

STUDY BUMPS MONTANA'S RANKING TO NO. 2 FOR WIND POTENTIAL

By Linda Halstead-Acharya

Anyone who has spent any time in Montana could hardly be surprised by the findings.

A Harvard study, released last month, puts the Big Sky State in a tie with Kansas - and second only to Texas - for having the greatest potential in the nation for wind power.

Coded by a deep blue color on the map, the report shows Montana so rich in wind that it has the potential to produce 4,700 terawatt hours of wind-generated electricity, a whopping 370 times the state's current total retail electricity sales.

Ross Keogh, a research analyst for Sagebrush Energy, a renewable energy development company that focuses on smaller-scale projects, explains that one terawatt hour is the equivalent of 1 million megawatt hours.

"They're assuming a huge potential," he said, adding that he found no fault with the model. "We have so much more energy in the wind blowing across Eastern Montana than is buried in the coal below."

While the figures boggle the mind, both the authors of the study and local wind experts quickly dispel the notion that wind potential equates to available wind power.

"A very small portion of what is possible ends up being doable," said Van Jamison, vice president of strategic operations for Gaelectric, an Irish wind-development company with an office in Great Falls. Jamison headed up the Montana Energy Office from 1980 to 2000.

Jamison describes the study as "fascinating reading" and "provocative." Yet he also views its projections as a "bookend" against which future development could be measured.

"We could even be the No. 1 state in terms of potential," he said. "But if there's absolutely no production, we'd be the most underachieving state in the world. That's where we sit today. We've got that choice."

Gov. Brian Schweitzer is less taken by the new ranking - "Down to category three wind (averaging between 14.3 and 15.7 mph), Montana is number one over Texas," he said - than the state's recent track record in wind energy development.

In 2003, the state was putting out a mere 1 megawatt of wind power. By 2008, that figure had jumped to 271 megawatts. He credits recent legislation with providing the tools for development.

"The bottom line is, Montana has increased its wind portfolio at the fastest rate in the country," he said.

Transmission bottleneck

Rhyno Stinchfield, CEO of Billings-based Montana Wind Resources, doesn't question the study's estimates.

"Montana has been ranked No. 5," he said. "That being said, the top five are very close to each other."

Stinchfield agrees that attaining the study's projection of capacity is not realistic, but he said he knows of half a dozen large wind projects under consideration in the state.

"Even if only one-third of them happen, we're talking 1,000 megawatts of wind power, easy," he said. That's nearly four times what Montana is currently producing.

By quick calculation, he figures that 100 megawatts of wind would amount to \$2 billion in construction and tens of thousands of jobs. A recent study from the Center for American Progress projects 16.7 jobs for every \$1 million spent on clean-energy projects.

Stinchfield estimates that development is four to 10 years off. Like others in the industry, he cites the state's limited transmission system as a key obstacle to additional wind development. Yet progress on that front, too, is beginning.

Jamison cites Senate Bill 360 for opening the door to boosting transmission. The bill, which passed in the most recent legislative session, allows transmission upgrades, up to a certain voltage, in existing rights of way without the need for additional environmental review.

"We don't want a proliferation of transmission lines across the state," he said. "To my perspective, it makes the same kind of sense as energy efficiency. It tends to minimize the environmental implications."

And there are transmission line projects in the pipeline. One is the 600-megawatt Montana Alberta Tie Line. When complete, possibly as early as next year, it will establish the first merchant transmission line in the Western grid.

Also in the works is the Mountain States Transmission Intertie. The line would provide 1,500 megawatts of new transmission capacity between Butte and Idaho. Further on the horizon is TransCanada's NorthernLights Inland Project.

Already permitted by the Federal Energy Regulatory Commission, the line would connect Eastern Montana through Townsend to Las Vegas, Southern California and Phoenix. Schweitzer explained that the direct-current line, with a capacity of 3,000 megawatts, would be more efficient than existing lines.

"There's much less line loss and (you need) smaller poles and lines," he said. "The disadvantage is, it's extremely expensive to put in the transformer system."

Balance of power

Critics of wind power also point to its unpredictability. Utilities need to make sure that power and load are balanced, which is a challenging task even with relatively stable sources of electricity.

