

A Model for Coal Generation



THE APPEAL OF MINE-MOUTH POWER

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Perhaps the largest coal-fired power plant now under construction, the 1,600-megawatt Prairie State Energy Campus in downstate Illinois might become a model for other successful build-outs as the electrical industry negotiates the green transition.

Early on in the Bush administration, Peabody Energy, the largest public coal-mining company in the world, decided that one way to increase its slumping coal sales in the Illinois Basin and the Southwest would be to convert its vast coal holdings into electricity on its own. The company intended to do this by constructing three mine-mouth coal-fired power plants – one each in New Mexico, western Kentucky and southern Illinois – and sell the power commercially. The New Mexico project was quickly tabled and soon thereafter the Thoroughbred Energy Campus in western Kentucky became mired in permitting challenges. But up north in Illinois, Peabody steadily progressed with plans for its Prairie State Energy Campus. When the combined electricity generating station and coal mine are complete and operating in 2012, they will be capable of serving up to 2.4 million homes in at least nine states as distant as Virginia, West Virginia and Pennsylvania.

Illinois, with more than 38 billion tons of recoverable coal reserves – more bituminous reserves than any other state and more overall coal reserves than all but six countries in the world – relies upon inexpensive coal-fired energy to support its large manufacturing and industrial base. Peabody Energy and its subsidiaries are also some of the largest owners of those massive coal reserves.

After several years of negotiations, lawsuits and other legal challenges, in October 2007, Peabody received a long-sought-after final air permit for the huge greenfield power plant. Almost immediately, PSE engaged Bechtel for the plant's construction and "it's been going like gangbusters ever since," said Peter DeQuattro, CEO of Prairie State. The site, now more than 10 percent complete, provides work for more than 1,200 manual laborers engaged in round-the-clock construction and sees constant earth-moving for the adjacent mine. "It's a beehive of activity," said DeQuattro. Over time, the project will inject some \$2.8 billion into the Illinois economy, mostly downstate. It will create 2,300 to 2,500 temporary construction jobs and perhaps 500 permanent positions among the power plant, coal mine and other assets. "We look at having an estimated \$125 million annual impact on the local economy," said DeQuattro. "It's both a tremendous responsibility and privilege."

"The sheer size of the project is the biggest factor for me," said David Price, who is overseeing plant construction. "It takes a lot of real estate for any new power plant, particularly a greenfield project such as this one where there's no infrastructure in place. It's not like adding unit. All of what you see here today is one year from the groundbreaking. On day one all we

A \$4 billion
Prairie State
Energy Campus
now under construction
in Southern Illinois promises to
be a model for the nation, supporters
say. Photograph by Lee Buchsbaum

had was a small graded area with a tent on it for the opening ceremony. That's it."

But the lesson lies in how PSE has come so far.

As the project evolved, Peabody realized it should focus on mining coal and decided to partner with a proven utility to handle and market the electricity. The greatest interest came from Midwestern municipal power providers and energy co-ops. By the time the first shovelfuls of dirt were being moved on the site, Peabody was but one stakeholder in the newly created Prairie State Energy Campus, which had morphed into a not-for-profit entity 95 percent-owned by the eight-member Prairie State Power Group that includes American Municipal Power of Ohio, the Illinois Municipal Electric Agency, the Indiana Municipal Power Agency, the Kentucky Municipal Power Agency, the Missouri Joint Municipal Electric Utility Commission, the Northern Illinois Municipal Power Agency, Prairie Power and the Southern Illinois Power Cooperative. Peabody maintains only a 5 percent ownership stake through its Lively Grove Energy subsidiary.

"Early on, we had hoped that Peabody might be interested in constructing a power plant in Indiana and we wanted to participate," said Raj G. Rao, president of Indiana Municipal Power Agency and chairman of the Prairie State board of directors. But as the project evolved and Peabody received the most traction in Illinois, the company began looking for partners in the ownership of the plant instead of subscribers to its energy. "I said 'yes,' especially because it's a mine-mouth operation. With those economics, I saw what an opportunity this is for our customers," said Rao.

Through his and Peabody's efforts, Rao brought other partners in, and by October 2007, "we were able to subscribe 95 percent of the project to public power entities. We all felt that by building this type of plant, we would ensure for our customers a low-cost, reliable and environmentally responsible supply of electricity," said Rao.

With PSE's unique bundled fuel position, each of the partners owns a complete vertical slice of the project. That includes both the mine infrastructure and the coal assets. "It's an unusual relationship as generally power entities enter into a partnership of common assets or have coal under contract for a term," said DeQuattro.

Environmentally, PSE will be one of, if not the "cleanest advanced pulverized coal plant in the U.S. fleet," said DeQuattro. "We'll feature state-of-the-art pollution controls, wet and dry electrostatic precipitators, nitrogen oxide scrub-

bers and limestone scrubbers for SO₂ removal and for mercury." With its enhanced thermodynamics, PSE actually will be emitting 80 percent less than most existing power plants and will be 15 percent more CO₂ efficient than any other similar existing power plant. "When you take into consideration our adjacent fuel source, total emissions from the plant will be virtually cut in half," said DeQuattro. At the end of the day, "Prairie State's environmental profile prevailed in the courts of law and public opinion," said Rick A. Bowen, Peabody senior vice president of Btu conversion and strategic planning, largely because "each environmental review brought stronger affirmation of Prairie State's advanced environmental controls."

"Another part of the foresight for Peabody and others was the establishment of the Midwest ISO – a huge liquid market with individual nodal points – which allows ourselves, the owners, to transfer the value to where we want to use it: across nine states as far away as Virginia and Pennsylvania," said DeQuattro. In searching for a cost-effective baseload energy source for the heavy manufacturing centers that the plant's energy will serve, "it's a great model for others, one that needs to be looked at and leveraged for the future," said DeQuattro.

AMP-Ohio signed on to the project largely because "we needed to reduce our membership community's exposure to the volatile wholesale energy market, which currently supplies more than 60 percent of our baseload need," said Kent Carson, AMP-Ohio's senior director of communications. "With prices going up – for both coal and energy – it's hard to predict where costs are going. Because of that, we've been moving more towards developing assets like PSE that our members either directly own or control."

"We are hoping that this model can be replicated," said Rao, referring specifically to the super joint action agency that his Indiana Municipal Power Agency and the other municipal power providers and energy co-ops created. "We believe that what we are doing could be an example for future power projects, be they coal fired, nuclear or green." While Rao agrees that municipal utilities and co-ops coming together is not unique, the size of PSE is the defining factor. "Before, we were depending on others to provide our energy. Now we can show that we can create it as well," he said. "We've done smaller projects, but nothing at the level of \$4 billion. Once we do this, we will have the confidence that you can go bigger." ☺



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