



Tech Talk - The Niobrara, the Tuscaloosa and the Chattanooga Shales

Posted by [Heading Out](#) on October 31, 2011 - 10:15am

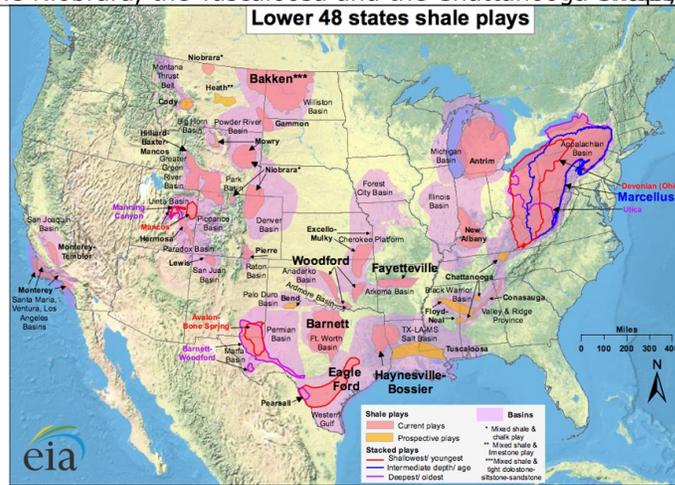
Topic: [Supply/Production](#)

Tags: [bakken](#), [chattanooga](#), [natural gas production](#), [niobrara](#), [shale oil](#), [tuscaloosa](#) [[list all tags](#)]

When Governor Perry recently released his Energy Plan, I noted [in my review](#) that it bore a close resemblance to the position paper prepared by CERA for the API and that it could be, in consequence, considered perhaps the “best shot” of the oil and gas industry in predicting where new North American resources might come from in the next couple of decades. One distinction that I did not make and that is somewhat difficult to decide is the extent to which these events will come to pass, regardless of who is the next President.

If one looks at the different regions that are suggested as sources to increase oil availability for the United States, I have largely discussed the various options, whether the [Bakken Shale](#), the [off-shore resources of Alaska](#), the [Gulf of Mexico](#), and the [gas shale reserves](#) such as the Marcellus. One of the two regions and resources I had not covered was the increase in production that can be anticipated from the Niobrara shales of Colorado, Wyoming, and adjacent states. (The other is the offshore Atlantic). Since this is a new enough development that it may not be well known, I thought to mention some basic information about the Niobrara in this post.

The development of fuel sources from the fine-grained shales that cover much of the country has been one of the great success stories of the past decade and the proliferation of natural gas that it has generated has helped keep the price of that critical fuel low, thereby providing an advantage to American industry. And if one looks at the shale plays potentially available around the country, there are a number that have yet to be developed significantly. I am not sure why this was singled out relative to a couple of others as being the only likely benefit of the Governor’s attention, nor what gains would be made in terms of either production or jobs from any action the Governor might make as President, given that in the same way as with the Bakken, the drivers are much more likely to be geologically and oil-price driven than they are regulatory, particularly at the Federal level.

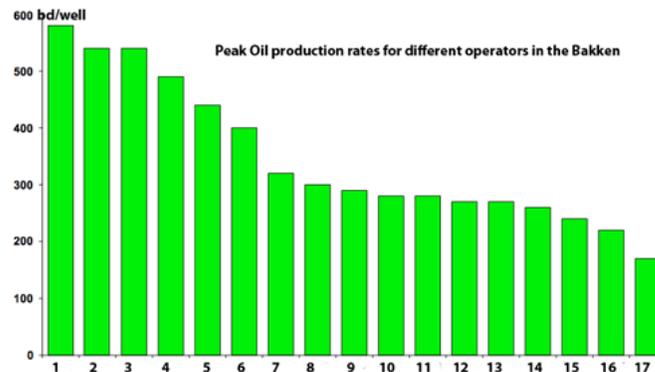


Shale plays around the contiguous United States (EIA).

The most likely of still relatively unknown resources (outside the Niobrara) to be developed in the near future may well be the Tuscaloosa and the Chattanooga. The Tuscaloosa has been vertically drilled [back in the 1960's](#) and since but with the potential to have similar attributes to the Eagle Ford, i.e. a liquids-rich resource, and it has a marketable product in those liquids that may make it more attractive. Exploratory drilling has begun, with two horizontal wells slated to be completed this year at a cost of perhaps \$8 million apiece to reach the reservoir and extend a lateral running out about 7,500 ft. Whether the production will make it possible to profitably cover those costs is yet to be determined. The reservoir varies from [200 to 800 ft thick](#) and lies at depths between 11,000 and 14,000 ft. The reservoir may contain as much as [7 billion barrels of oil](#).