"And now you add wind to that equation," Jamison said.

Keogh sees a critical need for a coordinated, regional plan to balance power, including the West's vast wind resource, across the grid. The alternative is an erratic power supply that increases the risk of outages and damage to equipment, he said.

There's also the problem of firming power, which is the backup when the turbines are still.

According to Stinchfield, the Judith Gap wind farm ranks as the most efficient in the country. Even so, it falls in the neighborhood of 40 percent efficiency.

"That means that 60 percent of the time they have to firm with additional power," he said.

Yet, he sees promise as more wind farms sprout up. Ultimately, he said, a multitude of wind farms in different locations would back up one another.

"We'll probably also need other sources of energy," he said. "They're not going to go away."

The economy of wind

Not surprisingly, the rate of both wind and transmission development is closely linked to economic activity. Just a year ago, 14 major investment houses were investing in renewable projects. That number is down to six, Stinchfield said.

There's still much interest and lots of money sitting on the sidelines, he said. And investment is beginning to pick up again.

But is wind power economically feasible, even if development dollars become available?

Detractors claim that wind is only viable because of government funding. Stinchfield argues that the hydroelectric dams and the rural electric cooperatives would never have come about without taxpayer help.

"We need to produce wind competitively," he said. "The power companies tell us we can't do that. I believe we can."

Exporting wind to out-of-state consumers is part of that competitive strategy. That's because out-of-state markets, like California, are willing to spend between 8 and 9 cents per kilowatt hour, compared to local bids in the 5 1/2-cent range.

"Believe me, that adds up when you're shipping megawatts of power," Stinchfield said.

Jamison sees Montana's wind potential as a resource that serves the state well when it reaches beyond state boundaries. To focus solely on supplying power to Montana is "insanely parochial," he adds. "Otherwise, why produce any more cows than we could eat in Montana?"

Unique to Montana

Not only can Montana boast of its enormous wind potential, but promoters assert that the state's wind is second to none.

"Not all winds are created equal," Jamison said.

The Harvard study notes a seasonal disparity between peak demand and availability. Demand tends to be high in the summer, when air conditioners are in use, but wind is more plentiful in the winter. According to Keogh, that applies less to Montana. He said Montana's wind is largely aligned with the region's hydroelectric power supply. Hydro peaks during spring runoff and into the summer, while wind comes on strong in fall and winter.

On a more short-term basis, Schweitzer refers to Montana's wind as a "peaking wind." In most places, wind blows during the night, when demand is low. But Montana's winds blow strong during the day, he said.

"That's the reason Montana wind is so good," he said. "That's why wind developers are chasing Montana projects."

By pulses and spurts

Jamison remembers when wind power wasn't cost-competitive with traditional energy sources. Now it's the fastest sector of energy growth in the world, he said.

The intervening years were a period of pulses of development, he said, the last of which hit Montana when Colstrip 3 and 4 and associated transmission capacity came online in the late 1970s and early '80s.

In general, he said, as a pulse hits one area, a slowdown hits another. In North America, growth will be slow and steady, he said.

"You won't see the potential Montana has get fulfilled in the next decade," he said. "Probably 5 percent at most. You'll see wind companies out prospecting for sites. You'll see people lining up to put together the next round of transmission."

Stinchfield thinks the new renewable energy standards - the state is committed to 15 percent renewable energy by 2015 - will spur the process. He noted that just last week, NorthWestern Energy put out a request for proposals to add 75 megawatts of wind energy to its portfolio.

And considering California's goal of 33 percent by 2020, that means very big business for Montana.

"You're talking the eighth-largest economy in the world," Stinchfield said. "It's huge."

From there, the possibilities are endless.

Keogh talks about a "smarter grid," which could tap into the latest and best technologies. One day, he said, the grid might provide consumers with instant information on the cost of the

electricity they're using, thus allowing them to make decisions based on that price. He also envisions "smart" appliances that could switch to a dormant mode when demand peaks and cost rises.

"Those are the little tweaks that will be really important when we reach 30 to 40 percent wind generation," Keogh said.