INDEX OF APPENDICES

Appendix 1

June 25, 2007

Planning Coordinating Committee
Technical Studies Subcommittee

PacifiCorp has recently announced plans to construct several major new transmission lines in the Western Interconnection (see attached press release).

To meet the Western Electricity Coordinating Council Regional Planning requirements, PacifiCorp is initiating the WECC Regional Planning Project Review Process for the proposed 345 kV and 500 kV projects shown on the attached map. The forum that will be used for the regional planning process will be the Northern Tier Transmission Group. The next meeting of this group will be held:

July 9, 2007
1:00 p.m. to 5:00 p.m.
Sheraton Portland Airport Hotel
8235 Northeast Airport Way
Portland, OR 97220
Phone: (503) 281-2500
Fax: (503) 249-7602

If you are interested in participating in the Regional Planning Project Review Group for these projects, please fill out the attached form and return it by July 6, 2007. If you have any questions, contact Darrell Gerrard at (503) 813-6994.

Sincerely,

Jeffrey C. Miller
PCC Representative for PacifiCorp

PacifiCorp 345 kV and 500 kV Expansion
Western Electricity Coordinating Council
Regional Planning Review Group

Name: _____

Title: _____

Representing: _____

Address: _____

e-mail address: _____

Phone number: _____

□ I am interested in participating on the regional planning review group
□ I am not interested in participating on the review group but would like to be included in the e-mail correspondence
□ I will be attending the July 9th Regional Planning meeting

Please either email this form to Gayle MacKenzie (gayle.mackenzie@pacificorp.com)
or fax it to (503) 813-6893, Attention Gayle MacKenzie at PacifiCorp.

Appendix 2

257 East 200 South, Suite 330
Salt Lake City, Utah 84111
Phone: 801-328-2171 Fax 801-328-2139

September 20, 2007

Planning Coordination Committee
Technical Studies Subcommittee

Subject: WECC Regional Planning Project Review Process for TransWest Express Project

Dear PCC and TSS Members:

On August 3, 2007 Arizona Public Service (APS), PacifiCorp, the Wyoming Infrastructure Authority (WIA), and National Grid entered into a formal agreement to co-develop the TransWest Express and Gateway South Projects. National Grid is to act as lead developer, on behalf of all four entities, for both projects.

National Grid, on behalf of these four entities, is initiating the WECC Regional Planning Project Review Process for the TransWest Express Project. The reference case for this project is a bi-pole ±500 kV direct current transmission line originating in eastern Wyoming and terminating in Phoenix, AZ, with a planned in-service date of 2015. This line will be capable of delivering up to 3,000 MW of resources to growing markets in the desert southwest.

The intention is to move the TransWest Express project through the Regional Planning Project Review Process alongside the Gateway South project previously announced by PacifiCorp. The reference case for the Gateway South project is a double-circuit 500 kV transmission line originating in southwestern Wyoming and terminating in central Utah, with a minimum 345KV extension onto Crystal, Nevada. PacifiCorp initiated the WECC Regional Planning Project Review Process for this (and several other) major transmission lines on June 25, 2007. We also intend to initiate Phase 1 of the WECC Rating Process for both projects in the next two months and progress the two projects alongside one another through this phase as well.

In accordance with the WECC Regional Planning Project Review Process, National Grid, on behalf of Arizona Public Service, PacifiCorp, and Wyoming Infrastructure Authority, is soliciting interest in forming a joint Regional Planning Project Review Group for the TransWest Express and Gateway South projects. We intend to include the parties that have previously expressed interest in joining the Gateway South Review Group with the parties expressing interest in TransWest Express as a 'joint 'Regional Review Group. We intend to coordinate activities with this joint development with both the Northern Tier Transmission Group and the Southwest Area Transmission group. If your company is interested in participating in the Regional Planning Project Review Group, please contact Robert Stade using the information below by October 1, 2007.

Robert Stade
Phone: 801-328-2169
Email: robert.stade@us.ngrid.com

If you have any questions concerning the TransWest Express Project, please contact me at 801-328-2171 or Robert Stade as indicated above.

Sincerely,

David Smith, PE
PCC Representative
smith6@us.ngrid.com

cc: Kent Bolton, WECC
Darrell Gerrard, PacifiCorp
Jay Loock, WECC
Jeffrey Miller, PacifiCorp
Robert Smith, APS
Steve Waddington, WIA

Appendix 3

CONCEPTUAL TECHNICAL REPORT

Appendix 4

257 East 200 South, Suite 330
Salt Lake City, Utah 84111
Phone: 801-328-2171 Fax 801-328-2139

December 4, 2007

Regional Planning Review Group Member

Subject: WECC Regional Planning Project Review Stakeholder Meeting for TransWest Express Project and Gateway South Project

Dear Review Group Member,

Arizona Public Service (APS), PacifiCorp, the Wyoming Infrastructure Authority, and National Grid will be hosting a Regional Planning Stakeholder meeting for the TransWest Express and Gateway South projects in Phoenix, AZ, on December 5th. Provided below is telephone and Webinar connection information. Meeting materials are attached. Please find minutes from the meeting held on October 17, 2007, in Salt Lake City, Utah, at:
http://www.tops.pacificorp.com/oasis/ppw/MeetingNotices.html
https://transwest.azpsoasis.com/Reports.aspx

(November minutes will be posted shortly).

Phoenix Meeting

Location: The Black Canyon Conference Center
Ballroom
9440 N. 25th Ave.
Phoenix, AZ 85021

Date/Time Wednesday, December 5, 2007
11:00 – 2:00 MT: lunch will be provided

Participation: In person or by phone

Call- in number 1-888-330-9939
Pin Number 830641#

Webinar access:

1. Go to https://energystrategies.webex.com/energystrategies/j.php?ED=101625717&UID=0
2. Enter your name and email address.
3. Enter the meeting password: (This meeting does not require a password.)
4. Click "Join".

Please contact Kelly Francone at (801-455-2049) if you should experience any connection problems or any other matter associated with the meeting.

Appendix 5

Minutes of the TransWest Express and Gateway South RPPR Stakeholder Meeting
October 17, 2007 Salt Lake City, Utah

Attendance: 23 attendees and 17 webinar/telephone participants

I. Introductions by Terry Ray, PacifiCorp

Terry opened the meeting at 11 am MT. He discussed PacifiCorp's involvement in the projects and went through the Standards of Conduct developed by the Northern Tier Transmission Group.
[Slide 2]

Terry introduced Bob Smith from APS, and indicated Bob would go through the agenda and introduce the participants.

II. Bob Smith, Arizona Public Service

Bob expressed his appreciation for the attendees' participation and interest in the projects. Bob indicated he is the Project Manager for the TransWest Express Project (TWE) for APS and that TWE has been going on for 2 years. He noted that the October 17 meeting was the kickoff meeting for the official WECC process.

Bob acknowledged the partners in the project: PacifiCorp, National Grid (NG) and the Wyoming Infrastructure Authority (WIA), and noted that APS was honored to be partnering with them and moving forward with the projects.

Bob asked the audience to ask clarifying questions as they went through the presentation and to ask (more expansive) questions afterward. Participants in the room introduced themselves and a roll call was done on the phone. (See attendance document)
[Slide 3]

III. David Smith, National Grid

David welcomed the group and made introductions. He noted that the partners are seeking input from stakeholders and were looking forward to having a dialogue with them.
[Slide 4]

Welcome and Introductions:
APS, PacifiCorp, National Grid, and the WIA in accordance with the WECC Regional Planning Review Process, the NTTG and SWAT planning processes, and FERC Order 890, request stakeholder feedback on the TransWest Express and Gateway South projects.

David went through each company partnering the project.
[Slides 5-8]

David discussed the co-development agreement and noted that PacifiCorp approached APS as representatives of TWE about a co-development partnership and took the initial steps to look at transmission. The partnership allows the group to work with other utilities to get a scale and scope of the projects needed.

[Slides 9-10]
David discussed the regional needs and how the projects would meet those. The projects would provide a prudent, reliable system and reinforce the Wasatch Front. David indicated the AC/DC combination would provide reliability and 3rd party access to the transmission, improve resource diversity, enhance wholesale markets, and provide access to renewable energy in Wyoming.
[Slides 11-12]
David completed his presentation and asked for questions. He then introduced Peter Krzykos from APS and turned over the presentation to him.

Questions and Answers

Jim Tucker: Do you believe both projects will be built?
Dave Smith: Yes. We expect both projects to be built: 3000 MW for TransWest and 3000 MW for Gateway South. Both projects will be moved forward, although not on the same timeline.

Jim Byrne: Is the Frontier project the basis for these projects?
Dave Smith: Not specifically. These projects meet some of the same goals and provide some of the same benefits, but don't feed exclusively into California.
Bob Smith: These projects look a whole lot like Frontier.

Jim Byrne: Is there an active Frontier Project?
Dave Smith: I'm not certain what plans the group working on the project have.
Bob Smith: At the last stakeholder conference call meeting regarding Phase II of the Frontier Project, Darrell Gerard spoke a lot about PacifiCorp transmission plans. Bob said he knows of no activity regarding the Frontier Project since that call.

IV. Peter Krzykos, APS

Peter indicated he would summarize the projects and conclude with the development status. Peter addressed the need for the projects and noted that most of the population growth is in the western US, and particularly in the southwest.
[Slides 13-14]
Arizona is growing the fastest and its need for new summer generating capacity is expected to increase to 8000 MW by 2025. In the next 20 years the load and requirements to meet them almost doubles. Peter added that the state RPS requirements are set at 15% by 2025.

Peter discussed the stakeholder participation process that has occurred. He noted that prior meetings had been held already.

[Slide 15]

Peter then moved on to discuss the map and the project alternatives in the feasibility study process. Peter indicated that basically five alternatives were studied – the map depicts three of these 500 kV lines from Dave Johnston down into the Phoenix area. Peter noted the most cost effective option is the DC line from Wyoming to Arizona – but all alternatives were feasible and met the needs of the study.

[Slide 16]

Peter discussed where the project is now. It starts from Dave Johnston DC terminal and leads into Gateway West then Gateway South on to the Las Vegas line.

[Slide 17]

Peter noted the parties who have expressed interest in moving power over the project lines.

[Slide 18]

Questions and Answers

Jim Tucker: Where would terminals be located?
Peter: In Wyoming and Phoenix and maybe Las Vegas.

Jim Tucker: What is the purpose of going this direction? Are synergies the reason behind the reference case?
Peter: We have determined there are more synergies that would occur with this option.

Phone questions: Would this be a new circuit from southern Nevada to Phoenix?
Peter: This new line is a continuation of a DC line going into Phoenix and maybe Las Vegas.

Phone question: Will the line entail a conversion?
Peter: One possibility of increasing capacity from southern Nevada to Phoenix is DC conversion of the Mead-Phoenix line.

Jim Tucker: Would there be any remedial actions required from line loss from the DC line?
Peter: There will be benefits of the two lines. We're in the early stage of analysis, although we anticipate that the joint 500 kV lines should technically help each other and have less of an impact in an N-1 contingency.

Jim Tucker: What are the contingency plans for the loss of the Gateway line?
Peter: My understanding is that it includes ramping up to 50% of the power- ramping up to 750 MW if a circuit is lost.

Jim Tucker: Have you looked at a contingency for losing both AC and DC lines in a corridor?

Peter: We haven't looked at a contingency plan for that yet. It's outside the requirements of what the WECC path rating calls for.

V. Craig Quist, PacifiCorp

Craig described the Gateway South Project. He noted that PacifiCorp has identified significant load growth by 2022 – at least 2500 MWs. He said there is a load pocket by St. George which will also grow by an additional 500 MWs. In May 2007, PacifiCorp announced plans to develop $4B in transmission expansion. As part of that announcement PacifiCorp and Idaho Power announced their partnership on developing Gateway West. Gateway West would move from Dave Johnston to Captain Jack and the Mid C. Craig noted that PacifiCorp has had many point-point requests for transmission.
[Slide 19]
Craig noted that there have been several stakeholder meetings to seek input on the projects.
[Slide 20]
Craig went through the reference case. He indicated it would be necessary to reinforce the system instead of expanding Dave Johnston. The project would carry 3000 MWs.
[Slide 21]

Questions and Answers

Jim Byrne: Can you characterize the point to point requests? Are they wishes and dreams?
Craig: Yes, yes, and yes. All the requests are posted on the OASIS. Some are from PacifiCorp entities, others are from outside PacifiCorp and we can't share those publicly.

