

Phase III construction at Lonesome Creek Station is wrapping up. Phase III will add 90 megawatts of additional peaking capacity for Basin Electric's membership.

# PROJECTS POSITIONING CO-OP TO MEET CONTINUED NEED

By Chris Gessele

**For the last several** months, the headlines out of the Williston Basin have not been ideal with commodity prices remaining low.

However, the need for safe, reliable and affordable power continues, and Basin Electric is working to provide just that for its members.

"The last few years have been an interesting and challenging time for us," says Matthew Greek, senior vice president of Engineering and Construction. "Member growth has driven a seemingly continuous stream of transmission and generation work to support it; our continued efforts to plan for a successful future at Dakota Gasification Company gave us the urea project; and a torrent of new and more challenging environmental regulations has led to a variety of projects at each of our coal facilities."

Below are updates on several of the cooperative's projects currently under way that will enable the cooperative to serve its members far into the future.

## Peaking at the right time

Two units have been added to Lonesome Creek Station to bring the plant's total capacity to 225 megawatts (MW).

Construction continues at two natural gas-based peaking stations in western North Dakota.

At Lonesome Creek Station, west of Watford City, ND, planned Phase III construction is just about wrapped up. The project will then move into a testing phase to work out any operational issues prior to the units being declared commercial later this year. Phase III consists of the addition of Units 4 and 5, with

the addition of a sixth unit should load forecasts require additional generation in the Williston Basin.

"Units 4 and 5 will add 90 MW to the plant, bringing the plant's total capacity up to 225 MW," says Darrell Slavick, construction coordinator.

The Lonesome Creek units will be able to be fired up and running within 10 minutes

of notice to provide energy and voltage support to the region.

"The overall safety culture during construction has been very good and we're looking forward to wrapping things up," Slavick says.

Currently at 135 MW, Pioneer Generation Station, northwest of Williston, ND, is in the midst of Phase III

“Especially with coal under the microscope right now, this facility is just another notch in assuring we'll produce quality power for Basin members.”

Mark Winn



Work is progressing on setting the steel towers on the concrete foundations for the North Killdeer Loop transmission project. There are 161 structures being set in total.

construction, adding 110 MW to the grid, provided by 12 natural gas-based reciprocating engines that each have a generating capacity of 9.3 MW.

First fire of the first reciprocating engine was achieved on April 27, and the second engine was fired up on April 28. The remaining engines will be fired up in the next several weeks.

“Especially with coal under the microscope right now, this facility is just another notch in assuring we’ll produce quality power for Basin members,” says Mark Winn, construction coordinator II.

The new additions to both Lonesome Creek and Pioneer Generation Stations are expected to go commercial after operational testing in late 2016.

## Transmission projects progressing

Generated power can’t get where it’s needed without a reliable way to deliver that power. That’s where the 345-kilovolt (kV) Antelope Valley Station (AVS) to Naset and North Killdeer Loop transmission projects come into play.

Reclamation is in the works along the now-energized AVS to Judson section of the 200-mile AVS to Naset transmission project and assembly of the Roundup Substation is nearly complete. Construction is under way on the final stretch of the AVS to Naset transmission line – Judson to Naset – and should be complete by the end of 2017.

Phase I of the North Killdeer Loop, an addition to the AVS to Naset transmission project, consists of about 28 miles of 345-kV transmission line and two substations that will deliver power into member cooperative McKenzie Electric Cooperative’s service territory.

Construction of Kummer Ridge and Patent Gate substations should be complete in time for the North Killdeer Loop Phase I project’s energization by the end of August.

As of late April, about half of the 161 steel poles were in place, according to Paul Telehey, construction coordinator. Conductor will be strung on the poles starting mid-May.

“With the good weather we’re moving along quite well. Spring has been great,” Telehey says.

The project is scheduled to be operational by late 2016.

## Emissions control project update

A project to install selective non-catalytic reduction (SNCR) equipment at Leland Olds Station near Stanton, ND, is under way.

The equipment will help the power plant meet NOx reduction standards identified in the North Dakota Department of Health’s Regional Haze Implementation Program. Both units at Leland Olds will be fitted with this equipment at a total cost of about \$29 million.

According to Jim Lund, senior project manager, the installation project began in August 2014 and plans are to begin testing in spring 2016. Leland Olds Station must be in compliance by April 2017.

The SNCRs will be comprised of several components, including a urea storage building, urea mixing equipment and piping to the injection ports to the boiler.

The Laramie River Station near Wheatland, WY, is planning for the installation of selective catalytic reduction (SCR) emission control technology on one unit. SCR is a process where precise amounts of ammonia-based reagent are combined with the flue

gas to speed the reduction of nitrogen oxides (NO<sub>x</sub>).

One of the most visible components of the project will be the 250-foot tall SCR catalyst reactor. The project is estimated to cost about \$330 million and construction is expected to begin in spring 2017.

At Antelope Valley Station near Beulah, ND, separated over-fire air (SOFA) and natural gas ignition projects are under way on Unit 2 to stay in compliance with NO<sub>x</sub> emissions to meet regional haze requirements.

SOFA is a method of controlling nitrogen oxide emissions by introducing combustion at a higher point in the furnace, which reduces the fireball temperature inside the boiler.

The natural gas igniters are used for unit startups. The Antelope Valley units were designed to use fuel oil during startup. During startup with fuel oil, flue gas would bypass the baghouse, which removes fly ash, otherwise the fuel oil would damage the fabric bags in the baghouse.

Environmental regulations no longer allow flue gas to bypass the baghouse during startup, so Basin Electric switched its startup fuel to natural gas. A newly-installed pipeline delivers natural gas from Dakota Gasification Company's neighboring Great Plains Synfuels Plant to Antelope Valley.

Total investment in both Antelope Valley projects is estimated at \$20 million.

SOFA and natural gas igniters were installed on Unit 1 in 2014.

## Fertilizer for local farmers

With engineering completed and construction about 30-percent complete, the urea production facility at Dakota Gasification Company's Great Plains Synfuels Plant is making big strides.

The onsite workforce recently reached nearly 500 construction workers as eight different contract companies are working on the general construction, power supply, concrete foundations, tanks, earth work and piping, according to Jim Greer, project manager.

Critical pieces of equipment were manufactured and have traveled from places such as Austria and Japan. The project will also include more than

22 miles of pipe, delivered by manufacturers from the Gulf Coast and Midwest.

"This unique, innovative project overall is progressing right before our eyes. We have a great team of people, from the many disciplines of craft workers, to engineers, pipefitters and electricians from literally all over the country," Greer says. "I am very pleased to see everyone work hard together in sync, safely and timely to get these results."

The urea facility is slated to be operational by mid-2017.

"We are proud to be part of safely developing and completing these projects to meet our members' needs. Still we continue to look to the future by planning and developing cost-

effective options for addressing these same basic challenges in the coming years," Greer says.

"While we can't say for sure what growth or regulations will come our way, we can lay the groundwork for future projects both through early-stage development activities like site selection as well as research and development of promising technologies."

**“ We are proud to be part of safely developing and completing these projects to meet our members' needs. ”**

*Matt Greek*



The 250-ton pool reactor is set in place as part of Dakota Gasification Company's urea facility construction project.