

Meeting Notes

Northwest Wind Integration Forum Technical Work Group

May 10, 2007

The Technical Work Group (TWG) of the Northwest Wind Integration Forum (NWIF) met on Thursday, May 10, 2007 at the Central Offices of the Northwest Power and Conservation Council (NPCC). This was the first meeting of the TWG since release of the Northwest Wind Integration Action Plan. The purpose of this meeting was to review the status of high priority tasks and to identify leads, subcommittee members, milestones, special resource requirements and key issues needing resolution to ensure timely completion of these actions. The agenda is provided as Attachment A.

| Attending | | |
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| Clint Kalich, Avista | 509-495-4532 | clint.kalich@avistacorp.com |
| Jeff King, NPCC | 503-222-5161 | jking@nwcouncil.org |
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| Philip Augustin, PGE-T | 503-464-7783 | philip.augustin@pgn.com |
| Karl Bokenkamp, Idaho Power | 208-388-2482 | kbokenkamp@idahopower.com |
| Lon Peters, for PGP | 503-203-1539 | lpeters@pacifier.com |
| Greg Maxfield, PacifiCorp | 503-813-5801 | greg.maxfield@pacificorp.com |
| David Clement, Seattle City Light | 206-684-3564 | dave.clement@seattle.gov |
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| David Gilman, BPA-T | 360-619-6193 | dlgilman@bpa.gov |
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| Diane Lozovoy, PacifiCorp | 503-813-6045 | diane.lozovoy@pacificorp.com |
| Juergen Bermejo, BPA | 503-230-4457 | jmbermejo@bpa.gov |
| Ty C. Bettis, PGE Merchant | 503-464-7770 | ty.bettis@pgn.com |
| John Pease, BPA Technology Innovation | 503-230-3299 | jhpease@bpa.gov |
| Hugo Gil, 3TIER | 206-325-1573 | hgil@3tiergroup.com |
| Mark Jackson, BPA | 360-619-6253 | majackson@bpa.gov |
| Participating by phone | | |
| Sarah Bermejo, BPA | 503-230-3917 | skbermejo@bpa.gov |
| Kay Moxness, Central Lincoln | 541-574-2004 | kmoxness@cencoast.com |
| Rebecca Berdahl, BPA | 503-230-4502 | rmberdahl@bpa.gov |
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| National Laboratory | | |
| Howard Schwartz, NPCC-WA | 360-725-3114 | howards@ep.cted.wa.gov |
| Irena Netik, PSE | | Irena.netik@pse.com |
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| Cameron Potter, 3TIER | | cpotter@3tiergroup.com |
| Rod Noteboom, Grant PUD | 509-766-2523 | rnotebo@gcpud.org |
| Bryan Baldwin, Montana Public Service Commission | 406-444-6191 | bbaldwin@mt.gov |
| Charles Toca, for VRB Power Systems | 949-474-0511 | ctoca@utility-savings.com |
| Kyle Kohne, BPA | 360-619-3066 | krkohne@bpa.gov |

Discussion of high-priority actions of the Wind Integration Action Plan

High priority actions are those needing to be accomplished or well-underway by the end of 2007. A summary of the status of these actions is provided in Attachment B.

A01 Reassess capacity value of wind (Resource Adequacy Forum, Clint Kalich): The Adequacy Forum has established a subcommittee for the reassessment of its provisional 15% sustained capacity value for wind. Forecast and actual hourly wind project output data is being provided to the NPCC by project owners under non-disclosure agreements. A data analyst has been identified and Bonneville has agreed to provide funding for the analysis. An initial reassessment is expected to be complete in September. While the Subcommittee intends to provide a general regional capacity value, individual utilities may wish to evaluate the capacity value of wind based on their own conditions. For example, a winter peaking utility with winter-peaking wind resources may be able to justify a higher capacity value than one based on average regional conditions.

