

ASHEVILLE
CITIZEN-TIMES

March 21, 2008

Clean-coal Technology is Vital to Our Energy Needs

By Roscoe Richter

One of the best hopes for a prosperous North Carolina is also one of the least appreciated: clean-coal technology. Its success in achieving cleaner air is proven. The Environmental Protection Agency says coal-fired electricity plants are 33 percent less polluting than in 1980. And nowadays more electricity is being produced from the same amount of coal, boosting output and the value of the fuel.

Although coal is inexpensive and plentiful, Duke Energy has abandoned plans to build new coal plants in North Carolina and South Carolina, on grounds that underground geological formations in the Carolinas are not suitable for storing carbon dioxide emissions from coal burning. Carbon storage or sequestration, as it's called is essential if we hope to mitigate carbon emissions at existing coal plants and make continued use of coal as a power plant fuel. Injecting carbon dioxide underground into a salt cavern or oil and natural gas field is a common practice in enhanced fuel recovery, but it has never been tested in a large-scale demonstration. And the technology for capturing carbon dioxide emissions at coal plants is still being developed. But carbon capture and storage is at the top of the U.S. Department of Energy's 2009 budget priority list, with \$400 million in research funds and \$241 million for projects to demonstrate sequestration.

Economic needs

Instead of coal, Duke Energy is preparing to use natural gas and renewable energy sources in the near term, followed by nuclear power. But the idea of abandoning coal which accounts for 62 percent of North Carolina's electricity ignores economic reality. Natural gas prices have tripled in the last two years, domestic gas production is continuing to decline and there isn't enough of the fuel available to meet growing demand, especially for electricity generation. Solar and wind are intermittent energy sources, too limited to provide "base-load" power at industrial strength. Nuclear power provides base-load power, but there won't be enough of it, and new nuclear plants won't become available soon enough to meet North Carolina's needs. Consequently, in years ahead, we could wind up with electricity shortages and higher monthly bills.

More to the point, countries with fast-growing economies such as China and India, which are large and growing emitters of carbon dioxide, will not endanger their economic growth by abandoning the use of coal. China alone is on track to add 562 coal-fired plants that's nearly half of the world total of coal plants expected to come online in the next eight years. India isn't far behind. Quite simply, even if the United States stopped

burning coal altogether, the overall effect on atmospheric levels of carbon dioxide would be small, and global levels would continue to rise substantially.

Full speed ahead

Technology development is the wisest course. Coal currently accounts for more than half of the electricity generated in North Carolina and the United States, and is projected by most energy experts to remain the mainstay of electricity supply through 2050 and beyond. Sustaining coal as a viable energy option requires progress not only in carbon capture and storage but also coal plant efficiency. Currently, coal plants extract only 33 percent to 35 percent of the energy value of the fuel. Significant efficiency gains can be realized by increasing the peak temperatures and pressures of the steam cycle. A 10 percent efficiency gain translates into a carbon dioxide emissions reduction of 25 percent. The Electric Power Research Institute, an arm of the utility industry, has established an efficiency target for conventional pulverized coal plants of 43 percent to 45 percent by 2030. And that's with carbon capture and a 25 percent reduction in the capital cost of building a new coal plant.

New advances in clean-coal technology work to everyone's benefit. If methods for improving coal plant efficiencies and capturing and storing carbon are made available worldwide, we would be able to stabilize atmospheric carbon dioxide levels. And with our 250-year coal supply, the United States would continue to produce large amounts of energy with a secure domestic fuel, without imposing billions of dollars in lost economic output and higher consumer costs.

For North Carolina to grow and prosper, it cannot rely solely on one energy technology or group of technologies. A diversified mix including coal, nuclear, conservation (energy efficiency), load management and renewable energy sources must be available. To assume that coal can be replaced without serious harm to our economy is a long stretch of the imagination.

Roscoe Richter is a retired employee of the mining industry, where he worked for more than 40 years. He lives in Robbinsville.