Bakken energy production continues to boom, but growth is easing

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The Bakken and Three Forks formations are producing 1 million barrels of oil daily in North Dakota and Montana, representing 12 percent of oil production in the United States. North Dakota also recently reached the milestone of over 10,000 producing wells statewide. Challenging weather conditions over the winter slowed drilling and production activity, but as spring is blooming, activity in the region is picking up.

While oil production levels are high and 2014 promises to be a record year, the rapid pace of growth in the area is easing somewhat compared with the past few years. One sign of easing is that recent leasing activity in North Dakota has been "very low," according to the state Department of Mineral Resources.

Energy companies have worked vigorously over the past few years to lease land and secure one producing well on the property, which opens the door to drilling additional wells in the same proximity (called a pad) over the next few years. With much of the initial leasing and drilling completed, energy companies in the next phase can operate a drilling rig in one area and drill several wells in sequence before dismantling the rig and moving it to a new site. There are as many as 16 wells on a pad drilled to various depths and horizontal directions.

The number of active oil rigs operating in North Dakota increased from an average of 170 in January to 178 in April, slightly higher than the number operating in April 2013, but down from June 2012 when over 200 drilling rigs were operating in North Dakota (see Chart 1). Meanwhile, the average number of rigs operating in Montana dropped to seven in April, down from 10 a year earlier and 25 in October 2012. Activity along Montana's eastern border is quieter than during 2004 and 2005, the start of the Bakken boom, when more drilling rigs operated in Montana than in North Dakota.

Oil has been the focus of production in the Bakken and Three Forks formations, but gas production continues to climb as processing capacity and gas-gathering pipelines expand. Nevertheless, recently over one-third of natural gas produced was not captured and sold (see Chart 2). With lower prices for gas relative to oil and the construction time needed to build gas-gathering pipelines, which are required to capture natural gas, the economics of energy production lead companies to produce oil from new wells before putting infrastructure in place to capture gas.

Almost all natural gas not captured and sold is flared, which releases carbon dioxide, a greenhouse gas, as a byproduct of combustion. Carbon dioxide is a less powerful greenhouse gas than methane, which would be released if it weren't for flaring. New gas processing capacity coming online this spring and recent state regulation changes are expected to spur increases in gas capture and reduce the proportion of wells that flare gas.

As more wells are drilled, more workers are needed to haul fracking fluids and oil in trucks, build pipelines for oil and gas, and maintain equipment. The pace of job growth in the Bakken area remains strong. For the 12-month period that ended in March, employment was 7 percent higher than a year earlier (see Chart 3). The unemployment rate in Bakken counties is 1.6 percent, with the lowest county unemployment rates in Williams (0.9 percent), Dunn (1.2 percent) and Billings (1.4 percent).

However, the pace of employment growth began slowing during last few months of 2013. Other indicators also suggest that labor market tightness is easing somewhat as growth in average weekly wages started slowing in 2012 (see Chart 4, page 12). In third quarter 2013, average weekly wages were 4 percent higher than a year earlier, down from a year-over-year peak increase of 21 percent in first quarter 2011.

In addition, the number of online job postings in North Dakota Bakken counties was up about 30 percent in March and April compared with a year earlier. From 2012 to early 2014, online job postings in the Bakken were relatively flat after increasing almost 400 percent from 2009 to 2012. Online job postings in the Bakken account for about one of every five jobs posted in North Dakota.

The number of business establishments continues to increase, but the pace slowed to 8 percent in 2013 following years of double-digit growth. There were 7,066 business establishments in the Bakken during third quarter 2013, up from 3,776 in third quarter 2005.

