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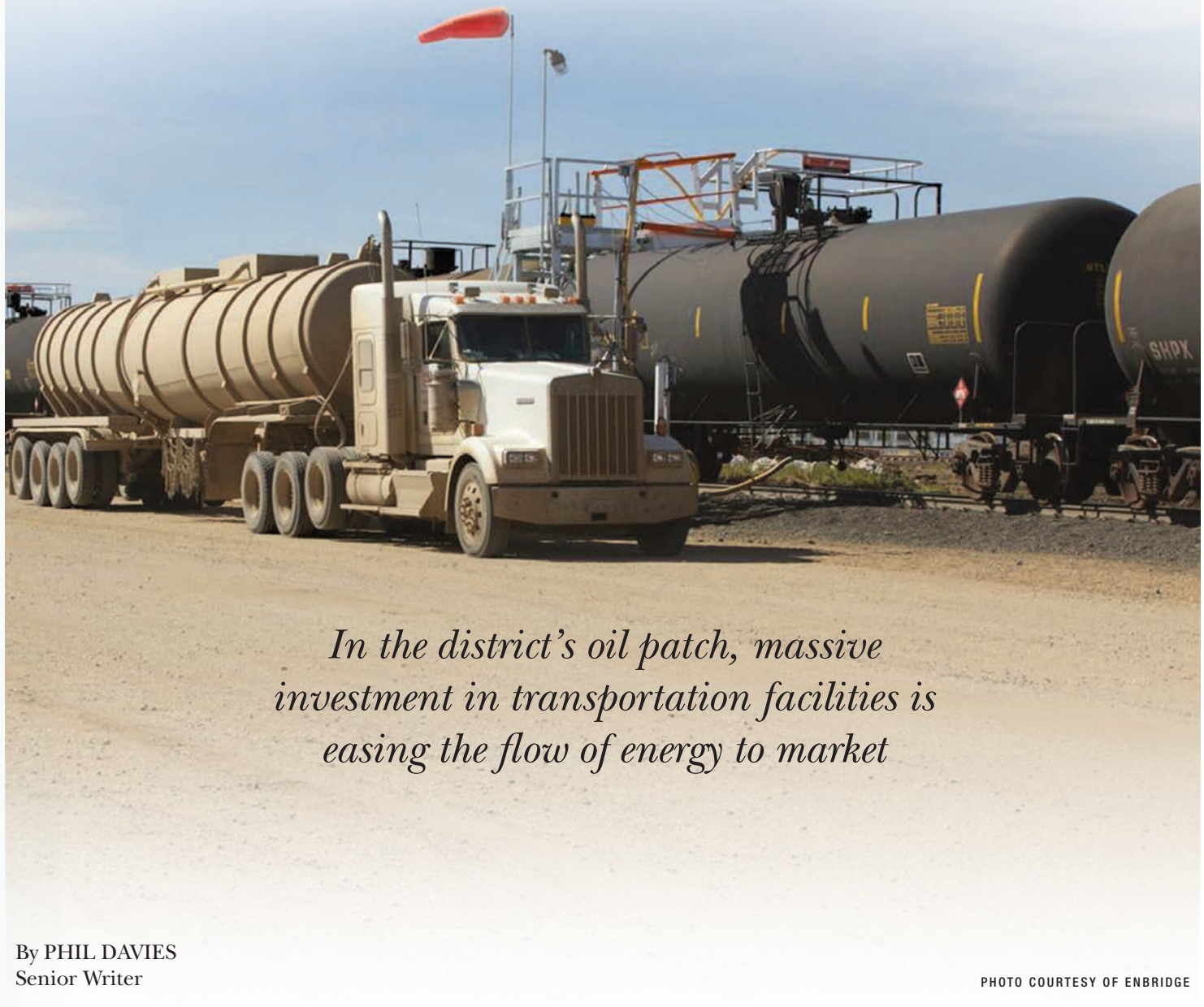
More on Energy Transportation …

Busting bottlenecks in the Bakken



In the district's oil patch, massive investment in transportation facilities is easing the flow of energy to market

By PHIL DAVIES
Senior Writer

PHOTO COURTESY OF ENBRIDGE

Charlie Roehm and his crew were waiting for an oil train at a rail loading facility in Berthold, N.D. The BNSF Railway train from Minot was behind schedule, but everything was in place to begin pouring Bakken crude into 90 identical tanker cars. At 15 cars a day, it would take a week to fill the unit train, whose payload comes from innumerable trucks driving from oil wells to the west, lined up at Berthold to disgorge their loads.

So much oil is being produced in western North Dakota and eastern Montana that it's turning competitors—railroads and pipelines—into partners in the vast enterprise of transporting that energy. The Berthold rail hub, an on-ramp to BNSF's nationwide rail network, is owned by Canadian oil transporter Enbridge, one of the largest pipeline companies in North America.

Enbridge built the rail facility last year to help ease a bottleneck on its large, nearby pipeline that carries oil eastward through North Dakota into Minnesota. The roughly 70,000 barrels of oil loaded on each unit train bypass the pipeline, headed to oil terminals and refineries all over the country. "We can only pump out so much," said Roehm, supervisor of Enbridge's rail operations. "What we're doing is optimizing the use of our facilities by bringing in more oil and putting it onto rail instead of the pipeline."

A second phase at the site will connect pipeline nodes in the heart of the Bakken to the Berthold facility, eliminating the need for producers to truck oil 50 miles or more. Once completed—shipments were slated to begin this spring—the large, hangar-like building will enable Enbridge to offload oil from its main pipeline into tank cars, boosting Berthold's rail capacity eightfold and freeing up capacity on the pipeline. The current truck-loading facility "is just temporary, to get us going," Roehm said. "Phase two is the real deal, because that's where we're moving a lot of oil." Enbridge has spent $160 million on the entire facility.

As has been well chronicled (including by the *fedgazette*), oil and gas production in the Bakken has surged over the past seven years. Getting that product to far-away markets is no less important

Continued on page 2

Bottlenecks from page 1

The Quick Take

In recent years, oil production in the Bakken region of western North Dakota and eastern Montana has outstripped the infrastructure needed to move it to refineries across the country.

