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Canadian Competitiveness Compromised By U.S. Shale Gas Economics

By Paul Wells

Prolific production growth in some low-cost shale basins in the United States has been hailed as a saviour for that country's natural gas supply going forward, but increased shale output, weak demand and still-bulging storage levels will make the short- to mid-term outlook bleak for the Western Canadian natural gas industry.

And despite reduced U.S. natural gas drilling so far this year, a continued supply-demand imbalance will keep the lid on prices and Canadian natural gas producers will struggle to remain competitive, predicts **Gary Leach**, executive director of the **Small Explorers and Producers Association of Canada** (SEPAC).

Especially in Alberta, Leach added, where higher royalties and a high cost structure has meant the province has "rapidly found itself as an uncompetitive" supply basin.

"The junior sector, like all producers, can only control its own costs and attempt to bring these down while focusing on developing higher grade prospects," he said.

"However, there is a strong likelihood that shale gas potential in the U.S. permanently changes the economic prospects for our Canadian natural gas producers. This is why SEPAC has been urging governments to grasp the serious threat to the Western Canadian Sedimentary Basin of uncompetitive royalties and an expensive regulatory burden."

Leach said the substantial drop in North American natural gas prices over the last year has resulted from the confluence of two factors: the recession caused a sharp drop in U.S. natural gas demand, particularly industrial demand, and there was a large jump in U.S. supply.

He noted that U.S. lower 48 domestic production -- thanks primarily to shale gas development -- jumped from an average of about 51 bcf per day in 2007 to about 55 bcf per day in 2008.

The most productive shales are relatively flat, thick and predictable, and the formations are so large that despite steep initial decline rates the wells can produce gas at a steady rate for years. Despite relatively high drilling costs, the long-life, repeatability and ready access to market that define the plays combine to improve the economics to a point that is the envy of other non-conventional and conventional plays.

In the U.S., the most prolific shale gas basin is the Barnett shale (north central Texas), with production from new basins such as Haynesville (northern Louisiana) and Fayetteville (Arkansas), continuing to ramp up. The Woodford basin in Oklahoma has also been a steady producer the past couple of years.

Emerging basins, such as the Marcellus shale in Appalachia (Pennsylvania, West Virginia, Ohio and New York), are also under development and could show similar production growth to other gas shale basins in the coming years.

However, with natural gas prices sinking below \$4 (U.S.) per mmBtu, the U.S. rig count continues to decline. According to **Baker Hughes Inc.**, overall activity dropped during the week ended Apr. 17 to 975 working rigs, compared with 1,743 drilling during the same period a year ago.

Baker Hughes said the number of rigs drilling for natural gas dropped by 30 to 760. Those drilling for oil increased by one to 205. There were 10 rigs unclassified. Horizontal drilling activity fell by 11 rigs to 399. Directional drilling was down five to 186.

Baker Hughes said natural gas rigs are expected to decline another 10% or so this year before bottoming at about 700, a level that should turn output negative and help tighten the overall supply-demand balance.

Oklahoma led the latest loss among major producing states, down 11 rigs to 91. Texas lost 10 to 384 rigs drilling. Arkansas and New Mexico declined by three rigs each to 45 and 31, respectively. However

Louisiana, with activity in the Haynesville remaining strong, Wyoming, and California were unchanged, with respective counts of 136, 37, and 19.

Aside from reduced drilling, some operators are also pulling back production. On April 16, **Chesapeake Energy Corporation** announced it has elected to curtail approximately 400 mmcf per day of its gross natural gas production due to continued low wellhead prices.

The reduction includes the 200 mmcf per day curtailment of natural gas production previously announced on March 2, 2009.

The wells that have been curtailed are primarily located in the Mid-Continent and Barnett shale regions.

The company said that until natural gas prices strengthen, it plans to limit production from most newly completed wells in the Barnett and Fayetteville shales to two mmcf per day and in the Marcellus and Haynesville shales to five and 10 mmcf per day, respectively, in addition to the approximate 400 mmcf per day curtailment.

"As a result of recession-related reduced demand and abundant U.S. production, natural gas prices have remained soft in recent months. However, we believe substantially lower drilling activity and natural reservoir depletion will work to rebalance U.S. natural gas markets by late 2009 or in early 2010," **Aubrey McClendon**, Chesapeake's chief executive officer said in a press release.

Reduced drilling and production numbers will take some time to work through the system and reduce U.S. storage.

But given the recent rapid decline in natural gas drilling activity in the U.S., some forecasters are predicting that U.S. domestic production will give back, at least temporarily, the production gains seen in 2008. But even if it does, Leach said the U.S. shale gas revolution has been a game-changer for the Canadian natural gas sector.

"The potential of shale gas is huge and requires a strategic, long-term response from government to help our industry on this side of the border stay competitive," he said.

