



RESOURCE PLANNING AHEAD

Member input defines Basin Electric's direction

By Andrea Blowers

Do you think you could navigate a road trip from Rockford, MN, to Rifle, CO?

With a good map and highway markers, you could probably do it pretty easily. How about that same trip without a map or road signs? That's a different story. Without a defined route and little knowledge of the areas, the trip becomes problematic.

The same is true for resource planning. Without vital input from Basin Electric's members, it's difficult to know how much and where power will be needed. That's why Basin Electric asks members to complete load surveys, so the cooperative can map out its resource plan to ensure every member's needs are counted.

"We're in the middle of preparing the 2011 forecast right now," says Dave Raatz, Basin Electric manager of marketing and power supply planning. "As the individual surveys come in, what we're seeing is not surprising, but members' needs are changing."

Raatz says the individual member forecasts help Basin Electric create the cooperative's fundamental guiding document, the load forecast. The load forecast is the basis for determining generation and transmission needs for the entire membership and, in turn, defines the long-term financial needs of the cooperative.

"Basin Electric's official load forecast won't be complete until the spring, but we expect to have all the member forecasts done by mid-February," Raatz says. "Right now, we're in the process of making trips to visit with the members. It's been a number of years since we've been out to talk with them, and we see a lot of value in doing that."

Of Basin Electric's 135 members, the cooperative's load forecasting staff completes 87 individual member load forecasts.* Each forecast includes six different forecasts – residential, residential use per consumer, small commercial, large commercial, irrigation and other.

*Basin Electric does not complete load forecasts for members of Tri-State Generation & Transmission Association or Class D member, Flathead Electric Cooperative. Tri-State completes the load forecasts of their members and provides the information to Basin Electric.

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Dave Raatz, Basin Electric

What’s changing and why

“We’re seeing loads adapting to the state of the economy and other factors,” Raatz says. “Some loads are up, while we are also seeing a number of load reductions.” For example, residential loads are down throughout the membership. Around the bigger cities, the economy is one of the main culprits. Construction of new homes has slowed and all but ceased in some areas. In rural communities, it’s not as much the state of economy as there’s been a steady decline in growth and development for years.

Some members have decreased energy development loads while other members have significant increases in the expected power needs for energy development throughout Basin Electric’s member service area. “It’s hard to be sure when or how the economy will settle out, but there are significant issues with the development of energy-related loads without a solid national energy policy,” Raatz says.

“As an example, we’ve completed the load forecast for PRECorp (Power River Energy Corporation),” he says. PRECorp is a Basin Electric Class A member. “Future load projections are down in the Powder River Basin. This is primarily because of gas prices and a downturn in the demand for coal bed methane due to the expected development of more economical shale gas reserves. The economics of producing natural gas from the coal seams in the Powder River Basin simply aren’t there right now.”

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MEMBER LOAD STORIES BELOW

Basin Electric’s 2010 Annual Meeting featured a member load panel with representatives from four member cooperatives. Each spoke on the challenges and opportunities of the loads they serve. Following are excerpts from those presentations.

Dale Haugen, general manager, Mountrail-Williams Electric Cooperative
Williston, North Dakota



“There are 150-some rigs drilling in North Dakota, and 74, compared to 38 two years ago, of those are in our service territory. ... We’ve estimated Mountrail-Williams is going from 80 megawatts to 350 megawatts in 2020.”

Matt Davis, vice president engineering and technical services, Powder River Energy Corporation
Sundance, Wyoming



“Our system went through its boom with the coal bed methane industry in the early 2000s. In 2004 through 2008, we were seeing substantial load growth in our entire service territory. ... But, unfortunately, like all good booms there is the downturn that eventually will happen. This downturn is the result of a lot of different issues.”

Jim Herron, general manager, Mountain View Electric Association
Limon, Colorado



“In 1985, we had 12,500 meters. We doubled that in 1999, we were on the path to double that again probably around 2012 and then the economy slowed down. ... in the last few years our growth is pretty well flattened out.”

Bill McKim, general manager, Midland Power Cooperative
Jefferson, Iowa



“Our load growth since 2005 has averaged just over 12.5 percent, but to give you a feel for the impact of ethanol, if you eliminate the ethanol loads that growth drops to three and a half percent. ... The ethanol industry does have its challenges. Over the past two years, we worked through Chapter 11 bankruptcies at two of three of these facilities. The good news is that we, Midland, came out whole in both cases.”

