

# Our energy, our future

*Dakota Valley Electric Cooperative, along with 125 other distribution cooperatives in nine states, buys most of its wholesale power from Basin Electric Power Cooperative. Basin owns extensive generation facilities and the Dakota Synfuels Plant in Beulah. It is working to develop additional generation to meet the needs of its cooperatives. As project manager for Basin Electric Power Cooperative's wind generation projects, Ron Rebenitsch is busy planning the nation's largest cooperative-owned wind project (at Minot) and another in central South Dakota. He was the project manager that coordinated Basin's participation in wind farms at Edgeley and Wilton in North Dakota and Highmore in South Dakota.*

*A licensed professional engineer whose title is manager of alternative technologies, Rebenitsch is responsible for Basin's wind-to-hydrogen and waste heat recovery projects, and a board director of the Utility Wind Integration Group. He also chairs the Renewable Energy and Distributed Generation Group of the National Rural Electric Cooperative Association's Cooperative Research Network.*



Ron Rebenitsch



## Ron Rebenitsch will now answer your questions

**Q:** As the owner of three coal-based power plants, five peaking plants and your gasification plant, Basin Electric Power Cooperative obviously has in place substantial baseload generation. Does Basin have plans to add additional baseload capacity?

**A:** Yes. Basin's member cooperatives are continuing to see significant growth in their service territories. These new loads require additional generation to serve them. Some of the new generation can be peaking plants, such as natural gas-fueled turbines, supplemented by wind energy, but baseload generation is still needed to provide the reliable service needed by consumers.

**Q:** How will the addition of this baseload capacity impact Basin's ability to develop wind energy?

**A:** Basin is looking at all generation options, with the goal of a diverse portfolio capable of meeting our members' needs reliably and at an acceptable cost. Wind energy is an important part of our planning for new resources and our ability to develop wind energy will depend on the economics of wind as compared to other generation resources and alternatives. Transmission availability also plays a large part in our planning and affects all generation resources.

**Q:** Basin presently purchases energy from three wind farms in North Dakota and South Dakota, and is building a 77-turbine wind farm near Minot. How is this wind integrated into Basin's energy mix and the electric grid?

**A:** Wind energy is considered a "non-dispatchable" resource, which means that other generation must be operated, or "dispatched" to compensate for the variability of wind, along with the varying changes in load. Essentially, the wind "runs free" with other generation adjusting to meet the difference between wind generation and load on a second-by-second basis. Currently, wind generation is a small part of the overall generation mix, so the adjustments are relatively small. However, as wind generation becomes a larger portion of the generation resources, the adjustments will become more of a challenge. That said, all generation resources have issues and challenges—we just need to figure out the best approach in addressing those challenges. Never bet against technology!

**Q:** How does Basin Electric site a wind farm?

**A:** It's a fairly complex process, but essentially, we begin by looking at statewide and regional wind maps, seeking the high wind areas. Then, we cross-reference the identified high wind areas with the transmission grid to identify potential sites. At that point, we try to identify areas where the transmission grid is least likely to experience congestion and interruptions.

**Q:** What may landowners expect when Basin targets their land as a favorable site for a wind turbine?

**A:** Basin will erect a few meteorological towers to measure the wind. About the same time, we will contact local landowners to let them know we are looking at the area and provide the landowners with a proposed wind lease. As our process continues, we will try to reach agreements with enough landowners to assemble a viable site. Even then, however, nothing is certain. Numerous studies, including transmission, environmental and economic, still need to be successfully completed and permits obtained before we can proceed.

**Q:** Does Basin have plans to build additional wind farms once its Minot farm is online?

**A:** Yes. We already have a second project under development. That project is tentatively planned for a location in central South Dakota and is tentatively scheduled for late 2010 or early 2011. The size of the project is planned to be 150 megawatts (MW) and involve about 100 wind turbines.

**Q:** The development of renewable energy benefits North Dakotans by offering a market for agricultural commodities, reducing our dependence on foreign energy, and providing jobs and industry to our state. What are the challenges of developing renewable energy?

**A:** As with any business, first, the economics must work. We have found that economy of scale is needed to bring the cost per kilowatt-hour down to an acceptable level. Next, we need to reach agreement with landowners, to be able to build a project in an economic manner. Finally (and probably the most difficult hurdle), the project must be developed in an environmentally responsible manner, which requires environmental studies, mitigation, avoidance of environmentally sensitive and archeological sites. For example, the U.S. Fish and Wildlife Service has expressed serious concern about the development of wind projects within the whooping crane migration corridor, which is roughly 200 miles wide and extends from Port Aransas, Texas, to Woods Buffalo, Canada. This issue could affect the ability to develop any wind project within the corridor and could cause lengthy delays, if not outright cancellation of projects.

**Q:** What is Basin's commitment to renewable energy development?

**A:** Basin is firmly committed to wind energy. Basin's board of directors has already approved the development of 300 MW of additional wind energy. The Minot projects and the proposed central South Dakota project currently total 270 MW. When these new projects are

added to our current wind purchases and small projects, Basin's wind resource will total over 400 MW.

**Q:** It is widely understood that North Dakota lacks access to transmission capacity that would allow us to market energy nationwide. How is the transmission issue being addressed by Basin?

**A:** Basin is encouraging the development of a national plan for a "backbone" high-voltage system that would strengthen the grid across the nation.

**Q:** Energy seems to be a hot topic on the national agenda now. Is there any news that would make North Dakotans feel better about their energy future?

**A:** Put bluntly—North Dakota has it all! We have extensive energy resources in the form of wind, coal, oil, hydro, natural gas, and even some potential for solar energy, despite our northern latitude. North Dakota is rapidly becoming an energy center, with conventional resources already firmly established and serving North Dakotans with energy, jobs and economic development. I believe our wind resource has enormous potential and could provide a significant part of our nation's energy if a national backbone grid is developed.

