

Tom Karier  
Chair  
Washington

Frank L. Cassidy Jr.  
"Larry"  
Washington

Jim Kempton  
Idaho

W. Bill Booth  
Idaho



Joan M. Dukes  
Vice-Chair  
Oregon

Melinda S. Eden  
Oregon

Bruce A. Measure  
Montana

Rhonda Whiting  
Montana

February 28, 2007

## MEMORANDUM

**TO:** Council

**FROM:** Jeff King

**SUBJECT:** Wind Integration Action Plan briefing

The final draft Northwest Wind Integration Action Plan (WIAP) was sent to the WIAP Steering Committee on February 26 for review and concurrence. Steering Committee members were requested to provide concurrence by March 5. Once we have concurrence, Bonneville and Council staff will revise the report as necessary, and then prepare it for printing and distribution.

Motivated by the rapid development of wind power in the Northwest, the Wind Integration Action Plan is the result of an intensive six-month collaborative effort involving a 23-member Policy Steering Committee and an 83-member Technical Work Group representing the Council, Bonneville, the five Northwest investor-owned utilities, Northwest publicly-owned utilities, wind developers, state agencies and other interested organizations. Tom Karier and Jim Kempton represent the Council on the Steering Committee.

The focus of the effort is to identify actions needed to integrate the 6000 megawatts of wind power of the Fifth Power Plan into the Northwest power system. The group concluded that there are no technical barriers to operationally integrating 6000 megawatts of wind power given existing system flexibility. FERC interconnection requirements for wind project output control capability will need to be implemented, however. The costs of integration services are in the range assumed for the Fifth Power Plan (\$5.25 - 11.25) and moderate compared to the overall delivered cost of windpower. Integration costs can be reduced by control area cooperation and improving regional markets for integration services.

Sufficient transmission appears to be available to service expected wind development through about 2009 (up to about 3000 megawatts) using conventional (firm service) approaches. Additional wind development can be most efficiently accommodated by a combination of new transmission products melding firm and non-firm transmission, and transmission expansion projects where cost-effective. The report recommends that work proceed on developing these products and on securing options to construct cost-effective expansions. In addition, the

feasibility and cost of extending transmission to Montana and other underserved prime wind resource areas offering better and more diverse wind resources should be explored.

These and other recommendations are included in 16 actions. Three of these actions involve the Council as the lead organization:

- Formation of the Northwest Wind Integration Forum to monitor and facilitate accomplishment of the actions (WIAP Action 16);
- Completion of Action GEN-9 of the Fifth Power Plan seeking better understanding of the effects of integrating wind power on other functions of the hydropower system (WIAP Action 14 (part)); and,
- Incorporating a planning framework in the next power plan to maximize the economic and environmental value of wind (WIAP Action 15).

The Council would also participate in other actions as the host organization for the Northwest Wind Integration Forum and the Regional Adequacy Forum or by direct staff support.

Assuming Steering Committee concurrence, Bonneville and Council staff will prepare a plan for the formal establishment the Northwest Wind Integration Forum for a two-year period. As of this writing, it appears that the Forum is best organized as a Council Scientific and Statistical Advisory Committee, similar to the Regional Technical Forum. Staff expects to bring a proposed charter to the Council at its April meeting for approval.

Because the Wind Integration Action Plan is not a Council document (though it will be distributed by the Council), we are not planning to bring it to the Council for formal approval. However, because of the role of the Council in implementing the recommended actions, it is important that Council Members be comfortable with the document and its recommendations. To this end, at the March Council meeting, Staff will provide an update regarding WIAP Steering Committee response to the final draft WIAP and an overview of the principal findings and recommendations.

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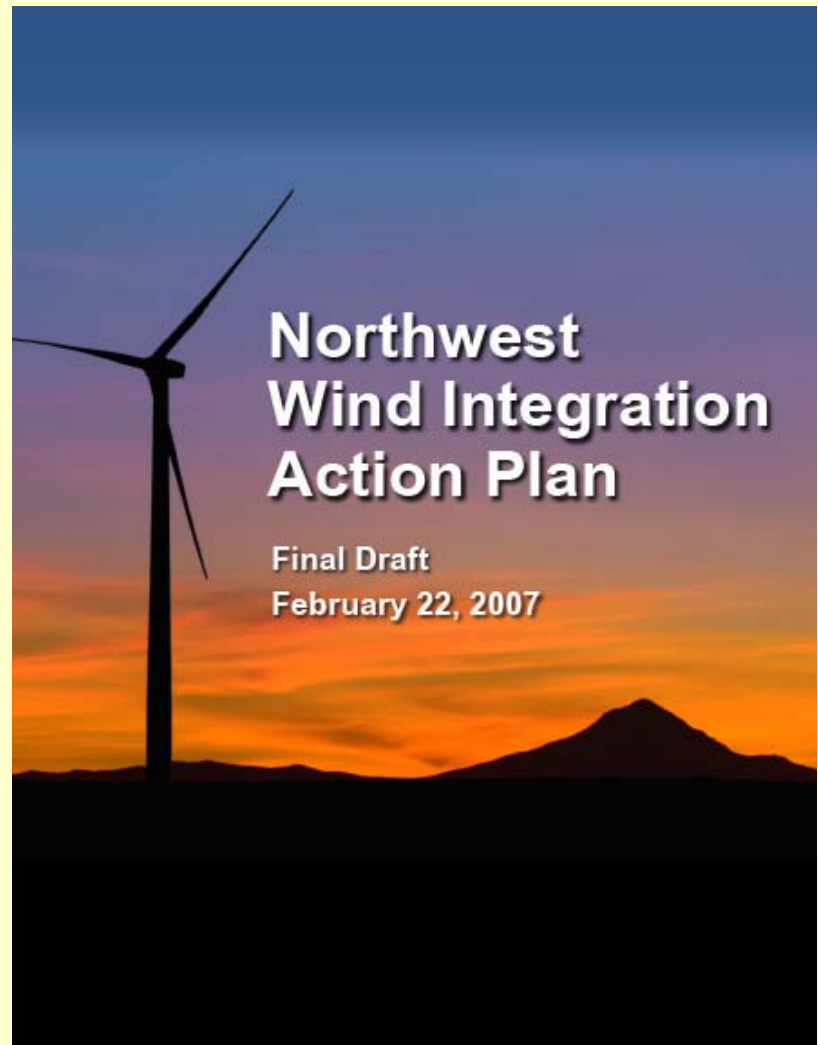
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# Briefing: Northwest Wind Integration Action Plan