Keystone Pipeline begins operation

Operation of a large pipeline that's bringing crude oil non-stop from Canada through North Dakota, South Dakota, Nebraska, Kansas, Missouri and Illinois began in the last year. The Keystone Pipeline Project constructed five pumping stations within Basin Electric's service area, each within a different distribution cooperative. One is within Dakota Valley Electric Cooperative, a Basin Electric Class C member, headquartered in Southeastern North Dakota.

Jay Jacobson, Dakota Valley general manager, says each pumping station load is predicted to be about nine megawatts during initial pipeline operation, escalating to 15 megawatts as the pipeline steps up its operation. "There are certainly benefits to serving the pipeline. They fit into our mix and help diversify our service area load," he says. "The pipeline also provides tax payments to the county and as a fairly consistent load, contributes to our margin and usage on our facilities, which helps balance our service mix."

Jacobson says Dakota Valley worked closely with Central Power Electric Cooperative, its power supplier, and Western Area Power Administration in the construction of the transmission system for the pumping station. "It's really a coordinated effort with distribution co-op, G&T, Basin Electric and Western to develop transmission solutions. We all work together."

Tom Meland, Central Power general manager, says once Dakota Valley finalized the contract with Keystone, it took about two years to receive approvals and permits, design the facilities, acquire right of way and construct the line and substation. "We built approximately 23 miles of 115-kilovolt (kV) line using single-pole horizontal post structures from the Western Foreman Substation to the pumping facility. We also built a dedicated 115-4.16 kV, 28 MVA substation to power the Keystone compressor station," Meland says.

Jacobson says the pipeline has been pumping on a limited basis since it became operational in late 2009. "Like every industrial load, they have a commissioning process and a shakeout process."

The pipeline will continue increasing its load factor into 2011.

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Raatz says the forecasts are also showing long-term reductions in coal development. The New York Times and other national media outlets have reported on potential activity in the export of coal overseas, but Raatz says it's not shown to be having much impact on development yet. "We continue to stay more on the conservative side with our forecasts; that includes coal development."

Ethanol development is another load where the marketing group continues to keep a conservative viewpoint. Right now, it's running flat. "It's so volatile," Raatz says. "It's affected by the price of natural gas, electricity, corn and national energy policy. Any of these things could affect the profits, making it either viable or not. There's no in between. . . . We're watching closely to see if it becomes more economically feasible to produce ethanol from different feed stocks, something that could affect different areas of our service territory."

On the flip side, a load that continues its upswing is in the oil industry. Construction of new oil pipelines continues throughout Basin Electric's service area. The TransCanada Keystone Pipeline System, which runs along the eastern edge of Basin Electric's service area, is expected to start taking additional amounts of power in 2011. This is a large load with five pumping stations in Basin Electric's service area, one site each for five different member cooperatives – Dakota Valley Electric Cooperative, Lake Region Electric Association, Central Electric, Dakota Energy Cooperative and Southeastern Electric. Each tap point requires about nine megawatts of power (see sidebar).

Another TransCanada pipeline, under development and set to begin construction in 2011, runs through the western and central cooperatives in Basin Electric's service area. TransCanada's Keystone Gulf Coast Expansion Project will have 11 pumping stations served by Basin Electric member cooperatives and is expected to result in about 120 megawatts of new load. Watch for more on that in a future issue of Basin Today.

In addition, oil development is showing no signs of slowing down. "Previous forecasts showed oil development leveling out in the next four to five years, but this new forecast is showing continued development of oil-related loads through about 2018-2020, primarily in Northwestern North Dakota and Eastern Montana," Raatz says.

What this means for resource development

For the last 10 years, Basin Electric has been in construction mode, growing its generation fleet to satisfy forecasted member load requirements. When the construction program is complete in 2012, Basin Electric will have added more than 1,000 megawatts to support that growth. With the changes seen in the member forecasts, Raatz says Basin Electric will have moderate on-peak surpluses for the next several years.

