

# The Reality Of Wind Power



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Wind turbines cost more to operate and maintain than planned, often have poor reliability, and place costly strains on other generators warns one early wind adopter, but so far the public is willing to bear the costs.

Kevin Gaden, wholesale power director for the [Municipal Energy Agency of Nebraska](#) (MEAN) and NMPP Energy, a public power consortium covering parts of Nebraska, Iowa, Wyoming and Colorado, detailed his members' experiences at the American Public Power Association conference in Washington last week.

Gaden said his members decided a decade ago that renewable energy was coming and they wanted to gain experience in the sector. They found their customers embraced the idea, and readily agreed to pay more to get renewable power.

MEAN now gets 5% of its electricity from five wind facilities, including one in South Dakota that averages more than 40% capacity factor, far better than the U.S. average of 30%.

But Gaden warned a packed conference session that public perception of wind has not caught up with the [realities of operating wind](#) in a commercial generating system. While newer turbine designs and engineering have improved, he said, "Overall reliability is less than advertised."

Overall reliability is less than advertised – Gaden

Turbines are still faulting on issues like finding the right lubricating oil for the Nebraska climate, Gaden said. Maintenance is costly because specialized equipment and personnel have to be brought to remote wind sites, making long-term relations with a reliable turbine supplier a must.

When they're damaged by things like lightning strikes, repairs can require a crane that can reach the turbine, 200-300 feet above the prairie, at \$1,000 an hour, he said.

State renewable energy credits, seen by renewables advocates as a way to compensate for higher costs, sell for \$1 apiece and make little difference, he said.

As in other parts of the country, wind is often plentiful at night and not available during the day, and drops off during summer peaks, so wind power isn't there when it is most needed. Gaden said the [Great Plains](#) winds track better with consumers' winter demand.

But that [wind variability](#), with wind often gusting and then calm in quick succession, puts a costly burden on other generators in the system, he said.

### **Less Than Zero**

Interstate grid operators take day-ahead bids for hourly power and fill their anticipated needs with the cheapest bids first. But all generators are paid the same amount as the highest bid taken. Gaden said wind operators benefit from tax credits for every megawatt-hour generated, so they bid into the system at zero or less. That ensures their generation will be taken, and they will get the price paid conventional generators.

That means generation from baseload units is only partially bought, and sometimes large units have to cycle up and down to accommodate the wind. This type of operation makes them far less efficient than the consistent operation they were designed for, and the increased wear and tear raises maintenance costs.

Gaden noted grid operators, who must keep the power supply stable, are looking at creating regional "energy imbalance markets" to account for the extra costs of offsetting renewable variability. Gaden said federal researchers had estimated ancillary resource costs at \$2 per megawatt-hour, but in Nebraska, it turned out to cost \$4.60.

Gaden said he'd asked Department of Energy experts how much carbon emissions were saved by wind, net of the less efficient operation forced on conventional fossil units. The answer, he said, was "we don't know," but the experts acknowledged there is an impact.

In the future, Gaden said, his public power members will probably continue to buy small shares of electricity from large wind projects, as long as customers want it.