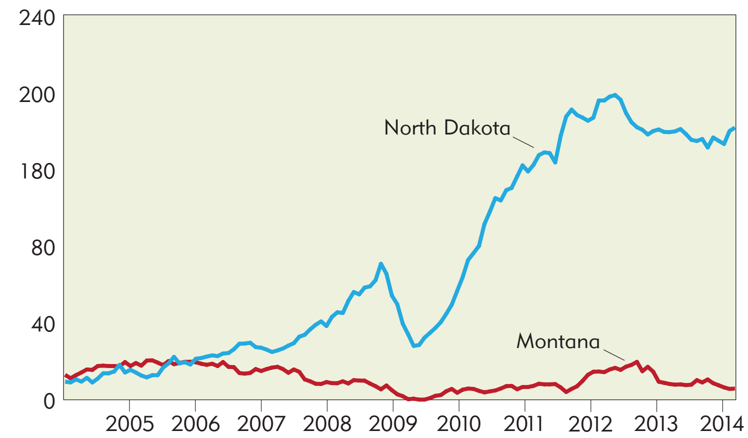
Finally, growth in construction has moderated in Williston, N.D., and the surrounding area over the past year, although building remains at very high levels. In 2013, the city of Williston issued 58 commercial building permits, down from 106 the year before, and 124 single-family housing permits, down from 208 the year before. While lower than a year ago, permit levels were strong relative to preboom history. For example, after issuing only four permits for building apartment complexes from 2004 to 2008, the city issued 49 such permits in 2013 alone, a record year.

Housing units authorized for construction in Stark County, which in-

Chart 1

Number of active drilling rigs leveling in North Dakota

Monthly average

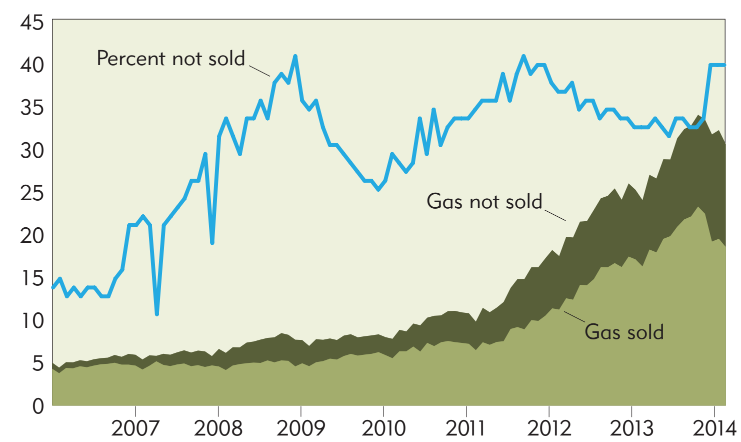


Sources: U.S. Energy Information Administration and Baker Hughes Investor Relations

Chart 2

Growth in North Dakota gas production and flaring

Monthly production, trillion cubic feet

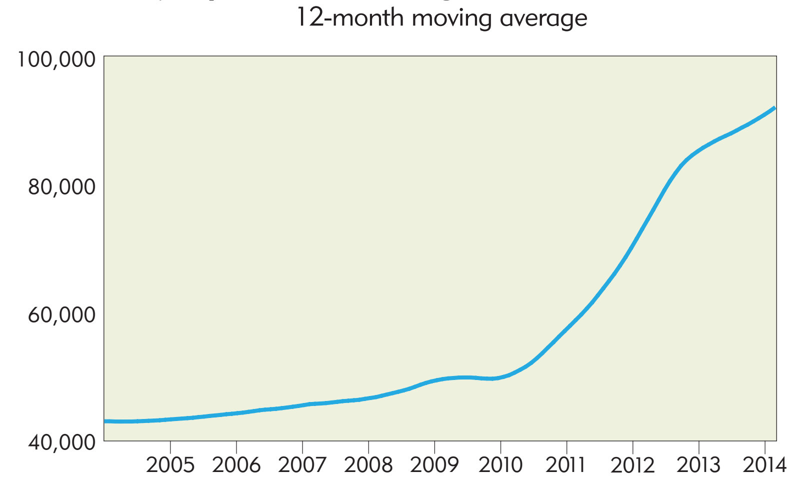


Source: North Dakota Department of Mineral Resources

Chart 3

Employment climbing in Bakken counties

12-month moving average



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics

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Professional services firms' growth may be constrained by labor availability

By TOBIAS MADDEN
Regional Economist

Business is picking up for firms that support other businesses, according to the annual survey of professional services firms conducted by the Federal Reserve Bank of Minneapolis and the Minnesota Department of Employment and Economic Development. But these companies are having a harder time finding the skilled labor—accountants, architects, engineers, graphic designers, market researchers, management consultants and other professionals—necessary to meet client demands.

