U.S. Barnett shale to pump natural gas to 2050 - report
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* New study looks at potential of Barnett shale
* Barnett will be a major play for a generation, study says
* Some areas of play will be less successful than others

NEW YORK, Feb 28 (Reuters) - The Barnett Shale formation in Texas will play a central role in the U.S. natural gas boom for a generation, according to a new in-depth report, the findings of which were released on Thursday.

The Barnett, one of a number of shale basins where new technologies have unlocked decades of gas supply in recent years, holds enough reserves to pump significant volumes of gas until 2050, albeit at declining rates, according to a study carried out by the University of Texas.

Hydraulic fracturing and horizontal drilling have transformed the U.S. energy outlook in recent years, with a number of basins, including the Barnett, emerging as major new production hubs. Companies have raced to the new plays, spending billions of dollars in search of the sweetest acreage.

Drilling using hydraulic fracturing, or fracking, has become a controversial topic, however, with environmentalists and residents fearful that the process - where chemical-laced water is pumped deep underground to break up the shale rock - can contaminate water supplies.

Based on data from over 16,000 wells, the report, funded by the non-partisan Alfred P. Sloan foundation, reckons that the Barnett will profitably produce around 44 trillion cubic feet of natural gas, assuming a market price of $4 per million British thermal units.

That amount, which is in line with government estimates released in 2011, is the equivalent of two years of total U.S. demand and three times the volumes that have already been produced from the Barnett, the report said.

The report "reaffirms the transformative, long-term impact of shale and other unconventional reservoirs of oil and gas on U.S. energy markets," the University of Texas said in a statement.

Experts' assessments of how much recoverable gas actually lies underneath the United States differ, and much is still unknown about the long term rate of production decline in new shale plays.

The UT report, which precedes other reports being conducted on other major shale plays in the country, acknowledges that large areas of the Barnett will be much less successful than others and that in fact half the acreage leased in the play may prove to be unprofitable.

"There is a lot of area out there that will not have economical production," said Scott Tinker, director of the Bureau of Economic Geology at the university and a principal investigator for the study.

That outlook could prove problematic for the countless companies large and small that flocked over the past decade to the Barnett, which was one of the first shale areas to be developed on a major scale.

Barnett production is expected to decline from 2 trillion cubic feet per year today to about 900 billion cubic feet per year by 2030, the study said.

Still, drilling is expected to continue at a strong pace. According to the report, another 10,000 wells will be drilled in the basin between now and 2030, slightly less than the 15,000 that were drilled there up to 2010.