

Powering a Nation

Energy development on Native lands

By Tanya Lee

Think “energy development on Indian lands” and probably wind, solar, geothermal and biomass projects – renewables – are what come to mind, but that's not all that's happening on Native American reservations. Coal, which supplies more than 50 percent of America's electricity, is still very much in the mix, and for good reason.

Sen. Ben Nighthorse-Campbell, R-Colo., told Congress just five years ago, “Indian lands comprise approximately 5

percent of the land area of the United States, but contains an estimated 10 percent of all energy reserves in the United States, including 30 percent of known coal deposits located in the western portion of the United States.”

Coal deposits are a big part of many tribes' patrimony. Coal can be the resource that provides a decent standard of living, sends kids to college, and finances the struggle to affirm and maintain tribal sovereignty.

Steven J. Morello (Sault Ste. Marie Tribe of Chippewa Indians) is director of the U.S. Energy Department's Office of Indian Energy Policy and Programs. “Energy development will be worth three times what gaming is worth in Indian Country,” he said. “Tribes need to take stock of their energy resources.”

Morello listed some of the energy projects on Indian reservations: the Northwest Band of Shoshone Nation is building the first of five geothermal plants

and its entire output is already sold; the St. Croix Chippewa Indians of Wisconsin have built an exemplary biomass facility; and the Oklahoma Cherokee, the Navajo Nation and many other tribes are working on wind projects.

Then there are the major coal projects: Many Stars CTL (coal-to-liquid) facility on the Crow Reservation in Montana and Desert Rock Energy Project, a coal-fired power plant in New Mexico on the Navajo Nation.

“The CTL plant will produce synthetic jet fuel for the Air Force,” said Morello.

When fully operational, the plant will provide millions in revenues each year to the Crow Nation. This will give them the opportunity to truly determine their own destiny.”

On Desert Rock, Morello said, “The Navajo Nation doesn't yet do gaming and has great economic need. We advise tribes, ‘Don't sell your raw materials, sell a product.’ That's what the Navajo Nation is

doing. The plant will generate electricity and provide jobs.

Many Stars CTL Project

Crow Tribal Chairman Carl Venne said the Many Stars Coal to Liquid project would not only “secure the future of the tribe and its members for generations, but would also enhance national security by making the United States less dependent on foreign oil.

“On the Crow Reservation we have a 47-percent unemployment rate and a yearly average family income of \$7,000 to \$10,000. Our people are the poorest of the poor; we don't make money from gaming,” Venne said. “We together as Indian tribes have an American dream to own our own homes, have jobs, and send our kids to school. But the federal government can't do this.

“We've given up a lot to this nation, which has not taken care of our tribe. Our land base was 38 million acres; now it is 2.5 million acres. What it boils down to is this: The government has managed our

resources for 140 years and we lost everything. We're tired of waiting for the federal government. We want the opportunity to make our own decisions and mistakes.”

How important is this project for the tribe? “We have the resources to secure the reservation for generations to come. That's how important it is,” Venne answered.

Ken Roberts, COO of Australian-American Energy Company, a subsidiary of Australian Energy Company, the developer of Many Stars, explained that the project would use coal gasification combined with the Fischer-Tropsch process, generally referred to as coal-to-liquids: Coal is first partially oxidized to create a synthesis gas made of hydrogen and carbon monoxide and then it is converted catalytically (a chemical process under heat and pressure...the Fischer-Tropsch process) into a synthetic crude. That can then be refined into transportation fuels and other chemicals. “Basically, the process takes the coal molecules apart and puts them back

together in another form to create ultra-clean transportation fuels. In this case, the plant will produce both synthetic diesel and jet fuel.”

Roberts said the Fischer-Tropsch process has been around since before World War II. In the past several years the Department of Energy and the Department of Defense have carried out studies to verify the benefits of synthetic fuels made using the Fischer-Tropsch process. Results have been good, and the Air Force is moving toward certifying its entire fleet of jets to use this fuel.

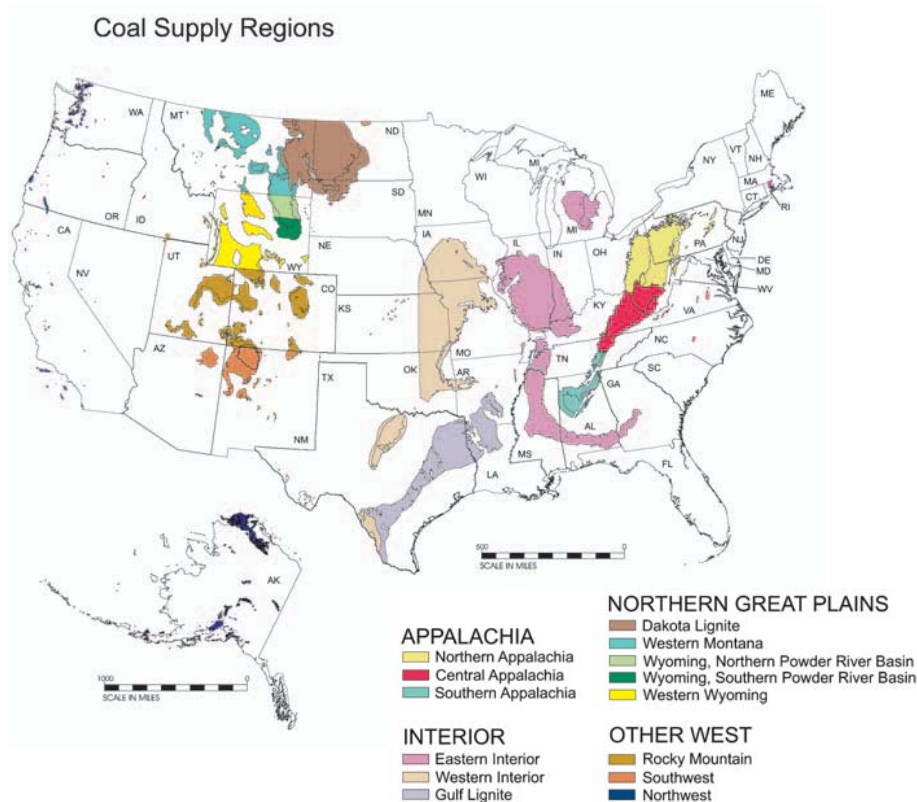
“The technology will help us achieve energy independence and security,” Roberts said. “This is fuel produced from domestic supplies of resources, not foreign oil. The project is of huge strategic importance to the U.S. and helps set the pathway for other CTL projects in this country.”