A02 Refine wind integration costs (Avista, BPA, IPC, PacifiCorp, PGE, PSE, Grant): Avista (Clint Kalich) plans on having additional work completed for the July Utility Wind Interest Group meeting and is open to discussion with anyone who is interested. Bonneville (Elliot Mainzer) has not determined when to reengage in a refinement of its integration work. A workshop on generation following rates is scheduled for June 6. Idaho Power (Karl Bokenkamp) is rerunning its 300, 600 and 900 MW cases, will add a 1200 MW case and is looking at possible asymmetries in reg-up vs reg-down costs. A workshop is proposed for June 20. PacifiCorp (Diane Lozovoy) is collecting sub-hourly output data from the Marango project and will assess regulating reserve levels. Puget (Irina Netik) is collecting output data on the Wild Horse project for review. Portland General Electric (Ty Bettis) is initiating an assessment, as is Grant PUD (Rod Noteboom).

The TWG will establish a standing subcommittee to facilitate this action. This subcommittee will review the results of the various wind integration studies, schedule regular discussions of the status and findings of the integration assessments at future

Technical Work Group meetings and prepare a white paper for the full TWG by this fall. The subcommittee will also define and facilitate the proposed effort by NREL (M. Milligan) to correlate wind and load using the dataset of Action A03. Subcommittee members are listed in Attachment B.

A03 Develop high-resolution wind data (NWIF, John Pease): In response to its 2006-07 Renewable Energy R&D RFP, Bonneville has selected a proposal by 3TIER Group and National Renewable Energy Laboratory (NREL) to develop a 10-minute interval, five elevation (10, 20, 50, 100 and 200 m), 2 km grid wind dataset for the four Northwest states. This effort will be jointly funded by Bonneville and NREL. The dataset will be developed for three historical years. Following discussion of which types of years to select, the TWG recommended 2004, 2005 and 2006. The dataset will be developed one year at a time, and will require about six months to complete once the contract is in place.

A04 Develop transmission planning methodology (NTAC, Chris Reese): Establishment of a Northwest Transmission Assessment Committee (NTAC) subcommittee to address this action will be proposed at the May 15 NTAC meeting. This subcommittee will develop principals and general guidelines, including modeling requirements, for the planning of transmission to serve wind projects. The first meeting of the subcommittee is tentatively scheduled for June.

A06 Review regulatory barriers (Commissions, Stefan Brown): The Oregon Public Utility Commission (OPUC) is leading this effort. A workshop is scheduled for Friday May 11. If merited, OPUC will organize a meeting of all WECC commissions for this fall to address regulatory barriers and their resolution.

A07 Improve use of transmission (BPA, Mark Jackson): This action will be part and parcel of Bonneville's response to FERC Order 890. Order 890 mandates that transmission providers offer a long-term conditional firm point-to-point transmission service with defined system conditions or annual number of hours during which service will be conditional. Order 890 also obligates transmission providers to evaluate the provision of redispatch from their own resources and to provide information the capability of other generators to provide redispatch services. Bonneville expects full implementation of conditional firm service to require several years. A subgroup, chaired by S. Enyeart will be established to discuss "less-than-firm" transmission service.

A08 Develop transmission plans of service (BPA, Kyle Kohne): Bonneville will present study results for West of McNary, West of John Day and I-5 corridor reinforcements at the May 15 NTAC meeting. Bonneville intends to open a regional dialog process on the I-5 reinforcements and to initiate an environmental assessment process for the West of John Day project. A supplemental EIA will be needed for the West of McNary project and a full EIS for West of John Day. Bonneville, with Puget, is investigating several options including addition of reactive capacity for North Cross-Cascades reinforcement. Puget will lead a discussion of the North Cross-Cascades reinforcement study at the May 15 NTAC meeting.

A09: Develop transmission financing model (BPA, Mark Jackson): A proposed cost allocation and financing methodology has been developed through a stakeholder process hosted by Bonneville. The proposal will be reviewed by the Transmission Issues Policy Steering Committee on May 16 and Administrator approval is expected by the end of May. Implementation is expected by the end of the year.

A12 ACE Diversity Interchange pilot (E. Mainzer): The ADI test was initiated on March 31 with PacifiCorp and Northwestern control areas participating. Idaho Power will join in May. BCTC is hosting. Evaluation will commence in May. A report on the pilot effort is scheduled for the July TWG meeting.

