiary of North Branch Holding Company, is proposing to construct a 600 MW gas fired combined cycle power plant in Mexico just south of the US/Mexico border south of Yuma, AZ. The plant will interconnect in the US via the North Branch Transmission Project which consists of two 230kV transmission lines which will connect to a new 230kV substation to be built next to WAPA's Gila 161kV substation. The new double circuit 230kV lines will continue to the APS North Gila 500kV station. Negotiations are currently underway to share the North Branch 230kV facilities with APS to avoid redundancy of facilities to serve APS loads in the Yuma area.

The Environmental Impact Study (EIS) for the transmission lines was performed by WAPA and the Record of Decision ("ROD") was forwarded to the US Department of Energy ("DOE") for their review in preparing and issuing a Presidential Permit. On August 21, 2008, the DOE published, in the Federal Register, notice of its decision to issue a Presidential Permit to Generadora Del Desierto to construct, operate, maintain and connect a new double circuit 230kV transmission line across the U.S.-Mexico border into Yuma County, southeast of San Luis, Arizona.<sup>22</sup>

WestConnect Planning did not receive a ten year plan submittal for this project. Therefore the project details have not been incorporated into the WestConnect Plan summary.

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<sup>22</sup> Federal Register / Vol. 73, No. 163/ Thursday, August 21, 2008/Notices, page 49447.  
<http://edocket.access.gpo.gov/2008/pdf/E8-19392.pdf>

## CONCLUSIONS

The WestConnect Transmission Plan area encompasses seven states, three subregional planning areas, fifteen transmission owners and twenty three project sponsors. The 2008 WestConnect Transmission Plan report is intended to give a snapshot of the large amount of planned and conceptual transmission projects with the planning area. The following conclusions intend to provide an aggregate summary of the WestConnect Transmission Plan for 2009 thru 2018 and provide recommendations for consideration of where the WestConnect Transmission Plan could develop in the future.

### 2008 SUMMARY

2008 was another very active transmission planning year for WestConnect. It marked the publishing of WestConnect's second annual Transmission Plan report. The 2008 WestConnect Plan contains relatively minor changes to the 2007 Plan. A major conceptual 500 kV transmission plan (Eastern Plains Transmission) was canceled and numerous projects have modified or delayed in-service dates but remained in the plan. Transmission projects were incorporated for WestConnect's two new planning members: Basin Electric Power Cooperative and Black Hills Power. WestConnect also invited other planned projects meeting WestConnect's criteria to participate in the Plan. During 2008, WestConnect developed and implemented an online data entry portal for transmission project submittals and project sponsors responded effectively by supplying requested information in a complete and timely manner.

The 2008 WestConnect Transmission Plan entered through the new WestConnect TPM database includes 140 planned new or rebuilt/upgraded transmission projects with a combined approximate length of 6,171 miles, 43 planned transmission substations, and 27 planned transmission class transformers as well as 16 other planned transmission enhancement projects at an estimated 10.2 billion dollar capital cost. Additionally, the 2008 WestConnect Transmission Plan includes 30 conceptual new or rebuilt/upgraded transmission projects with a combined approximate length of 4,298 miles, 3 conceptual transmission class transformers and 5 conceptual transmission substations at an estimated 5.6 billion dollar capital cost.

Planned and conceptual Interstate projects continue to dominate the WestConnect Plan statistics due to the scope and scale of the projects. Additionally in 2008, the data received marked a large reduction in the number of projects, both planned and conceptual, without in-service dates. This vastly improved the reported timing and relevance of projects contained in the Plan.

## RECOMMENDATIONS

Continued improvement within the WestConnect planning function specifically related to the quality of the Plan is a constant goal. The following recommendations are offered for the WestConnect Planning Management Committee's consideration in support of WestConnect's effort to meet this goal:

7. The window chosen for the annual data collection process may require reexamination, as the current window ends prior to some WestConnect members' corporate approval of their plan.
8. Annual revisions to the WestConnect Plan should remain a minimum requirement and consideration should be given to more frequent updates thru the TPM to keep stakeholders abreast of changes in the Plan as they occur.
9. The WestConnect Plan detail and accuracy corresponds directly to the quality of data entered through the TPM. Continuing to improve the detail and accuracy should remain a goal.
10. WestConnect Planning will work to develop tutorial tools for TPM usage to ensure constancy in data entry.
11. Project sponsors should consider and define a standard for providing transmission project detail, including level of detail and common file format. Additionally, development of more detailed common reporting standards would remove ambiguity and inconsistencies among data submittals.
12. Addition of new fields in the TPM data base could allow project status reporting on an ongoing basis. This could improve project status updates at meeting and possibly be accessible via the website map.

WestConnect proposes to measure self-improvement of its Plan based upon PMC adoption of these recommendations.