Because of pipeline bottlenecks, Bakken crude oil has often traded at a discount to other types of domestic oil, and natural gas producers also face transportation constraints. Energy transportation firms have invested billions of dollars in new or expanded pipeline and rail infrastructure to relieve bottlenecks and move crude oil and gas efficiently from wellhead to market. Energy transport has also created jobs and increased tax revenues in the region. But matching supply to demand in energy transport will be a challenge due to uncertainty about how high Bakken production will ultimately rise. Producers and transportation firms are trying to gauge future capacity and are experimenting with different transport modes to reduce risk and maximize profit.

and similarly complicated, but given much less attention. In recent years, oil production has outraced the infrastructure to move it to refineries across the country, with predictable results.

"Bottlenecks are occurring at all levels," said Lynn Helms, director of the North Dakota Department of Mineral Resources (DMR). The transport kinks arise at well sites, where there aren't enough small pipelines to gather oil (and natural gas produced as a byproduct), as well as on big interstate transmission pipelines such as the Enbridge system. Because of tight capacity on long-haul pipelines, Bakken crude has often traded at a lower price than other flavors of domestic oil, trimming producers' profit margins and tempering their enthusiasm for further oil investment.

Energy firms have responded vigorously to market demand. Oil and gas producers, pipeline operators and railroads have invested billions of dollars in new or expanded infrastructure to relieve bottlenecks and move fossil fuels as quickly and cheaply as possible from wellhead to market.

Everywhere in the region, contractors are laying pipeline, erecting giant storage tanks and building rail hubs like the Berthold facility that are proving a lucrative—but probably temporary—alternative to shipping oil by pipeline.

Ongoing efforts to increase capacity to move energy commodities are crucial to fully developing the Bakken's energy resources, the engine of the region's robust economic growth. But matching supply to demand in energy transport will be a challenge as the Bakken continues to break records for energy production.

The market for shipping hydrocarbons is dynamic and fluid; producers and transportation firms are trying to gauge how much capacity is needed and are experimenting with different transport modes to reduce risk and maximize profit. In addition, the path is not completely smooth for energy transportation projects in the region. Obstacles to rapid development include tightened federal environmental rules and rising costs of securing pipeline right of way from landowners.

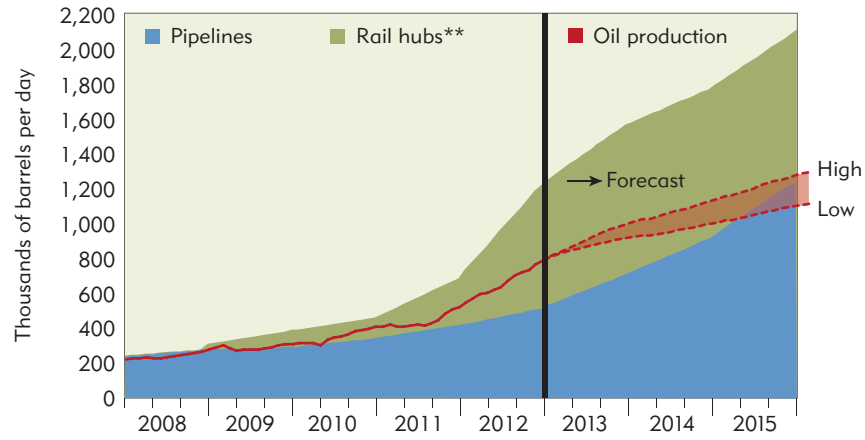
The pig in the python

Transporting energy within the Bakken region and beyond to markets across the country used to be straightforward. Large pipeline systems carried crude oil and natural gas mostly from western Canada into the United States, and the modest amounts produced in Montana and North Dakota just went along for the ride.

Chart 1

Oil output to exceed pipeline capacity until 2015

Oil production and transportation capacity in the Williston Basin*



* Comprising 17 counties in western North Dakota and 12 counties in eastern Montana
** Listed capacity (may be less than actual capacity)
Source: North Dakota Pipeline Authority

Long-established, major conduits for oil include the Enbridge System, which delivers oil to refineries in the Twin Cities and Chicago via pipeline connections in Minnesota and Wisconsin, and Tesoro Corp.'s High Plains system, the main route for Bakken oil bound for North Dakota's only refinery in Mandan. For natural gas, two main pipeline systems funnel Canadian gas and coal bed methane from the Powder River basin in Montana and Wyoming toward Midwest population centers, picking up gas from northeastern Montana and western North Dakota on the way (see map, page 4).

Pipelines are by far the cheapest and safest way to move oil and the only practicable method of transporting gas. But the capacity of this transportation system began to be tested in the late 2000s, as production of shale oil and associated gas from the Bakken and Three Forks formations soared to new heights after the Great Recession.

North Dakota is now the nation's second-biggest oil-producing state, after Texas. Statewide oil output surpassed 750,000 barrels of oil per day (bopd) in December, more than twice the production of two years earlier. As oil production has climbed, so has the volume of North Dakota gas bubbling out of the ground, also doubling since 2010.

Today the energy transport python is having trouble swallowing the pig—a circumstance few in the oil and gas industry could have foreseen, said Justin Kringstad, director of the North Dakota Pipeline Authority (NDPA), a state agency established in 2007 to facilitate pipeline development. "We way underestimated the potential for the resource," he said. "We're realizing now we need more and more pipeline capacity and infrastructure in place."

Oil and natural gas—oil's often overlooked sidekick in the Bakken—present different transport challenges. Natural gas, for example, flows freely on dedicated pipelines carrying gas to utilities and other users in the Twin Cities, Chicago and beyond. But hundreds of miles of smaller pipelines are needed to collect gas from wells, and increased gas processing in the region is driving demand for transport for natural gas liquids (NGLs) derived from gas. (See a separate analysis of natural gas production, processing and transportation on page 9.)

Constraints on crude oil transport are more straightforward, and more urgent, because oil is by far the most valuable product of Bakken wells. Long-distance oil pipelines can no longer handle the region's output. According to data compiled by the NDPA, oil pipeline capacity in the Williston Basin—a broad area of western North Dakota and eastern Montana that includes oil-producing areas outside the core Bakken region—was about 300,000 bopd short of total oil production in the Basin as of last September. Based on two scenarios for drilling activity and well output, the NDPA projects that crude oil production in the Basin will exceed pipeline capacity at least until 2015 (see Chart 1).

