

Wind Integration Action Plan Technical Work Group Meeting
Monday August 14, 2006

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**Wind Integration Action Plan
Technical Work Group
Initial Meeting, Aug. 14, 2006**

Summary

More than 40 representatives of Northwest utilities, state energy offices and public utility commissions, wind developers and researchers met Aug. 14 to review a draft Work Plan for the Northwest Wind Integration Action Plan.

By the end of the day, the group had:

- Confirmed the scope of the project as Idaho, Montana, Oregon and Washington.
- Confirmed the project's three-phase structure.
 - Phase I: Assess available information.
 - Phase II: Identify near-term strategies for next 36 months.
 - Phase III: Identify long-term requirements for 6,000 megawatts of wind.
- Accepted with reservations the target date of January 2007 for release of a draft Action Plan.
- Reviewed and revised all proposed tasks in the work plan.
- Established six working committees and assigned each task in the revised Work Plan to a committee or specific individuals. The committees are:
 - Wind Data and Forecasting
 - System Operators
 - Regulatory Policy and Cost Recovery
 - Wind Project Operators
 - Transmission Planning and Expansion
 - Flexibility Augmentation

The revised Work Plan will be presented for approval to the Northwest Wind Integration Action Plan Policy Steering Committee at its first meeting on Aug. 24.

The group also identified two issues to take to the Steering Committee at its first meeting:

Data sharing: Some information needed for this project is proprietary or sensitive. The group agreed that each utility will be responsible for filtering information provided to this study. Third parties acting under confidentiality agreements can remove identities and aggregate information. However, aggregation can reduce the value of information. Data, filtered or not, is needed quickly to get this project moving.

Cooperation among utilities. Utilities today operate largely as separate businesses in a competitive market. Some cost-effective solutions to flexibility problems may involve active collaboration and cooperation among utilities. The Steering

Committee will need to address the policy and structural implications of the technical solutions this group finds.

A roster of Aug. 14 attendees, the revised Work Plan and other information are posted at <http://www.nwcouncil.org/energy/Wind/Default.asp>.

Presentations and Discussion

Project introduction: Elliot Mainzer, BPA

There is an amazing level of interest in wind integration in the Northwest utility community today. This group will grapple with fundamental issues of wind integration at higher levels of penetration in the Northwest and make recommendations for action to senior executives. In the process, we'll address fundamental questions at the heart of the operation of the Northwest power system, not just individual utilities.

The Steering Committee meets Aug. 24 to formally adopt the work plan and commit resources. Walt Pollock will facilitate the Steering Committee. The draft action plan is due in January.

We must be careful to maintain Federal Energy Regulatory Commission Standards of Conduct for separation of power market and transmission functions. Notes of this meeting will be publicly posted. We will put protocols in place so that we do not violate SOC in these meetings or in committee deliberations.

Project overview: Jeff King, Northwest Power and Conservation Council

The Northwest is now in its second round of very rapid wind power development since the first commercial project came on line in 1998. Wind projects grew following the West Coast energy crisis, then diminished after the production tax credit expired. With renewal of the tax credit, interest picked up. At a minimum we expect cumulative development above 2,200 MW of installed Northwest capacity to produce about 740-760 average megawatts by the end of 2008. This is about 4 percent of installed Northwest capacity and about 2 percent of electric energy production.

We're beginning to see geographic diversity, going beyond the east end of the Columbia River Gorge, and adding projects on the High Plains, the Snake River Basin and central Washington.

Summary of issues as discussed: All

Timeframe

All agreed that this effort could take years, given the amount of data needed and difficulty of obtaining much of it. However, the reliability and some ratemaking issues are imminent. The group agreed to push to meet the January deadline for a draft Action Plan, recognizing that the effort will be iterative and some issues may need to be passed to other organizations.

Scope

There was ready agreement that Phases I and II will address plants expected to come on line within the next 36 months. Much of this is known in utilities' resource portfolios and BPA's transmission queue. The Northwest Transmission Adequacy Committee has a detailed forecast for Oregon and Washington. The group will add Montana and Idaho. California will be excluded as too broad.

Long-term assessments for Phase III tasks also will begin immediately. The long-term assessments will use low, medium and high scenarios with sensitivities for potential market, PTC effects and other variables.

Data availability

Availability of sufficient meaningful data is a major concern. The group agreed that the first step is to comb all the physical data and simulated data available, then determine where the gaps are.

One member pointed out that that the impact of 6,000 megawatts of wind is different if it's in one control area or 17. With 17 control areas, the group could wind up with lots of 10-minute data that doesn't help produce an answer, especially if the location of prospective wind plants is not known.

Several said that the methodologies other regions have developed may be applicable, particularly those on use of meteorological data. But one cautioned that looking at power operations under wind regimes alone won't provide information on other competing uses of system flexibility.

Michael Milligan at the National Renewable Energy Lab is coordinating the data gathering, and will call members of the Operators Committee to see what data each organization has. He will also work with Oregon State University.

Charlie Smith of the Utility Wind Integration Group will help prepare a summary of other areas' efforts. The group suggested that areas that may be fruitful to include are Public Service of New Mexico, CAISO, ERCOT, Excel (covers three control areas), Alberta, Denmark, Germany, Spain, IEEE summary of Minnesota work and a British summary of European studies.

