

Getting power to the well sites

By Maxine Herr for the Tribune

Keeping the lights on in western North Dakota is proving to be no small task. Forecasts show the oil patch will continue to see an incredible bump in electrical demand in the next five years, nearly doubling today's load. A recent study conducted by KLJ, a planning and engineering firm, projects load demand in 2017 to be 2,299 megawatts, a 208 percent increase from the expected 1,209 megawatts load for 2012.

"The major build-out, major infrastructure and influx of population is happening right now, and will continue over the next five years," said Mike Wamboldt, Project Manager for the KLJ study. "After that you start going into operation mode with just a little build-out."

The projection for rapid increases from now until 2017 creates a huge demand for additional power plants and transmission lines. Basin Electric Power Cooperative is keeping pace with the electrical rise by constructing two new 45-megawatt generation stations, or peaking units, in northwestern North Dakota. Pioneer Station is located 15 miles northwest of Williston and Lonesome Creek Station is 13 miles west of Watford City. Both are slated to be operational by summer. In addition, two more 45-megawatt units plan to be built at each site and functional within the next two years.

In addition to these stations, Basin Electric wants to add nearly 200 miles of transmission line to carry electricity from their Antelope Valley station in Beulah to Killdeer, Williston and on to Tioga.

"It would do two things: strengthen the transmission system but also provide electricity into the area without building new generation. We've got generation in Beulah, so instead of building new generation this will help develop power to the area," said Basin Electric spokesman Daryl Hill. "The load isn't coming at one time; it's gradually increasing, so you build to meet the load. It's entirely possible we may have to build something else. But what happens if this load doesn't materialize? You don't want to over-build or under-build. As a supplier to our member systems in that area, we are under obligation to provide generation they need to sell power to their customers."

Montana-Dakota Utilities invested \$74 million last year in electric and natural gas infrastructure in the Bakken region and anticipates investing another \$70 million in 2013. In 2012, they installed nearly 2,600 new electric services in the Bakken region, which includes an area from Dickinson to northwest North Dakota and northeast Montana.

The company has also upgraded substations and transmission lines in the area, constructing two new 115-kilovolt lines serving Kenmare and Dickinson.

McKenzie Electric Cooperative General Manager John Skurupey said development in the Watford City area is moving fast, and utilities are often playing catch-up.

"Everybody's got that concern and we share that concern," Skurupey said. "It's our job to serve our customers. Their well-being is paramount to what we do here."

Skurupey said load shedding, when high consumption customers are required to scale back on their energy usage, is always a possibility. Load shedding is necessary when

overloads occur and the system needs to maintain a reliable and stable voltage. He said McKenzie Electric has avoided the need for load shedding but predicts next winter will require an education campaign targeted to its largest consumers so they can be prepared. When the transmission systems owner, the Western Area Power Administration, sends notice for load curtailment, the cooperative has just 30 minutes to implement their plan to meet pre-determined load levels.

“If we don’t hit that load, they’ll just shut things off randomly,” Skurupey said. Mountrail-Williams Electric Cooperative manager Dale Haugen said Williston faces the additional challenge of being at the end of the current transmission line that begins north of Bismarck, then up to Minot and through Stanley and Killdeer. So when Williston’s energy usage is heavy, Haugen needs to reset the local system to avoid knocking off electricity to all those cities.

“If a system is unstable, it’s like a breaker in your house. You have to reset everything, so you shut everyone off, but it only results in short blinks for consumers,” Haugen said. Haugen said with increases of 30 to 35 percent energy usage each year since the oil industry took off in the area, their system is on the upper end of its capacity. And while the peaking units coming on line through Basin Electric provide some stability, he said they are not a long-term solution.

“We don’t want to rely on these band-aids out on the countryside,” Haugen said. “It’s good that Basin Electric is looking to build transmission facilities, too, but landowner issues are there.”

Easements are the biggest obstacles for local cooperatives as often there are absent landowners or multiple owners to contact, and when owners fight for top dollar for permission to develop on the land, it stalls the process.

“Everything’s got Bakken pricing on it,” Haugen said. “So we pay, pay, pay and what goes up? Rates, rates, rates. Then everybody pays. That’s the way it’s kind of ending up.” When landowners draw a line in the sand, projects slow to a crawl, and in worst-case scenarios, are eliminated.

“At some point we just tell the oil companies we’re not getting to that well, and they have to find an alternative. That gets expensive, and it adds more trips to the wells, more traffic on the roads, more everything,” Haugen said.

“[Drill operators] actually use diesel generators which are not the greatest in winter. Some have tried to use the flare gas, but it is too intermittent and there’s a lot of downtime using those alternatives,” Skurupey said. “In many cases, the last thing that goes in is electricity, so many landowners look at it as the last opportunity to get what they really wanted in the process of getting an oil well drilled on their land.” Haugen said Mountrail-Williams Electric Cooperative strives to be proactive with landowners, meeting with all parties involved to make sure they understand the whole scope of the project.

“We’ll sit down with landowners when the well goes in and explain that pipelines and electricity will need to be put in, so when it’s over, you can look at who didn’t do what they promised. If the landowner isn’t happy, we all try to come to the table because, frankly, sometimes Mountrail-Williams has made the mess — left the fences open, cattle got out. It isn’t all oil companies; I have to look in the mirror sometimes too. But we really try to make sure there are no surprises for the landowner when that oil well pad is drilled. We become their advocate.”

Haugen is hoping for a strong solution to the electrical demand. If Basin Electric is able to construct the proposed transmission line, he believes that’s a solid answer to the problem.

Currently the area is outfitted with two lines, one 115-kilovolt and another 230-kilovolt. The proposed line is expected to be 345 kilovolts.

“The 230-kilovolt loop is great and capable, but if it breaks or falls down and we need to do maintenance on it, the 115 can’t handle the load,” Haugen said. “So we can’t do maintenance, and that is no way to run a utility. So we need another line, and if you’re going to go through the work to build it, you might as well build it bigger. Then if that 345 broke, the 230 could handle it and that brings more stability to western North Dakota.”

A few years ago, Mountrail-Williams chose to invest their own resources to build four substations which can provide another 800 megawatts to the region. Their current load is only 200 megawatts, but the current 230-kilovolt transmission line can’t handle any more anyway without further upgrades.

“We’ve tapped that line so much it’s almost become a distribution line instead of a bulk highway,” Haugen said. Haugen likens the transmission system to the state’s roadways. The 230-kilovolt transmission line used to be the area’s interstate or “freeway” when there was a large distance between taps. New substations along the line have created “stoplights” and turned that freeway into a rural highway.

“What used to be our freeway became ‘Highway 2,’ but that’s getting busy and we really need an express lane. Our ‘I-94’ is that 345 [kilovolt line], where there’s a long way between taps. With population comes growth, so you have to build a bigger freeway,” Haugen said.

With studies like KLJ’s alongside their own internal research, Basin Electric continually looks at the future to ensure they have the facilities available to meet the needs.

“It’s imperative from a power supply standpoint to make sure we have the generation and transmission available to meet the need,” Hill said. “The last thing we want to have happen is for the place to go dark.”