Rail—a transportation option up to three times more expensive than shipping by pipeline—has allowed producers to get around pipeline bottlenecks in many areas. But the rail network's functional capacity is less than Chart 1 implies, due to loading delays at rail hubs, scarce railcars and other constraints.

Because of choked pipelines in the district and elsewhere, Bakken crude has sold for less than oil from other parts of North America in recent years, reducing returns on investment for North Dakota and Montana producers. Together with oil from western Canada, Bakken crude backs up in the middle of the continent, causing a regional supply glut that lowers its price. A benchmark

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One of the Minneapolis Fed's congressionally mandated responsibilities is to gather information on the Ninth District economy. The *fedgazette* is published quarterly to share that information with the district, which includes Montana, North and South Dakota, Minnesota, northwestern Wisconsin and the Upper Peninsula of Michigan.

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Oil and gas producers and logistics firms have invested heavily in energy transportation infrastructure in the Bakken. PHOTO BY PHIL DAVIES

for Bakken oil is the price paid for delivery to Enbridge's pipeline terminal in Clearbrook, Minn. In early January, Bakken sweet crude was selling for about $5 less per barrel than the West Texas Intermediate (WTI) spot price at Cushing, Okla.—a discount equating to $4 million per day in forgone revenues. For extended periods last year, the Bakken-WTI differential was even greater (see Chart 2).

Because of a paucity of small-diameter gathering pipelines, producers already cope with high costs at the wellhead: In North Dakota, over 70 percent of oil is picked up and taken to a pipeline terminal or rail hub by tank trucks—a cumbersome and expensive method that exacts a heavy toll on rural roads.

Money on the move

Rising demand for energy transport has given pipeline companies, railroads and other market participants ample incentive to invest heavily in the Bakken region—part of a continentwide wave of spending on transportation infrastructure for shale oil and gas. IIR Energy, an energy market research firm, estimates that $10 billion will be spent on crude oil pipeline projects in North America this year—four times the average of the previous seven years.

In the Bakken, pipeline, rail and other infrastructure development has altered the pattern of energy movement in the region and gone a long way toward alleviating bottlenecks. Continued investment may eliminate the Bakken crude discount altogether in the not too distant future.

Little in the way of public data exist on energy transportation investment in the Bakken region—mostly privately held pipeline companies and other "midstream" firms that ship or process energy products closely guard their financials. But a partial list of recently built and proposed energy transport projects gives an indication of the scale of investment (see table on page 4).

Outlays by some of the biggest market players run to hundreds of millions of dollars annually. Enbridge, for example, has spent $1.2 billion to construct or expand pipeline and rail facilities (including the Berthold hub) in North Dakota since the oil boom began in the state.

Upfront infrastructure costs are steep; laying a 12-inch diameter transmission pipeline costs roughly $800,000 per mile, Kringstad said. But raising capital doesn't seem to be an obstacle for energy transportation enterprises. Institutions, venture capitalists, angels and large banks are eager to fund projects in the Bakken, said Rodney Wren, president of New Frontier Midstream, a Texas firm that is developing gas-processing plants and oil and gas pipelines in North Dakota and Montana.

"We have some financial institutions [and] some very wealthy individuals in the billion-dollar range who want to [invest in the company]," he said. "It's amazing how much money is out there that wants to get into greenfield projects."

Rather than raising capital, the challenge for many midstream operators is putting together projects that make financial and logistic sense, and securing buy-in from producers who are often reluctant to commit to a particular transport mode or route. Usually ground isn't broken for new pipelines, rail hubs, storage tanks or other transportation facilities until oil or gas producers have agreed to purchase capacity at a predetermined rate. For pipelines, tariffs must be approved by state utility regulators or, for interstate pipelines, the Federal Energy Regulatory Commission.

Laying pipe

Much of the investment in energy transportation has focused on expanding the capacity of the pipeline network. Drive a few miles in any direction in the oil patch, and you come across a pipeline trench being dug or disturbed soil indicating the route of a recently laid line. If all projects under construction or proposed go into service, the capacity of oil transmission pipelines in the region will more than double to about 1.2 million bopd by 2015.

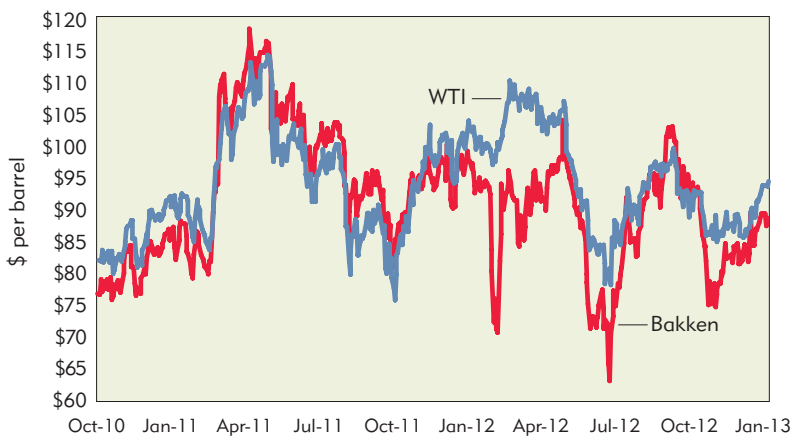
One of the most ambitious oil pipeline projects is Enbridge's Bakken Expansion—a $700 million effort to increase capacity on the company's main route spanning North Dakota, which connects in Clearbrook with an even bigger line originating in Canada. The three-year program includes the Bakken Pipeline, a reconstruction and reversal of an existing line that previously carried Canadian crude south to Berthold. The

Continued on page 6

Chart 2

The Bakken discount

Prices of sweet Bakken crude and WTI*



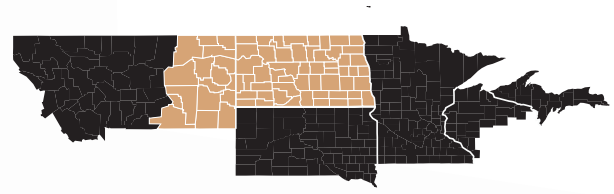
* Bakken crude delivered to Clearbrook, Minn.; West Texas Intermediate delivered to Cushing, Okla.
Source: Bloomberg

PHOTO BY PHIL DAVIES

Natural gas, a byproduct of oil production in the Bakken, presents its own transport challenges.