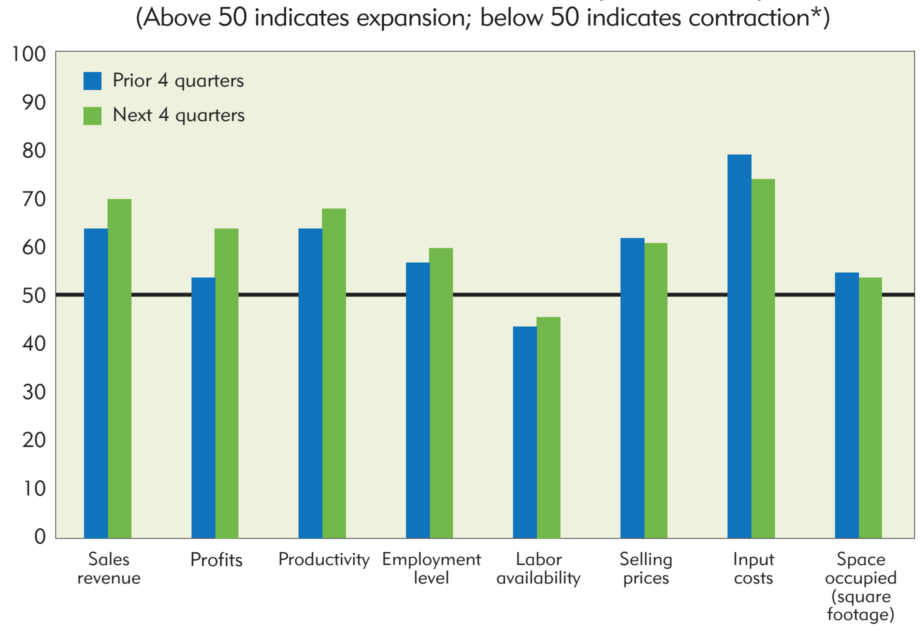
The good news is that more services firms reported growth in sales and profits over the past four quarters than those reporting a decline, and respondents expect this trend to accelerate in the coming year (see chart). Employment also expanded over the past year, according to the balance of respondents, who are slightly more upbeat about the coming year as well.

The bad news for services firms is that more respondents said labor availability is getting tighter, and they do not expect the situation to meaningfully improve in the next year. At least some appear able to deal with tight labor conditions thanks to rising productivity at their firms—something that is also likely contributing to higher sales and profits. More firms reported rising (rather than falling) service prices and input costs, and average wages over the past year increased by 2.7 percent and benefits by an average of 2.4 percent. While more growth is expected in the next year, respondents believe those trends will moderate at least slightly. Respondents from the low-unemployment Dakotas anticipate higher wage increases, while respondents from Michigan's Upper Peninsula, where unemployment is higher than the national average, reported slower wage growth.

More employers in this sector expect their state's economy, total employment and consumer spending to increase (rather than decrease) over the next four quarters. While corporate profits are expected to increase across the district, 62 percent of respondents also expect higher inflation, with only 1 percent believing that inflation will decrease.

