Gateway South
Transmission Project

Regional Planning Project Review Report

May 28, 2008

Gateway South

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I. Introduction

The purpose of this report is to document the Regional Planning Project Review (RPPR) for the Gateway South Project. The Gateway South project was announced by PacifiCorp in May 2007 to provide increased transmission capacity between Wyoming, Utah and southern Nevada. PacifiCorp initiated the Western Electricity Coordinating Council (WECC) Regional Planning Project Review process for Gateway South and the related Gateway West projects on June 25, 2007 (see Appendix 1).

PacifiCorp formed a partnership with Arizona Public Service (APS), National Grid, and the Wyoming Infrastructure Authority (WIA) (the 'Partners') to identify and explore regional transmission opportunities with the co-development of the Gateway South (GS) and the TransWest Express (TWE) projects. These two projects could potentially share common corridors and the Partners recognized several potential benefits through co-development of the projects, including improved reliability to the Western Interconnection, a reduction of transmission congestion, an increase in the efficiency of development, and potential for other operational benefits.

The Partners conducted joint Regional Planning Project Reviews (RPPR) for GS and TWE projects. The appended material to this report is common to both the GS and TWE projects. GS and TWE along with PacifiCorp's joint project with Idaho Power, the Gateway West (GW) project, are three major projects emanating from Wyoming to serve growing needs in the west. This RPPR Report should be reviewed along with the companion RPPR Reports for TWE and GW.

WECC's Regional Planning Project Review process provides transmission project sponsors with a procedure to report on planned projects and work together with WECC members and other stakeholders on expanding the system capacity to meet the regional needs. WECC provides eleven guidelines to ensure compliance with the Regional Planning Project Review process. Each of these specific guidelines are addressed within the context of the report.

The FERC Open Access Transmission Tariff (OATT) Order 890 provides nine Transmission Planning Principles that transmission providers are required to adopt within in their OATT processes. As eight of the nine Principles have been employed during this RPPR, the Report references the specific Principles within the context of the review. (Note that as an open stakeholder review process, the RPPR does not lend itself directly to the Dispute Resolution Principle. The Partners have adopted the Dispute Resolution process within PacifiCorp's Attachment K. See http://www.tops.pacificorp.com/oasis/ppw/main.html).

The body of this report is sub-divided into three sections: 1) Stakeholder Process, 2) Resource Assessment, and 3) Transmission Assessment. The WECC RPPR guidelines and the Order 890 Transmission Planning Principles that are specifically addressed in each section are listed at the beginning of each section. To assist the reader in determining how each guideline has been addressed by the Partners, the WECC RPPR guideline number has been noted (in $^{\text{superscript}}$ format) where a specific guideline is addressed within a statement.

The Partners engaged Black & Veatch (B&V) to refine the technical aspects of the projects, evaluate opportunities through co-development, and perform conceptual cost analysis for the evaluation of alternative configurations. A Conceptual Technical Report produced by B&V for the Partners serves to document these evaluations. The Conceptual Technical Report is a supplement to this RPPR Report and is attached as Appendix 3.

II. Regional Planning Project Review

A. Stakeholder Process

The following WECC Regional Planning Process guidelines and FERC principles are addressed within this section.

WECC Regional Planning Process guidelines

2. *Cooperate with others to look beyond specific end points of the sponsors' project to identify broader regional and sub-regional needs or opportunities;*
5. *Cooperate with Regional Planning Review Group members in determining the benefits and impacts due to the project;*
7. *Coordinate project plans with and seek input from all interested members, sub-regional planning groups, power pools, and region-wide planning group(s);*
8. *Coordinate project plans with and seek input from other stakeholders including utilities, independent power producers, environmental and land use groups, regulators, and other stakeholders that may have an interest;*
11. *Coordinate with potentially parallel or competing projects and consolidate projects where practicable.*

Order 890 Principles for Transmission Planning:

A. *Coordination*
B. *Openness*
C. *Transparency*
D. *Information Exchange*
G. *Regional Participation*
I. *Cost Allocation*

PacifiCorp initiated the RPPR for the GS and GW projects on June 25, 2007 by soliciting interest of all members of WECC's Planning Coordination Committee (PCC) and Technical Studies Subcommittee (TSS) (see Appendix1). The project was first presented to stakeholders on July 9, 2007 at a Northern Tier Transmission Group (NTTG) Regional Planning Process (RPP) kickoff meeting in Portland, Oregon.