Jim Tucker: Do you expect any [AC] terminals [on the Gateway South circuits] between Dave Johnston and Mona?
Craig: Right now it's roughly a 400-mile length – we may have to build a substation. A lot of it depends on what requests we get – right now we are only studying it as point-to-point.

Jim Tucker: So you're not planning on hooking up the system midway?
Craig: Yes – yes there would be something midway. It's anticipated by the areas on the map, but the actual construction may differ slightly.

Jim Tucker: Please point out Jim Bridger. Have you looked at a single corridor for Gateway West and Gateway South?
Craig: Jim Bridger is in the Gateway West path – Gateway South does not go through Bridger.

Rick Campbell: Is there a reason you wouldn't share corridors?
Craig: Probably because of setbacks. We are going to have to string more 345 kV line through the area.

Edison Elizah: Have you had any discussion with Nevada Power regarding capacity?
Craig: Yes. Dave Smith and I visited with them to discuss the project and they have no problem with what we are looking at for capacity.

Edison Elizeh: Have you looked at Crystal to Mead?
Craig: Yes. We have recently held a meeting with SRP.

Phone: Will you be able to get power out of Crystal?
Craig: Yes, with additional work built at Crystal or a new substation.

VI. David Smith, National Grid

David discussed the potential design solutions for the two projects. David noted that with co-development of the larger project the partners can improve reliability and capacity beyond what could be achieved by the projects separately. Currently system studies are being conducted and stakeholder input sought. David noted that the partners are looking to firm up the access to the Las Vegas market, which would be ranging from 4500 MWs to 7500 MWs – exporting 3000 MWs to Gateway South and 3000 MWs for TransWest. A range of options are being looked at.
[Slide 22]
David discussed the needs assumptions for both projects: sinks and sources ***[Slide 23]***. The sinks are located in Utah, Phoenix and Las Vegas and we have included ten –year expected growth demands. Economics indicate it best to build the DC line as large as possible and fill it.

David then discussed the projects that complement both TransWest and Gateway. Energy flows from Phoenix into Southern CA. Gateway West is a very important circuit for reliability of the Wasatch Front. Expanding capacity is seen on the EOR 9300.
[Slide 25]
The timeline was reviewed. David noted that the schedule requires moving through regional planning. Two reports are forthcoming: the report to the Review group by the end of 2007 for each project. Regional planning on both projects is expected to be completed in January 2008. The partners plan to initiate the WECC Phase I Rating Process in December. The Phase I process is expected to be completed in July 2008.

David completed the presentation and asked for additional questions. He indicated meetings will be held in Cheyenne on November 7 and in Phoenix on December 5. It was noted at the end of the meeting that an Engineering Work Group representing the co-development partners had been formed and email addresses were provided for the representatives.

Arizona Public Service:
Peter Krzykos, *Supervisor of Transmission Planning,* peter.krzykos@aps.com

PacifiCorp:
Craig Quist, *Manager of Transmission Development & Planning,* craig.quist@pacificorp.com
National Grid:
David Smith, *Project Manager, Business Development,* david.smith@us.ngrid.com
Wyoming Infrastructure Authority:
Loyd Drain, *Development Director,* Loydd@WYIA.org

Questions and Answers / Stakeholder Forum

Jim Byrne: Is another consideration a DC terminal in Salt Lake?
Dave: The DC terminals are expensive – we're not focusing on DC as an economic solution because of the relatively short distance and cost.

Edison Elizeh: Why is the low capacity for southwest Utah 3,000 MW?
Dave: We are using 3000 MW for both the highest and lowest number.

Edison Elizeh: Will the AC project more likely come first?
Peter: Yes

Edison Elizeh: On your TWE project, what is the termination point in Phoenix? If I am going to Pinnacle Peak can I really put more power from Pinnacle Peak to Palo Verde?
Peter: It's [near] Pinnacle Peak. Yes. That area will be reinforced with another 500 kV line.
Bob Smith: Somewhere further north outside of the city. Improvements will have to be made to the 345 kV lines.
Peter: This will happen 20-30 miles away from Pinnacle Peak for the converter station. It's too built up in the area of Pinnacle Peak for a converter station there.

Edison Elizeh: Some other projects have been announced. It is critical for customers to have that information. It would help us to know what is happening. Those paths will come from a higher point. That will be good to know.

Marshall Empey: Will the 345 circuit for Path C be a separate process?
Craig: Yes. Preliminary studies are underway and we are hoping to form a work group. Path C cuts through Wyoming into Southern Utah. We know what it's capable of. We'll keep you informed.

Jim Byrne: Regarding the double 500 and 345 circuits, are those going from Populus to terminal?
Craig: We aren't going to bring to Northern Utah 500 kV into the terminal. A double circuit 345 will make its way to terminal. That will increase import capability by potentially 3000 to 4000 MW. The double circuit 345 is already there. We will be going south to a 500 kV line, with two double lines into Salt Lake.

Jim Byrne: Why not have a continuous double circuit into Utah?

Craig: That it is not feasible.

Jim Byrne: Will the AC line have to be phase shifted?
Craig: Yes. The AC line will have to be phase shifted.

Jim Byrne: Will the High Plains Express to the East require phase shifting?
Craig: Yes. It is in preliminary stages and if it was to get built it would [most likely] require phase shifters.

Dave Angell: Are both AC and DC lines being looked at?
Craig: Yes

Dave Angell: Will there be a terminal into Las Vegas?
Craig: Yes. We are looking at two terminals: Phoenix and Las Vegas and Wyoming to Phoenix.

David Angell: Will you operate in three-terminal mode?
Craig: That is one option.

Phone: Do you see additional improvement to support other lines? It would appear that additional reinforcements would be needed at Dave Johnston and Aeolus.
Craig: Yes. We are already looking at 230 kV circuits to be part of another network. West of Aeolus we have one 500 kV and one 230 kV in the initial plans for load service in southern WY. We will have to get into the studies. We may need a separate 230 kV for load service.

Phone: Regarding the loss of DC terminal: would you anticipate loss on that line?
Peter: Yes. Two AC lines would help with that. The two projects will complement each other in outage situations.

Dave Angell: Will both the AC and DC lines be rated north to south/southwest?
Peter: They are rated both directions.

Jim Byrne: Where is Miners compared to Aeolus? How does this connect to TOT 3?
Craig: We have one project – Black Hills – that would cut down through Dave Johnston. We are going to model sensitivities. We will look at a "with and without" scenario – don't expect much to occur between those two lines.
Edison Elizeh: Miners isn't a part of TOT 3.
Craig: Potentially the cross-over would be at Aeolus. We are doing some studies.
Jim Byrne: Developers would like to have the option of selling power onto that line in either direction.

Edison Elizeh: Will the next stakeholder meetings cover the same topics or the progress you are making?
Dave: We plan to provide a similar overview of the projects and also describe the progress being made in developing the project definition.

Regional Planning Stakeholder Meeting Attendees
October 17, 2007 Salt Lake City, Utah

Name:	**Company:**
Brian Murphy	SDG&E
Jim Byrne	West Wind Wires
Rick Cambell	UPSC
Michael Doyle	EPG
Marshall Empey	UAMPS
Kelly Francone	Energy Strategies
Justin Farr	Energy Strategies
Dave Hagen	PacifiCorp
Elaine Hughes	MYR Group
Peter Krzykos	APS
Don Mundy	Black and Veatch
Craig Quist	PacifiCorp
Andy Rawlins	Black and Veatch
Terry Ray	PacifiCorp
Bob Smith	APS
S. Sankar	Black and Veatch
Jim Tucker	DG&T
Maike Walbert	POWER Engineers
Bob Webster	Red Butte

WEB EX Attendees

Name:	**Company:**
David Angell	IPC
Ken Bagley	Genesee Consulting Group
Paul Bowman	
Stephen Brown	Colorado PUC
Paul Butler	Haddington
Vance Crocker	Black Hills Power
Jon Cummings	NWE
Loyd Drain	WIA
Eric Egge	Black Hills Power
Edison Elizeh	PacifiCorp Energy Trading
Bill Hosie	TransCanada
Amy Johnson	Columbia Grid
Kent McCarthy	Idaho Power

Charles Russell	
	Basin Electric Power
Matthew Stoltz	Coop
LouAnn	
Westerfield	Idaho PUC
	LS Power Development,
Lawrence Willick	LLC

Conference Call Attendees

Name:	**Company:**
David Angell	Idaho Power
	Genesee Consulting
Kenneth Bagley	Group
Stephen Brown	Colorado PUC
Vance Crocker	Black Hills Power
Jon Cummings	NWE
Eric Egge	Black Hills Power
	PacifiCorp Energy
Edison Elizeh	Trading
Dennis Proctor	
Bill Holiday	Trans Canada
Amy Johnson	Columbia Grid
Kent McCarthy	Idaho Power
	Basin Electric Power
Matthew Stoltz	Coop
Chuck Wates	SRP
LouAnn	
Westerfield	Idaho PUC
	LS Power Development,
Lawrence Willick	LLC

Appendix 6

Minutes of the TransWest Express and Gateway South RPPR Stakeholder Meeting
November 7, 2007 Cheyenne, Wyoming

Attendance: 53 attendees, 3 webinar and 5 telephone participants

I. Introductions by Loyd Drain, Wyoming Infrastructure Authority (WIA)

Loyd opened the meeting at 11 am MT. He welcomed the participants and acknowledged Bryce Freeman from the Wyoming Office of the Consumer Advocate, and Wyoming Pipeline Authority representatives Colby Drechsel and Brian Jeffries. Loyd discussed the partners' involvement in the projects and went through the Standards of Conduct developed by the Northern Tier Transmission Group.
[Slide 2]

Loyd expressed his appreciation for the attendees' participation and interest in the projects. He acknowledged the partners in the project: PacifiCorp, National Grid (NG) and the Wyoming Infrastructure Authority (WIA).

Participants in the room introduced themselves and a roll call was done on the phone. (See attendance document)
[Slide 3]

Welcome and Introductions:
APS, PacifiCorp, National Grid, and the WIA in accordance with the WECC Regional Planning Review Process, the NTTG and SWAT planning processes, and FERC Order 890, request stakeholder feedback on the TransWest Express and Gateway South projects.
[Slide 4]

II. David Smith, National Grid

David welcomed the group and discussed the partnership and the regional planning review process. David went through each company partnering the project.

David stated that APS has been developing the TWE project for several years. Arizona is the fastest growing state, with significant load growth. David added that PacifiCorp is one of the largest transmission owners and has great load growth as well. David provided information on National Grid and the regions that the company serves. He noted that NG is now working on its first project out in the west. He recognized the WIA and its mission and that Wyoming as a state is the largest exporter of energy in the U.S.
[Slides 5-8]

David discussed the co-development agreement and the development of the project. David stated that the agreement established a partnership of the four parties. NG is the lead developer. David noted that the agreement allows for initial development to take place and that a work on several different fronts is currently being performed.
[Slide 9]

David explained that co-development of the projects allows each project to maintain its independence. The load-serving entities will address serving their loads and transmission customers will be able to get more involved in a larger scaled project.
[Slide 10]

David discussed the regional needs and how the projects would meet those. Both projects provide benefits. David indicated that the projects would provide a prudent, reliable system and reinforce the Wasatch Front, as well as provide improved access to regional resources. David indicated the two projects together with the AC/DC combination would provide improved reliability and capacity. This will allow 3rd party access to more economic transmission, improve resource diversity, enhance wholesale markets, and provide access to renewable energy in Wyoming.
[Slides 11-12]

David completed his presentation and opened the floor to questions. No questions were raised and he then introduced Peter Krzykos from APS and turned over the presentation to him.