Northwest Power &  
Conservation Council

Boise, ID

March 13, 2007



# Key findings

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- No fundamental technical barriers to integrating 6000 MW of wind power:
  - Future wind plants equipped w/output control capability
  - Current system obligations & constraints
  - \$1.90 – 12.00/MWh (20% wind penetration)
  - Control area cooperation and improved markets will lower cost and increase availability of integration services
- Existing transmission can service near-term wind development (~3000 MW, through ~2009).
- New firm/non-firm transmission service and selective reinforcements needed for 6000 MW.
- Wind's capacity value probably lower than the NWRA Forum provisional 15%.

# Recommended actions 1 - 6

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- 1) The Resource Adequacy Forum should reassess its 15% pilot sustained wind capacity value.
- 2) Northwest utilities should refine their estimates of wind integration costs and develop estimates of potential cost reductions.
- 3) The Northwest Wind Integration Forum (Forum) should contract for the development of a high-resolution Northwest wind data set.
- 4) The Northwest Transmission Assessment Committee (NTAC) should propose a planning methodology to balance the cost of transmission capacity and the value of delivered wind energy.
- 5) Columbia Grid and the Northern Tier Transmission Group should apply the NTAC methodology to regional transmission planning.
- 6) States should amend regulatory policies to remove barriers to more efficient use of transmission for wind and other renewable resources.

# Recommended actions 7 - 12

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- 7) BPA and others should explore conditional firm service, redispatch and other ways to improve efficiency of transmission use.
- 8) BPA should complete Plans of Service and review the business cases for the proposed West of McNary, I-5 Corridor and North Cross-Cascades transmission reinforcements.
- 9) BPA should develop a general model for financing market-driven transmission improvements, using West of McNary as a prototype.
- 10) NTAC should identify and evaluate approaches to delivering wind energy from Montana and other isolated wind resource areas.
- 11) The Forum should evaluate the costs and benefits of a regional wind forecasting network and if positive, develop an implementation plan.
- 12) The participants in the ACE Diversity Interchange pilot should provide a progress report to the Forum.

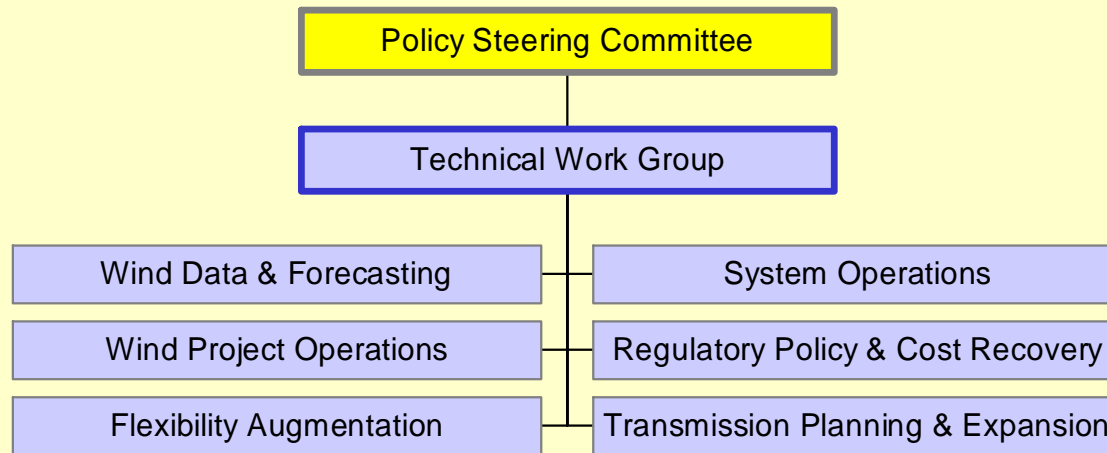
# Recommended actions 13 - 16

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- 13) The Forum should address market barriers for control area services and wind integration products.
- 14) The Forum should characterize options for augmenting system flexibility. The Council should complete Action GEN-9 of the Fifth Plan to improve understanding of the tradeoffs between competing uses of system flexibility.
- 15) The Council, in future power plans, should incorporate a planning framework to maximize the economic and environmental value of wind energy.
- 16) The Council, working with Bonneville and others, should establish a Northwest Wind Integration Forum to facilitate implementation of these actions.

# Wind Integration Forum

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- Council SSAC
- Monitor, facilitate and review implementation of WIAP actions.
- May directly undertake actions where efficient (e.g. wind data set)
- Actions directly undertaken by Forum would be funded and otherwise supported by participating organizations
- Initial period of two years



# Wind Integration Action Plan: Key Events

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- Feb 26 – Final draft WIAP to Policy Steering Committee
- Mar 5 – PSC concurrence & final comments
- End of March – Final WIAP published
- End of March – Plan for establishing Forum
- April Council Meeting – Charter for Forum
- April – Resume Technical Working Group meetings??
- July – Semiannual Steering Committee progress meeting??