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Nation watching as Pennsylvania decides natural gas future

By Bryan Schutt

Pennsylvania has become a microcosm of the national energy picture.

Long reliant on coal, the state mandated renewable energy investments in the past decade, and in November 2004, Pennsylvania's Alternative Energy Portfolio Standards Act, No. 213, was signed into law.

But while the state had its eyes on alternative energy, the exploration and production industry focused on unconventional resources and executed a massive land grab. Now, six years after Pennsylvania forged ahead with its AEPS, the Keystone State finds itself "the Saudi Arabia of natural gas."

Thanks to the Marcellus Shale, natural gas is all the rage in Appalachia. Company reports show burgeoning production at better-than-expected levels, and with the flexibility offered by two distinct producing regions — dry gas in the northeast and wet gas in the southwest — the rig count is only expected to rise. Environmental concerns over extraction techniques aside, the question becomes where will all that gas go?

Nationally, coal-to-gas conversions have picked up steam as shale supplies brought stability to the ever-volatile natural gas markets and regulators developed more stringent emissions rules. ICF International is the latest group predicting major contraction in coal-fired generation over the next 10 years, which will result in additional generation from natural gas.

Natural gas usage in the transportation sector is on the rise, too. Seeing a steady future for the fuel, Congress has increased efforts to capitalize on the country's readily available supplies. As recently as September 2010, Senate Majority Leader Harry Reid of Nevada proposed a natural gas vehicles bill with hopes of decreasing foreign reliance on oil. Similarly, when Sens. John Kerry, D-Mass., and Joseph Lieberman, I-Conn., teamed up for the now-defunct American Power Act, they sought to incentivize a shift toward NGVs.

Similar opportunities for natural gas exist in Pennsylvania, said Kathryn Klaber, president and executive director of the Marcellus Shale Coalition. The looming question is how quickly the state wants to tap into its plethora of production.

"All eyes are on Pennsylvania. We've got an opportunity to be creative here and set the tone," Klaber said.

Having worked to help companies meet air emissions requirements during the 1990s, Klaber said one of the most straightforward methods to hit emission targets is to swap out boilers to burn more natural gas. Volatility concerns made some companies hesitant; now, that shouldn't be an issue, Klaber said.

"With natural gas prices more stable than a couple of decades ago because of the supply, you see the cost concerns go away," she said. "People start to recognize, if we are serious about air emissions, then natural gas absolutely becomes the fuel of choice."

Procter & Gamble Co. has seen the light.

Because the company owns significant Marcellus acreage in Wyoming County, its Mehoopany papermaking facility is using natural gas produced from its own campus for operations.

Procter & Gamble has an alliance with Colorado-based Citrus Energy to develop several wells. The wells have been so productive that UGI Energy Services Inc. and Citrus entered into an agreement in September 2010, whereby UGI will gather production from Citrus production and deliver it to Tennessee Gas Pipeline Co.'s interstate system in Susquehanna County.

Thomas Murphy, co-director of the Marcellus Center for Outreach and Research at Pennsylvania State University, said the Procter & Gamble/Citrus alliance exemplifies a trend of increasing industrial activity being observed across the state because of the Marcellus.

"It's providing some economic stimulus for industries to stay put versus potentially moving to other states where a commodity price might have been lower," Murphy said.

Aside from the commercial and industrial uses, Murphy pointed out, the residential uses and benefits should not be overlooked.

While producers might like to see higher prices, low rates attract additional residential users, which benefit the industry in the long run by building its customer base.

"Some of the more urban locations in Pennsylvania are seeing a [10%] reduction in price going into the winter heating season because of the volume of Marcellus Shale gas being produced," he said. "That tells you there is local utilization and … it's advantageous for the end user."

The outreach center does not advocate specific policy except for increased money to research, which Murphy has observed.

"Public policy will be driven by 'what are the options?' Options are often determined by 'what does the research say?'" he said. "We're in the research business, and provide that information and data. Public policymakers will take that and [possibly] use it."

Klaber said she hopes state officials will use the research and embrace natural gas even more. She knows there will be hurdles, however. Pennsylvania has one of the largest state legislatures and roughly 2,600 municipalities.

"We don't necessarily have a tradition of just getting stuff done," she said. "We deliberate a lot. It's good to think, but it could constrain us from acting as quick as we could or as quickly as a lot of people would like."

No matter how quickly it acts, Pennsylvania will not be the only market for Marcellus gas.

An industrial rebound in New York?