III. Peter Krzykos, APS

Peter addressed the need for the projects and noted that most of the population growth is in the western US, and particularly in the southwest. He indicated that the TWE project has been underway for three years. Peter noted that the growth for Arizona is tremendous over the next 20 years. Over 8,000 MW will be needed by 2025 and the TWE project will help address that need.
[Slides 13-14]

Peter then discussed the stakeholder process. He indicated that several regional planning meetings have been held, beginning in November 2005. Meetings were also held in March and June of 2006. The partners have been active in regional updates with the sub-regional planning groups, WECC and SSG-WI. The technical studies for the projects have been shared with the groups.
[Slide 15]

Peter then moved on to discuss the map and the project alternatives in the feasibility study process. TWE is a 3,000 MW project, covering 2,000 circuit miles. Peter noted that it was cost-effective at $2.3 to $3.2 billion. He discussed the routes of the projects and the synergy with Gateway South regarding the Right-of-Ways.
[Slide 16]

Peter discussed the parties who have expressed interest in the TWE. Salt River Project, Tucson Electric and SCE have all expressed interest in participation. National Grid is the development manager, with WIA joining the project team. PacifiCorp is on board to co-develop the project with Gateway South.
[Slide 17]

Peter opened the floor to questions, hearing none, he then handed the meeting over to Craig Quist, From PacifiCorp.

IV. Craig Quist, PacifiCorp

Craig described the Gateway South Project being developed by PacifiCorp. It is one of two large projects being developed by the company. Craig noted that Gateway West is the second project PacifiCorp is developing. The Gateway West project starts near Dave Johnston in Eastern Wyoming. The line involves Aeolus, which is about 15 miles north of Miners, which will head west to the Jim Bridger substation then on to Populus, and then continues on over to Midpoint in Eastern Idaho. He noted that PacifiCorp is investigating a possible terminal to the Pacific NW. The Gateway West project is being co-developed by Idaho Power. Craig added that a 3,000 MW rated line will be heading west out of Wyoming and south to Aeolus. He noted that in the base case PacifiCorp is looking to add a 345 kV line out of Sigurd.

Craig noted that the Salt Lake line will be going to Mona, with a 500 MW option going to Red Butte and Crystal. Craig said that the reason the Red Butte line is needed is due to load growth in St. George, Utah. The Wasatch Front is broken up into Salt Lake, Provo and Ogden. PacifiCorp has identified significant load growth by 2022 on the Wasatch Front – at least 2,500 MW. Regarding PacifiCorp's IRP, Craig indicated PacifiCorp is projecting 8.5% of renewable energy on its system over its six-state territory. Craig added that there have been many requests from merchant and wind developers for capacity on the lines. Both PacifiCorp and Idaho Power are looking to spend $4 billion each on these two projects to keep up with load growth.
[Slide 18]

Craig noted that there have been several stakeholder meetings to seek input on the Gateway South and West projects. The transmission needs have been examined in both PacifiCorp's Integrated Resource Plan and in the Northern Tier Transmission Group (NTTG) process. Craig added that the NTTG has a meeting planned in Boise in mid November.
[Slide 19]

Craig went through the reference case. He indicated the project would carry 3,000 MW from Aeolus to Mona with two 500 MW lines that will be in service by 2014. PacifiCorp is also looking at possibly a 345 kV line from Sigurd down to Crystal. The Utah to Nevada lines will carry from 800 to 1,500 MW that will be either 345 kV or 500 kV AC. He noted that it's a big project that covers a lot of area.
[Slide 20]

Questions and Answers

Audience: What is the relationship of Aeolus to Medicine Bow?
Craig: There is a line out there called the Dave Johnston line. This will be located roughly 15 miles Northeast of Miners. The line will be approximately 22 miles to the northwest of Medicine Bow, basically to the north of Highlands.

Audience: Do you anticipate any generation from coal-to-liquids resources for this project?
Craig: Yes. In fact, right now PacifiCorp is working on a coal-to-liquids project and is in discussion with the WIA; that technology is definitely on the horizon.

Audience: What is the in-service date of Gateway West?
Craig: It is early 2013 – one year ahead of the Gateway South.

Audience: Are you saying the line from Mona to Sigurd will interconnect? And will this line be able to handle the capacity?
Craig: Yes. Right now from Mona to Sigurd there is enough capacity to handle that additional transfer. If more power is needed we'll determine the need of extra 500 MW lines based on requests and needs.

Craig handed the meeting back over to David.

V. David Smith, National Grid

David discussed the potential design solutions for the two projects. Currently system studies are being conducted and stakeholder input sought. David noted that the partners are looking to firm up the capacity to the Las Vegas market. Configurations under study include from 4,500 MW to 7,500 MW export out of Wyoming. These represent plus and minus 1500MW solutions from the 3,000 MW Gateway South and 3,000 MW TransWest Express reference cases.
[Slide 21]

David discussed the needs assumptions for both projects: sinks and sources. The sinks are located in Utah, Phoenix and Las Vegas and we have included ten –year expected growth demands. Economics indicate it best to build the DC line as large as possible and fill it.
[Slide 22]

David then discussed the design solutions that have been designated for the projects.
[Slide 23-24]

David reviewed the resource plan being developed to progress the projects through the transmission rating process. Based on the duration to build transmission to export Wyoming's resources is greater than the duration to develop those resources, the partners

have developed a resource plan for the express purposes of the transmission studies. This resource plan was developed utilizing input from the PacifiCorp 10 year IRP and 20 year business plan for the Gateway projects and an independent study of potential resource developments within Wyoming for the TransWest Express project. The resource plan for transmission purposes includes coal, natural gas and wind, with 6,100 MW slated for Gateway South and 3,100 MW for TransWest. The total amount of MW required at 9,200 MW.
[Slide 25]

David moved on to discuss the transmission resource bubble diagram being utilized by the engineering team.
[Slide 26]

David identified the numerous projects that are complementary with the TWE and Gateway South projects.
[Slide 27-28]

David reviewed the timeline for the projects. The partners held a Stakeholder meeting in Salt Lake in October, plus the meeting in Cheyenne, and a meeting in Phoenix is scheduled in December to discuss the development process. David indicated that the partners are in the process of finalizing applications to be filed by mid November.
[Slide 29-30]

Questions and Answers

Bill DeGraeve: Who provides the numbers for the needed resources? Regarding wind specifically, what do these numbers represent and what is going to be built in Wyoming?
David: To put it into perspective, this is our view of the collective resources that could be developed. First let me describe what we think the potential for WY resources are. From work performed for National Grid and the WIA, Black & Veatch have determined through examining physical opportunities and constraints in Wyoming that there is the potential to develop between 6 to 10 GW of coal and 14 GW of wind. We did not identify the potential of gas fired development because we don't see this limited from a physical perspective. The resources identified within this plan are not the final resources for these projects. The utilities and resource developers will be determining the ultimate levels of various resources associated with this project.

Bob Kayser: Discuss the TransWest Express line and capacity north of Dave Johnson into Powder Basin.
David: What we are doing now is analyzing where the terminal should be located. We're trying to show a representative view of the location of the terminal which may be influenced by the resource mix. We're looking to locate the DC terminal in the center of the potential resource sites. At this point we are looking at a location for the TransWest Express terminal north of Dave Johnson.

Tom Darin: Referencing Slide 25 [Resource Plan for Transmission Studies] , could you explain the hypothetical resource mix that is being projected on the WECC system – is there any way that WECC requires a blended mix to do the transmission study?
David: Yes. In general, the hypothetical look is to take a mixture of resource types that makes sense for the area of line terminations. It is in our best interests to look at the utility renewable portfolios. Our view is that if we are to invest billions of dollars in a transmission line, you would need to be improving upon on the future renewable mix.

Tom Darin: Is there any way when doing the blended mix for the transmission study to look at a second set of resources and submit an alternative wind only resource plan that would allow carbon sequestration to catch up?
David: Yes, however there are some limits in the number of options we could take into the WECC Rating process. We are already looking at several different options. We could explore this, although we believe the mix of coal, wind and gas, which basically comes down to synchronous versus non synchronous generation, is a sufficient to test for the different types of resource mixes that may ultimately be put on the line from a technical perspective.

Craig Cox: I am wondering if participating parties are working with the NREL lab, who anticipates a lot of wind.
Peter: As the chair of the renewable task force group for AZ and NM, both AZ and NM do have RPS goals and we are looking at all kinds of resources. However, wind is not exactly the best renewable resource in the Southwest as it has a very low capacity factor and will be difficult to produce much energy from a RPS perspective.
David: We are also looking at examples from the UK and other countries that have taken place over the past few years. There are some good examples to consider as we go forward that we will use as a reference points.

Gerry Stellern: How are you meeting the specific needs and requirements of the public service commissions as related to the timeline? Also what are the certificate of needs per state and what's the state commission view for transmission and resources plan?
David: There are different requirements for each utility. We are committed to meeting these requirements and are currently performing due diligence. We are looking at the NEPA process that has a purpose and need requirement, as the primary initial process and plan to initiate the various state processes once the NEPA process is underway.

Thomas Carr: Are you going to be addressing the economic analysis or is this first stage largely technical?
David: This stage of the process includes consideration of technical and economic aspects of the project. The Rating Process, which we've proposed the Resource Plan for, only considers technical aspects. We are working on the economics for the project.

Thomas Carr: Earlier analysis of the TWE showed expenditures in regards to transferring resources, along with a fuel mix of different numbers. Can you explain the route with the numbers?

Peter: The earlier study of TWE identified a mix of wind and coal resources. Moving forward we have identified various resource mixes and looked at possibilities to levelize wind.

Thomas Carr: Would you think of using the FEAST type model for a quick analysis for exporting WY resources to the southwest?
David: The economics we are looking at now are beyond the FEAST representative model. Although we can run the FEAST tool to show from a high level perspective of the resource analysis of exporting WY resources to Utah and the Desert South West.
Craig: RMATS has already run the analysis in previous work before the FEAST tool. The results from RMATS referenced the congestion problems and showed solutions to solve the resource needs. RMATS is a production cost model that was used for the calculations which goes into more depth than the FEAST tool. FEAST is a tool used for initial screening to provide a quick view of what could take place with different resource mixes and the transmission to transfer those resources.

Stephen Brown (phone): TransWest Express will have infrastructure in both Northern Tier and WestConnect, which are of two distinct sub regions. The TWE line would travel the length of the Gateway West in WY and would parallel the Gateway South project. What are the potential difficulties?
David: Actually both TransWest Express and Gateway South will span both sub regions. We have been working with SWAT/WestConnect and NTTG on the development of these projects and we are committed to work and coordinate between both groups.

Stephen Brown (phone): CO PUC has concerns that if all lines were built this would increase transfer capability and possible operational problems of having adjacent lines in parallel. He recommended peer to peer interconnection.
David: We want to coordinate the requirements of the WECC process and plan to run sensitivity cases to look at interim processes of multiple projects. Detailed technical consideration of the projects will take place in Phase II of the WECC process. We have been meeting with representatives of the Gateway West and High Plains Express projects. In general, the expansion of transmission along parallel lines, for example Gateway South and TransWest Express, improves reliability. Additional expansion along parallel routes would enhance reliability.

VI. Loyd Drain

Loyd completed the presentation and asked if there were additional questions. The group agreed to break for lunch and to pick discussion after as a stakeholder forum.

Questions and Answers / Stakeholder Forum

This discussion was started after lunch as part of the stakeholder process with David Smith opening the floor for discussion. David asked if Tom Carr to provide an overview on a project that he is working on.

Tom Carr provided an overview on the work that WIEB (Western Interstate Electric Board under the WGA) is doing with Lawrence Laboratories, National Energy Renewable Laboratory and National Energy Technology Laboratory. The group is utilizing the FEAST model that PG&E created to look at economics for the Frontier study in early 2007. Tom said they are using FEAST to look at scenarios to export resources out of WY to AZ and run comparative analysis to gas, coal, wind, versus local generation wit in the state.

- The presentation is to be posted on WIEB website by the end of the month, www.westgov.org/wieb/
- Preliminary results show hybrid wind/advanced coal generation solution is economic and feasible

Craig Quist : Were reverse ramp rates reviewed and/or gasifiers running all the time in the FEAST model?
Tom: He referenced that a coal–wind power hybrid with a fuel -production coal or syngas storage was studied and is very compatible and is technically feasible. Tom said future work is required for precise estimates.