The Partners are committed to the development of these projects within an open and transparent process with all stakeholders. The Partners held four joint GS/TWE Stakeholder meetings to seek public input and participation in the projects. To encourage participation at these meetings, they were held jointly and in different states along the proposed project route (see Table 1). In addition, telephone participation of these meetings was augmented via a web cast of the meeting materials. Meeting announcements were sent to WECC members, public officials and other interested parties as well as posted on several websites. Appendix 4 is a sample announcement letter. Representatives from utilities, independent power producers, environmental and

land use groups, regulators, and energy policy advocates attended the meetings and provided valuable input. Appendices 5 through 8 are the Stakeholder Meeting Minutes and Attendance Lists. Appendix 9 is a listing of the websites where these materials are posted. WECC RPPR Guidelines: 2, 5, 7, 8

Table 1 GS and TWE Joint Regional Planning Project Review Stakeholder Meetings

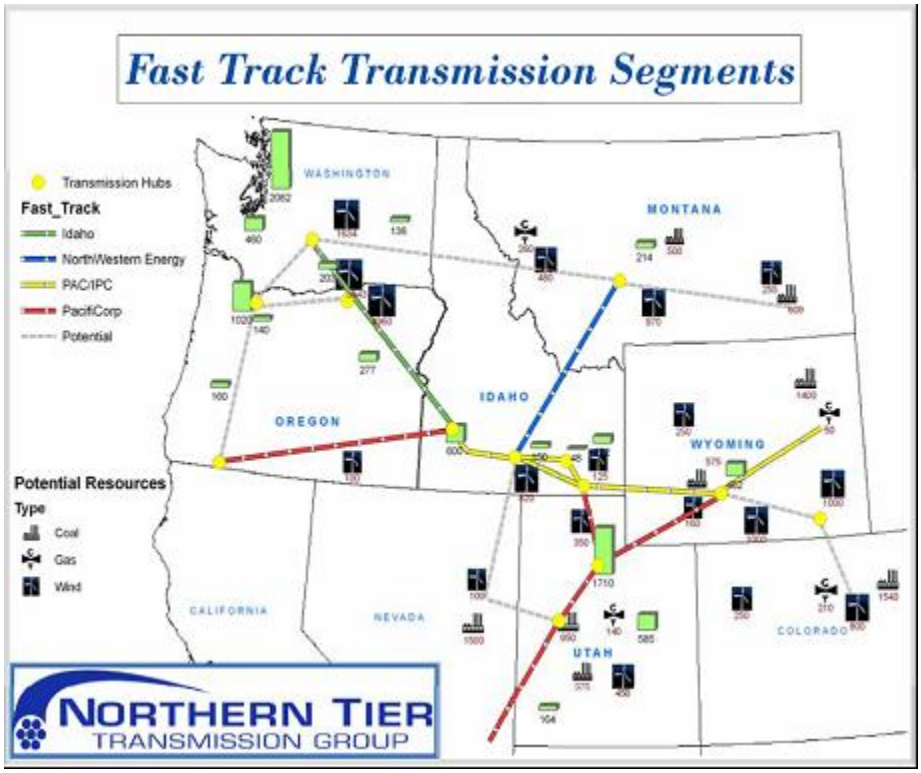
Location	Date
Salt Lake City, UT	October 17, 2007
Cheyenne, WY	November 7, 2007
Phoenix, AZ	December 5, 2007
Las Vegas, NV	January 23, 2008

Sub-Regional Planning Process

The Northern Tier Transmission Group was formed by a group of transmission providers and customers in the Northwest and Mountain states. The footprint of NTTG includes Wyoming, Montana, Idaho, Utah, and parts of Oregon. NTTG coordinates individual transmission systems operations, products, business practices, and planning of the high-voltage transmission network to meet and improve transmission services that deliver power to consumers. In 2007, NTTG recognized the extent of projects within their footprint that were about to enter the WECC RPPR process, initiated an accelerated Regional Planning Process (RPP), or Fast Track RPP, to coordinate these initial projects prior to implementing their full two year planning cycle.