Speaking at an industry conference in October, Paul Olmsted, director of gas supply for Consolidated Edison Inc., said New York City is ripe for a natural gas demand surge.

In the next 20 years, Olmsted said, another 1 million people will be living in New York City. In turn, power demand will rise, as will the potential gas utility customer base. But on a shorter-term basis, the company sees a significant opportunity in conversions from oil heat.

At the time, Olmsted said more than 7,000 buildings in Con Ed's gas service territory heat used No. 4 or No. 6 fuel oil, and as the gas-to-oil spreads grow, conversion to natural gas looks better and better. Beyond the economics, growing environmental restrictions on burning fuel oil also will push along conversions, Olmsted said.

But, whether companies like Con Ed will be able to capitalize depends on a few factors, including the conversion cost and the volatility in gas prices. Olmsted stressed volatility because when gas goes from $3 to $13 and back to $3, "it confuses our customers."

And saying the country is running out of gas, "that gives us some credibility issues with our customers," he said. "On balance, however, I think there is clearly a lot of opportunity to displace a fair amount of oil."

Despite its potential, natural gas demand in New York state has fallen steadily.

Citing EIA data, American Gas Association's Christopher McGill said demand in New York has declined from about 1.3 Tcf to 1.1 Tcf in an annual period. The decline appears to have little to do with the residential sector.

"What we're talking about in New York state is a significant decline in the industrial sector," said McGill, managing director of policy analysis at AGA. "It's not the one-third decline we have seen around the country, it's two-thirds when you look at the data."

Bruce McDowell, AGA director of policy analysis, said the decline is somewhat puzzling. "Whether it's due to efficiency, whether it is people moving operations [abroad], switching to other fuels, we don't know the answer," he said. "We just know that the industrial sector has shown a consistent decline over the last 13 to 15 years."

The battle, according to McGill, will be convincing the broader public, especially in New York, to have confidence in the industry.

"New York appears to be ready to accept the gas supply that comes from the Marcellus, but they are not going to produce it in their own state, at least not right now," McGill said. "That's a little ironic."

With a short haul to markets and pervasive use across the economy, Marcellus gas offers the Northeast an opportunity that McGill hopes it will not squander.

"We have a burgeoning supply picture, which is in my view an opportunity for the future. Yet, the discussions are in all these other periphery areas," he said.

Power generation opportunities

As noted by ICF, new air, water and waste rules being developed by regulators, including the U.S. Environmental Protection Agency, could force roughly 20% of the U.S. coal fleet to retire in the next 10 years. That capacity will be replaced mostly by natural gas and renewables, ICF said.

While natural gas use for power generation looks to have a promising future, coal-to-gas switching has already played a prominent role in energy markets as spot natural gas prices hovered in the sub-$5/MMBtu range.

Branko Terzic, executive director of the Deloitte Center for Energy Solutions, expects gas prices will remain depressed in the near term, making it the fuel of choice for electric generation in most parts of the country. "There's a lot of short-term growth prospects for natural gas, but in the long term I think coal will have to come back as a fuel as well," Terzic said.

Because Marcellus gas is readily available, knowable, close to demand centers and has reasonable extraction costs, Terzic said it will have a prominent role in the Northeast.

Ed Kelly, Wood Mackenzie's vice president of North American gas and power, expects Marcellus producers will be looking for the most economical way to dispose of their gas, making forward-haul pipeline zones the most likely target. And because the Southeastern market grows fairly rapidly, Kelly said the region may suck up some of the displaced gas.

The future of gas exports from the U.S may ultimately decide what long-term inroads shale gas makes on power generation, however.

Terzic called the future of gas exports "the big unknown." Recently companies including Cheniere Energy Inc., Macquarie Group Ltd. and Apache Corp. have circled 2015 on the calendar for when they believe exports could begin in earnest.

"There are just a lot of variables out there that will be settled in the next few years, and I think large capital projects will have to wait until a lot of that is settled," Terzic said.

And while 2011 will flesh out the Marcellus and overall shale gas demand picture even more, Murphy said 2010 brought all eyes to Pennsylvania.

"There are a lot of places in the country that are looking at us from a regulatory standpoint, from a utilization standpoint, as well as research and public policy [perspective]," he said. "Pennsylvania, without any question, is deeply in the midst of that."

Perhaps the most telling tale is the state's own energy future. "By the year 2013," Murphy said, "it's widely accepted that Pennsylvania will be a net exporter of energy."