Gerry Stellern: What about coal in Wyoming and what relationship would there be for the resource mix? More specifically, are the developers were looking at pulverized coal or gasified?
David: We have not specified they type of technology within the Resource Plan developed for further Transmission Studies.

Gerry Stellern: Have you thought much about how coal and wind will mix?
David Smith: The economic analysis will develop further the resource mix beyond are proposal to take forward for the Transmission Studies. We have initiated these studies, however final determination of the mix will not likely take place for several years. We are focusing on building the transmission line to the resources or fuels in Wyoming and let the resource

Gerry Stellern: Do you need to figure out capacity of transmission line with capacity factors
David Smith: Capacity factors are not important for the transmission studies. Line utilization, as measured by capacity factors, is a key driver in the economic analysis.

Gerry Stellern: Is there a certificate of need for the projects?
David Smith: They are not required at this stage of the projects. We are conducting due diligence on the required permits and certificates and we have identified that certificates of need may be required based on ultimate routing.

Jerry Vaninetti: As long as DC line is concerned how do you plan to operate? Will the DC line mirror the load of say Phoenix load requirements and what do you anticipate the generation to be. What level of capacity factors do you expect to operate?

David Smith: We have not worked out these operational parameters, although we would most likely have the load following function supported by gas fired generation in Wyoming. We haven't finalized this as it is dependent on the resource mix, we do anticipate operating in the 60 to 80% capacity factor range.

Kristen Janicek: When the line is built, is it expected to be incorporated into the rate base? Or how do you expect to do that? How do point-to-point transmission rates work? Will there be a pancake rate effect? Nobel has a wind project near Happy Jack which is about 10 miles NW of Cheyenne. If they were to get WAPA to transport energy to the project DC terminal near DJ, would she have to pay WAPA's tariff?
David Smith: To answer the first part of the question, we are looking into the options on how the lines will be paid for and how and at what type of rate structure the lines will be offered.

Bob Easton: Will you help me understand what is meant by over building and what does it mean for this project?
Tom Carr: He referenced the work that Dave Olsen did for the Frontier Feasibility study where 'over building' the number of wind turbines by 10 to 20% and that a resource mixture would alleviate some of the capacity factor issues.

Bob Easton: How does it not make the wind economic?
Tom Carr: It is more efficient based on the Dave Olsen report in reference to the work that was done for the Frontier study.
David Smith: The term 'overbuild' is an example of the current assumption that energy and capacity need to be offered by the same resources. In the case of a resource that is only available at roughly 40% of nameplate rating you need to look at differently and consider other options such as overbuilding which is essentially an optimization of transmission utilization. There are only a handful of days or hours in a year where of wind generation is at 100%.

Aaron Clark: Refer to slide #25 [Resource Plan slide], are these totals for the entire project?
David Smith: Yes, you can look at the total resources referenced to the columns on the right.

Aaron Clark: Looking at same slide, where is upper Green River and what is the gas source?
Craig Quist: The Upper Green River is a natural gas extraction area. Green River is north of Jonah around the Pinedale area. Note that this a hypothetical resource used for the purpose to meet WECC requirements. PacifiCorp does plan to use a natural gas resource although the site depicted here may not be at the exact location.

Aaron Clark: Has there been a ROW application filed [to build a line to this Green River site]?
David Smith: I don't know if this route has been filed as part of the Gateway West project.

Regional Planning Stakeholder Meeting Attendees
November 7, 2007 Cheyenne, Wyoming

Name:	**Company:**
Arwood, Steve	Third Planet Windpower
Boner, Rob	Converse Area New Development Organization
Byrnes, Andrew	Renewable Energy Choice
Carr, Thomas	WIEB
Clark, Aaron	WY Governor's office
Coppinger, Karen	Invenergy LLC
Cox, Craig	Interwest Energy Alliance
Darin, Tom	Western Resource Advocates
DeGraeve, Bill	True Companies
Drain, Loyd	WIA
Dreschel, Colby	WY Pipeline Authority
Easton, Bob	WAPA
Falen, Frank	Budd-Falen Law Offices
Freeman, Bryce	WY Office of Consumer Advocates
Fuller, Tom	WY Business Council
George, Walt	BLM
Gilkerson, Clay	Invenergy LLC
Goertz, Gregor	Slater Wind Energy LLC
Green, Thomas	Xcel Energy
Hickey, Clifford	Anschutz Exploration Corp
Janicek, Kristen	Noble Power
Jeffries, Brian	WY Pipeline Authority
Johnson, Brenda	WY Land Owner
Kayser, Bob	Energy Expeditors
Kennedy, Bob	WAPA
Peter Krzykos	APS
Madsen, Ed	Buffalo Energy
Martin, Lindsay	Siemens
Martinez, Holly	WIA
McGrath, Jim	Independent Developer
Miller, Bill	Anschutz Exploration Corp

Mundy, Don	Black and Veatch
Nadira, Ramon	Siemens
O'Malley, Dave	Invenergy LLC
Osborn, Scott	
Peel, Maggie	
Pierson, Alan	PBS&J
Craig Quist	PacifiCorp
Ramsay, Dillwyn	Tri-State Generation
Rogers, Jim	Ranchers Energy LLC
Schimpf, Cristen	Siemens
Scott, Mary Keating	George K. Baum Co.
Smith, David	National Grid
Stade, Robert	National Grid
Stellern, Gerry	Xcel Energy
Stumbough, Grant	Dept of Agriculture
Szot, Lisa	BP Alternative Energy
Vaninetti, Jerry	Trans Elect
Walbert, Mike	Power Engineers
Werner, Ed	WY Wind Working Group
Wold, Hollis	Wold Companies
Zabriskie, Stephen	Engineering, INC

WEB EX Attendees

Name:	**Company:**
Brown, Stephen	Colorado PUC
Farr, Justin	Energy Strategies
Francone, Kelly	Energy Strategies

Conference Call Attendees

Name:	**Company:**
Brown, Stephen	Colorado PUC
Farr, Justin	Energy Strategies
Francone, Kelly	Energy Strategies
Murphy, Brian	Sempra
Powers, Ed	National Grid

Appendix 7

Minutes of the TransWest Express and Gateway South RPPR Stakeholder Meeting
December 5, 2007 Phoenix, Arizona

Attendance: 43 attendees, 19 webinar/telephone participants

I. Welcome and Introductions by Darrell Gerrard, PacifiCorp

Darrell opened the meeting at 11 am MT. He welcomed the participants to the third stakeholder meeting for the projects being co-developed by the lead entities, Arizona Public Service (APS), National Grid, PacifiCorp and the Wyoming Infrastructure Authority (WIA). Darrell reviewed the Standards of Conduct developed by the Northern Tier Transmission Group.
[Slide 2]

Darrell noted that the agenda was a full one and that David Smith from National Grid would introduce the partners. David, Peter Krzykos, and Craig Quist were on the agenda to explain the projects.
[Slide 3]

Darrell announced that the partners are planning another session in late January for the fourth and final meeting. This meeting will not be a repeat of previous meetings; it will be focused on the engineering study results and other additional information. Darrell also announced that a generation meeting headed up by the WIA is being planned sometime in February and scheduled in Salt Lake.

Participants in the room introduced themselves and a roll call was done on the phone. (See attendance document)
[Slide 4]

II. David Smith, National Grid

David welcomed the group. He stated that there were several different purposes to the stakeholder meeting: the main purpose being to provide information to those participating so they understand what the project plans are and to also receive input from stakeholders in order provide feedback to the partners so they understand what concerns stakeholders might have. David indicated that the partners were also available by email and phone in order to have an ongoing dialogue with stakeholders to discuss any concerns or opportunities the partners may be missing with the project. David noted that the four partners working on the project are committed to an open dialogue with all stakeholders in their work in developing these projects. He thanked the attendees for participating.

David then went through the four groups partnering the project. They are four leading entities in transmission and electric utility operation working on the project. The first is APS, the largest electric utility serving customers in Arizona. They have been working

on various transmission projects and have built quite a bit of transmission infrastructure. David stated that Arizona is the fastest growing state – its load growth is four times the average growth in the US. APS is concerned with how it will meet its load growth in the future. David added that PacifiCorp is one of the largest transmission owners in the West. They serve Salt Lake City, which is the focus of the TransWest project. They also serve Wyoming, Idaho, Oregon and Washington.

David provided information on National Grid, a gas and electric utility, and an international energy delivery company with significant experience building transmission projects in different parts of the world over the last 20 years. He discussed the regions served by the company and he noted that he represented the business development group and they are looking at development opportunities in the west. He recognized the last partner, WIA. David identified Wyoming as a state that has significant natural resources for energy production. Currently, very little of that energy is exported. The WIA was formed by the government to bolster the development of transmission infrastructure in order to export some of that energy. The WIA's mission is to diversify and expand the state's economy through generation and transmission development. David indicated that the creation of WIA is in recognition of work done in the RMATs study and other studies that were done by the various states.
[Slides 5-8]

David discussed the co-development agreement the four parties reached in August 2007, which established a partnership in order to collaborate on the projects. The agreement is based on 6 to 9 months in order to look at the co-development opportunities. David said the purpose of the agreement is to hold projects together and work in the WECC and permitting forums, and meet transmission customer needs. He noted that they have filed separate ROW applications and the WECC rating processes are underway.
[Slide 9]

David indicated that the regional planning began with the work identified by RMATs and studies done to develop resources in the Rocky Mountain area. David noted the partners are looking at both reliability and capacity from Wyoming to the desert Southwest regarding the way the projects complement each other. The partners believe these projects will improve overall electric reliability; the capacity being added is significant. They also see the AC/DC combination improving reliability and capacity in the way they complement each other, much like the Pacific Intertie. David added the projects provide increased access for third party transmission users. David indicated that the scale of the project is so large it will reduce overall costs for transmission services and also provide more optionality for transmission capacity in the west. He noted it also improves regional resource diversity and that will help states meet renewable portfolio standard requirements and move other energy sources out of Wyoming.
[Slide 10]

David stated that this collaboration will meet regional needs by having a larger project, as is envisioned through the WECC and other FERC processes. The benefits of co-development include meeting regional needs, better use of transmission corridors and the

ability co-locate lines closely together to better utilize right-of-ways. David noted that in combination with the opportunity for permitting and economies of scale, the benefits all work together.
[Slides 11]

David completed his presentation and opened the floor to questions.

Dan Brickley (SRP): What is the arrangement going forward with the parties to allow other utilities to join into the participation agreement? What is the relationship with other parties?
David: Last year when APS was working directly leading the process for the TWE project, several different utilities, specifically SRP, TEP, SCE, all expressed interest in joining the TWE project. This smaller team has taken the step to move forward at this point, with the idea to open up the discussions with development agreements for the time period moving forward post this interim agreement. We are planning to get back and talk with all those parties and any other utilities in the Southwest who are interested in joining the project.

Mark Etherton (PDS Consulting): What are the possibilities of separate ROW applications being filed, or is there an advantage of joining applications together to file as one application?
David: What we have done is file two separate ROW applications, but you will see we have a common map and common corridor between them that we are looking at. We are also exploring and will most likely move forward with a single environmental impact statement. So really the application is an administrative function that we want to preserve for record of decision and take advantage of the synergies in the development of the environmental reviews.

Ted Mullikan (Terracon Consultants): What are the parameters of joining the project team?
David: The partners are looking for other utilities with an obligation to serve customers in a target area of Southern California, Arizona or the desert Southwest.

David then introduced Peter Krzykos from APS and turned over the presentation to him.

