The Fayetteville Shale will continue to be one of the most productive natural gas players in the United States in forthcoming years, with reserves that can be affordably extracted through 2050, according to a recent study.

The shale holds about 38 trillion cubic feet of recoverable natural gas reserves based on production data from 2005 to 2011, according to the study by the Bureau of Economic Geology at the University of Texas at Austin, funded by the Alfred P. Sloan Foundation of New York.

Of the total estimated natural gas supply in the shale, it will be economically feasible to extract about 18 trillion cubic feet with prices at $4 per million British thermal units, according to the study.

The bureau plans to complete studies later this year on two other shale formations, the Haynesville in Arkansas, Louisiana and Texas, and the Marcellus in the Appalachian region.

At $4 per million Btu, production in the Fayetteville Shale plateaus between 2012 and 2015, before slowly declining as the annual well count falls, according to the study’s summary.

Some wells in the Fayetteville Shale will be more economical at the $4 price level than others, said Svetlana Ikonnikova, an energy economist at the university who worked on the study.

“In every play, and the Fayetteville Shale is like all others, you have locations that are very productive and others with less production,” she said.

Natural gas futures increased the most in 16 months Monday on speculation that a report from the Energy Information Administration will show a record drop in U.S. supplies because of recent cold temperatures nationwide.

Natural gas for February delivery gained 22.1 cents to settle Monday at $4.27 per million Btu on the New York Mercantile Exchange.

Last week, natural gas prices were trading below $4 per million Btu, said Addison Armstrong, senior director of market research at Traditlon Energy, a Connecticut-based consulting firm.

“It is all being driven by the fact that inventories have tightened up substantially since December,” he said. “We are expecting a record withdraw from natural gas storage, and that’s based on the widespread frigid temperatures we had in the country last week.”

The government report to be released on Thursday is expected to show that supplies declined by 303 billion cubic feet last week, according to a Bloomberg News report.

“This would be the second week this winter that we had a record storage withdrawal,” Armstrong said.

He said natural gas inventories are 10 percent below average and are down 15 percent from last year.

The rebound in natural gas prices could continue if the tightening of supplies is prolonged, and prices could reach or even surpass $4.50 per million Btu, Armstrong said.

Analysts have said natural gas prices need to reach about $4.50 per million Btu to spur work in the Fayetteville Shale, where
drilling has declined in recent years as companies shifted focus to formations containing crude oil and natural gas liquids.

Although the number of drilling rigs in the Fayetteville Shale has dwindled, the formation’s production is expected to remain stable in the next three to five years with prices in the $4 range, Ikonnikova said.

“The number of new wells may be decreasing, but the key reason for that is that the wells are lasting longer and [operators] are drilling in better areas,” she said. “That’s why they don’t need to drill as many as before to maintain their production.”

Ikonnikova said that “to survive in the low-price environment, operators get smarter and more efficient.”