

# POWERING UP: Wiring the state for the next generation

Blueprints for thousands of miles of new power lines to carry wind are sparking debate over the nation's clean energy future.

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Minnesota, beset by an aging and overused power grid, is losing its edge in the wind industry just as the rest of the country is ready to embrace it.

But if President Obama and some of the country's largest wind developers have their way, the state's gusts could someday soon help power homes in Chicago and further east.

Developers are still drawing up blueprints, with multibillion pricetags, that crisscross Minnesota with networks of gigantic transmission lines to ship wind power east. President Obama spurred the planning, making the electric superhighway -- the energy equivalent of the country's interstate highways -- a key plank of his clean energy agenda. Recently, governors of 29 states, including Gov. Tim Pawlenty, pushed Congress to pass a national renewable energy standard requiring 20 percent of electricity from renewable sources, largely wind, by 2020.

Huge power line plans, however, have sparked sharp debate over who controls the nation's energy future. Like the paths of the wires themselves, battle lines are still being drawn. Environmentalists are grudgingly embracing some of the green plans despite all the development they entail, citing the urgency of shifting from dirty coal-fired electricity. Minnesota companies that stand to benefit are pushing for the potentially large export crop. But a national group of utilities, many from the East, came out this month saying they don't want Midwest wind, preferring to encourage local development.

Some Minnesotans agree. The state should meet its own renewable energy goals -- 25 percent of its electricity from renewables by 2025 -- not by exporting wind but harvesting it for its own use with smaller lines, they argue.

Ratepayers inevitably will get socked with bills lasting decades for building new transmission lines, but no one can agree on how to fairly spread out the costs.

Despite sky-scraping pricetags on the backs of taxpayers and ratepayers, debates over the large-scale transmission buildouts around the country remain largely invisible to the general public, said Bruce Edelston, who heads the newly formed Coalition for Fair Transmission Policy in Washington, D.C.

"It's probably the biggest issue out there that the average person on the street has no idea of," Edelston said.

To see the state's power stalemate firsthand, look no further than the St. Paul control room that manages the electric grid. Staring at a bank of computers beneath a 12-foot-high screen of blinking lights, a dispatcher will see that the lines are getting jammed and order a wind farm operator to turn off turbines.

Last year dispatchers ordered farms in Minnesota and nearby states to "dump wind" 6,000 times, according to the Midwest Independent System Operator (Midwest ISO), which runs the million-square-mile electrical grid over 13 states, including Minnesota, plus the province of Manitoba.

The calls come when it's windiest. There just aren't enough power lines, said Clair Moeller, the group's vice president of transmission management.

And it has ambitious wind developers up in arms.

"We're literally feathering our blades ... while others continue to generate with coal," says Don Furman, an executive at Iberdrola Renewables Inc., the U.S. arm of the Spanish wind giant that owns several farms in Minnesota. "Where we are right now is pretty contrary to where the administration and most of the public wants to be going."

Minnesota has about 150 wind projects waiting in line at the Midwest ISO to plug into the grid. Some have waited since 2005.

Meanwhile the state's status as a wind energy leader is languishing. As recently as 2007, Minnesota was the country's third-largest wind producer. By last year it had fallen to fifth. Last year 20 states each added more than 100 megawatts of new wind power. Minnesota added just 56. In each of the two previous years, the state had added more than 400 megawatts of new power.

Meanwhile, Minnesota imports nearly a quarter of its electricity, putting it near the top in the country.

There are so many stalled wind projects in Minnesota that if they were all hooked up, the state could probably triple its renewable energy goal of 25 percent. The state appears to be on track to hit the 2010 target of 15 percent for Xcel Energy and 7 percent for all other electric utilities.

Renewable Energy Systems is waiting to hook up three projects, said Joe DeVito, who works in the Colorado company's Minneapolis office.

"It's been a slow and painful process," DeVito said. "I just don't think we're going to take any more positions in this region because of the difficulty of the queue."

DeVito said his company will likely build in Oregon or Colorado instead.

The state's energy regulator, the Public Utilities Commission, and its top utilities argue that Minnesota has simply maxed out the spiderweb of power lines hanging over the state. It hasn't expanded its grid significantly in nearly 30 years.