Increased oil exploration and drilling activities in North Dakota have had a positive effect, as 27 percent of respondents reported higher sales revenue and 11 percent noted higher employment as a result of the oil boom. However, not many have opened new locations or expanded into North Dakota. ■

Professional services firms expect to expand
(Above 50 indicates expansion; below 50 indicates contraction*)



* Percent of respondents indicating increase plus half indicating no change
Source: Federal Reserve Bank of Minneapolis; Minnesota Department of Employment and Economic Development

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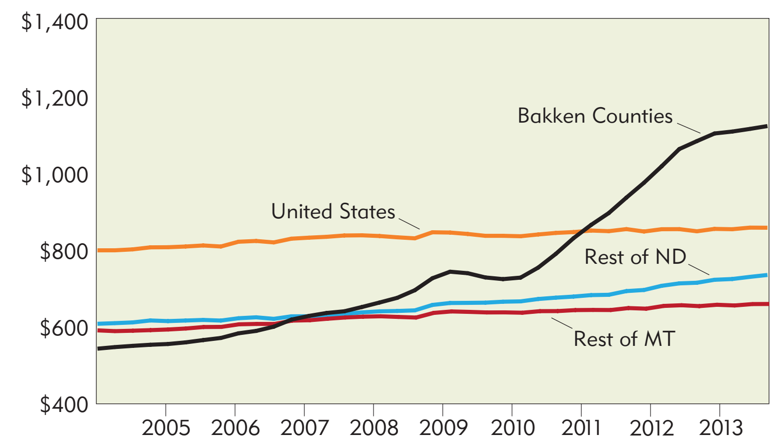
cludes Dickinson, N.D., dropped to 760 in 2013 from 1,484 in 2012. In 2004, housing units authorized in Dickinson represented 2 percent of all authorizations in North Dakota. In 2013, the county represented almost 9 percent of all authorizations in the state.

For more Bakken data, analysis and maps, see the Minneapolis Fed's Bakken section online at minneapolisfed.org. ■

Chart 4
Recent weekly wage increases easing
4-quarter moving average in 2013 dollars



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Crying over spilled oil

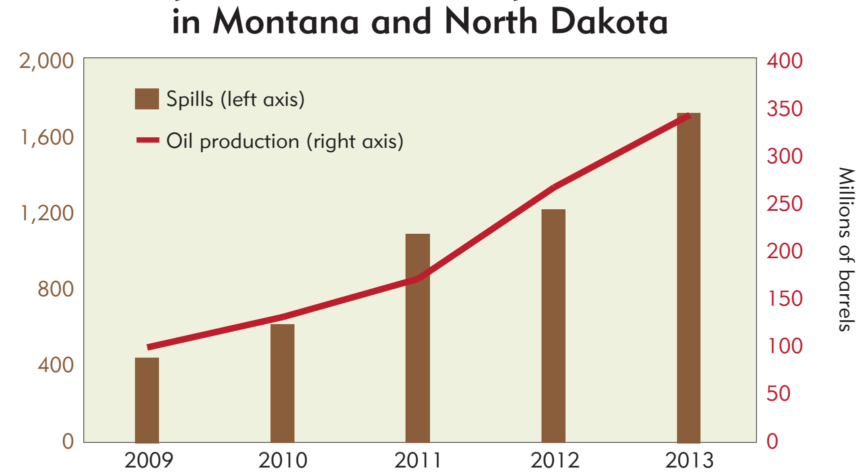
The Bakken oil boom has been a big economic story over the past few years, not just in the region but nationally. But it hasn't been all economic good news. Booming oil extraction has led to a big increase in spills of oil, chemicals and other drilling byproducts, according to an analysis of state records by EnergyWire.

From 2009 to 2013, the number of spills tripled, roughly in line with the increase in oil production (see chart). Most of the spills (and oil production) occurred in North Dakota. The volume of fluid spilled has grown even faster, in part because of a dramatic spike in 2013. One of the biggest incidents was a wastewater spill of 17,000 barrels last November in Bowman County, N.D.

As that incident attests, not all of these occurrences are oil spills. The fracking process used to extract shale oil from formations like the Bakken requires pumping large volumes of water mixed with other chemicals at high pressure. Some of the spills in the database are of seawater and other fracking fluids. And a few of the records cover spills of diesel fuel and assorted other fluids used by drilling machinery. Over the past several years, the proportion of spills involving oil appears to have remained fairly stable, at around two-thirds.

—Joe Mahon

Spill incidents and oil production in Montana and North Dakota



Source: EnergyWire, Montana Department of Environmental Quality, North Dakota Department of Mineral Resources