According to **Ziff Energy**, in 2008 shale gas production was over five bcf per day (eight per cent of North American gas production), with 70% attributable to Barnett shale gas in Texas.

Simon Mauger, Ziff's director of gas services, notes that while production of the Barnett, Fayetteville, and Woodford shales is developing, several other plays are being evaluated. He says these new plays will ensure shale gas production growth in the next decade.

"Growing shale gas production is changing the mix of North American gas supply. Increasing unconventional gas production will comprise 53% of gas supply by 2020, up from 30% in 2000," Mauger said.

Bill Gwozd, vice-president of gas services for Ziff, said while drilling in even some of the more economic plays has started to wane given low natural gas prices and current over supply in the market, his firm believes that the low gas price will only serve to delay the growth that would have materialized in shale gas.

"Our view is that even the Barnett will see some drop in shale gas output this year and probably next year," he said.

A Ziff Energy economic ranking study issued in the spring of 2008 did analyze the full cycle costs of several shale gas plays. While Gwozd said the company will not release specific results from the 83 play types analyzed, "I can say that overall costs varied from \$4.50 per mcf (U.S.) to 9.75 per mcf."

Areas where companies will likely continue to focus their limited resources include the Barnett, Fayetteville, Haynesville and Marcellus; the Woodford in Texas and Oklahoma; and the Horn River in British Columbia, the report says.

Gwozd views the growth of incremental shale gas a blessing in disguise.

"It is a true blessing as it means that the gas producers are technically and commercially successful in starting to unlock the vast potential of shale gas," he said. "It is a blessing also as it means that North America has a 'new big kid on the block' and his name is shale gas."

By 2020, Gwozd contends that this new shale gas bubble will grow up to be "a huge kid" - with output of 16 bcf per day.

"Notwithstanding, the incremental shale gas is re-creating the gas bubble of the 1970s and 1980s. The bubble burst in December 1992 and has arisen in late 2008. Without the incremental shale gas, gas prices would be a shade higher and liquefied natural gas (LNG) imports would be greater," he said.

Gwozd is adamant that increased shale gas production is not the culprit for what ails the Canadian natural gas sector.

"When gas prices were good, many producers turned a blind eye towards managing costs. When gas prices fall, those producers who assessed their costs in the good times and made headway at driving costs down will fare better than those producers looking in and asking what should we do?" Gwozd said.

Richard Moorman, a Saskatchewan native who is manager of strategic analysis for U.S. producer and shale gas player **Southwestern Energy Company**, also believes that unconventional natural gas - especially that produced from shales - is not the guilty party when it comes to the low price environment.

"Today, most analysts both on the Canadian and American sides will probably tell you there's an imbalance between supply and demand of about three to four bcf a day," he said.

"And almost without exception, if you ask those same analysts, they should tell you that industrial demand in the U.S. is off about three bcf a day. So if you do the math, how much is supply really over?"

Moorman added that despite rapid growth in U.S. shale gas production, it still comprises only a small portion of overall U.S. supply.

"A lot of people blame unconventional gas and say it did all this. The truth is all the shale in the U.S. put together makes about six bcf a day right now, which is only 10% of U.S. production," he said.

Moorman said that while overall U.S. natural gas drilling numbers are down considerably and that rigs have even been pulled out of the Barnett region, the same can't be said for other shale basins. He expects producers to continue evaluating emerging shale reservoirs, increasing their technical understanding of extraction techniques and evaluating the potential of emerging and developing areas.

"Generally, other than the Barnett, all the other plays are showing strength or growth because of one fundamental - because they are viable at these lower prices, so there are parts of the country where drilling can still be done and afforded," Moorman said.

"Maybe in the case of the Haynesville and Marcellus it's not even a question of the economics right now as much as it is just trying to understand what we have," he added.

"Companies think they have a gold mine but if they wait two more years until they find out, who knows what happens? So they're proceeding to try to understand the play so that means they have to drill to do that."

Headquartered in Houston, Texas, Southwestern is active in the shales of Arkansas, Texas and Pennsylvania and a focus for the company this year is to continue to develop the Fayetteville shale play's potential.

"It is a clean, dry and affordable play to develop," Moorman said.

He said that Southwestern's finding costs are in the neighbourhood of \$1.60 (U.S.) while operating costs come in around \$2.

"So that means we can sell that gas for about \$3.60 and we're making a return - a lousy one, mind you, but we can stay in business," Moorman said.

"Hence, we haven't shut a rig in yet and our competitors in the play (most notably **Chesapeake Energy Corp.** and **Petrohawk Energy Corp.**) haven't either."

In 2009, the company plans to invest approximately \$1.6 billion in the Fayetteville (including midstream investment). Southwestern plans to participate in approximately 650 horizontal wells, 500 of which will be company-operated.

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