As the GS project is primarily within the NTTG footprint, the project was entered into the NTTG RPP in May 2007. The RPP for the Fast Track projects included engaging stakeholders to formulate and refine the transmission plan to meet the ten year requirements of the NTTG region. This process was completed during the first half of 2007 and incorporated: 1) the member utilities' Integrated Resource Plans (IRP), 2) past studies highlighting regional through-put and export needs and known congestion areas, and 3) existing regional projects. NTTG identified several transmission projects as high priority infrastructure improvements that should be built in the near term to improve the reliability and capacity of member system utility, as shown in Figure 1. WECC RPPR Guidelines: 2, 5, 7, 8

Figure 1 NTTG Fast Track Transmission Project Map



Information concerning NTTG and documents produced during the Fast Track Project Process may be found on the website: www.nttg.biz

As part of the RPPR, the Partners coordinated planning with NTTG, the Southwestern Area Transmission (SWAT) Regional Planning Group, and WestConnect. These sub-regional planning groups coordinate transmission additions planned by the members of these respective organizations. The Partners actively participate in these sub-regional planning groups and WECC committees and have provided briefings and sought input from members and stakeholders on these projects. Table 2 is a listing of the meetings held during the RPPR period that included agenda items for GS presentations and stakeholder input. WECC RPPR Guidelines: 2, 5, 7, 8

Table 2 WECC & Sub-Regional Planning Group Meetings that included a Presentation on Gateway South

Location	Date	Organization
Portland, OR	July 9, 2007	NTTG
Seattle, WA	August 10-12, 2008	TSS
Portland, OR	August 20, 2007	NTTG
Conference Call	October 22, 2007	NTTG
Vancouver, BC	October 24-26, 2007	PCC
Reno, NV	October 30-31, 2007	SWAT / West Connect
Boise, ID	November 13, 2007	NTTG
San Francisco, CA	November 28-29, 2007	TEPPC
Portland, OR	January 16-17, 2008	NTTG
Las Vegas, NV	January 16, 2008	SWAT / West Connect
San Diego, CA	January 16-18, 2008	TSS

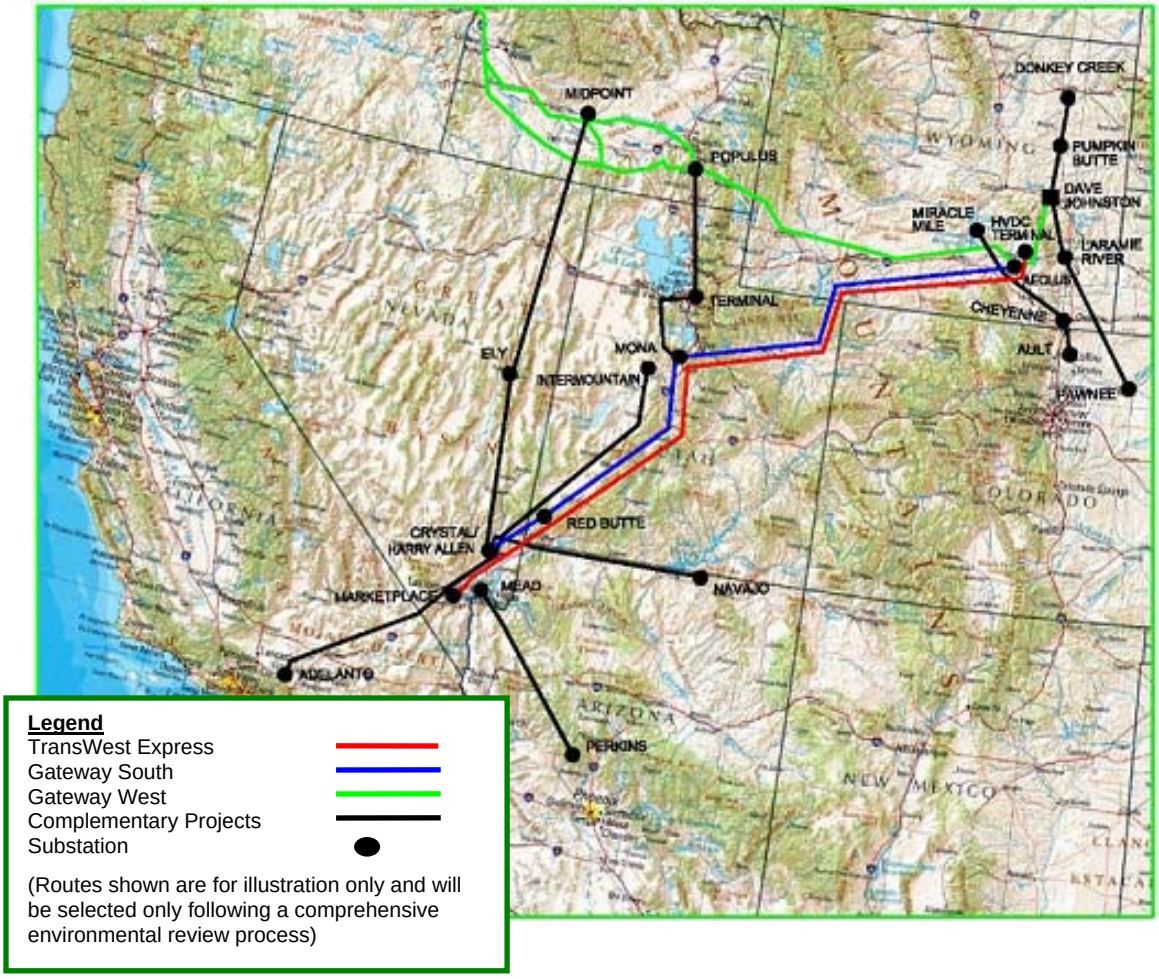
NTTG established Cost Allocation Principles and a process to allocate project cost on a preliminary basis during the RPP in an open and transparent method. Cost Allocation is of particular interest for GS as the transmission line crosses multiple states and jurisdictions.