At peak times, lines jam around St. Cloud, Alexandria, Rochester and La Crosse, Wis., raising the threat of outages and leaving the system vulnerable to a bad storm.

"The existing system capacity is essentially used up," said Priti Patel, director of regional transmission development at Minneapolis-based Excel Energy, and a co-director of CapX2020, the state's major power line expansion that's been years in the planning.

The first phase of CapX2020, expected to break ground later this year, would add about 700 miles of high-voltage lines across Minnesota and part of Wisconsin at a cost of about \$1.7 billion. The second phase is undetermined. Among other things, utility officials wait to see whether there's an export market.

### Big plans, big costs

Last October at a solar facility in Florida, Obama stumped for a clean energy superhighway in which "a wind farm in rural South Dakota can power homes in Chicago."

Three plans do just that. At the moment, the \$12 billion Green Power Express is furthest along. It would be a 3,000-mile network of 765-kilovolt lines across the Dakotas, Minnesota, Iowa, Wisconsin, Illinois and Indiana. It's backed by ITC Holdings Corp., a publicly traded transmission company in Novi, Mich. Federal regulators boosted the project last year when they granted it a guaranteed 12.38 percent return on investment.

To DeVito, even that project isn't big enough. "The need is actually larger if we want to really tap renewable energy."

American Electric Power in Columbus, Ohio, and MidAmerican Energy Holdings in Des Moines, Iowa, are pushing another electric superhighway that would cross Minnesota. A study is due out in April.

And the Midwest ISO itself just proposed several different configurations of high-voltage lines stretching from the Dakotas to Illinois to meet mandates for renewable energy. The pricetag: between \$12 billion and \$22 billion.

Any of the proposed lines crossing Minnesota would be subject to approval by state regulators.

But who pays? The Midwest ISO recently announced it's devised a method for sharing transmission costs between power generators hooking up to new lines and ratepayers throughout its far-flung grid based on a formula for their power use. It's still hammering out details.

"We're watching it like a hawk," said Peter Fox-Penner, principal at the Brattle Group, an economic consulting firm in Cambridge, Mass. Spreading the cost is "without any question, the biggest bottleneck in this acceleration."

### Go it alone

Not everyone is sold on electric superhighways. The governors of several Northeast states and a growing number of utilities are pushing back on plans to import cheap Midwest wind power, concerned it will squelch local development.

"It skews the market toward the remote resources," said Edelston, who heads the utility opposition.

Others argue the entire interstate transmission concept is wrong. David Morris, a vice president at the Institute for Local Self-Reliance in Minneapolis, says Minnesotans "may be forced to pay billions to build almost 2,000 miles of high-voltage transmission lines that will benefit Minnesota little, if at all," he said.

His group thinks Minnesota's energy future should focus not on big wires to haul power long distances, but on small ones supporting grass-roots projects. He points to countries such as Denmark and Germany where small renewable energy projects have taken a significant bite out of overall use. Wind generates about 20 percent of Denmark's electricity, the bulk of it owned by farmers and cooperatives.

## Green town

Some 20 stories high, the sleek white machine on the edge of Mountain Lake towers over a gas station and the town's golf course.

The single turbine, built about three years ago, generates about 16 percent of the electricity used by this town of about 2,000 people in southwestern Minnesota.

Besides trying to be green, one goal was to control swings in electricity prices -- avoiding so-called spot market purchases, said City Administrator Wendy Meyer. Its wind power has a cost slightly less than the average of the town's total electricity mix, which includes electricity from Nebraska. But wind prices won't change, while electricity from other sources will inevitably increase.

"It's a huge futures contract," said wind developer Dan Juhl, who helped the town build it at a cost of \$2 million.

Meyer said her town won't ever become completely energy self-sufficient. Wind is famously intermittent. "You can't put up 100 percent wind turbines," she said. "You still need something."

Indeed, Beth Goodpaster, a staff attorney at the Minnesota Center for Environmental Advocacy, said to wean the nation from coal requires approaches from all angles, one reason her group offered reluctant support for CapX2020. "We think we do need to do it all."

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