III. Peter Krzykos, APS

Peter addressed the need for the projects and noted that most of the population growth is in Arizona and Utah, and particularly in the southwest. Arizona, Nevada, and Colorado are exploding with load growth. Three and a half percent population and load growth in Arizona is way above the national level of 1%.
[Slides 12]

Peter noted that the energy consumption in Arizona is also increasing about 1 ½% a year. This almost doubles from 2010 to 2020. APS resource capacity requirements are expected to be over 8,000 MW by 2025. APS energy sales are expected to grow by 30%

by 2025. Peter added that other utilities in the area like SRP and TEP are experiencing the same kind of growth. In the next 20 years they are expecting to double the peak load to 15,000 MW with 1.8 million customers. Peter indicated that Arizona's RPS requirements demand that 15% of retail energy sales be from renewable energy sources by 2025. Peter noted that APS views the TWE as the alternative to local resource planning.
[Slide 13]

Peter then discussed the feasibility study started in 2005. They have studied five route alternatives: three of which are 500 kV alternatives, one an AC/DC hybrid alternative, and also a DC alternative by itself. They accomplish the same things -they bring about 1,500 MWs to the Phoenix area, 500 MW to Salt Lake, and 500 MW to Las Vegas and 500 MW to Palo Verde. The costs for the original feasibility study alternatives ranged from $4.5 to $5.5 billion. The economic analysis concluded that a DC or AC/DC alternative is the most economic from Wyoming to Mona and then to Phoenix and Las Vegas. It also provides flexibility and that made it possible to reduce the costs to $2.3-$3.2B. The DC alternative is very straightforward from Dave Johnston to the Phoenix area delivering 3,000 MWs.
[Slide 14]

Ken Bagley (Genesee Consulting): From slide 14 you show costs of $2.3 B to $3.2 B. What do these estimates entail and what was included in the economic analysis?
Peter: In 2005 the estimated costs were $2.6B – that included the converter and line itself.

Peter then addressed the stakeholder process. He indicated that several regional planning meetings have been held, beginning in November 2005. Meetings were also held in March of 2006 in Phoenix and June of 2006 in Wyoming. The partners have been active in regional updates with the sub-regional planning groups, TSA, WECC, SWAT and SSG-WI. The technical and economic studies for the projects have been shared with the groups and the project was well defined by the end of 2006.
[Slide 15]

Peter asked if there were any questions.

Jerry Smith (WestConnect): Regarding the feasibility and options around the DC transmission line: was the DC option looking at thermal, and are you looking at three terminals or is this a two-terminal option?
Peter: We looked at three terminal options going from Dave Johnston in Wyoming to Nevada and Phoenix. However, operationally, although it sounded like a good idea, I don't believe there are any DC projects that have three-terminal options. We have something that we are comfortable with right now.

Amanda Ormond (TOG): From a wind developer's point of view, the line you are discussing creates a super highway that can't accept additional routes along the way onto the super highway. How do you plan to allow renewables to have access to the highway?

Peter: We realize going from Wyoming to Phoenix you have to have a drop-off point and have other utility benefits. That's why we are in a very open process. As you know, I'm the chair of the Renewable Task Force that SWAT initiated to study renewables in the southwest, particularly Arizona and New Mexico, with the assignment to address these issues. The DC line is for a collection of renewable energy at the hub or start point in Wyoming. This could be viewed as a hub and spoke, with the intent to get renewables to the hub to export to the desert southwest. The superhighway can be addresses by the joint AC line, which will have collection points along the way.

Amanda Ormond (TOG): Would any part of that model allow for additional substations along the route and what are the economic benefits that will be received by the load centers in Arizona?
Peter: You can't have a drop-off every 100 miles on the DC line- it's not economical. The costs for one terminal are $235 million.

Amanda Ormond (TOG): In WECC and abiding by their standards, how much power could you drop and still be within the standards? What does the DC line do for the reliability and what happens if the DC line is out of service?

Peter: In the WECC area, there are contingencies built in. For the DC line, if it drops one pole the outage would drop 50% of the power. If the system is not very stable, generation has to be dropped.

Amanda Ormond (TOG): What if AC were built instead of DC? What is a scenario you are looking at to handle dropping either the AC or DC line?
Peter: On the AC line, if you drop one line, the power can be moved on the second line because its rating is much, much higher. You could maybe move 750 MWs.

Jeff Schlegel (SWEEP): As Arizona stakeholders there are a variety of reference cases that have been evaluated for supplying power into the metropolitan area. Many of the cases that have been studied have dropping off points in Phoenix, the surrounding metropolitan area, and Las Vegas. What are the different scenarios of the routes to Vegas versus the route to Phoenix? In these cases are you assuming a 2.5% increase in load growth? How long does that program take to achieve energy reduction and what is the efficiency gained?
Peter: Right now we have narrowed down to a DC line on the TWE. At the time of the feasibility study we had several drop-off points to Salt Lake City, Las Vegas, and the Los Angeles area all at 500 MWs, the remaining 1,500 MWs of power was going to Phoenix. The in-service date two years ago was 2012. We did share the load with SRP at that time so 3.5% growth wasn't assumed until 2012. Load growth is still expected to be 3.5%. The project is right now expected to be in service by 2015.

Peter then moved on to discuss the map and the project alternatives in the feasibility study process. The alternatives were narrowed down to a DC line– from Wyoming where the most likely resources are. It is about 40 miles north of Dave Johnston, the AC/DC terminal, then going south to PacifiCorp's ROW. Basically after Mona the line

goes south to Sigurd then diagonal to Nevada, stopping at Crystal then south to Marketplace and then to Pinnacle Peak. Peter noted that the project goes a little farther than originally studied. The DC line is 1,250 miles – the original project studied was 850-890 miles. He discussed the routes of the projects and the synergy with Gateway South regarding the ROWs.
[Slide 16]

Amanda Ormond (TOG): Earlier you said three terminals were too risky. Now are you stating that there is a possibility of a three-terminal design?
Peter: The technology is there and also there is synergy with a project also being developed with PacifiCorp. We can see the benefits are there for the AC and DC, which Craig will explain. You can see how the benefits exist with common ROWs. At the end of this presentation, Dave will summarize the benefits and you can see how these projects co-exist and work together.

Amanda Ormond (TOG): More drop-off points allow you the ability to have additional generation and load points of picking up additional power and delivering to the load center. Can you discuss the on and off ramp locations?
Peter: Keep in mind there is a lot of flexibility to gain. This is the proposed route, if you go through Crystal for instance, and the project proves to be feasible, we can stop there and not go any farther. We can do that too – we can back-schedule power to Arizona. There is still flexibility in the project. This is the most extended route and we could end up with a little different arrangement – but this is the ultimate project.

Mark Etherton (PDS Consulting): Regarding the last segment into the Phoenix area, can this last section of 500 kV line in to Phoenix be converted to AC?
Peter: Our DC route is not being converted to AC line. That is where the extra mileage comes from. The FERC visibility rule adds quite a bit of extra miles. However, again, it gives us a lot of flexibility co-existing with the PacifiCorp project.

Peter than addressed the parties who have expressed interest in the TWE. Salt River Project, Tucson Electric Power and SCE have all expressed interest in participation. National Grid is the development manager, with WIA joining the project team. PacifiCorp expressed interest in co-developing the project with Gateway South. At this point all parties remain interested and work is being done under the development agreement.
[Slide 17]

Peter opened the floor to questions.

Amanda Ormond (TOG): Is it being contemplated to build a very long line to get to generation at a great distance? Is there any other analysis taking place to look at serving load locally? Is there a parallel process looking to meet local load with resources in the same time frame to address using resources outside of Wyoming and other mechanisms to serve load with local resources?

Peter: In our ten-year plan we are looking at a lot of alternatives concerning Phoenix, however there is nothing comparable to what we are doing right now. These are our proposed alternatives bringing in energy from Wyoming to Arizona. In the past two years we have studied three alternatives, hybrids, etc, and this is ultimately the one that we prefer because of the economics and the synergies with PacifiCorp. So to answer your questions, the answer is yes, but this is our proposal right now.

Amanda Ormond (TOG): But when you say yes, what does that mean?
Peter: Yes means that in the original study plan we looked at all kind of alternatives of how to bring energy to Arizona - state-wide and southwest-wide going to California and Nevada. There are all kinds of projects going on. On a regional planning process, SWAT or WestConnect can put those all together so you understand what's going on in the Southwest.

Amanda Ormond (TOG): It's difficult to look at $3.5 billion to build a transmission line and that's a lot of money to look at bringing in energy to Arizona. Are there other projects being reviewed to serve Arizona load?
Peter: SWAT or WestConnect would probably have a good summary of all the projects going on in the Southwest so you could have an understanding of transmission development going on.

Jerry Smith made a clarification, stating that as of 12/4/07, a draft report to look at the ten-year regional plan for WestConnect was posted on the web site.

Peter then handed the meeting over to Craig Quist, From PacifiCorp.

IV. Craig Quist, PacifiCorp

Craig described the Gateway South Project being developed by PacifiCorp. PacifiCorp has some major energy needs. Craig indicated that the Salt Lake Valley is growing very rapidly north of Mona. Southern Utah in the Red Butte area is a major retirement area. Idaho Power also has some load growth. The two companies have developed a variety of scenarios for moving power across Wyoming into Idaho. The Gateway West project starts near Dave Johnston in Eastern Wyoming. There are already coal plants located there. PacifiCorp has identified future thermal resources for that area. They anticipate networks being built around the hubs to pick up wind resources. The Gateway line involves Aeolus, which is about 15 miles north of Miners, which will head west to the Jim Bridger substation in Wyoming then on to Populus, and then continue on over to Midpoint in Eastern Idaho. He noted that PacifiCorp is investigating a possible terminal to the Pacific NW to Captain Jack or Mid C. Craig added that a 3,000 MW rated line will be heading west out of Wyoming and south to Aeolus. He noted that in the base case PacifiCorp is looking to add a 345 kV line out of Sigurd for additional transfers. PacifiCorp is also looking at 500 kV options form Mona South down into Southern Nevada.

Craig noted there have been several significant queue requests on several paths. PacifiCorp has identified significant load growth by 2022 on the Wasatch Front – at least 2,500 MW. Southern Utah will grow at least 500 MWs. Regarding PacifiCorp's IRP, Craig indicated PacifiCorp is projecting 8.5% of renewable energy on its system over its six-state territory. Craig added that there have been 5,000 MWs of point-to-point requests off the system.
[Slide 18]

Craig noted that there have been eight public workshops starting in 2005 to seek input on the Gateway South and West projects. Meetings have been held in Portland, Salt Lake and Cheyenne. The transmission needs have been examined in both PacifiCorp's Integrated Resource Plan and the partners are using the NTTG process as the method of communicating technical information. Craig added that three meetings have been held with NTTG since May of 2007.
[Slide 19]

Craig went through the reference case and rating process. He indicated the project would carry 3,000 MW from Aeolus to Mona with two 500 MW lines that will be in service by 2013. PacifiCorp is also looking at possibly a 345 kV line from Sigurd down to Crystal. The Utah to Nevada lines will carry from 800 to 1,500 MW that will be either 345 kV or 500 kV AC – the in-service date is 2012.
[Slide 20]

Craig opened the floor for questions.

Amanda Ormond (TOG): With projects going into Oregon and Washington and all the talk of co-development with the parties – I'm trying to get an idea of the co-development agreement.
Craig: The co-development agreement focuses on Gateway South, which starts at Aeolus and comes south. PacifiCorp also has an agreement with Idaho Power to work with them on the Gateway West project.

Amanda Ormond (TOG): Is National Grid a partner in Gateway West?
Craig: No, they're not.

Ned Farquhar (NRDC): From slide #18, could you describe the transmission leg in to New Mexico and the Four Corners area?
Craig: We start out with the base case on initial TransWest presentations and on the following pages we look at what other potential upgrades could be made if more requests came along. One of the other upgrades that could be made, if we get enough requests, would be from Sigurd down to the Four Corners area. It really comes down to how many requests we get and who comes forward for transmissions service.

Amanda Ormond (TOG): At Four Corners, is the power flowing north to south, south to north, or is it bidirectional?

Craig: Each of the paths from Southern Utah down into Arizona and Las Vegas both paths are rated bi-directional. It just depends on what season of the year, what is going on and what the schedules are. We can control the schedules on them.

Jeff Schlegel (SWEEP): I want to ask the same question I asked earlier: do the power flow scenarios modeled look at load reduction?
Craig: All of our forecasts already take that into account.

Jeff Schlegel (SWEEP): Do these projects take into account the IRP forecast?
Craig: We have an ongoing program for saving energy that is rolled into this.

Jeff Schlegel (SWEEP): How long does that program take to achieve energy reduction and what is the efficiency gained?
Craig: We are working on including that. We'd have to go back and ask the IRP folks what their targets are to answer that question.

Craig turned the meeting back over to David Smith.