Getting in the flow

Major pipeline projects in the Bakken region



Pipelines operating or under construction*

Project	Owner/developer	Description	Capacity	Cost	In service
Bakken Pipeline	Enbridge (Canada)	Reconstruction and reversal of an existing 86-mile crude oil pipeline from Berthold, N.D., to Steelman, Saskatchewan. Connects via new pipeline in Canada with Enbridge mainline to Clearbrook, Minn.	145,000 bopd	$180 million	1st quarter 2013
Four Bears Pipeline	True Cos. Casper, Wyo.	New crude oil pipeline carrying oil from developing oilfields in central McKenzie and Dunn Counties in North Dakota to an oil hub in Baker, Mont. Also delivers oil to a rail facility near Dickinson, N.D.	110,000 bopd	Undisclosed	2011
Plains Bakken North Pipeline	Plains All American Pipeline Co. Houston, Texas	Hundred-mile crude oil line from Trenton, N.D., to Canadian border that provides a northern outlet for North Dakota and Montana producers. Connects with Enbridge mainline via a reversed Canadian pipeline.	50,000 bopd	$60 million	Mid-2013
Bakken NGL Pipeline	Oneok Partners Tulsa, Okla.	NGL pipeline from Sidney, Mont., to Cheyenne, Wyo., to transport output of Oneok processing plants in the Bakken. Planned expansion to 135,000 bopd next year.	60,000 bopd	$500 million	1st quarter 2013
Bakken Link Pipeline	Great Northern Midstream Houston, Texas	Crude pipeline from Keene to Fryburg, N.D. Will collect oil from wells being developed along the Highway 85 corridor south of Watford City, N.D.	65,000 bopd	$127 million	4th quarter 2013
Tioga Lateral Pipeline	Alliance Pipeline (Canada)	Wet gas and NGL pipeline linking Hess processing plant in Tioga, N.D., to Alliance's main pipeline terminating at a large fractionating plant in Channahon, Ill.	126 MMcfd	$168 million	2nd quarter 2013
Vantage Pipeline	Vantage Pipeline (Canada)	Pipeline for liquid ethane will stretch 430 miles from Hess' processing plant in Tioga to a petrochemical facility in Empress, Alberta.	40,000-60,000 bopd	$240 million	3rd quarter 2013

Proposed pipelines

Project	Owner/developer	Description	Capacity	Cost	In service
Sandpiper Pipeline	Enbridge (Canada)	Large (24-inch) line from Tioga, N.D., to Superior, Wis., that would parallel Enbridge's main North Dakota line, relieving bottlenecks on that line and in Clearbrook, Minn., a key hub for Bakken and Canadian oil.	225,000-375,000 bopd	$2.5 billion	2015
High Prairie Pipeline	Saddle Butte Pipeline Durango, Colo.	Pipeline would transport crude oil from Alexander, N.D., to Clearbrook, Minn., for delivery to Midwest and East Coast markets. However, Enbridge has refused to allow a connection to its Clearbrook oil terminal, citing the need for improvements at the hub.	150,000 bopd	Undisclosed	4th quarter 2013
Crude oil and NGL pipelines from Dickinson, N.D., to Baker, Mont.	New Frontier Midstream Richardson, Texas	Parallel lines would transport crude oil from Dickinson-area wells and NGLs produced at a planned gas processing plant 65 miles to the Baker oil hub and a connection with Oneok's Bakken NGL line. A shorter NGL line would link a proposed gas processing plant near Sidney, Mont., to the Bakken NGL.	Undisclosed	Undisclosed	4th quarter 2013
Keystone XL Pipeline	TransCanada (Canada)	Major pipeline carrying mostly Canadian tar sands oil 1,600 miles through Montana and South Dakota to Steele City, Neb., where it would feed into existing pipelines serving Gulf Coast refineries and ports. TransCanada has proposed an alternative route through the Nebraska Sandhills to allay concerns about damage to wetlands and the Ogallala Aquifer.	100,000 bopd of Bakken crude; total capacity of 830,000 bopd	$5.3 billion	2015

* Projects undertaken since 2011

Bakken NGL Pipeline

Owner/developer
Oneok Partners
Tulsa, Okla.

