DRAFT 11/28/07

Meeting Notes

Wind Integration Forum Policy Steering Committee

Northwest Power Planning Council Central Offices
851 SW Sixth Ave, Suite 1100, Portland, OR
November 27, 2007

Attending

Steering Committee	
Tom Karier, co-chair	Northwest Power and Conservation Council (NPCC)
Steve Wright co-chair	Bonneville Power Administration
Walt Pollack, facilitator	
Jorge Carrasco	Seattle City Light
Scott Corwin	Public Power Council
Teresa Conway (phone)	PowerEx
Bill Drummond (phone)	Western Montana Electric G&T
Angus Duncan	Bonneville Environmental Foundation
David Gates (phone)	Northwestern Energy
Don Furman	PPM Energy
Greg Jergeson	Montana PSC
Jim Kempton	Idaho PUC
Jim Lobdell	Portland General Electric
Kelly Norwood	Avista Corporation
John Prescott	PNGC Power
Jane Peverett	BC Transmission Corporation
Wayman Robinette (phone)	Puget Sound Energy
John Savage	Oregon PUC
Rachel Shimshak	Renewable Northwest Project
Brian Skeahan	Cowlitz County PUD
Other Participants	
Ken Dragoon	Renewable Northwest Project
Wally Gibson	NPCC
Randy Hardy	Hardy Energy Consulting
E. Jon Kaake	Columbia Grid
Jeff King	NPCC
Doug Larson	Western Governor's Association
Shirley Lindstrom	NPCC (Idaho)
Elliot Mainzer	Bonneville Power Administration
Carol Opatrny	Opatrny Consulting
Howard Schwartz	NPCC (Washington)

Brian Silverstein	Bonneville Power Administration

Welcome and Initial Remarks

Facilitator Walt Pollack welcomed the group and reviewed the Wind Integration Action Plan implementation schedule. The Forum is chartered through April 2009 and a progress report will be prepared next summer. Co-chair Tom Karier described the forthcoming development of the Sixth Power Plan and the expected importance of state renewable resource and climate control policies in that plan. A useful objective of the plan would be to provide guidelines for the efficient integration of wind power. Co-chair Steve Wright described the proposed McNary - John Day transmission reinforcement as a model for subsequent transmission development. Bonneville is also developing a conditional firm transmission product and is considering participating in the Area Control Error (ACE) diversity sharing agreement.

Introductions and Initial Comments

The other Steering Committee members were introduced and offered an opportunity to comment on wind integration and related issues. Greg Jergeson noted that NorthWestern Energy is now empowered to own generating resources and is investigating the construction of gas-fired generation to augment its wind integration capability. John Prescott referred to a New York Times article describing growing resistance to wind development in Europe because of aesthetic concerns. Kelly Norwood noted that Avista is completing its Palouse transmission project which will help relieve the West of Hatwei bottleneck. Jim Lobdell announced that the last wind turbine of Phase I of PGE's Biglow Canyon project has been erected and the commercial operation of the project is expected in December. Jim Kempton noted that the Idaho Power wind integration rate case will resume in December. Don Furman reviewed the ownership status of PPM Energy, and said that the company expects to develop 2-300 MW in the Northwest over the next three years. Angus Duncan announced that Phases I and II of the White Creek project were commissioned this month and that the project owners are contemplating a third phase. Jorge Carrusco noted that the Seattle City Council has adopted a policy to meet all load growth with conservation and renewables. Scott Corwin reminded the Committee to be mindful of possible impacts of wind integration on other Bonneville services. Teresa Conway described BC Hydro's energy self-sufficiency goal which is expected to require substantial development of BC wind resources. Bill Drummond noted that his organization is looking at wind post-2011 but that the existing transmission queues are clogged with dead coal plant proposals. Dave Gates remarked on the two transmission projects proposed by his company - upgrading the Colstrip 500kV lines and the MSTI project (see below) - and the effort to develop plants to provide auxiliary services.