V. David Smith, National Grid

David discussed the potential design solutions for the two projects and the options being looked at. David added that the development is being coordinated through NTTG so that both projects are moving forward in a regional planning forum. This is the same format WestConnect uses so it happens in a collaborative way. David noted there is a fair amount of energy policy and resource planning happening in concert with these projects, there is also ongoing work in the resources being looking at both in Wyoming and other alternatives. This is one alternative the partners are looking at. The partners are focusing in on what solutions they see here for Wyoming and the Southwest. Currently system studies are being conducted and stakeholder input sought. David noted that these projects are a portion of the answer to the needs. There is a lot more comprehensive regional planning required for all the needs to be satisfied.

The study group is studying two 3,000 MW projects. Configurations under the study include from 4,500 MW to 7,500 MW export out of Wyoming. These represent plus and minus 1500 MW solutions from the 3,000 MW Gateway South and 3,000 MW TransWest Express reference cases. They are co-locating the super highway in the desert Southwest area. They are also looking at the optionally of a third DC terminal in the Las Vegas area for 3,000 MWs. However, David indicated that the likelihood that it will be economic to provide a third terminal solution is remote.
[Slide 21]

David discussed the needs assumptions for both projects: sinks and sources. The sinks are located in Utah, Phoenix and Las Vegas and ten –year expected growth demands have been included. These are a myriad of configurations that will best serve the growing needs.
[Slide 22]

David then discussed the design solutions that have been designated for the projects. The partners are looking at a reference case of bi-pole 500 kV circuitry – co-located with two double circuit 500 kV lines. The result is then four circuits of 1,500 MWs, which provide better reliability. David added that this is where the benefit of the additional circuits providing extra reliability is seen.
[Slide 23]

David reviewed the complementary projects in the WECC rating process. The footprint of the regional plan includes a series of projects in the eastern Wyoming area to serve the growing load in Denver. PacifiCorp is also working on circuits to expand the Salt Lake service area. There is a lot of opportunity to optimize the transmission development in Wyoming and the viable resource market there. There are also circuits being expanded between California and the Southwest and the partners are watching how these projects fit into that.
[Slide 24]

David provided an overview of the resource potential in Wyoming. Wyoming is one of the lead export states for energy in the country. Most of that is done through rail and through pipes, very little of it is done over wires. WIA is looking to expand exporting energy. WIA and National Grid have been working together for several years and have done studies to determine Wyoming's potential. Six to ten GWs of coal-fired pulverized coal has been identified. One of the major constraints in pulverized coal plant development is limited air shed. David indicated that Wyoming is the 7th largest wind potential state in the country. He reviewed the map that illustrates the wind potential in Wyoming compared to other surrounding states. Wyoming has several Class 5 areas, which lowers the price of the wind resources and provides more availability and capacity.
[Slides 25-26]

David moved on to discuss the numbers around the generation development happening in Wyoming. The WIA and National Grid are closely monitoring the development. Nearly 17,000 GWs of undedicated wind development have been identified.
[Slide 27]

David then reviewed the timeline for the projects. The next step is the WECC rating process to secure a rating to build the transmission lines. A fair amount of extensive study needs to be conducted. The partners are looking to move in to that process in January for a peer review amongst the engineering community within WECC, which will be reviewing how the circuits would interact with other circuits and impact other ratings that parties have secured. The study is looking at the fuel sources available in Wyoming – the study group has mainly focused on wind and coal, but there is almost a vast amount of gas potential in Wyoming as well. Transmission siting resources will be developed over the next several years and the partners are looking for developers to work on the transmission line and also develop resources in Wyoming to go onto the line. Coal, wind and natural gas are included in the table for both projects. Some of the drivers behind that are to improve the RPS requirements in states that have them.

[Slides 28 and 29]

Amanda Ormond (TOG): Are the numbers related to resources shown on slide #29 for study purposes?
David: These are the studies we are going to take into the transmission rating process.

Amanda Ormond (TOG): Does slide 29 necessarily represent the resource mix that what will be purchased as a generation mix?
David: We want to make it robust enough that whenever the ultimate mix is determined we won't have to go through the rating process again, so we are trying to create somewhat of a stable renewable mix here to take a look at our options.

David then addressed the bubble diagram that represents the terminals and resources in the transmission study. It shows the different locations and depiction of what has been shown in the maps.
[Slide 30]

David moved on to the status of the co-development deliverables. The partners are looking at the conceptual technical analysis to determine what the best options are regarding cost and benefits. The resource plan development and delivered energy economic analysis will be presented at the Las Vegas meeting in January. The performance criteria and corridor analysis are being looked at to determine how energy can be exported, and the regulatory plan is being developed by the four different parties.
[Slide 31]

David reviewed the WECC timeline and the review planning process through 2009. There are many variables that have to be addressed in the Phase II process. He announced the next stakeholder meeting would be held on January 23 in Las Vegas. At the end of November the parties filed a ROW permitting application to the national projects office at the Cheyenne BLM office. At the same time the parties filed an update to the filing PacifiCorp made in May for the Gateway South Project. BLM will be the lead agency and the parties have met with the officials a number of times. BLM and the partners are looking forward to moving ahead with the projects and coming up with a common impact statement. The project sponsors are working to secure a third-party consultant and also considering setting forth a regional siting protocol.
[Slides 32 and 33]

David finished the presentation by addressing the routing from the ROW applications just filed with the proposed corridors.
[Slides 34 -36]

The group broke for lunch and questions were asked in a stakeholder forum following lunch.

Questions and Answers/Stakeholder Forum

This discussion was started after lunch as part of the stakeholder process with David Smith opening the floor for discussion.
Jerry Smith (WestConnect): What analysis is being done for assumptions of TWE and Gateway South? Are they each being studied separately in accordance with WECC criteria and/or are they being studied in conjunction to see the impacts of one another?
David: We are studying each project individually. At this point we haven't done all the analytical work; we do have some qualitative analysis that was done on the AC/DC lines– we are looking at upwards of 300 MW or a 10% rating increase and we need to do more study work to confirm that. The first stage of the WECC process is to find out what the effects are of the projects individually and we are focusing on that part. Phase II, which will be starting in the summertime, is to look at the simultaneous effects and the benefits.

Jerry Smith (WestConnect): In regard to the High Plains Express and Sun Zia as projects east of the Rockies as possible projects to get power to the Desert Southwest. What of these projects are being studied in the same time frame as the TWE and Gateway South projects?
David: We haven't yet talked with the High Plains folks about co-development; these projects would complement each other and combine benefits, particularly along the eastern part of the Western Interconnect. More transmission will improve the WECC footprint. The detailed study work hasn't been done yet and will be done in the next 2-3 years.

Amanda Ormond (TOG): Can you give the big project time –line of the development of these projects?
David: The timelines for the Gateway South projects is a 2012 in-service date, 2012 for the southern portion and 2013 for the northern portion. The drivers for that are reliability and service into the Wasatch Front. The in-service date for the TWE project is 2015 and that has remained the same for the past year. We are looking at a 2-3 year time-frame for the project – we have filed separate ROW applications. We are looking at coordinating the generation projects around the same time as the transmission. We are looking for an early decision on a portion of the line. We see that as the critical path for the permitting process. They won't be directly linked in the project yet. We are spending tens of millions of dollars in these first couple of years, and then billions of dollars later on.

Rob Boner (Converse Area New Development Organization): Can you give a clarification of the resources based on possible state laws or carbon restrictions?
David: We believe coal has to be a part of an economic solution for this project as we view it today. We don't know what the value of renewable resources is, how much parties will be willing to spend on those. We also need to look at gas and see how that would levelize the costs. One of the concerns that we have is connecting 9,000 MWs of non-synchronous generation in Wyoming. That's quite a bit. We will be testing out the types of resources.

Rob Boner: Clarification on the PacifiCorp Gateway South project: could you expand on the timeline of the two project segments, along with expectations of the anticipated resource mix?
Darrell: That is an important tie between PacifiCorp and Gateway South. We have a December 2013 timeframe to tie Wyoming into Mona. The 2012 earlier date is driven by two requests for service by 2012. The Gateway project is double circuit over to Idaho and then north in 2013. What we are shooting for is 3,000 MW to Salt Lake for the regional planning path rating – the circuits have to work together. PacifiCorp's resource planning is over ten years, but we extend it. In the event those resources don't get built, we still have one half with 1,500 MW on the table. We've got a three-year window and those projects really have to come along. We may have 6,000 MW by 2012. We are building for native load. We will also have 3rd party users. Circuits can't work in isolation – they need to be fully loaded and fully constrained. What happens if coal isn't developed? We will still have 1,200 MW of wind in Wyoming either under construction or being developed. Another thing is that if the resources don't happen we have several options. We have an obligation to serve and we are bound by that. There are quite a few moving parts that have to come together. TWE fits into those moving parts.

David: To amplify on what Darrell said, it's the same for Arizona. We have different options as well.

Jerry Smith (WestConnect): Looking at slide #18, what is the dependency on leg "G" and trying to deliver 1,500 MW from Sigurd to Mona over a single path?
Craig: The area south of Mona and Sigurd has a capacity of 800 MW, so there are no lines there. There is also quite a bit of capacity - more than enough capacity that we will have a lot of options south of Sigurd.

David: What is the impact of the line?
Craig: It should be able to sustain 1,500 MW. We are going to stick with the numbers we have.

Amanda Ormond (TOG): In the Frontier Line project some of the wind advocates asked that wind be modeled alone because it was more cost effective. Has that been considered here? With concerns of coal, does it make sense to do that?
David: Yes, I'm familiar with the Frontier Project work. I believe they did a study on wind only for California and Wyoming. We will take a look at any options in getting projects developed, wind only and other resources. That's more on the backs of the folks who develop resources. I am aware that NREL and the Lawrence Berkley National Lab have been looking at all wind. I know there is study work going on in that regard. We are taking a more "what might happen" approach. As transmission developers it's hard for us to determine what resources generation developers will build.

Amanda Ormond (TOG): Referenced the WIEB study that looked at solar and wind and if there was any coordination with them.

David: We will reach out to other groups that are doing study work and evaluations to take a look at their results. We are looking for support of transmission lines. The study work is outside the transmission development itself.

Ned Farquhar (NRDC): You are permitting just for the transmission lines, not resources.

David: That's correct.

David closed the meeting and thanked the participants for attending. He announced that the next meeting would be held in January in Las Vegas and information would be forthcoming.

Regional Planning Stakeholder Meeting Attendees
December 5, 2007 Phoenix, Arizona

Name:	**Company:**
Albert, Brad	APS
Bagley, Ken	Genesee Consulting
Balser, Steven	Black and Veatch
Berdahl, Rebecca	BPA
Boner, Rob	Converse Area New Development Org.
Brazdys, Luke	Invenergy LLC
Brickley, Daniel	SRP
Butler, Richard	URS Corporation
Crane, Gary	Southwest Power Group
Drain, Loyd	WIA
Etherton, Mark	PDS Consulting
Farquhar, Ned	NRDC
Gerrard, Darrell	PacifiCorp
Hunter, Yvonne	APS
Jones, Melinda	PBS&J
Kenny, Chris	Star Group, LLC
Kondziolka, Rob	SRP
Krause, Mike	SRP
Krzykos, Peter	APS
Madsen, Earl	Buffalo Energy
Magie, Scott	Buffalo Energy
Mogel, Angela	BLM
Mullikan, Ted	Terracon Consultants, Inc
Nelson, Beth	SWEEP
Ormond, Amanda	The Ormond Group
Quist, Craig	PacifiCorp
Reiner, Steve	David Evans & Associates
Roberts, Re	ASU Tech
Sandvig, Nate	Horizon Wind
Schimpf, Cristen	Siemens
Schlegel, Jeff	SWEEP
Simpson, Randall	EPG
Smith, Bob	APS
Smith, David	National Grid
Smith, Jerry	WestConnect

Smith, Paul	APS
Stade, Robert	National Grid
Stolz, Ludie	APS
Swenson, Roger	Consultant
Van Dyne, Mark	PBS&J
Walbert, Mike	Power Engineers
Wodall, Laurie	AZ Power Plant and Siting Committee
Young, Randy	APS

WEB EX Attendees/Conference Call Participants

Name:	**Company:**
Battles, Jennella	Nevada Power Company
Berdahl, Rebecca	BPA Power SW
Brown, Stephen	Colorado PUC
Butler, Paul	Haddington
Carr, Thomas	WIEB
Coyle, Angus	BP Alternative Energy
Edwards, Alan	Northern Lights
Farr, Justin	Energy Strategies
Fife, David	Wasatch Wind
Francone, Kelly	Energy Strategies
Herndon, Paul	APS
Long, Tom	Clear Creek Power
Maddox, Edward	APS
Olson, Eric	Navigant Consulting
Powers, Ed	National Grid
Taylor, Robert	SRP
Walker, Robert	Cargill Power Markets
Wold, Hollis	Wold Companies
Young, Andrew	Horizon Wind

Appendix 8

Minutes of the TransWest Express and Gateway South RPPR Stakeholder Meeting
January 23, 2008 Las Vegas, Nevada

Attendance: 39 attendees, 15 webinar/telephone participants

I. Welcome and Introductions by Robert Smith, APS

Bob Smith opened the meeting at 11 am PT. He welcomed the participants to the fourth regional stakeholder meeting for the TransWest and Gateway South projects being co-developed by the lead entities, Arizona Public Service (APS), National Grid, PacifiCorp and the Wyoming Infrastructure Authority (WIA). Bob noted that there has been significant progress on the work being done on the conceptual study. Bob reviewed the Standards of Conduct for the meeting as developed by the Northern Tier Transmission Group.