2013

$500 million

Capacity 60,000 bopd

PHOTOS COURTESY OF WBI ENERGY

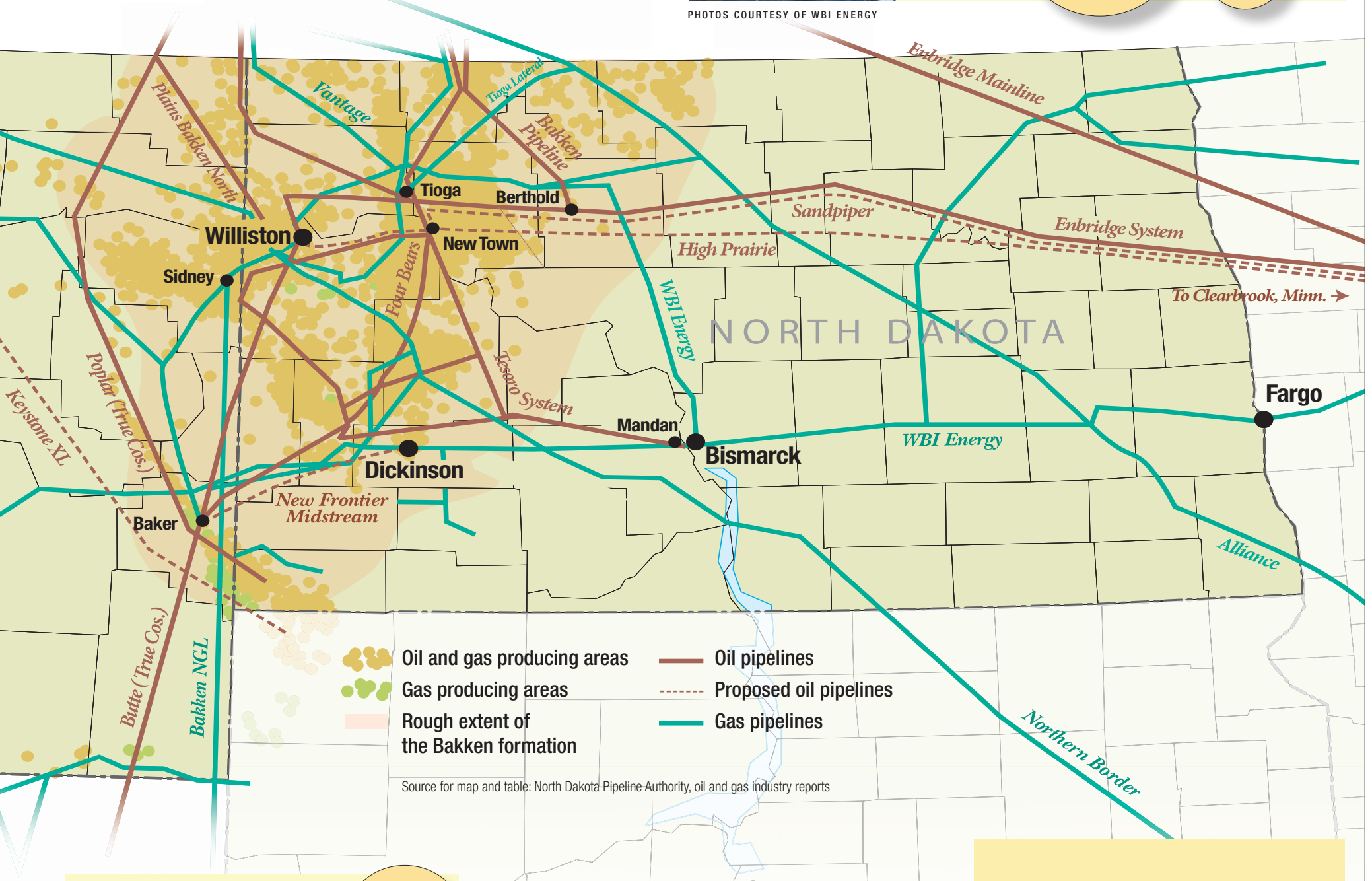
Sandpiper Pipeline

Owner/developer
Enbridge
(Canada)

$2.5 billion

Capacity 225,000-375,000 bopd

2015



Source for map and table: North Dakota Pipeline Authority, oil and gas industry reports

Plains Bakken North Pipeline

Owner/developer
Plains All American Pipeline Co.
Houston, Texas

$60 million

Capacity 50,000 bopd

Mid-2013

Keystone XL Pipeline

Owner/developer
TransCanada
(Canada)

$5.3 billion

2015

Capacity 100,000 bopd of Bakken crude; total capacity of 830,000 bopd

Bottlenecks from page 3

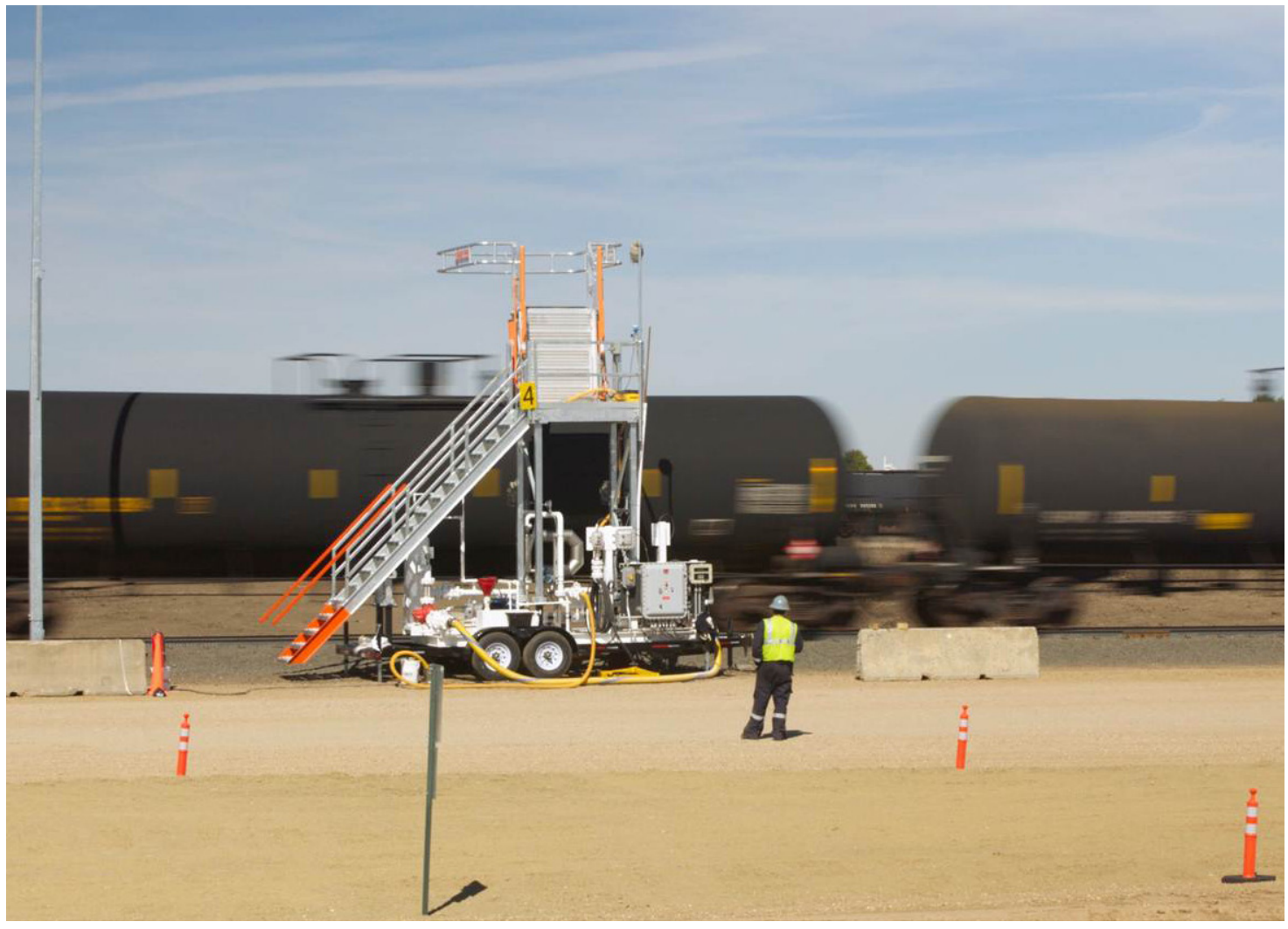
145,000 bopd line is slated to become fully operational this spring, bypassing a bottleneck in North Dakota by pumping oil into Manitoba and then south on the mainline through Clearbrook.