Update on Pacific Northwest Wind Development

Jeff King reported on wind power development in the Northwest and compared the current level of development with the forecast prepared when the Wind Integration

Action Plan project was getting underway (Attachment A). Northwest wind capacity additions in 2007 are expected to be 885 MW, the largest annual addition in the history of Northwest wind development. Though confirmed additions for 2008 are few (70 MW), construction announcements over the next several months are expected to increase the 2008 figure. Participants noted that while further large additions of wind capacity are expected over the longer-term, huge additions are unlikely in the near-term because Northwest utilities are approaching near-term renewable portfolio standard targets.

The Committee requested that the forecast be updated and extending, employing information from utility IRPs and state renewable portfolio standards.

Status Report on Selected Action Plan Items and Related Issues

Action 09 - BPA commercial infrastructure financing model: Elliot Mainzer described the new BPA commercial infrastructure financing model. Working with stakeholders, BPA has developed a new policy for developing transmission lines needed primarily to interconnect new generation. The policy stipulates that if the present value of commitments for long-term (10+ years) transmission service, future beneficial uses and collateral reliability benefits are sufficient to justify the cost of a new transmission line, then BPA will finance and construct the facility. BPA is finalizing the criteria for calculating future reliability and beneficial uses.

Bonneville has developed a Network Open Season (NOS) process both to secure commitments to long-term transmission service and to address its transmission queue. The NOS will offer a Precedent Agreement (PA) to all entities in the queue who are requesting PTP or NT service across the BPA network (excluding interties). The PA will obligate the signee to take transmission service from a requested point of receipt to a requested point of delivery at a specific start date, contingent on BPA's ability to offer that transmission service at its embedded cost rate and successful completion of required NEPA work prior to construction of the facility. Entities not signing Precedent Agreements will be withdrawn from the queue.

The NOS is designed as a repeatable process that will be coordinated with other regional planning and expansion efforts. However, given the long lead times for new transmission and the urgent need for infrastructure investments, BPA regards this first open season as extremely important and expects folks to step up to support new lines, with West of McNary and the I-5 Corridor projects being prime examples. BPA is in the final stages of drafting the Precedent Agreement, trying to resolve questions about minimum contract length, fungibility and conditional firm transmission service.

BPA has discussed the NOS approach with FERC and has received positive feedback from staff and commissioners. A major outreach process with customers is beginning with the aim of running the Open Season in February-March 2008.

Action 08 - BPA Plans of Service and other regional transmission proposals: Brian Silverstein reviewed the status of the following transmission proposals (map, Attachment B):

West of McNary Generation Integration Project: The purpose of the BPA West of McNary Generation Integration Project (East-West Green lines on Attachment B) is to accommodate additional generation integration in the Boardman-McNary area. The proposal consists of a new 500kV line from McNary to John Day, plus a 500kV interconnection between Big Eddy north and the Wautoma - Ostrander 500kV line. The WECC Regional Planning Review was initiated in June 2007 and Columbia Grid is preparing the Regional Planning Project report.

I-5 Corridor Reinforcement Project: The BPA I-5 Corridor Reinforcement Project (North-South Green line on Attachment B) would relieve existing congestion and accommodate additional generation interconnection requests including wind power interconnection requests east of the Columbia River Gorge. The proposal consists of a new 500 kV line from a new substation near Castle Rock, WA to the existing Troutdale, OR substation. A plan of service has been developed and the analysis for the Regional Planning Project report is underway.

Canada - Northern California Project (CCTP): The CCTP project (purple line on Attachment B), proposed by PG&E and others would facilitate delivery of renewable resources from Canada and the Northwest to California. The proposal consists of two-circuit 500kV AC line from Selkirk BC to central Oregon with intermediate substations near Spokane and McNary. A single-circuit DC line would continue south to the Bay Area. The north to south rating would be up to 3000 MW. The WECC Regional Planning Review was initiated in August 2006 and the Regional Planning Project report was released in November 2007.

Mountain States Transmission Intertie (MSTI): The MSTI project (heavy red line on Attachment B), proposed by NorthWestern Energy would facilitate export of power from new generating facilities in Montana. The proposal consists of a single-circuit 500kV line from a new substation near Townsend, MT to the existing Midpoint or Borah substations in southern Idaho with a planned rating of 1500 MW. Deposits have been secured for about 2/3 of the capacity. A study plan has been submitted for the WECC rating process.