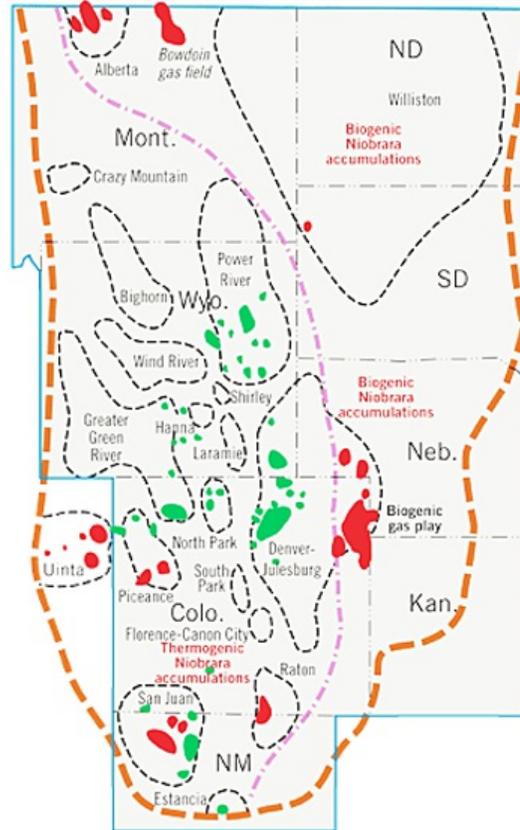
The Chattanooga, on the other hand, is a relatively [very shallow gas play](#) which may make it easier and less costly to develop, particularly if [existing wells can be deepened](#). In relative terms, the oil production anticipated is only as yet on the order of 6 bd (from vertical wells), with 25 – 300 Mcf of natural gas. It is not, in short term likely to bring significant production to the table, at least on the basis of current prospects.

And this is where the Niobrara has the greater potential. It is considered to be somewhat similar to the nearby Bakken, which has now reportedly reached production levels of around 400 kbd, with production varying between around 150 to just under 600 bd/well.



Peak well production rates in the Bakken (EOG Resources)

The Niobrara is not a continuous reservoir, but rather broken into a series of smaller sections:



Niobrara locations in some seven states in the West (OGJ)

The production numbers are still somewhat tentative given the small number of wells that have been produced, but [EOG reports](#) from its wells in Colorado, for example, one well with an initial production of 645 bd, though that has now fallen to between 300 and 250 bd, while a second is now running at 225 bd. The company is planning a total of 45 wells this year. Further north in Wyoming, Entek is reporting [low oil flows](#) even before fracturing.

Well costs are reported to be between [\\$4 and \\$5.5 million](#) for E&D in drilling down to the reservoir which lies in the 7,000 to 8,500 ft depth and then completing a horizontal section of perhaps 4,500 ft with perhaps 18 stages for hydraulic fractures.



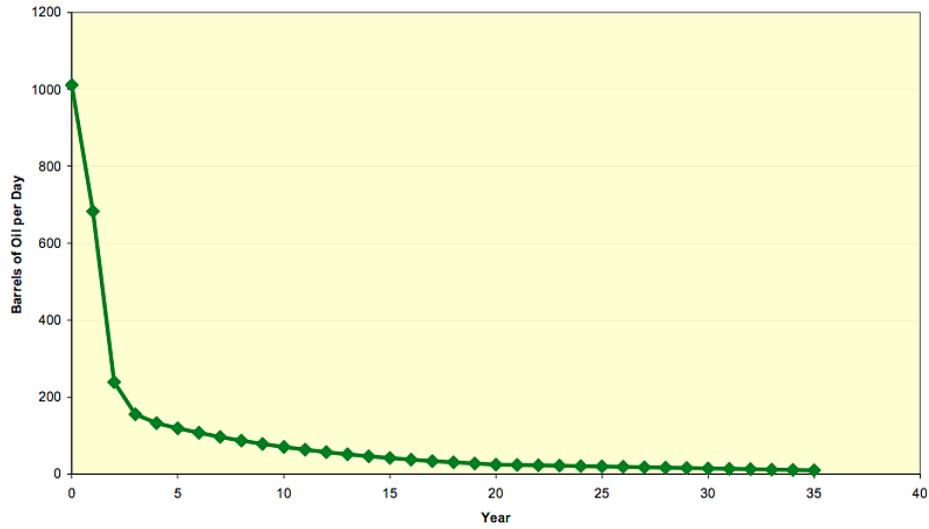
Anadarko plans for [development of the Niobrara](#)

Anadarko, which is reported to have one well that initially produced at 550 bd, is expecting to run between one and four rigs, building up to a production of around 16 – 20 wells per rig per year on a 40-acre spacing. The Wyoming section of the Niobrara currently has some 13 rigs, while the Bakken in North Dakota has [around ten times that number](#). Rigs are, however, also reported to be [in short supply](#).

(There is an [Anadarko video](#))

The story would not, however, be complete if one did not note that China is also aware of the play, and in January bought a [third of the Chesapeake Niobrara operation](#). Given that one of their wells came in with an initial production of [1,270 bd of oil](#), and 2.4 mcf of natural gas, Chesapeake seem to retain their ability to find the sweet spots in reservoirs relative to others for whom the [200 – 500 bd average](#) is more typical.

And a final reminder from the Bakken post, of the relatively short life that can be found for a typical well producing oil from a fractured shale deposit.



Typical Bakken well production ([ND DMR](#))



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