The Crow project will need two to three years for design work, including final site selection of the plant and the coal mine that will supply it, with these initial development costs in the \$100-million range.

About \$7 billion will be needed in capital costs for construction of the plant, which will take about four years. “CTL facilities are highly capital-intensive projects,” said Roberts. Investors from the U.S., Australia, and other countries will get a reasonable rate of return on the project because oil prices are so high. “Oil prices of \$75 a barrel or higher make CTL economically viable,” said Roberts.

The Crow Tribe will receive royalties and taxes from the coal mining operation as well as share in the profits from the CTL plant, with the exact dollar amount being related to future crude oil prices. In addition, “Part of our agreement is to help develop education and training programs to meet the needs of the project and operations into the future,” said Roberts. The project is expected to create up to 4,000 temporary construction jobs and up to 900 permanent jobs on a reservation of 12,000 people.

Coal gasification in a CTL plant takes



Source: Energy Information Administration, Office of Integrated Analysis and Forecasting

place in an enclosed system, which makes it possible to capture significant amounts of the carbon dioxide produced by the process. The carbon dioxide can then be injected into deep geologic structures (geosequestration) or sold to oil production companies for enhanced oil recovery in older reservoirs.

Roberts explained that underground gas storage is not experimental. “Naturally-occurring carbon dioxide reservoirs exist and are currently being used for enhanced oil recovery, such as Jackson Dome in Mississippi and Sheep Mountain in Colorado. Natural gas has been injected and stored in underground reservoirs by the petroleum industry for a long time.” He said the company is working with the Department of Interior to locate potential storage locations for the carbon dioxide generated by the Many Stars Project. There are also many oil fields in the area that could utilize the carbon dioxide for enhanced oil recovery.

About 3 percent of the country's coal is under the Crow Reservation. This project, Roberts said, would use stranded coal, coal that does occur in sufficient quality or quantity to be economic to develop if costs for transporting the coal to power plants have to be added in. “The CTL plant can be built near the mine to reduce costs of transporting the coal,” said Roberts.

Water is another requirement for the project. Fifteen thousand acre-feet a year will be required to produce 50,000



Crow Tribal Chairman Carl Venne (bottom row, second from the left) and Allan Blood, chairman of Australian-American Energy Company (bottom row, third from the left), sign the agreement for the Many Stars CTL project. Photo courtesy of Many Stars CTL

barrels a day of transportation fuel, “That's the same amount that would be needed to irrigate a 7,500-acre field of alfalfa,” said Roberts. “Fifteen acre-feet a year represents less than 3 percent of the tribe's water rights on the reservation today. We intend to be very attentive to water and carbon dioxide concerns. Our objective is to be technically reliable, environmentally responsible and safe.”

Desert Rock Energy Project

Steven Begay is general manager of Diné Power Authority, the Navajo Nation's coal energy development arm and co-developer with the international development company Sime Global Power subsidiary Desert Rock Energy Company of the proposed Desert Rock Energy Project.

Begay is acutely aware of the place coal could have in economic development on tribal lands: “There is a huge supply of coal here. From Four Corners to Grants, N.M., there is enough coal under lease to last us for 30-50 years. After that, there are harder-to-retrieve supplies good for another 300-500 years.”

The Desert Rock project, an advanced-technology coal plant, is composed of two 750-MW units that use supercritical boiler technology, Begay explained. The units burn pulverized coal and the power plant will be built so that it can be retrofitted for carbon-dioxide capture and sequestration when that technology is mature.

For now it will have the latest emission controls, among them selective catalytic reduction (SCR) technology (the same system used to control vehicle emissions) designed to reduce emissions of carbon dioxide, nitrogen oxide, mercury and other pollutants, a bag house to contain particulates, and wet scrubbers to reduce sulfur dioxide emissions.

Frank Maisano, a spokesman for Desert Rock Energy Company, said: “This plant will be built to meet the most stringent air-pollution limits ever imposed in the United States. Other projects have used pieces of

Federal Loan Guarantees

Steve Morello said that the Department of Energy has revamped its loan guarantee program for energy development. “DOE has consolidated all loan programs into one and is currently accepting applications. The second group of awards will guarantee 90 percent of the loan value so long as the project uses preferred technologies. “There are large amounts of money available,” said Morello.

Visit <http://www.lgprogram.energy.gov/apply.html> for details.