The Partners reviewed the relationship of GS to other projects within the WECC RPPR and Rating processes. Table 3 provides a list of the complementary projects to GS. These projects are complementary because they will help strengthen the Western Interconnection by providing increased capacity into and out of the same transmission 'hubs' as GS. Figure 2 provides a graphical representation of the complementary projects to both GS and TWE. The Partners have established good working relationships with the sponsors of these complementary projects to share respective project plans, agree on the relationship of these projects with GS, and ensure development plans are generally consistent with one another. The Partners did not identify any project within the WECC process that would be competing with GS. WECC RPPR Guidelines: 2, 5, 7, 11

Table 3 Complementary Projects to Gateway South

Project	Voltage
Gateway West	2 - 500 kV
Wyoming – Colorado Inter-tie	345 kV
TOT 3 Upgrade (300 MW)	230 kV
Populus – Terminal (Path C upgrade)	345 kV
Mona – Terminal (PacifiCorp internal)	2 – 500kV
Intermountain – Adelanto (DC) Upgrade	500 kV DC
Eastern Nevada Transmission Inter-tie	500 kV
Great Basin	500 kV
TransWest Express (DC)	±500 kV DC

Figure 2 GS and TWE Complementary Transmission Projects



B. Resource Assessment

The following WECC Regional Planning Process guidelines and FERC principles are addressed in this section.

WECC Regional Planning Process guidelines discussed below include:

1. *Take multiple project needs and plans into account, including identified utilities' and non-utilities' future needs, environmental and other stakeholder interests;*
4. *Identify and show how the project improves efficient use of, or impacts existing and planned resources of the region (e.g., benefits and impacts, transmission constraint mitigation);*
9. *Review the possibility of using the existing system, upgrades or reasonable alternatives to the project to meet the need (including non-transmission alternatives where appropriate);*
10. *Indicate that the sponsor's evaluation of the project has taken into account costs and benefits of the project compared with reasonable alternatives.*

Order 890 Principles for Transmission Planning discussed below include:

C. Transparency
E. Comparability
H. Economic Planning Studies

PacifiCorp is projecting the annual peak load along the Wasatch Front in Utah will increase by more than 2500 MW by 2022. PacifiCorp is also projecting the annual peak load in southern Utah (including transmission network service customers) will increase by at least 500 MW by 2022. PacifiCorp's annual energy sales are projected to increase 40% to 50% in this timeframe. They have also set a voluntary renewable target of 8.5% of electricity sales by 2016. As stated in the Stakeholder Process section, the NTTG Sub-regional planning process involved incorporating member (including the Utah and western Wyoming utilities) Integrated Resource Plans, past studies and other regional projects. WECC RPPR Guideline: 1