Once online, the Bakken Pipeline and other projects will increase Enbridge's takeaway pipeline capacity for Bakken oil to about 400,000 bopd—more than five times the capacity of the North Dakota system in the mid-1990s. Enbridge has proposed another major pipeline that would add 225,000 bopd to the river of Bakken oil flowing east to refineries in the Midwest and the South. The $2.5 billion Sandpiper Pipeline would stretch over 600 miles from Tioga, N.D., to Superior, Wis.

The True Cos. of Casper, Wyo., a family-owned group of firms that operates four crude pipelines in the Bakken region, also is intent on expanding its capacity to meet rising demand for oil transport. Vice President Tad True says that revenues from the company's Bakken operations have roughly quintupled since 2005 as it has acquired pipelines and built new ones to extend and strengthen its network.

Demand from crude producers in central McKenzie and Dunn counties in North Dakota prompted the construction in 2011 of the Four Bears Pipeline,

Continued on page 8



To get around oil pipeline bottlenecks, many Bakken producers turned to the iron horse to deliver oil to distant markets. Photo courtesy of Enbridge

Working on the railroad–and the pipeline

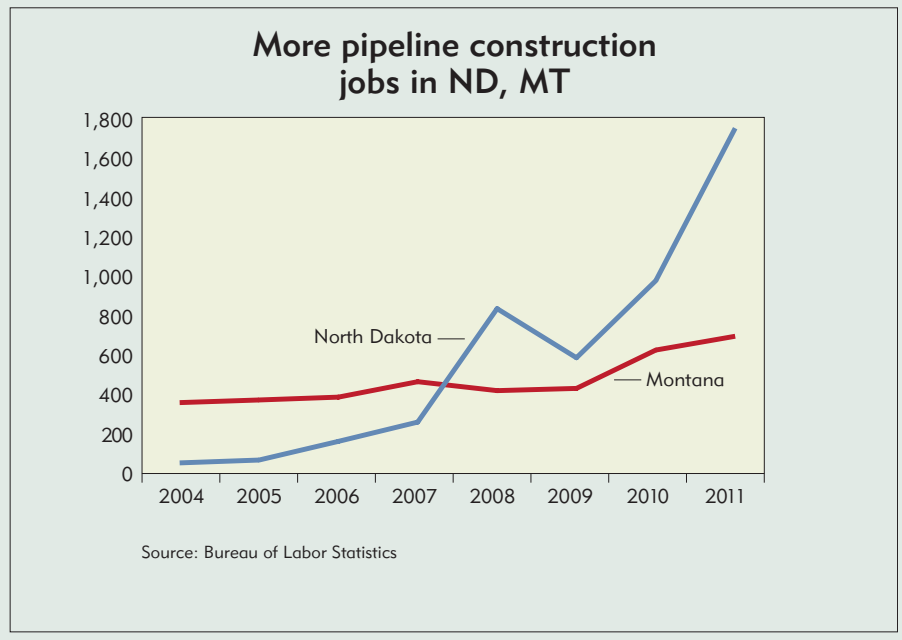
By making energy transportation more efficient, pipelines, rail hubs and other facilities promote economic growth in the Bakken. Higher profit margins encourage oil and gas producers to drill and develop more wells, resulting in more hiring, spending and tax revenues to support public services. But energy transport also stimulates local and regional economic growth in and of itself: Companies involved in moving energy create jobs, buy goods and services and pay taxes.

This direct economic impact is difficult to measure. Federal labor statistics, for example, don't track energy transportation as a discrete industry, with the exception of oil and gas pipelines. But the energy-moving business has clearly made a significant contribution to rising employment and tax receipts in the district's oil patch.

Western North Dakota and northeastern Montana have seen strong growth in pipeline construction employment since the oil boom began, according to U.S. labor figures. From 2004 to 2011, pipeline construction jobs in North Dakota increased from fewer than 100 to more than 1,700, although the recession caused job losses (see chart). Montana also experienced a substantial jump in pipeline construction positions. Virtually all of these job gains occurred in oil- and gas-producing areas of those states.

Railroad employment in the Bakken has increased since the recession, and anecdotal evidence suggests that many new jobs are related to rising volumes of outbound crude. Since 2011, BNSF has hired more than 550 new workers to fill positions in North Dakota and Montana. New rail oil-loading hubs in North Dakota, such as the Enbridge facility in Berthold and Musket Corp.'s crude oil terminal near the Montana border, have also generated new employment. At its hub in the hamlet of Dore, Musket employs about 45 workers—almost equal to the ghost town's population during its heyday in the 1930s.

The fiscal impact of energy transportation is minor compared with that of oil and gas production, which is taxed on a value or volume basis in Montana and North Dakota. But state and local governments benefit from the burgeoning assets of pipeline companies, railroads and logistics firms. In 2011,



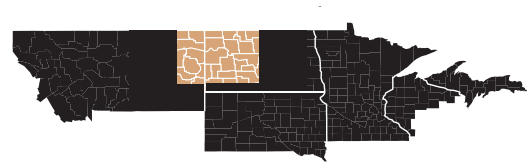
pipeline infrastructure in North Dakota generated $29 million in property tax revenue, according to state tax records. That's a 46 percent increase since 2004, adjusted for inflation. And some Bakken counties crisscrossed by pipelines saw bigger tax jumps over the same period; in Mountrail County, N.D., pipeline property tax revenue increased 16-fold in constant dollars.