Gateway West, Gateway South, Idaho to Northwest projects: The Gateway West transmission project (yellow lines on Attachment B) proposed by PacifiCorp and Idaho Power Co, would improve system reliability and facilitate delivery of power from new generating resources in the Mountain States. Gateway West would include new and upgraded 230 and 500kV circuits extending from Jim Bridger, WY to Hemmingway, ID with a possible extension to Malin in south-central Oregon. The Idaho to Northwest Project would extend from Hemmingway to McNary, OR. Gateway South would extend from Dave

Johnson, WY through PacifiCorp Utah load centers to Las Vegas. The WECC Regional Planning Review process has been initiated with the Northern Tier Transmission Group.

Southern Crossing: Portland General Electric has proposed transmission reinforcements (heavy blue line on Attachment B) to provide transfer capacity from east of the Cascades to the PGE service territory and to relieve South Cross-Cascades transmission constraints. The Southern Crossing project would consist of a 500kV line between McNary and Bethel substation, (Salem vicinity) and a 500kV interconnection to the Round Butte substation in central Oregon.

In the discussion that followed, members noted that the PGE Southern Crossing project is considered complementary to the BPA West of McNary project. Others noted that construction of all of the current proposals is unlikely, rather segments here and there would be constructed as needed. Several of the proposals pass through or terminate in the vicinity of McNary leading to the possibility of a transmission hub. Possibilities such as this indicate the need for coordinated planning. It was also noted that the proposals described would comprise a network of trunk lines, costing upwards of $10 billion, but that gathering facilities would also be needed to accommodate wind development.

Action 10 - Evaluate opportunities to deliver wind energy from Montana and other isolated wind resource areas: Doug Larson of the Western Governors' Association (WGA) described the WGA's proposed Renewable Energy Zones project. This project would identify and designate Renewable Energy Zones (REZ) in the Western Interconnection based on commercial potential and cost of development. The project would then seek to develop transmission plans of service to priority REZ to facilitate development of the most cost-effective renewable resources located in the Western Interconnection. The project is organized into four phases:

- Identification of REZs in the Western Interconnection
- Identify conceptual transmission from REZs to load centers
- Identify obstacles to the development of this transmission
- Identify options for facilitating interstate coordination of transmission permitting

Committee members noted the similarity of the objectives and proposed approach of the proposed WGA REZ study to those of WIAP Action 10 and efforts underway in British Columbia to identify renewable potential (report available from BC Hydro). The BC effort will be updated to support the assessment of the economic viability of the proposed Canada - Northern California Transmission Project.

An efficient approach to accomplishing Action 10, given the extensive transmission proposals in the Northwest, may be to overlay wind resource area information on a map of proposed transmission lines and evaluate the adequacy and efficiency of the proposed lines to serve prime wind resource areas, rather than to identify and evaluate new conceptual transmission lines. Some are concerned, however that current transmission plans may not be sufficiently expansive. Mapping should include promising resources

in addition to wind, consider emerging technology and include natural gas pipelines. The WGA CDEAC project was cited as a good source of information. Members emphasized the need to evaluate the covariance of potential wind project output that could be gained by extending transmission to new resource areas. Discussion followed, concerning the general value of the Action 10 and proposed WGA REZ efforts. The group concluded that the information to be obtained, especially economic insights would make these efforts worthwhile. The value of the RMATs project was cited.

Action 04 - Partial-firm transmission tradeoff planning methodology: Jon Kaake (Columbia Grid) reported that Columbia Grid was asked by Chris Reese, when retiring from the chairmanship of NTAC, to assume this effort. Though Action 04 was originally charged to the Northwest Transmission Advisory Committee, changing roles of regional transmission planning organizations and the sponsor/project-driven focus of the WECC Regional Planning Process have made it unclear as to what organization is best suited to undertake this effort. Jon indicated that Columbia Grid would be willing undertake this task, but as a member-financed organization, providing its members agreed to support the work. Members felt that the product of Action 04 remains important and work should be continued.