PacifiCorp has identified Wyoming's exceptional wind resources as a potential source to serve Utah's growing demand. In addition to the resource needs of PacifiCorp customers, there are significant resource needs in Las Vegas and Southern California which can be partially met by the GS project. There is existing and planned additional transmission capacity (bi-directionally) between Mona (central Utah) and Crystal (southern Nevada) transmission hubs that can be served by the GS project. WECC RPPR Guideline: 1

Wyoming, ranking seventh among all states in the country for wind energy potential, could provide the means to make significant strides towards meeting Renewable Portfolio Standards in the region. Expanded transmission corridors from Wyoming would provide an electrical pipeline from a state with some of the most abundant energy resources in the US.

The primary objectives of the GS project are to:

- Provide alternatives that cost-effectively meet increasing demand and energy needs of native load customers;

- Provide options for meeting future resource integration needs, including renewables (e.g. wind, thermal);
- Improve resource diversity and reliability;
- Provide increased access for third party transmission users;
- Improve overall electric reliability in the Western Interconnection;
- Provide options for scalability;
- Take advantage of standard voltages, standard increments of capacity, and economies of scale.

The existing transmission capacity available to export from Wyoming is fully committed. These constraints led to the recommendations for transmission expansion along similar routes as GS from the Western Governors Association (WGA), the Rocky Mountain Area Transmission Study (RMATS), and the Clean and Diversified Energy Advisory Committee (CDEAC). Further evidence of the scarcity of transmission capacity came following PacifiCorp's announcement of their Energy Gateway projects, including the GS project, which spawned over 5,000 MW in point-to-point transmission service requests that cannot be accommodated with the existing transmission system. WECC RPPR Guidelines: 1, 4, 9, 10

C. Transmission Assessment

The following WECC Regional Planning Process guidelines and FERC principles are addressed in this section.

WECC Regional Planning Process guidelines discussed below include:

1. *Take multiple project needs and plans into account, including identified utilities' and non-utilities' future needs, environmental and other stakeholder interests;*
3. *Address the efficient use of transmission corridors (e.g. rights-of-ways, new projects, optimal line voltage, upgrades, etc.);*
6. *Identify transmission physical and operational constraints resulting from the project or that are removed by the project.*

Order 890 Principles for Transmission Planning discussed below include:

A. Coordination
C. Transparency
E. Comparability
H. Economic Planning Studies

The Partners performed a conceptual level technical analysis of GS and TWE to review and update prior work performed by the Partners, refine the technical aspects of the projects, develop and analyze alternative configurations of the combined projects, and evaluate opportunities through co-development. The Partners engaged Black & Veatch to assist with this review. The Conceptual Technical Report developed by Black & Veatch for the Partners is attached as Appendix 3.

The initial review of alternatives considered a wide range of potential solutions for the two projects. The general requirements for the GS project were developed as part of PacifiCorp's Energy Gateway project. These requirements include terminations in southeast Wyoming, central Utah, southwest Utah and in southeast Nevada. The nominal ratings for the northern and southern segments are 3000 MW and 800 MW,

respectively. These general parameters where combined with the parameters for TWE to develop a series of alternatives. A high level screening of alternatives determined the following:

- Utilizing 765 kV AC technology would not be economic because it would need to be de-rated below optimal capacity to meet WECC and NERC Reliability Criteria;
- HVDC technology would not be appropriate for the GS segments. The distance between the transmission hubs interconnected with GS, all less than 400 miles, are below the lower range of economic feasibility for HVDC technology;
- The use of 1500 MW building blocks provides sufficient scalability and flexibility in the development of GS. The needs for these projects may change as the projects are developed. The use of 1500 MW elements will serve to minimize environmental impacts of the projects and also provide flexibility in developing these projects over time. WECC RPPR Guidelines: 1, 3