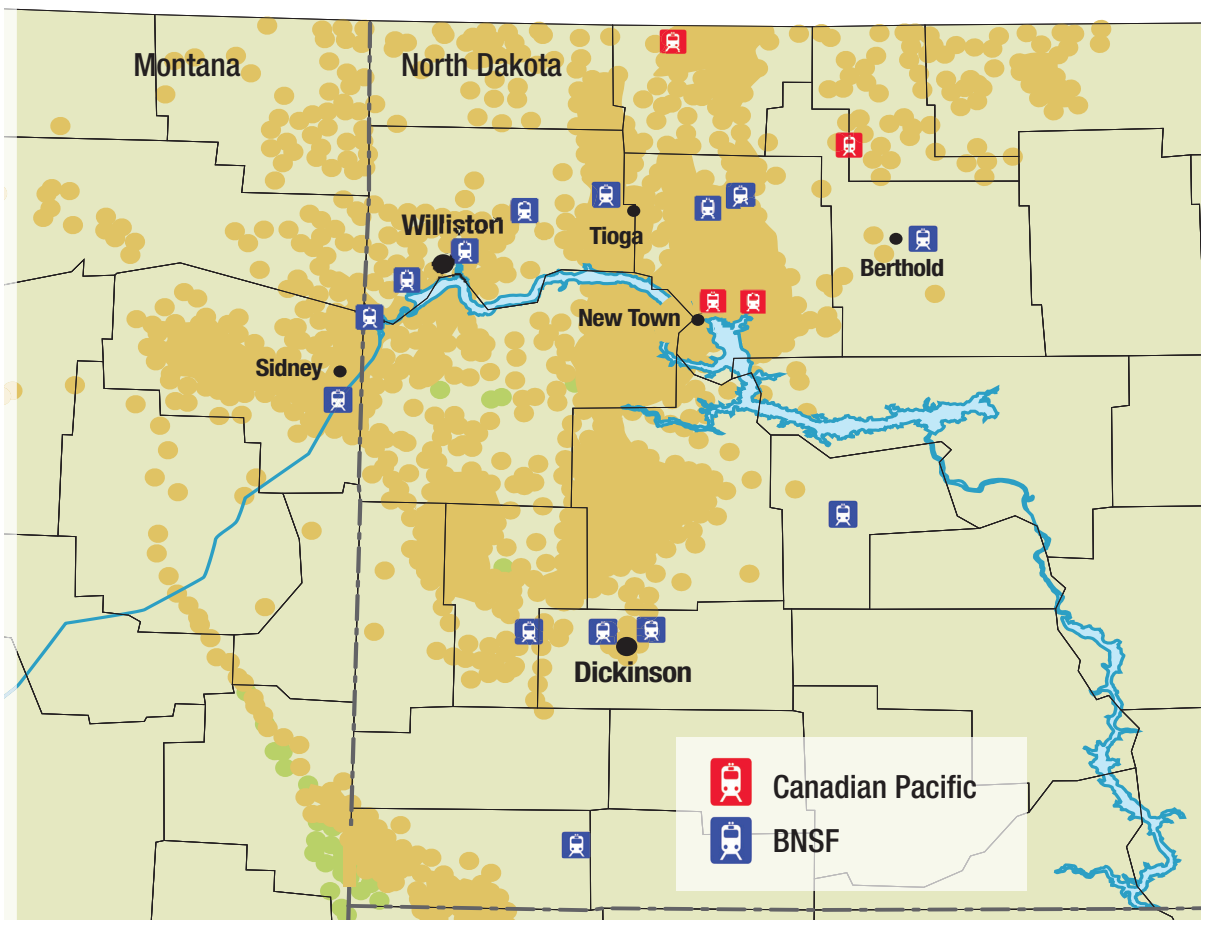
Land appreciation during the oil boom accounted for some of these increases, but capital investment by pipeline firms also contributed to rising valuations and taxes.

—Phil Davies

Pipelines on wheels

Major rail facilities operating or under construction*





Manitou rail facility
Ross, N.D.

Owner/developer
Plains All American Pipeline
Houston, Texas

$40 million
Capacity 65,000 bopd oil; 8,500 NGLs
2011

Hess rail yard
Tioga, N.D.

Owner/developer
Hess Corp.
New York City

2012
$50 million
Capacity 60,000 bopd

Project	Owner/ developer	Description	Capacity (bopd)	Cost	In service
Bakken Oil Express near Dickinson, N.D.	Lario Logistics Wichita, Kan.	Loads Bakken crude delivered by pipeline and truck into BNSF trains on the railway's southern line spanning North Dakota. Planned expansion may increase capacity to over 200,000 bopd this year.	100,000 bopd	Undisclosed	2011
Manitou rail facility Ross, N.D.	Plains All American Pipeline Houston, Texas	A crude oil and NGL terminal that expanded to receive 100-car BNSF unit trains last fall. Plains All American plans to build a gas-processing plant at the facility this year.	65,000 bopd oil; 8,500 NGLs	$40 million	2011
COLT Hub Epping, N.D.	Inergy Midstream Kansas City, Mo.	The largest crude oil terminal in the state as of January, the COLT Hub ships by rail on BNSF unit trains and via a 75,000 bopd pipeline that connects to the Enbridge and Tesoro pipeline networks.	120,000 bopd	Undisclosed	2nd quarter 2012
Van Hook Crude Terminal near New Town,N.D.	Plains All American Pipeline Houston, Texas	Loads crude oil delivered by either truck or pipeline into rail cars for shipping across North America on Canadian Pacific network. The railroad expects to increase capacity to over 65,000 bopd this year.	35,000 bopd	Undisclosed	1st quarter 2012
Musket crude oil rail terminal, Dore, N.D.	Musket Corp. Houston, Texas	A five-fold expansion of a facility that receives oil from trucks and Banner Pipeline's extensive oil gathering system near the Montana border.	60,000 bopd	Undisclosed	2nd quarter 2012
Savage Bakken Petroleum Services Hub, Trenton, N.D.	Savage Cos. Salt Lake City, Utah	An expansion of an existing BNSF crude oil transloading facility to handle 118-car unit trains. Also receives frac sand, drilling pipe and other oil-related materials.	90,000 bopd	Undisclosed	3rd quarter 2012
Hess rail yard Tioga, N.D.	Hess Corp. New York City	Facility ships unit trains of crude oil and NGLs piped from Hess's Tioga gas-processing plant on BNSF's mainline.	60,000 bopd	$50 million	1st quarter 2012
BakkenLink rail hub Fryburg, N.D.	Great Northern Midstream Houston, Texas	Great Northern's BakkenLink Pipeline will feed this crude oil loading facility on BNSF's southern line paralleling Interstate 94.	65,000 bopd	$40 million	4th quarter 2012
Enbridge rail hub Berthold, N.D.	Enbridge (Canada)	Crude oil pipeline-to-rail facility capable of loading one BNSF unit train per day. Replaces smaller truck-to-rail hub at same location.	80,000 bopd	$160 million (both sites)	1st quarter 2013
Global Basin Transload Beulah, N.D.	Global Partners Waltham, Mass.	One of two Bakken oil-by-rail sites owned by Global Partners, this facility south of the Fort Berthold Indian Reservation was expanded to accommodate BNSF unit trains serving West Coast and Gulf Coast refineries.	60,000 bopd	Undisclosed	First half 2012