A13: Expand markets for flexibility (BPA, E. Mainzer): The group discussed issues associated with developing improved markets for system flexibility. These include:

- Getting operators to think of capacity as a potentially more valuable product than energy.
- Understanding the opportunity costs of dedicating hydro capacity to providing flexibility services.
- Thinking short-term sales potential as well as long-term contracts.
- Need to get out of the vertically-integrated control area thought process mold.

A brainstorming session to get this effort underway is scheduled for the July Technical Work Group meeting.

A16: Establish Wind Integration Forum (NPCC, Jeff King): The NWIF charter was adopted at the April Council meeting. The next meeting of the Steering Committee will be scheduled for the latter part of July.

Future meetings

The Technical Work Group will meet regularly on the second Thursday of alternate months. Next meetings are scheduled for July 12, September 13 and November 8. Meetings will normally be held at the NPCC offices. The meeting format will include parallel focused subcommittee sessions in the morning and review of task progress by the full committee in the afternoon.

The meeting was adjourned at 3:00 PM.

Attachment A

FINAL AGENDA

Northwest Wind Integration Forum

TECHNICAL WORK GROUP

Thursday May 10, 2007
10:00 AM - 3:00 PM

Northwest Power and Conservation Council Central Offices
851 SW Sixth Avenue, Suite 1100
Portland, Oregon 97204
1-877-848-1997 Guest Code: 319

10:00 - 10:10: Welcome, review agenda

10:10 - 12:00; 1:00 - 2:30: Review status and identify task leads, subcommittee members, schedule and special resource requirements for high priority (2007) actions:

A01 Reassess capacity value of wind - **Clint Kalich**

A02 Refine wind integration costs:

Avista - **Clint Kalich**

BPA - **Steve Barton/Bart McManus**

Idaho Power - **Karl Bokenkamp**

PacifiCorp - **Greg Maxfield for John Apperson**

Puget Sound Energy - **David Mills for Joe Hoerner**

A03 Develop high resolution dataset - **John Pease**

A04 Develop transmission planning methodology - **Chris Reese**

A06 Review regulatory barriers - **Stefan Brown**

A07 Improve use of transmission - **Mark Jackson**

A08 Develop transmission plans of service - **Kyle Kohne**

A09 Develop transmission financing model - **Mark Jackson**

A12 Report on ACE Diversity Interchange pilot project - **Elliot Mainzer**

A13 Expand market for flexibility - **Elliot Mainzer**

A16 Establish Wind Integration Forum - **Jeff King**

2:40: Open public comments

2:50: Set date and agenda for next TWG meeting

Attachment B

Summary of Northwest Wind Integration Action Plan Action Status

| Action | Lead Organization | Lead and Contact | Subcommittee Members | Status/Upcoming Work | Issues/Key Actions | Target Completion |
|---|---|--|--|--|--|---|
| A01 Reassess capacity value of wind | Resource Adequacy Forum | C. Kalich (Avista) | J. Fazio (NPCC) M. Johannis (BPA) C. Kalich J. King (NPCC) S. Melchiorri (PGE) K. Dragoon (RNP) R. Noteboom (Grant) | Adequacy Forum subcommittee established Collecting hourly wind data Analyst identified Funding secured | Complete data acquisition (King) Establish contract for data analysis (Johannis/King) July deadline for initial reassessment is optimistic | Jul 2007 (Initial) 2008 (Refinement) |
| A02 Refine wind integration costs/Estimate potential for reducing costs | Avista BPA IPC PacifiCorp PSE PGE Grant PUD | C. Kalich (Avista) S. Barton/B. McManus (BPA) K. Bokenkamp (IPC) John Apperson (PacifiCorp) Joe Hoerner (PSE) T. Bettis (PGE) D. Lozovoy (PAC) R. Noteboom (Grant) M. Milligan (NREL) B. Kirby (ORNL) | C. Kalich S. Barton/B. McManus K. Bokenkamp J. Apperson J. Hoerner/I. Netik T. Bettis B. Kirby D. Lozovoy M. Milligan K. Dragoon R. Noteboom J. Bermejo | AVA - Additional refinement late July BPA - Generation following rate workshop 6/6. IPC - Rerunning expanded assessment; workshop 6/20 PAC - Collecting data from Marengo, will assess regulating reserve levels PSE - Collecting data from Wild Horse PGE - Initiating study Grant - Initiating study | Prepare white paper for TWG in fall (Subcommittee) Define and obtain load and other needed information for proposed NREL comparison of wind output and load using A03 database when available (Subcommittee). | Continuing |
| A03 Develop high resolution dataset | BPA | J. Pease (BPA) | J. Pease M. Milligan J. King R. Pascal | BPA & NREL contract w/3TIER to develop 2km resolution, 10 min. data, 10, 20, 50, 100, 200m for 4-state PNW. 2004-06. | Complete contracting process (BPA, NREL, 3TIER). Identify ground truth sites (3TIER). | EOY 2007 |
| A04 Develop transmission planning methodology | NTAC | C. Reese (BPA) | To be organized by NTAC | | Organize subcommittee (NTAC) Kickoff meeting in June. | Sep 2007 |
| A05 Apply transmission planning methodology | NTTG Columbia Grid | | | | | Initiate by EOY 2007 |
| A06 Review regulatory barriers | OPUC | S. Brown (OPUC) | | OPUC Workshop to identify barriers (5/11) Follow-on WECC-wide commission | | End of 2007 |

| | | | | | | |
|--|------------------------|------------------|--------------------------------------|--|--|--------------------------|
| | | | | meeting this fall | | |
| A07 Improve use of transmission | BPA | M. Jackson (BPA) | S. Enyeart M. Jackson S. Brown | FERC Order 890 mandates conditional firm service and requires consideration of planning redispatch. This task will be accomplished in conjunction with BPA's response to O. 890. Full implementation of conditional firm will require several years. | Establish subgroup to discuss "less-than-firm" transmission products (S. Enyeart). | Continuing |
| A08 Develop plans of service | BPA | K. Kohne (BPA) | | W. of McNary: Prepare supplemental EIS. W. of John Day: Open stakeholder discussion; prepare EIS. I5: Open stakeholder discussion. Cross-Cascades: Continue joint studies of options All: Discuss at 5/15 NTAC. | | EOY 2008 |
| A09 Develop transmission financing model | BPA | M. Jackson (BPA) | | A cost allocation and financing methodology has been developed. This will be reviewed by Transmission Issues Policy Steering Committee on 5/16. Administrator approval is expected by end of May. Implementation is planned for this year. | | EOY 2007 |
| A10 Evaluate delivery of wind energy from Montana | NTAC | C. Reese (PSE) | | | | Jul 2008 |
| A11 Evaluate wind forecasting network | Wind Integration Forum | E. Mainzer (BPA) | | | | Jul 2008 |
| A12 Report on ACE Diversity Interchange pilot | | | | Pilot initiated 3/31 w/PAC & NEW participating. IPC will join in June. Evaluations will begin in May. | Presentation of results at July TWG meeting. | Jul 2007 (pilot results) |
| A13 - Expand market for flexibility | Wind Integration Forum | E. Mainzer (BPA) | To be organized | Bring together interested parties to define products and explore approaches to marketing. Schedule for morning of July TWG meeting. | Organize subcommittee for July TWG meeting (Mainzer) | EOY 2007 |
| A14a - Characterize flexibility augmentation options | Wind Integration Forum | | | | | EOY 2008 |
| A14b - Characterize flexibility tradeoffs | NPCC | J. King (NPCC) | | | | EOY 2008 |
| A15 Develop planning | NPCC | J. King (NPCC) | | | | 6th Power |

| framework to maximize value | | | | | | Plan |
|--------------------------------------|------|----------------|--|------------------------------------|---|------------|
| A16 Establish Wind Integration forum | NPCC | J. King (NPCC) | | Next WIF meeting proposed for July | Schedule next WIF meeting (King, Mainzer). Establish calendar of workshops on WIF website (King) | April 2007 |

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