The Partners developed twelve project alternatives to meet the combined project needs of GS and TWE. The alternatives included standalone GS and TWE projects, and combinations of projects ranging from 4500 MW to 7500 MW export out of Wyoming. The twelve scenarios were screened on a series of qualitative and quantitative metrics. Conceptual cost estimates and capacity projections were made to make quantitative comparisons between the alternatives. The cost estimates were prepared by B&V, reviewed by the Partners, and then used to assist in selecting between the alternatives. WECC RPPR Guidelines: 1, 3

The Partners evaluated from an environmental perspective several route alternatives for the projects. The general methodology to identify the corridors focused on crossing land with the least environmental sensitivity and utilizing locations where siting opportunities exist. Siting opportunities generally include designated utility corridors from adopted land management plans or areas with existing transmission lines or other energy transportation (pipeline) infrastructure. Additionally, many of the preliminary corridors follow designated utility corridors on Federal land. The approach for determining potential transmission corridors, both intrastate and interstate, was based on data from secondary sources. The resulting proposed study area and alternative corridors for further evaluation within the development of an Environmental Impact Statement is shown in the Conceptual Technical Report (Appendix 3, Figure 3-1 page 3-2). WECC RPPR Guideline: 3

Based on the analysis, the selected configuration for the GS project is a double circuit 500 kV AC transmission line between Aeolus substation in southeast Wyoming and Mona, Utah and a single circuit 500 kV transmission line between Mona, Utah, the Red Butte substation in southwest Utah, and the Crystal substation in southern Nevada. Aeolus is a new substation to be built as part of the GW project near the existing Miners substation. The analysis found that the 500 kV option provides additional capacity from Mona to southern Nevada at a lower incremental per unit cost. This additional capacity could be used to meet the additional needs of the transmission service requests that have been submitted to PacifiCorp.

The GS project will significantly increase the amount of infrastructure and transmission capacity between Wyoming and central Utah. GS will strengthen the capability and performance of the eastern portion of the Western Interconnection. Studies currently underway should demonstrate that this new path will provide approximately 3,000 MW of

capacity between Wyoming and central Utah. The northern portion of this project from Aeolus to Mona will be developed as a parallel path to the existing TOT 4A (Path 37 - Eastern – Southern Wyoming), Bridger West (Path 19), and potentially TOT 1A (Path 30 Utah – Colorado).

The southern segment of the line between Mona, Red Butte, and Crystal substations will significantly increase the capacity between these substations. The existing two 345 kV lines between Mona and Sigurd substations will be combined with the GS 500 kV line to create a new 'WECC Path', to be designated 'Mona South' with a rating on the order of 2500 MW. The segment of the line between Red Butte and Crystal substations will be added to the existing TOT 2C (Red Butte-Harry Allen 345 kV) path and increase the bidirectional rating by approximately 1500 MW between southern Nevada and central Utah area. WECC RPPR Guideline: 6

The project will integrate into the GW project at the new Aeolus substation. GS along with other projects, including the Mona to Terminal, Gateway West, and Populus to Terminal projects, will significantly increase capacity into the Utah Wasatch Front. At the southern Nevada terminal, the project will connect at the Crystal substation, which is interconnected into Las Vegas and Phoenix through various 500 kV and 230 kV lines.

Some generation tripping may be required in the event of outages to portions of GS, depending upon actual schedules and directional flow during contingencies. These dynamic impacts and the generation tripping schemes will be analyzed and resolved as part of the WECC Phase 2 Rating process. WECC RPPR Guideline: 6

