

## **Financing Nuclear Power Plants: Risks and Rewards**

By Kathy Warbelow

In April 2011, NRG Energy Inc. said it was pulling financial support for doubling the size of its South Texas Project nuclear plant near Bay City.

At the time, analysts and the company itself said the recent Fukushima Daichi nuclear accident in Japan had made financing the two new units too difficult.

But at a May 2 McCombs panel discussion, participants said a less dramatic factor was at work: decade-low prices and a nationwide glut of natural gas had dramatically altered the balance of power -- literally -- between nuclear and natural gas.

"Fukushima did not take nuclear off the table; \$2 gas did," said Dale Klein, the university's associate vice chancellor for research and former chairman of the Nuclear Regulatory Commission.

While the session topic was nuclear plant financing, the discussion spread to broader issue, including the future of coal-fired generation in Texas and how to assure that the state has a diverse power generation portfolio.

Financing a nuclear plant has never been easy. The plants can take a decade to permit and build, meaning their owners will have spent billions of dollars before they sell a single megawatt.

Nuclear plants can work in regulated markets, where investors can get guaranteed rates. Southern Co. is building two nuclear plants in Georgia; two more are under consideration in South Carolina, Klein said.

In unregulated markets such as Texas, where rates are set purely by market prices for power, the risk for investors and creditors is just too high, said Brant Meleski, a managing director at Bank of America Merrill Lynch who focuses on utilities.

The Lower Colorado River Authority will spend about \$500 million to build a 540-megawatt natural gas plant to replace its aging Ferguson plant west of Austin, said Michael McCluskey, the authority's manager of resource development. A comparably sized nuclear plant would cost 10 times more, he said.

"Nuclear is out of the money right now," McCluskey said.

That was not always the case. Austin Energy, the city-owned electric utility, signed on as a co-owner of the South Texas Project's first two units in the 1980s after facing severe shortages of natural gas to fuel its power plants, said McCluskey, a former Austin Energy executive.

In that case, nuclear power became a reliability hedge.

Gas supply reliability is no longer an issue in Texas, but providing a reasonable risk-return opportunity to investors for new nuclear is a challenge.

“The risks associated with a 10 year planning and construction cycle combined with significant upfront capital costs for new nuclear cannot be offset by a 5 year forward market for power and natural gas hedging” Meleski said.

### **How renewables change the picture**

Ross Baldick, a professor of electrical engineering at the Cockrell School, raised this question: Do nuclear plants make sense as Texas increases its use of power from renewable sources?

“We’ve gone from zero to 10 percent wind in about a decade,” he noted.

And as wind and solar play a bigger role in providing baseload power, the state will increasingly need intermediate and peaking power plants to fill in the gaps, Baldick said.

Natural gas plants are flexible enough to do that, but “nuclear is very inflexible in coping with variability of demand,” he said.

### **The need for diversification**

The panelists agreed that new coal plants are unlikely because of the potential creation of carbon legislation, the likelihood of prolonged cheap natural gas, and the recent EPA legislation penalizing release of mercury and other particulates associated with burning coal for fuel. But as owners retire the state’s older coal plants, where will the replacement power come from?

“Renewables can’t replace all the coal that is being taken offline.” Meleski said. “If all you are building is gas, you may be subject to major price shock in 5 years, 10 years. You have to have some new nuclear in the portfolio.”

### **The case for nuclear:**

Nuclear plants cost a fortune to build, but have lower and predictable operating and maintenance costs, Klein said.

Natural gas plants are far less expensive, but the price of fuel is unpredictable.

“In Texas right now, you can’t afford” to build nuclear plants, he said. “But if we had more baseload price stability, it would be better for the state.”

Quote for sidebar:

“What you are telling me is that, while building a nuclear plant is very risky, not building nuclear plants is even riskier”

Sheridan Titman, finance professor, panel moderator