

News

**Study: 100,000 Bakken well locations remain**

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A new study reveals a long lifetime yet for the Bakken Shale as more than 100,000 potential well locations remain using current technology.

The study, conducted by the University of Texas' Bureau of Economic Geology, was unveiled March 16 for the first time at Hart Energy's DUG Bakken and Niobrara conference in Denver.

Researchers at the bureau have been systematically studying every major shale play in the US. They have already published studies on several major gas shales, including the Barnett, Marcellus, Haynesville and Fayetteville and are now undertaking analyses of the oil and liquids-rich plays such as the Eagle Ford and now the Bakken. The next major study to be released will cover the geophysics of the popular Permian.

Similar to most forward-looking production scenario studies, a lot of the emphasis is placed on commodity prices. However, technological innovations continue to play an increasingly larger role in production and drilling forecasts.

Bakken is a multi-target play

"The Bakken is not just one play," said Svetlana Ikonnikova, a research scientist at UT's Bureau of Economic Geology. "It is several layers. It contains the Upper, Middle and Lower Bakken with increasing attention given to the Three Forks formation as the Bakken continues to be developed.

"Most of the wells drilled in the play target the Middle Bakken, but the Upper and Lower Bakken have the most resources with 122 billion barrels. When you add in the Three Forks it expands to 220 billion barrels which was similar to our total estimates in the Eagle Ford."

How much of this is eventually developed depends on price and technology.

"In a low-price environment you need to know what and where to target," Ikonnikova said. "With current technology there are more than 100,000 drilling locations remaining, but technology is always changing and this number could grow as we learn more about the rock.

"But you will always see operators drill some wells outside the areas of maximum profitability. This is part of their research and development operations as they continue to test the rock and completion techniques. These might make for some unsuccessful first attempts but over the years they will improve."

Operators need at least \$65/b to grow production

"The ultimate number of wells drilled and where they will be drilled is still tied to price," Ikonnikova said. "If the price of oil eventually reaches \$80 per barrel you would see up to 50,000 well locations drilled that are outside the core areas of maximum profitability."

There are many locations across the North Dakota play just sitting there either waiting for better technology or better prices.

"A lot of the pace of development will depend on prices," Ikonnikova said. "If we experience a price recovery we will see continued development in the play. At a price of \$40 to \$50 however, we will likely see a slow rate of decline in the play. From \$65 a barrel and up we start to see production growing again."

However, Scott Tinker, director of UT's Bureau of Economic Geology, noted very high oil and gas prices are typically coupled with economic recessions on a national level. Also, the lower commodity prices have allowed operators to see some of the cheapest service costs in years.

"Every time the price of oil and the price of gas, which is tied to oil, spike up the US economy suffers a recession," Tinker said. "Correlation is not causation here but you do see a tight tie between energy and the economy. At \$100 a barrel people were drilling everywhere. Then the price drops down to \$30 and you hear voices from the media saying the shale boom is dead. But then you see when the price comes down the costs goes down as well."

Bakken averages 1.55 Bcf/d during January

Current gas production averaged 1.555 Bcf/d in January, the most recent data provided by the North Dakota Industrial Commission.

It is down from the 1.759 Bcf/d production record set last November. However, much of the decline is due to weather-related production shut-ins and lower levels of associated gas capture over the past couple of months, leading to higher levels of gas simply being flared off rather than processed, according to NDIC director Lynn Helms.

The state is currently hitting these production levels with only a little more than 13,000 producing wells and North Dakota sweet crude priced at a lowly \$41.50/b. About 1,700 wells in the play have been declared inactive while the drilled but uncompleted wells in the play are at 802. That is the lowest number of DUCs in the play since December 2014 when there were 750 DUC wells.

Gas prices in the play are also trailing many other US regions. As of March 8 the average price of natural gas delivered to Northern Border at Watford City was down 48 cents from the month prior to \$2.00/Mcf, resulting in an oil-to-gas price ratio of 21 to 1.

For more information on UT shale studies go to [www.beg.utexas.edu](http://www.beg.utexas.edu).

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Bakken gas flaring and production graph Source: North Dakota Industrial Commission

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