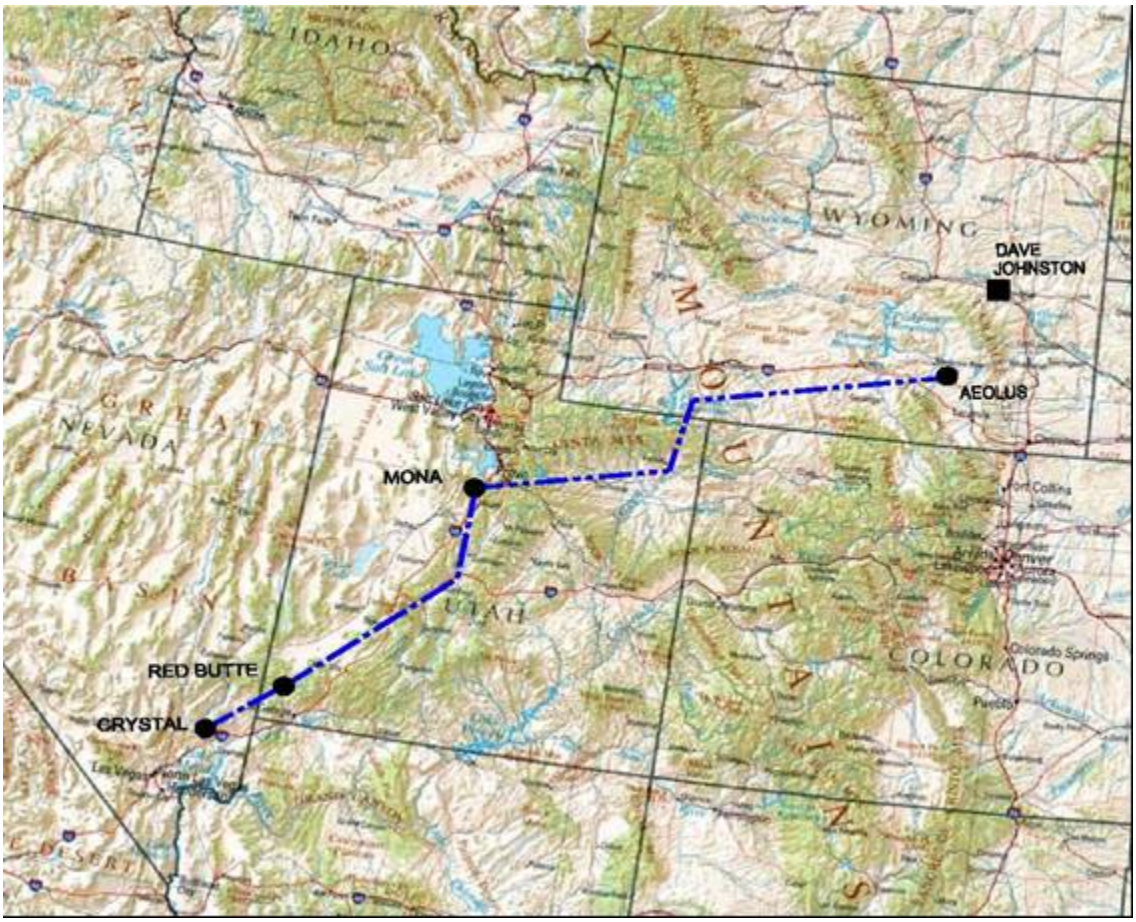
GS and the complementary TWE project are anticipated to strengthen the Western Interconnection. Through the WECC Phase 2 Rating process this performance will be evaluated.

III. Conclusion

The Partners conducted joint Regional Planning Project Reviews for Gateway South and TransWest Express projects. These reviews were supplemented with a conceptual technical review of both projects that looked into potential routes and alternative configurations. The Partners are committed to the development of these projects within an open and transparent process with all stakeholders. The scope of this conceptual review and the results were shared at the stakeholder meetings held in late 2007 and early 2008. Stakeholders provided input that helped refine the projects.

Upon completion of the RPPR, the GS project has been configured to consist of two AC transmission line segments (Figure 3). The southern segment is proposed as a single circuit 500 kV line approximately 330 miles long between the Mona substation in central Utah, Red Butte substation in southwest Utah, and Crystal substation near Las Vegas, Nevada. This line is planned to have a bidirectional rating of up to 1,500 MW with a planned in-service date of 2012. The northern segment is proposed as a 400 mile double circuit 500 kV line between a new substation Aeolus in southeastern Wyoming and the Mona substation in central Utah, with an in-service date of 2013. This line will be capable of delivering up to 3,000 MW of energy including new renewable energy resources developed in Wyoming to growing markets in Utah and the Desert Southwest.

Figure 3 Proposed Gateway South Transmission Project



(Route shown is for illustration only and will be selected only following a comprehensive review process)

Based on the analysis conducted by the Partners, the GS project and the complementary TWE project are anticipated to strengthen the Western Interconnection. The Partners have entered these projects into the WECC Project Rating Review process as independent projects. As with the RPPR, the intent is to take the projects jointly through the WECC Project Rating Review process and demonstrate this improved performance through the Phase 1 and 2 system rating studies and review.