Operators committee function

Mainzer explained that this involves utility operators sharing the results of their respective wind integration studies, modeling techniques and methodologies and results. Avista, PacifiCorp, Idaho Power and BPA and perhaps others have done studies. Some in the group suggested aggregate results are less important than understanding the differences and commonalities of the studies.

Some system information is confidential. Some suggested that a third-party gather information and scrub it for sensitivities. Others said presenting aggregate results might diminish the value of the information.

The group agreed that each utility will self-filter and share only what its comfortable sharing. The operators committee will present the results at the next Technical Work Group meeting with any insights on what they may want to change going forward.

Information needed for reliability v. cost allocation

Jim Caldwell of PPM said the detail needed by a system operator who worries about potential outages is different from the concern about cost allocation. The precision needed for one is not needed for the other, he suggested. He continued, “The amount of flexibility and cost you’d incur with control area services turns out to be so expensive that no one believes it and no one would do it. Wind farms will have to somehow take responsibility for the tail events, the large ramps. If we can do that, so control area operators can be comfortable, flexibility becomes an investment criterion. That’s a different paradigm from worrying about a 6,000 MW ramp that’s going to tear the system apart. No scenario is going to comfort people who are worried about major blackouts. We’ll argue forever about cost, but we have to address reliability.”

Another member said, “Engineers want to get to pennies and economists stay at 50,000 feet. While we don’t have the best data, we can understand what drives our costs. We know how to look at control areas together and individually. If we pool our information with confidentiality, we have the data we need. Then you can build the tools to address reliability and ramp rates and see if you can afford them. To understand what we have to do to solve this issue, we don’t have to have all the data.”

Current utility experiences

“It’s not fun” to be working at the top or bottom of the allowed operating range of a resource pool and not have a lot of operating flexibility to deal with wind turbines, one member said.

BPA has been looking at load variability and how much additional load following capability would be needed at different levels of installed wind. It’s found that regulation for three standard deviations would be very expensive. “That’s what you do to capture 99.5 for regulation studies – it doesn’t capture the tails. The tails are a lot bigger.” Right now, BPA’s dedicating 350 MW to regulating reserves. If it needed more reserves, it would take it out of the trading floor day-ahead or other markets. BPA’s interested in exploring how to stretch existing capability before reallocating more system capacity to regulation and load following.

One member noted that NorthWestern bought Judith Gap and found a very illiquid market for regulating reserves.

Another observed that Germany and New York have done huge studies with steering committees and political folks that were? very contentious and are taking two to three years, arguing about the data, and they're just dealing with cost allocation; reliability doesn't come into either.

Current BPA ancillary service assessment

Regulating costs are being assessed to loads because, before there was wind, all the variability was in load. BPA needs to prepare this fall for its 2008-2009 transmission rate proposal; it may consider whether to allocate some regulation costs to intermittent generation. About half the wind generation in BPA's control area goes to loads outside BPA's control area.

Potential solutions suggested

- Best forecasting practices may reduce ancillary services requirement. BPA is moving toward a preschedule protocol that updates wind forecasts and ramp rates throughout the day, so the system would only need to stand ready with capacity for hours when a ramp is likely to occur.
- Wind developers can provide part of answer. Consider whether and when turn wind turbines off or limit their ramp rate.
- A 5-minute capacity market would help. We only have a 1-hour market to participate in to protect load. We need an intermittent (?) mechanism.

Project impacts on other resources

Several members pointed out that, while wind taxes the flexibility of the system, so do other things. One noted that the wind-integration tools produced in a New York study created benefits whether or not there was any wind on the system.

Others suggested considering demand-side alternatives for regulation. One said that a tariff for variability could apply to loads as well as generation.

Several members said benefits of wind and system flexibility apply not just to operators or the utility system but to customers and society, and recommended inclusion of regulators and the regulatory perspective in the project. Others commented that the regulators had already been actively encouraged to participate, as evidenced by their inclusion on the Steering Committee.

Wind forecasting issues

Wind forecasters asked to "get power, transmission and load forecasting guys in a room to define what information we need" to produce better wind forecasts. One said he is now

working on operating requirements, including information SCADA requirements, to require for wind interconnection.

Several suggested it would be helpful to synthesize wind data at each of the wind projects for several years. One noted that load following impacts could be very location specific, especially when large projects go in small rural areas.

The capacity value of wind power

The capacity value of wind will be very important for BPA tier 2 customers when they want to buy wind to meet load growth, one member said, adding, and “Wind doesn’t show up in January when its 20 degrees below zero in Spokane.” As utilities plan for load growth, they need to plan for incremental capacity and flexibility as well as energy.

The Northwest Power Pool Resource Adequacy Forum has been discussing this and has addressed the need for capacity, a member said. Michael Milligan of UWIG has prepared a summary of wind capacity studies and credits by others.

Resource portfolio standards and the production tax credit

Several members suggested that, in the next 36 months, state RPS actions won’t have much impact, but extension of PTC could. Jeff King said that, for the long term, RPS requirements like those proposed in Washington would about double the amount of new renewables called for in the Council’s Fifth Power Plan.

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