Action 02 - Wind Integration Capability and Cost: Elliot Mainzer noted that additional study and analysis is underway at several regional utilities, including Grant, PGE, and Avista, but few new results are available to report at this time. As part of its rate case, Idaho Power revised its costing methodology based on stakeholder input, and reduced their numbers from the preliminary figures reported in the Action Plan. BPA has been re-evaluating its estimates as part of the wind integration rate case, focusing on scenarios with more than 3,000 MW on the BPA system. In these studies, the demand for balancing reserves (and hence costs) begins to dogleg above approximately 30% wind penetration. At this point, the variability and uncertainty of the wind resource begins to dominate the uncertainty of loads, appearing to place an increasing draw on system flexibility. BPA has not published these results, pending further modeling using the meso-scale dataset (Action 03) to ensure scaling effects are modeled correctly. High levels of wind penetration will increase the need for new operating strategies and improved forecasting capability, as well as ramp rate limitations under certain circumstances to maintain reliability. It also places increasing importance on the need to geographically diversify wind resources to smooth aggregate output.

Attendees commented that these findings emphasize the need to explore thermal sources of flexibility, a within-hour balancing product and dynamic scheduling.

Action 06 - Regulatory policy and cost recovery: John Savage reported that two commission workshops concerning transmission barriers and transmission line proposals have been held and that Northern Tier commissioners have agreed to cost allocation principals.

Action 12 - ACE diversity interchange (ADI) pilot: Carol Opatrny reviewed the status of the ADI pilot project. The pilot, hosted by BCTC went live March 31 with Idaho

Power, NorthWestern Energy and PacifiCorp participating. Testing was completed in July and the results are being evaluated by the Northwest Power Pool for application to the entire Pool. The cost of implementation was less than $100,000.

Action 13 - Expand market for flexibility products and services: Elliot Mainzer The noted that the experience of Northwestern Energy has highlighted the difficulty in purchasing balancing services for wind projects from the marketplace. Action 13 was designed to address the many barriers to establishing deeper markets for balancing services in the Northwest. Basically, there are no standardized terms and conditions for these services, the technical requirements are poorly understood, and historically, many control area operators have been opposed to introducing new sources of flexibility into their operations. As a result a task force consisting of PacifiCorp, Grant, NorthWestern, PowerEx, BCTC, PGE, Avista and BPA technical representatives have developed a new product, called Dynamic Load Following, which is designed to allow a balancing area operator to procure within-hour flexibility from another balancing area or independent power producer. The team has worked through the technical issues associated with providing the service and is in the final stages of developing a standard term sheet for the service. The team is also are ironing out a few outstanding legal and regulatory issues associated with pricing of the service. Plans are underway to develop one or two pilot transactions in early 2008. Every new market starts with a few bilateral deals, and we hope to see some active developments in 2008.

In response, members noted that transmission reinforcements, including the Northern Intertie may be needed to fully exploit Dynamic Load Following potential.

Concluding Comments

In concluding comments from Committee members, Scott Corwin urged that analyses focus on real proposals where possible. Jorge Carrasco expressed interest in linking up with the WGA proposed REZ project, considering other renewables in addition to wind and meeting at regular intervals. Angus Duncan noted the need to examine technologies to expand system flexibility. Don Furman expressed concern that the Forum is moving too slowly on actions that will reduce costs and needs to step up efforts, especially implementation of Dynamic Load Following. Rachel Shimshak seconded the concern that accomplishment of the action plan is progressing too slowly and there is a need to dedicate more staff to resolving these issues. Jim Lobdell noted that the difficult aspect of the Biglow Canyon project may not be development and construction, but rather operation, including securing the benefits of dynamic load following and sharing wind project output. John Prescott emphasized cost concerns and urged that those working on implementation of the action plan look at what others have done where possible. Jane Peverett supported the earlier comment concerning the need to explore thermal sources of flexibility, a within-hour balancing product and dynamic scheduling. Tom Karier noted the scheduled status report and meeting of the Steering Committee next summer. Steve Wright emphasized the need to find ways to keep the cost of wind power as low as possible.