Participants in the room introduced themselves and a roll call was done on the phone. (See attendance document)
[Slide 2]

Bob noted that significant new information would be shared and that he was very pleased with the progress being made. He reviewed the agenda and the speakers who would cover each area: David Smith, Peter Krzykos, and Craig Quist.
[Slide 3]

Bob then introduced David Smith from National Grid, and turned the meeting over to him.

II. David Smith, National Grid

David welcomed the group. He indicated that this meeting being held in Las Vegas was the fourth stakeholder meeting. He stated that there were several different purposes to the stakeholder meeting process: the main purpose being to provide information to those participating and to receive input from stakeholders to help shape the projects based on concerns or additional opportunities that hadn't been considered. Public comments also determine what next steps will be taken by the partners. David noted that the four partners working on the project are committed to an open dialogue with all stakeholders in their work in developing these projects. He thanked the attendees for participating.
[Slide 4]

David then went through the four groups partnering the project. He stated that the partners started out independently, but saw that the two projects are aligned with each other and they decided to develop them in a partnership last year. The partners are four leading entities in transmission and electric utility operation. The first is APS, the largest electric utility serving customers in Arizona. David stated that Arizona is the fastest growing state – its load growth is four times the average growth in the US. He

noted that APS started working on the TransWest Express project two years ago. PacifiCorp is one of the largest transmission owners in the West. They operate in several states, including Utah, Wyoming, Idaho, Oregon and Washington. They serve Salt Lake City, which is the focus of the Gateway South project.

David provided information on National Grid, a gas and electric utility, and an international energy delivery company with significant experience building transmission projects in different parts of the world over the last 20 years. They are based in the United Kingdom. He discussed the regions served by the company and he noted that he represented the business development group and they are looking at development opportunities in the west. He recognized the last partner, WIA. The WIA was formed three or four years ago. David identified Wyoming as a state that has significant natural resources for energy production. Currently, very little of that energy is exported via transmission lines, most of it is transported by rail and pipeline. WIA's goal is to bolster the development of transmission infrastructure in order to develop in-state generation for export. The WIA's mission is to diversify and expand the state's economy through generation and transmission development.
[Slides 5-8]

David discussed the co-development agreement the four parties reached in August 2007, which established a partnership in order to collaborate on the projects. The agreement provides a governance structure to co-develop the two projects to work on permitting and engineering functions and to allow the partners some time to develop a more complex arrangement that would be needed to move the projects forward. As TransWest Express was forming it attracted the attention of several other utilities in Arizona and California. David indicated that they made a decision a year ago to proceed with the project development among these four partners with the understanding that they would open the TransWest project to other utilities to participate. What this timeframe allows the partners to do is to develop the projects at the same time and take advantage of the synergies for both the WECC process and stakeholder outreach, which are being undertaken jointly. David noted although the process was being handled jointly, the records are being kept separate for the WECC rating process and the permitting process so that they can remain independent if one project moves ahead of the other project.
[Slide 9]

David indicated that within the governance structure there are working groups to address the specific areas. The engineering work group has representatives from the four partners and has been tasked to work on the regional planning process, evaluation of the project taking a look at a number of the alternatives, and then the process of selecting what alternatives to use to move forward. David noted that Black & Veatch has been retained to assist in that work. The conceptual report is being developed and it will be published in the near future. David stated that comments on that report would be appreciated. David said the report would include progress made to date, both technical and economic.
[Slide 10]

David asked if there were any clarifying questions. He then introduced Peter Krzykos from APS and turned the presentation over to him.

III. Peter Krzykos, APS

Peter addressed the evaluation approach and the report results. He indicated that Craig would explain the final report results. Peter stated that the planning study defined objectives and used several screening methods to determine the preferred functions: one on the transmission side, the second one on the ROWs, and the third one focused on the loads and resources. Peter added that the engineering group needed to determine a range of solutions and the technical and financial parameters. Criteria used included WECC and NERC criteria for the screening process. Peter stated that the partners used five to ten different solutions in the screening process and a high level cost analysis.

Peter addressed the planning process. He noted that the WECC Regional Planning Project Review process was initiated in 2007. This review process provides an opportunity for the sponsors to describe the project, coordinate with other proposed projects and for interested parties to make themselves known before the next step is taken. Phase I of the WECC Rating Process is the next step, which involves more technical analysis to determine the rating of the system, or defining the capacity of lines. Phase II of the Rating Process involves testing the system and measuring the impact by lines identified by other utilities. Peter noted that it's necessary to make sure all the parties are satisfied and there isn't any negative impact on other utilities. The final Phase III is the construction phase where progress is monitored against a plan established as part of the second phase.
[Slide 11]

Peter then discussed the project variables that are under review. He noted that the partners studied the combined export transfer capacity of 4500, 6000 or 7500 MW. The largest single transmission contingency in the Western Interconnect is 3,000 MW. He added that because of the WECC reliability criteria the environmental impact of the 765 kV line is significant compared to the 500 kV line. Single and double circuits were evaluated and ROW usage. The transmission interconnection end-points also have to be considered.
[Slide 12]

Peter noted that a preliminary assessment to illustrate the ROW footprint is required. The starting point is at Dave Johnston in Wyoming and the origination of TransWest Express is between Dave Johnston and Wyodak. Peter added that from Aeolus the line goes straight south down to the Flaming Gorge area and then down into the Salt Lake City hub and further south to Sigurd. That will be the northern portion of the project. The Dave Johnston area would be a single corridor route. The resources are located in Wyoming. The southern portion of the map starts at Sigurd down to Red Butte and ultimately going to the Nevada area Marketplace at Crystal and on to Las Vegas. The line goes south of Las Vegas and down into the Flagstaff area in the eastern side of the metropolitan area.

Peter asked if they were any questions. Being none, he moved on to the next section.
[Slides 13-14]

Peter then discussed the study of loads and resources as related to transmission to determine what comes first. Peter emphasized that the resources for these studies are only developed for the study itself – they aren't resources that will necessarily go on the line. He indicated that the partners decided to evaluate a 2015 high peak summer case to start the focus of the project. WECC requires developers have a base case study based on a ten-year period. Peter noted that the resources were developed from utility integrated resource plans. Renewable resource standards are also included, 15% in the case of Arizona, Peter noted, and the higher amount is being used to determine the impact wind farms and other renewable resources have on the performance of the system. Ultimately the utilities will decide within their regulatory process what resources actually get built through a stakeholder process.
[Slide 15]

Peter addressed how resources were selected for the two projects. The Dave Johnston area shows 3000 MW of coal and 200 MW of gas, with 1700 MW of wind. The natural gas is there to levelize the wind. Peter addressed the two projects individually, with Gateway (including West and South Projects) including the 6100 MW and TransWest Express having 3100 MW assigned to them. The coal is in the Dave Johnston area, wind at Aeolus, and gas at the Upper Green River.
[Slides 16 -17]

Peter then introduced Craig Quist from PacifiCorp and turned the presentation over to him.

IV. Craig Quist, PacifiCorp

Craig described both the Gateway South Project being developed by PacifiCorp and the TransWest Express project. Craig noted that through the engineering studies there was a significant amount of overlap in the evaluation study findings. The first thing determined was that it made sense to use DC lines to move the power due to the long distances. The second thing the engineering group confirmed, Craig added, was that it made sense to use AC circuits for intermediate points, as well as using double circuits. This type of technology is more economic for shorter distance delivery. Craig indicated that from PacifiCorp's standpoint, building double circuit lines with the companion project with Idaho Power makes sense. He noted that the group looked at 765 kV technology and determined that wasn't optimal. The double circuit 500 kV line makes a lot more sense because it gives a lot more flexibility and allows the partners to better utilize corridors and maximize the conductor selection.
[Slide 18]

Craig then reviewed the building blocks for the Gateway South configurations. He indicated the double circuit 500 kV line from Wyoming to the Salt Lake area was optimal. Between Aelous and Mona there are about 400 miles and a switching station between the substations may be required. There is already a line between the Mona and Sigurd so PacifiCorp would need to only add some additional line to deliver 800 MW of

power south of Mona. The 500 kV option will start at Mona and go to Red Butte and Crystal in the rating process.
[Slide 19]

Craig noted that the engineering group looked at twelve different options, including double circuits structures, a three-terminal DC line, etc, but since the technology is unproven it wouldn't be the most economic. The DC line will go from Wyoming and deliver 3,000 MW and then it will have to be determined if another line will need to be built at Marketplace. Craig addressed the TransWest Express project configuration and noted that the partners looked at several termination locations, including Phoenix, Las Vegas and Salt Lake.
[Slide 20]

Craig discussed the high points of some of the alternatives that were evaluated. The alternatives include Gateway South at both 345 and 500 kV, TransWest at both HVDC to Phoenix, and to Las Vegas, as well as several other combinations. Some of the alternatives take power to Las Vegas directly. Both double circuit and single circuit combinations were used. Gateway South HVDC lines were evaluated at both Las Vegas and Phoenix with different amounts of MW delivered.
[Slide 21]

Craig turned to the capital costs. He indicated with the help of Blank & Veatch, National Grid, PacifiCorp, and APS, the very latest capital costs were compiled. The construction costs come in at under $1 million a mile for 345 kV single circuit, about $1.4 million for 500 kV single circuit, $2.6 million for double circuit 500 kV and $1.24 million for bi-pole 500 kV HVDC. ROW, development costs, and taxes are added, plus contingency, to get a complete cost. In the end, Craig noted, the costs increased to $1.53 million a mile for 345 kV single circuit, $2.6 million for 500 kV single circuit, $3.48 million for double circuit 500 kV and $1.96 million for bi-pole 500 kV HVDC.
[Slide 22]

Craig moved on to the different cost estimates at different capacity levels for the alternative scenarios. The capacity on Gateway South to Mona is based on 3000 MW for all cases, with load at Mona assumed to be 1500 MW. Craig indicated that the Gateway South 500 kV line project cost came in at $2.89 billion. Reference case 5 to deliver 3000 MW to Mona and then 1,500 down from Mona to Crystal would be just under $6 billion.
[Slide 23]

Craig moved on to the costs per MW for the different configurations used as the basis to determine what option is the most reasonable. The very first option with 345 kV line into Crystal from Utah delivering 800 MW shows the costs are $1.41 million/MW. Craig indicated that by increasing it to 1500 MW the price per MW drops to $1.34 million, so building 500 kV line becomes more reasonable, and allows for more capacity. The engineering group evaluated all the options for both AC and DC technology. The group also looked at costs in delivered energy terms or $/MWh. This analysis will be issued in

the report, and portions of it will be available on the NTTG website when it's published and questions can be addressed at that time.
[Slide 24]

Craig asked if there were any questions.

Mel Giberson (Fernald Power Corp): Do you have the termination charges in here for all the converters?
Craig. Yes.

