

Kansas Oil and Gas Production Down in 2016

Kansas Geological Survey Reports 2016 Stats

Oil and natural gas production in Kansas declined significantly in 2016 as prices for both stayed down, according to estimates from the **Kansas Geological Survey (KGS)** at the University of Kansas in Lawrence, Kansas. Statewide, production of oil dropped about 17% in 2016, following an 8% decline in 2015. Natural gas production fell about 14% in 2016, following a 1% decline in 2015. Between 2007 and 2014, rising oil prices and a boom in horizontal drilling with hydraulic fracturing, popularly known as fracking, in south-central Kansas boosted oil production in the state.

Starting in 2010, companies increasingly used hydraulic fracturing there to pump primarily hard-to-reach oil, but also natural gas, from a producing zone known as the Mississippian limestone play. Most of the activity occurred in Harper and Barber counties. "The decline isn't surprising since production in both counties was greatly augmented by about 300 horizontal wells drilled from 2012 to 2014," said KGS geologist **David Newell**. "Then the price for oil plummeted in late 2014 from about \$100 a barrel to around \$45 a barrel, where it hovers even now, and exploration declined."

Production from a typical Mississippian play well drops off about 80% after the first year, Newell said. When new drilling nearly stopped, overall production from the play fell rapidly. Due to lower prices and possible overestimation of the productivity of the Mississippian play in Kansas, the number of intent-to-drill permits for horizontal wells requested by companies and issued by the state dropped from one to two dozen per month in 2014 to just two or three per month in 2015. In 2016, only eight permits were issued for the entire year. Traditional vertical drilling in the state also was down.

Harper County, which rose from the state's 33rd highest producing county in 2010 to first in 2015, dropped back to second in 2016 as production there declined 40%. Ellis County, which led in oil production for all but three of the last 50 years, regained the lead even though production there fell almost 11%. Following Ellis, the top-10 oil-producing counties, in order, were Harper, Barton, Haskell, Finney, Russell, Rooks, Ness, Barber, and Stafford.

Production in each of the 10 counties fell at least 10% except in Haskell County, where a decline of just 0.7% propelled the county up from eighth highest producer in 2015 to fourth in 2016. About 2.7 million barrels of oil were produced in Ellis County and 2 million were produced in Harper County. The other top counties produced between one and two million barrels. Statewide, total production was 37.9 million barrels, compared to 45 million in 2015 and nearly 50 million in 2014. Oil production in Kansas peaked at 124 million barrels in 1956 and continues to fluctuate as prices rise and fall.

Natural gas production in all of the top-10 gas-producing counties also was down, ranging from a nearly 9% decline for Morton County to a 20% decline for Barber County. Stevens County, which produced 30 billion cubic feet of gas, was the top producer. It was followed, in order, by Harper, Grant, Kearny, Barber, Haskell, Finney, Morton, Stanton, and Seward counties. All are in the Hugoton natural gas area except Harper and Barber counties, where natural gas was produced mainly from the Mississippian play. Of the nearly 245 billion cubic feet (bcf) of natural gas produced in Kansas in 2016, two-thirds came from the Hugoton natural gas area. Decades of gradual production declines are due, in large part, to continued depletion in the area, which has produced more than 40 trillion cubic feet of gas since it was developed in the 1930s.

"Production in other gas plays in the state, including the Mississippian limestone play and the southeastern Kansas coalbed gas play, also have dropped as lower prices led to less drilling," Newell said. In southeastern Kansas, natural gas is produced mainly from shallow coal beds. Production of the gas, called coalbed methane, peaked there in 2008 when the price of natural gas reached \$14 per thousand cubic feet. With prices today bouncing between \$2.50 and \$3 per thousand cubic feet, production of coalbed methane continues to drop as old wells are depleted and drilling has virtually ceased. In 2016, only four wells were drilled in the southeastern Kansas coal beds compared to 1,596 in 2006 when prices were on the rise. From 2015 to 2016, coalbed methane production in Kansas declined 10%. For the entire state, natural gas production fell from about 285 bcf in 2015 to 245 bcf in 2016.

"Few oil and gas exploration wells are being drilled in Kansas right now, and production volumes are declining generally in the state," Newell said. "I estimate prices will have to be in excess of \$55 a barrel for oil and perhaps \$5.50 per thousand cubic feet for gas to see any start to a turnaround."

Current and historical production data for the entire state, by county or field, are available at <http://www.kgs.ku.edu/PRS/petroDB.html>.