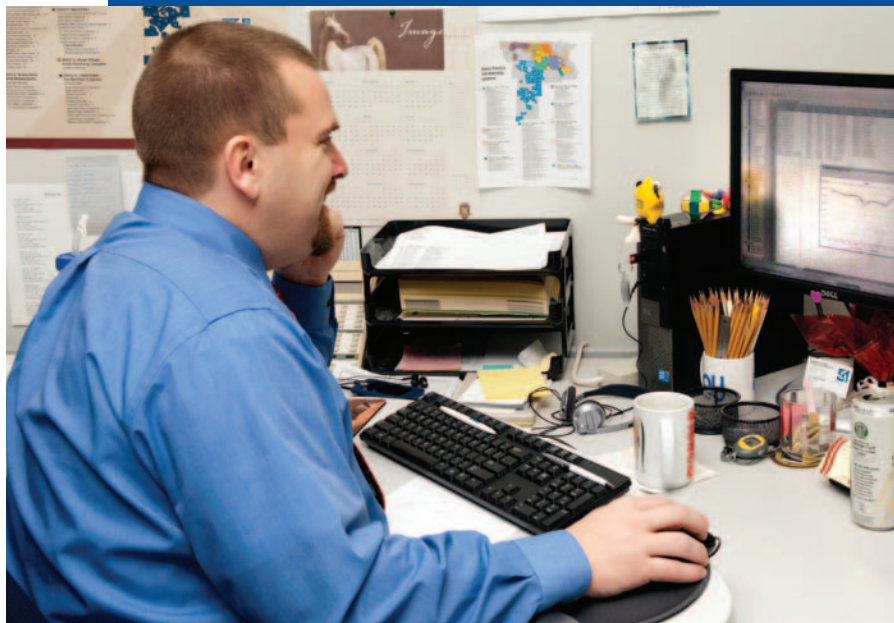
“Though we strive to develop just enough resources to meet our expected obligations on a year-by-year basis, long lead times in developing resources and ups and downs in member forecasts mean Basin Electric is rarely in load resource balance,” Raatz says.

That isn’t a negative perspective. It simply emphasizes the importance of getting the most accurate information possible through member load forecasts.

Sometimes that means communicating directly with industry. “To get a good grasp of the oil development in Western North Dakota, we (Basin Electric and member cooperatives) interviewed 20 oil companies. For coal bed methane, we did interviews as well. Through this interview process we talked not only with the regional representatives our members usually work with, but with staff in the corporate headquarters offices. This helped give us a better understanding of each company’s development strategy over the entire country.”

It’s undoubtedly challenging. The sheer volume of data and numbers can be overwhelming. But, in the last year, handling the data has gotten easier. The load forecasting team has begun using a new software to complete the load forecasts called NDMetrix (see sidebar). This software allows quick modeling and provides a more up-to-date working document for Basin Electric.

“With this new load forecast, or any load forecast, we don’t want to overestimate or underestimate the loads. Member support and review on all levels – consumer, distribution, G&T (generation and transmission) and sometimes even industry – is vital and invaluable. It’s the member’s Load forecast that defines Basin Electric’s direction, from resource and transmission development to financial planning, and ultimately what drives future rate levels,” Raatz says.



Jay Lundstrom, forecast analyst, says with NDMetrix the forecasting group hopes to be able to develop a new long-term forecast every year instead of every other year as it is done now.

NDMetrix offers great potential

According to Jay Lundstrom, Basin Electric forecast analyst, the marketing group began implementing NDMetrix late last year.

“The short-term forecasting process, used to forecast member load levels by hour for about seven days into the future, was getting too time consuming for existing staff to complete on a daily basis. The original intent was to get a software solution that allowed more automation and increased accuracy of the daily scheduling process,” Lundstrom says. “We quickly recognized the solution to deal with the short-term load forecasting issues could be applied for the long-term forecasting as well.”

The greatest benefits of NDMetrix are the ability to implement different economic scenarios (high growth, low growth and expected growth) and have more automation in preparing the forecasts.

Lundstrom adds the software shows great potential. “Eventually, we would like to be able to model different economic scenarios with different weather scenarios (extreme conditions, mild conditions and average conditions). We are also heading toward a goal of preparing a new long-term load forecast to use for each annual budget cycle.”

Before NDMetrix, it took the load forecast group about two to two and a half years to complete the member long-term load forecasts. With the new application, the group is striving to develop a new long-term load forecast every year without additional staff, ultimately providing a more up-to-date working document for the cooperative.