

# factsheet

June 2006

## Renewable resource integration action plan launched

On June 13, the Northwest Power and Conservation Council agreed to cosponsor with the Bonneville Power Administration a regional Renewable Resource Integration Action Plan. The plan will identify and commit participants to regional steps to effectively integrate large amounts of wind power and other intermittent renewable resources into the Northwest power system. The Council's 2004 power plan calls for 6,000 megawatts of new wind generation over the next 20 years. More than 2,000 MW already have been built or are under active development, another 2,000 MW are in planning stages.

Development of renewables is vital as the nation seeks both energy independence and environmental sustainability. Wind, in particular, has huge potential. BPA is integrating a large amount of wind power into the grid today and is seeing a steep growth curve occurring much faster than expected. This raises a number of technical and operational challenges for grid operators.

New tools to successfully integrate large amounts of wind have been proposed; it will take regional cooperation to refine and implement them. A multi-disciplinary work group representing Northwest utilities, independent power producers and other stakeholders will develop a proposed action plan this summer and circulate it for public discussion this fall.

### How much wind power is on line in the Northwest today?

Wind farms in the Northwest have blossomed from two in 1998 to a dozen today. By the end of 2007, wind power capacity in the Northwest should reach 2,178 MW. Of this, somewhere between 1,500 and 1,700 MW will be in BPA's control area. Another

4,800 MW or so of wind power projects are known or in the BPA queue.

For comparison, the region's peak power capacity is just under 40,000 MW, and its firm energy about 23,500 MW. Wind is going from ½ of 1 percent to 5 percent of the region's power capacity in just a few years, with more to come.

### What's the challenge?

In recent years, the growth of wind power has occurred in one concentrated region. The resource will consume larger and larger amounts of system flexibility unless it is spread out across a broader cross-section of the region.

In many ways, wind and hydro are a natural fit, but there are limits on the ability of the region's hydro-system to integrate wind. Wind turbines can ramp from zero to full capacity or back in a matter of seconds. Managing this variability requires quite a bit of system flexibility. As the region adds more and more wind to the transmission system, wind's variability will consume more and more power system flexibility. As a result, the region needs to develop a range of strategies to stretch existing flexibility as far as possible and procure additional ramping capability when ultimately needed. The costs of additional flexibility and the proper allocation of those costs will be explored in the action plan.

### What's the solution?

To use wind cost-effectively as a major power source in the Northwest, the region needs to ensure its development and operation are effectively coordinated with



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other regional generation and transmission resources. It's similar to the way the region currently coordinates the output of dams and thermal plants in the Pacific Northwest Coordination Agreement. Given the expected rate of growth in wind development, now is the time for a regional action plan.

### How will the process work?

BPA and the Council will convene a Policy Steering Committee comprised of the leaders of the major organizations involved in renewables development in the Northwest. These leaders will discuss and approve a scope of work and schedule for the effort, dedicate staff for a four to six month period and commit to review a draft action plan this fall. Then, staff will begin workshops to develop the draft action plan for public review this fall.

### What are potential solutions?

Several concepts already are under discussion.

- 1) Create a centralized wind forecasting network in which all wind farms would participate and schedule accordingly. The California Independent System Operator already does this.
- 2) Disperse wind farm development more broadly throughout the region and explore options for providing transmission service to other favorable wind development areas.
- 3) Develop cooperative arrangements among utilities to pool their system flexibility to manage the region's fleet of wind projects.
- 4) Set operating rules on the speed with which wind farms ramp their output up or down. Instead of letting all turbines spring to full capacity at once, add a few every few minutes, so the incremental output is easier for the system to absorb. Diminishing output also can be controlled to a certain degree by closely watching wind forecasts and starting to take off a few turbines at a time as the wind starts to decline.

BPA and the Council look forward to working with the region to discuss these and other potential approaches to the issue.

### How does BPA support wind power today?

- 1) BPA funds and maintains the nation's most extensive, detailed base of wind resource tracking; it has been developing the data base since the 1970s.
- 2) BPA has built and continues to build and operate the transmission facilities to physically integrate wind turbines into the transmission grid and provides ancillary services needed to transmit that power.
- 3) BPA currently purchases 198 MW of wind resources to serve the loads of its public power customers. In 2004, BPA launched two new power products to back wind energy with hydropower and store wind energy in the hydro system. However, most future sales of these products are on hold until uncertainties about the cost of providing them are resolved.

### Where will the wind farms be located in the Northwest?

Most of the new wind is going into the heart of BPA's grid in the Columbia River Basin near the eastern end of the Columbia River Gorge. This area already has a high concentration of power plants and transmission lines, but very little power load. Putting so much wind power in this one location adds a concentrated source of variability to system operations. The region's utilities can manage this issue effectively if the region begins expanding the geographical scope of wind development through coordinated planning and evaluation of potential transmission expansion alternatives.

### How does Northwest wind development compare nationally?

The flat Midwest plains have the nation's greatest wind power potential. California has the most installed wind capacity today with more than 2,000 MW already online, according to the American Wind Energy Association. The Northwest is the fastest growing region in wind power installations in the nation today.