Mel Giberson (Fernald Power Corp): So you have so many dollars for the first mile and then added so many dollars for the other miles?
Craig: Yes. Peter do you remember how much we assumed?
Peter: We used $375 million for each converter.
Craig: So we have that at each end and then what we did for the DC was take that and add to that the costs for paying for the conductor.
Peter: And that would include all the charges for the reactors, filters and the converters. We included the Static VAR compensators in the design for the converter stations in Wyoming.

Mel Giberson (Fernald Power Corp): In the previous table showing the costs, do the line costs include the converter stations?
Peter: No, just the line costs. Everything was included in the total project costs, but in the line costs the individual pieces aren't known. Craig has a more detailed analysis – costs per mile for the transmission where the converter is included.
Craig And of course that would have adding a third terminal on a DC line that will have a big impact on what the decision will be to build.

Craig turned the meeting back to David.

V. David Smith, National Grid

David thanked Craig. He then discussed the next steps for the project. The schedule for the projects includes Gateway South to Crystal in service in 2012, and the Gateway South to Mona project date is 2013. The TransWest Express project in-service date is now 2015. David added that as they progress in the construction for TransWest it may move closer to the Gateway South project in-service date. David indicated that common activities are taking place in the start of the projects for development and permitting. He noted that co-development of the projects provides savings during the development phase, but probably not as much savings is possible in the construction phase because each project is very large on its own.
[Slide 25]

David then discussed the findings from the technical report. The costs are generally flat for the various alternatives– in the 2 cents/kWh range. The 4500 MW and 7500 MW cases increase the cost on a $/MW basis. The 500 kV solution for the southern portion

for Gateway South is more economic on a marginal basis, as Craig indicated earlier. David noted that the WECC planning process and permitting is expected to be in the $10-$30 million range. The partners will utilize a shared corridor. He added that the report also identifies how the projects receive improved rating benefits as the HVDC lines receive a higher rating. At this point it is expected there will be improved performance on both the HVDC and AC lines.
[Slide 26]

David reviewed the two reference cases. The TransWest Express project is 3000 MW, and will run about 900 miles from Wyoming to Nevada to terminate at Marketplace. The line voltage is 500 KV. This project will serve the Las Vegas, Phoenix and southern California markets.
[Slides 27 -28]

David discussed the complementary projects to Gateway South and TransWest Express that are in the WECC planning process. Currently the partners are reviewing the engineering solutions together. Several public meetings have been held in order to move forward. A common study group will be formed as part of the WECC Rating process for both projects.
[Slide 29]

David went through the complementary projects to the Gateway South and TransWest Express projects. The projects take on a regional expansion planning flavor. There are a number of projects for the Wasatch Front and a series of Eastern Wyoming projects that would provide service into Denver and beyond. He added a number of circuits are complementary to the two projects. Some of these lines will provide additional capacity into the Los Angeles and Phoenix markets.
[Slide 30]

David provided a status update on the co-development agreement. Four stakeholder meetings have been held as part of the WECC planning project review process. David indicated that a draft report will be issued in February 2008 for review. A corridor analysis has been completed for permitting, and an ROW application was filed in November 2007. The BLM will be the lead agency and the partners will be working with them on all the details.
[Slide 31]

David asked for any clarifying questions before moving on to the stakeholder forum.
[Slide 32]

The group broke for lunch and questions were asked following lunch.

Questions and Answers/Stakeholder Forum

This discussion was started after lunch as part of the stakeholder process with David Smith opening the floor for discussion.

Edison Elizah (PacifiCorp Merchant): Based on what we saw, the joint development expires in March 2008. What does that mean regarding the future of the projects?
David: We are now in discussion as to how to move forward with the agreement. We have always contemplated a second phase for the TransWest project and additional interested parties. There are ongoing discussions. We don't have the results of that discussion yet. Both projects are planning to move forward through the WECC and permitting process.

Edison Elizah (PacifiCorp Merchant): As a follow-up question, when we talk about how both projects will continue, can I get a sense from Gateway South participants as to which project we are talking about – is it the 345 or is it the 500, and what is the terminus point? I know it is initiating from Aeolus to Mona double circuit and then from Mona south – what happens if this joint development doesn't go forward after March 2008? Which project will go forward for submittal?
Craig: The plan we are going to move forward in the WECC rating process is Case 2: the double circuit 500 kV from Aeolus to Mona, and then south to Crystal, a single-circuit 500 kV line. There will be some other system enhancements done to the 345 and to the south end down at Harry Allen. That line south of Mona will also be compensated. That's the project we are moving ahead with in the WECC rating process.

Edison Elizah (PacifiCorp Merchant): So is it fair to say that the PacifiCorp transmission before it was announced had changed from 345 to 500 from Mona to Crystal?
Craig: We just believe at this stage that it makes sense based on economics. We are projecting enough transmission service requests to justify the expanded capacity at this time.

Edison Elizah (PacifiCorp Merchant): I saw there is no project identified either for TransWest or Gateway South that is considered a parallel project. Is the parallel project not something that has a direct implication to this given the Sierra Nevada part of WestConnect regional planning is putting a line from White Pine County out toward Crystal-Marketplace area? LS Power has also announced as part of the Gateway West association with Idaho Power – I consider that a parallel project. It is also my understanding is that Xcel and Public Service of New Mexico has announced a transmission project from the Rockies down to Albuquerque and down to the Phoenix area.
Craig: Yes, that's the High Plains Express. The base cases that we are putting together have been compiled under the Northern Tier Transmission Group. They have elected to put in those projects that are currently in the WECC Rating process. They do include the transmission line south of the Ely Energy Center and the transmission from the Ely Center north to Midpoint, they also include the Mid C project that goes up into the Montana area. Also included are three projects from Wyoming: one line goes from

Wyodak to Dave Johnston, Dave Johnston down to Miracle Mile and a 230 project that I believe LS Power has that goes from the Dave Johnston area south down to Colorado. There are many transmission projects being talked about, but a lot of those are just on paper. They haven't even entered Phase I or the Regional Planning Project Review process as yet.

Edison Elizah (PacifiCorp Merchant): If I understand you correctly, you will include these projects in your base case if they have been reported as entering Phase I planning?
Craig: If they are in Phase II of the regional planning process. The other question you might have been asking is "Is the system south of Mona dependent on what is happening in Nevada south of Ely and so forth?"

Edison Elizah (PacifiCorp Merchant): Yes, that would be a natural follow-up question.
Craig: We have done some sensitivity analysis with various configurations in and around the Ely Energy Center and the rating that we are seeking south of Mona will be independent of what is happening with Nevada Power or LS power north of the Ely Energy Center. If they do come in it will do nothing but enhance the performance of our project.

Edison Elizah (PacifiCorp Merchant): This question is to Bob and Peter in respect to TransWest. Do we really need a new transmission line from Marketplace to Phoenix since you want to move that power from that area back to the Phoenix area, given that we have so much of the EOR (east of river) delivery transmission?
Peter: Going to Marketplace creates numerous opportunities for people to get access to the line and that's why we have selected the Marketplace are to terminate the line. With APS, most likely we would back-schedule on the EOR delivery to the Phoenix area our portion of the power.

Edison Elizah (PacifiCorp Merchant): And you may not need that 500 kV line you are showing on the map?
Peter: That's correct.
David: In our WECC filing if we take a look at Slide 3, there is a description of the project we submitted for the WECC process and we do not have the 500 kV AC line from Marketplace to Phoenix. We did include it as one of the alternatives used to determine price. But we did not include Marketplace into the Phoenix area as part of the TransWest project.

Bill Hosie (TransCanada): I would like to make a request of the project team here to at least include in the Regional Planning Project Review report the TransCanada's two projects. We have been developing for two years a 500 kV line from Wyodak into the Power River Basin then into central Idaho, and then south to the Marketplace area. We have been developing the project for two years and we don't want to be competitive, we just want it to be noted and included in the regional planning discussion. Similarly we are developing an HVDC project that is 500 kV that runs through the Colstrip area in Montana and runs over to the Townsend area and then straight south to Idaho, and then into eastern Nevada and down to the Marketplace area. Again we have been developing

these projects and the terminal points have been identified. We would like them included in the regional planning report.
David: We will take that request to the group for consideration. I would like to clarify that the projects that we have planned to go into the report up to this point have been projects that are from subregional or WECC planning groups. We realize projects have been going on for several years and we will take it under consideration.

John Tompkins (SBP-RTS): Will the presentation today be available electronically or are there anymore paper copies available?
David: We are posting this information on the PacifiCorp and APS OASIS websites, as well as the WECC website. There may be additional hard copies still available.

Holly Wold (Whirlwind LLC): My question is related to financing the project. Where are you in respect to securing financing for the projects and what timeframe do you expect to do it in?
David: We plan to secure financing of the project through contributions from entities and utilities through the desert southwest that have obligations to serve and have that as a rate base extension of their transmission expansion plans. That's how we plan to secure financing. The timeframe is in the next year or so. Although the level of commitment is the next five years and we will be coordinating all that financing through utility mechanisms.

David closed the meeting and thanked the participants for attending on behalf of PacifiCorp, APS, National Grid and the WIA. He indicated the partners would be available after the meeting for questions and invited participants to contact the engineering group by email or phone.
[Slide 33]

Regional Planning Stakeholder Meeting Attendees
January, 23 2008 Las Vegas, Nevada

Name:	**Company:**
Battles, Jennella	Nevada Power
Breckenridge, Billye	PBS&J
Butler, Richard	URS Corporation
Cords, Robert	Terracon
Dicey, Martha	ENTRIX
Drain, Loyd	WIA
Enzi, Brad	Two Elk Generating Partners
Finn, Dennis	Wartsila NA
Giberson, Mel	Fernald Power Corp
Goodwin, Kimberly	PBS&J
Hill, Denise	Horizon Wind
Hosie, Bill	TransCanada
Johnson, Anders	BPA
Ketterl, John	GE Energy
Krzykos, Peter	APS
Lucero, Lucas	BLM
Maddox, Ed	AES Wind Generation
Madsen, Earl	Buffalo Power
Quist, Craig	PacifiCorp
Perkins, David	Rentech, Inc
Raso, Maria	ENTRIX
Rucker, Michael	Clipper Wind Power Development
Sandvig, Nate	Horizon Wind
Schimpf, Cristen	Siemens
Simpson, Randall	EPG, Inc
Smith, Bob	APS
Smith, David	National Grid
Snyder, Paul	
Stade, Robert	National Grid
Stephens, Mark	Buffalo Power
Stoltz, Matthew	Basin Electric Power Cooperative
Stuart, Andrew	Terracon
Tanner, Mark	Siemens
Tompkins, E. John	SBP-RTS
Umenhofer, Tom	ENTRIX
Wold, Holly	Whirlwind LLC

Willick, Lawrence	LS Power Development
Wood, Daniel	Utility System's Efficiencies
Zyvoloski, Daniel	Kroenke Ranches

WEB EX Attendees/Conference Call Participants

Name:	**Company:**
Berdahl, Rebecca	BPA Power SW
Boner, Rob	Boner Brothers
Bradley, Mike	Ayres Associates
Elizah, Edison	PacifiCorp Energy Trading
Farr, Justin	Energy Strategies
Francone, Kelly	Energy Strategies
Johnson, Joel	Berrendo Wind
Joyce, Jack	General Compression
Livingston, Tracy	Wasatch Wind
Mitchell, Jan	PacifiCorp
Mazer, Laurie	BP
Nerzig, Rich	Duke Energy
Olson, Eric	Navigant Consulting
Tucker, James	DG&T
Zabriskie, Stephen	Engineering, INC

Appendix 9

Regional Planning Web Site Postings

Regional planning documents, i.e., invitations, presentations and minutes, have been posted at the following web sites for stakeholder review:

APS Oasis
https://transwest.azpsoasis.com/Reports.aspx

Northern Tier Transmission Group
http://nttg.biz/site/index.php?option=com_extcalendar&Itemid=30
(See meeting dates under the Calendar)

PacifiCorp OASIS
http://www.tops.pacificorp.com/oasis/ppw/MeetingNotices.html

Western Electricity Coordinating Council
http://www.wecc.biz/index.php
(See meeting dates under the Calendar)

West Connect
http://www.westconnect.com/documents.php
(Go to Search "TransWest" for documents)