



# Defining certain paths to prepare for an uncertain future

Everyone from political candidates to celebrities has engaged in the climate change discussion.

It's no secret that future regulation of carbon dioxide emissions is a certainty.

In the midst of the debate, Basin Electric has been forging ahead and doing its part to meet its members' growing energy needs in the most affordable and environmentally friendly way.

But that's where things get a little complicated.

A majority of the electricity produced at Basin Electric's facilities is coal-based, and coal-based power plants are in the center of the climate change debate because of their carbon dioxide output.

How, then, is Basin Electric proposing to address future climate legislation or a possible moratorium on coal, however unlikely that may be?

"Basin Electric has done its homework and has put together a number of strategies to develop a carbon mitigation formula," says Mike Eggl, Basin Electric senior vice president of External Relations and Communications.

"There are really three main parts to the formula: The first is Basin Electric's work to try and demonstrate carbon capture and sequestration on an existing commercial-scale power plant. The second is to construct either an integrated gasification combined-cycle power plant or a new power plant built with carbon capture technology. The third is to continue diversifying our energy portfolio. This includes developing more renewable resources, such as wind and waste heat facilities, and construction of natural gas facilities such as our proposed combined cycle plant in South Dakota," Eggl says.

## ***Basin Electric tackles the carbon conundrum with a solid plan***

*By Andrea Blowers*

### **Finding a technology solution**

There currently is no commercially available technology to capture and sequester carbon dioxide from an existing coal-based power plant. That's not news. But, that doesn't mean it's not possible. Basin

Electric is working to advance carbon capture technology development at its Antelope Valley Station in Beulah, ND.

“We’re working with the state of North Dakota and are currently in the process of completing an application to work with the Department of Energy to fund this project through the Clean Coal Power Initiative,” Eggl says.

In December, the North Dakota Industrial Commission agreed to invest \$2.7 million of the total \$5.4 million needed to complete a front-end engineering and design (FEED) study for a CO<sub>2</sub> capture demonstration project. The FEED study will provide Basin Electric with engineering detail and cost estimates to evaluate the economic viability of the demonstration project. The study is expected to take about six months to complete. It will begin in the first quarter of 2009 and will be complete in the third quarter of the year. “This study, along with our continued negotiations with technology providers, will give us the information we need to make a decision on moving forward with the Antelope Valley Station carbon capture and storage project,” Eggl says.

Basin Electric is also currently working with oil and gas companies to try to increase opportunities to sell carbon dioxide captured at both the Great Plains Synfuels Plant and any future carbon capture facilities. Since 2000, Basin Electric has been capturing and providing carbon dioxide from its subsidiary, Dakota Gasification Company’s Great Plains Synfuels Plant, for sequestration. The cooperative currently provides approximately 3 million tons of carbon dioxide a year to oil fields in Canada for enhanced oil recovery. If everything goes as planned with the CO<sub>2</sub> capture demonstration project at Antelope Valley, another 1 million tons of CO<sub>2</sub> could be available for market each year.

## When more power is needed

“We’re not simply focused on existing facilities. We’ve got a growing membership that will need significant amounts of energy in the coming years,” Eggl says.

The second part of the formula focuses on constructing a new power plant facility called NextGen with a preferred location near Selby, SD.

“We’ve defined two options for how we will move forward with this facility,” says Wayne Backman, Basin Electric senior vice president of Generation. “We’re exploring both super-critical pulverized coal and IGCC (integrated gasification combined cycle) technology. We’ve also made an application with the Department of Energy for a newly announced loan program designed to encourage carbon capture and sequestration from coal-based resources.”

With both options, there are a number of unknowns. But as the cooperative works to balance the members’ increasing power

*Continued* ▶



## The first 100 days: Can we expect carbon legislation sooner or later?

According to Mike Eggl, it’s likely President Barack Obama’s first agenda item will be a stimulus package. “Then there will be some sort of green jobs bill,” Eggl says. He adds it’s possible these two items will be pulled together.

The actual carbon legislation will come later. The last time carbon legislation was debated in the Senate, it largely avoided a complicated committee process and went straight to the floor of the Senate. This time it is more likely the various committees with an interest in such broad-reaching legislation will want to be more directly involved in its development. This means the Senate Finance Committee, the Senate Energy and Natural Resources Committee, as well as the Senate Environment and Public Works Committee, will all have a hand in addressing this legislation. At the same time, the EPA (Environmental Protection Agency) will likely be undergoing a rule-making process to address the carbon issue.

“Not many people believe an administrative solution is the best result to address the issue of climate change,” Eggl says. “Because this issue reaches into almost every aspect of the American economy, current laws simply don’t provide very effective ways to address the issue as a whole.”

Eggl expects the EPA will start writing the rules, and at the same time the administration will work with Congress on a legislative proposal for 2009-2010, or the EPA rules will take effect. “Unfortunately, what we don’t know is what kind of proposal the House and the Senate are going to come up with,” he says.

The bottom line: expect carbon legislation in later 2009 and into 2010.

needs – financially and economically – and the likelihood that carbon capture will be required at some point in the future, Basin Electric must continue to explore all options.

### Mixing it up a bit

With its current portfolio weighted heavily on coal-based resources, Basin Electric has taken steps to develop additional resources not dependent on coal. “Essentially, we’re diversifying our portfolio. There’s renewable energy. Regarding wind development we’ve got roughly 320 megawatts currently being developed, 170 megawatts in North Dakota and 150 in South Dakota,” Backman says.

Over the last year and a half, Basin Electric’s board of directors authorized the creation of two new wind subsidiaries, PrairieWinds ND 1 and PrairieWinds SD 1. The formation of these subsidiaries made the cooperative-owned projects possible.

“Then we’ve got our waste heat sites with more being developed,” Backman says. Basin Electric will develop four more recovered energy generation or waste heat units along the Northern Border

Pipeline. The new units join a fleet of four previously constructed in 2006. Because the units use existing waste heat from the pipeline, they are considered zero-emissions facilities. Each unit has a capacity of 5.5 megawatts.

Backman says Basin Electric is also looking to natural gas and has a combined-cycle facility, called the Deer Creek Station, in the permitting stage. Deer Creek will be located in the eastern part of South Dakota, near White. It will have a capacity of 300 megawatts and will be Basin Electric’s first combined-cycle unit. Also, Basin Electric is adding a simple-cycle gas turbine to its fleet near Culbertson, MT. This 90-megawatt unit is identical to the cooperative’s two units already operating in Groton, SD.

“Basin Electric is integrating these gas resources with our current wind resource development,” Backman says.

### Keeping all options on the table

“Building resources is one thing, but with pending carbon legislation and the possibility of a cap-and-trade system, we’ve got to think beyond

the traditional. We’re looking at expanding our carbon mitigation options to possibly include terrestrial sequestration,” Eggl says.

Basin Electric serves rural communities, so farmers and ranchers are the cooperative’s consumer-members. By working with them to change their land management practices to sequester carbon, Basin Electric and the member could both benefit. Eggl says terrestrial sequestration is currently thought of as a bridge between now and when industrial carbon capture is proven.

“We believe legislation is going to pass; it’s a pretty good bet,” Eggl says. “It could be a cap-and-trade or it could be a tax on carbon. Generally speaking, if we think there’s going to be a market for credits on carbon, we’re trying to think of ways to engage in this comprehensively so we can get the lowest cost per credit for the membership.

“If it’s by working with farmers, if it’s by creating technology to reduce the carbon footprint, if it’s by developing renewables, we’re going to try to figure out a way to meet this problem as best we can.”

## Renewable & Gas Development

