

## Blending wind into electric grid comes with a price

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For more than a year, the [Bonneville Power Administration](#) has tried to put a price tag on the flightiness of wind.

Earlier this week, the federal power marketer settled on a figure: 68 cents a kilowatt month or \$2.82 a megawatt hour.

Those are numbers only energy wonks could love. But, they're significant because they identify for the first time the so-called "integration" costs of wind and because, eventually, they'll work their way onto the monthly bills of electric utility customers.

The [price-setting](#) also speaks to the rapid growth of wind energy in the Northwest and the challenges tied to a clean but quirky resource.

Essentially, the fee represents the short-term costs associated with blending wind-generated electricity with other resources -- hydro-power, for example -- so that the power flows steadily through the grid.

"We tried to price it right," said Elliot Mainzer, BPA's manager of transmission policy and strategy.

The fee goes into effect in October, and it will be paid by all the companies that generate wind in the Columbia River Gorge. That includes utilities Portland General Electric and Pacific Power and developers PPM Energy and Horizon Wind Energy.

Utility customers won't immediately feel a pinch.

[PGE](#), Oregon's largest utility, said the fee has been rolled into a rate request currently under review by state regulators.

The request seeks an additional \$146 million annually from ratepayers -- an 8.9 percent increase on an average residential customer's monthly bill. A little more than one-third of that increase involves higher power costs. And just a fraction of that amount is attributable to BPA's wind-blending services, said PGE spokesman Steve Corson.

Any increase approved by regulators will go into effect in January 2009.

About 4 percent of PGE's power comes from wind resources. The utility owns the Biglow Canyon wind farm in Sherman County and buys power from two other projects in the Gorge.

Generally wind-energy in the Gorge sells for about \$70 a megawatt hour, more than coal or hydro but increasingly competitive with power from natural gas-fired plants. Add BPA's integration services and the price rises by \$2.82 a megawatt hour, or 4 percent.

Earlier this decade, only a few wind farms produced power in the windy corridor stretching east from Hood River. Today, more than [1,600 turbines rise from that area](#), and hundreds more are under development.

The generating capacity of these turbines has hit 1,400 megawatts. In 10 years, capacity could rise to 6,000 megawatts, enough to light up two Seattle's full time.

But those numbers need to be used carefully. A wind turbine is different than a coal- or natural gas-fired plant, or even a hydro-electric dam. It can't produce a steady flow of energy, and it can't be turned on and off at will.

Adjusting for wind's variability, a wind turbine over time produces about one-third the electricity of a traditional power plant.

The task of integrating the power generation into the system has fallen primarily to BPA because the wind farms lie within BPA's service territory. The agency owns the high voltage transmission lines that the turbines must hook into, and it controls the hydro-power along the Gorge's Columbia River.

Hydro, then, has become wind's complement. When the winds blow strong, BPA cuts back on the output from its hydro turbines, and when breezes calm, the agency pushes hydro into higher gear.

It's a complex task, and the difficulties -- and costs -- increase as more wind comes online.

Until now, BPA's customers -- the public utilities in the Northwest -- have paid for these blending costs. But most of the wind-power goes elsewhere, to investor-owned utilities PGE, Pacific and Puget Sound Energy and south, into California.

Now that so much wind is coming onto the system, the costs need to be apportioned fairly, BPA's Mainzer said.

Mainzer also expects the costs to serve as a signal to other power producers, who might want to blend wind with other resources such as natural gas- or coal-fired plants.

"We don't want to overcharge or get irrational," he said. "We want to be fair; it's an issue of cost recovery."

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