* The table lists most hubs built since 2011; information unavailable for some facilities.

Source for map and table: North Dakota Pipeline Authority, railroad and energy industry reports

Enbridge rail hub
Berthold, N.D.

Owner/developer
Enbridge
(Canada)

2013
$160 million
(both sites)
Capacity 80,000 bopd

Bottlenecks from page 6

which snakes 77 miles from New Town., N.D., to Baker, Mont., a major transshipment point for oil and gas. "Before production in that area even started to come online, they were calling us and saying, 'Hey, you guys really need to consider building in this direction,'" True said.

The most famous pipeline in the Bakken is one that is yet to be built—the Keystone XL Pipeline, a 1,180-mile route from Canada to Nebraska proposed by TransCanada Corp. The controversial project would provide a handy on-ramp for 100,000 bopd of oil from Montana and North Dakota producers—if the U.S. State Department approves it. Environmental groups have objected to the transport of much larger volumes of heavy Canadian crude derived from tar sands because the extraction process consumes more energy and releases more greenhouse gases than other types of oil production.

Midstream companies also are busy laying hundreds of miles of gathering pipelines for oil, gas and drilling wastewater (which by law must be hauled to disposal wells). Last fall, Saddle Butte Pipeline of Durango, Colo., was building an oil- and gas-gathering system on the Fort Berthold Indian Reservation near New Town, and a Denver-based oil company formed a $180 million venture to construct oil-, gas- and water-gathering systems near Alexander, N.D.

All aboard the oil train

Many Bakken oil producers and shippers aren't waiting for pipelines to be built to carry their crude to market. They've turned to trains ("pipelines on wheels") to transport oil long distances, even though shipping by rail costs about $10 to $15 per barrel, depending on the destination, compared with about $5 per barrel via pipeline. The NDPA estimates that the percentage of Williston Basin oil transported by rail went from 6 percent in 2010 to 60 percent last year—over 450,000 bopd.

Trains have become a popular alternative to pipelines (see map and table on page 7) chiefly because they allow producers to sell Bakken crude at higher prices than the benchmark prices posted at pipeline hubs such as Clearbrook and Guernsey, Wyo. To get around pipeline chokepoints, producers started trucking their oil to train depots and in the process discovered that coastal refineries accustomed to buying high-priced imported "sweet" crude (which is easier to refine) would pay a premium for similar crude from the Bakken.

"Even with the higher transportation cost, it's cheaper than buying at the Brent benchmark price," said John Duff, an oil analyst with the U.S. Energy Information Administration, referring to the leading global price marker for crude oil.

What's more, the iron horse offers Bakken producers more buyer options,

Many Bakken oil producers and shippers aren't waiting for pipelines to be built to carry their crude to market. They've turned to trains ("pipelines on wheels") to transport oil long distances, even though shipping by rail costs about $10 to $15 per barrel, depending on the destination, compared with about $5 per barrel via pipeline.

delivering oil to refineries in Texas, Louisiana, New York, Pennsylvania and other areas not easily reached via pipeline. Last fall, Tesoro began shipping 30,000 bopd of Bakken crude by rail to a refinery in Washington state, and in February Delta Airlines received its first rail shipment of North Dakota crude at a refinery it owns near Philadelphia.

Rail hubs can be developed more quickly than pipelines, which must contend with harsh winters—frozen ground hinders trench digging—and a permitting process that can stretch out almost a year. Under the Obama administration, pipelines that cross federal lands are subject to heightened environmental review. (However, with the exception of Keystone XL, no new pipeline or rail facility in the region has been halted or delayed on environmental grounds.)

Over the past two years, about a dozen rail facilities dedicated to oil transport have been constructed in the Bakken, increasing rail hub listed capacity to 730,000 bopd, according to the NDPA. Pipeline operators as well as logistics firms specializing in energy transport are involved in many of the rail hubs.

The Bakken Oil Express, a rail hub located on a BNSF line west of Dickinson, dispatched its first oil train in the fall of 2011. Its anchor shipper is Eighty-Eight Oil, a subsidiary of the True Cos., which delivers oil to the hub via its Belle Fourche Pipeline. Other customers truck in oil from wells scattered all over Stark County. At startup, the facility could transfer up to 100,000 bopd into railcars; its owner, a Kansas-based logistics firm, was planning to build additional track, loading racks and pipeline connections to more than double capacity.

Other oil rail hubs in the Bakken include Enbridge's newly expanded hub, which will allow Roehm's team to load one 100-car unit train per day and send it down the line to markets served by BNSF and other connecting railroads, and a large crude oil terminal near Williston, N.D., owned by Inergy Midstream of Kansas City, Mo.

Railroads have made their own investments in tracks, tank cars, sidings and other facilities to support oil transport. BNSF, the biggest railway mover of domestic crude, spent $197 million for North Dakota and Montana infrastructure improvements in 2012 to increase its capacity to haul Bakken crude to about 1 million bopd.

Widening bottlenecks

All this rail development has dramatically increased crude transportation capacity in the Williston Basin, and producers are reaping the benefits. Sufficient quantities of Bakken crude are moving to the coasts by rail to push up the benchmark price of oil from the region. As midcontinent oil inventories have fallen, the Bakken discount to WTI has shrunk and at times disappeared (see Chart 2 on page 3).

Rail transport of crude has increased so much that some transmission pipelines in the region are no longer full. True said that oil piped to the Bakken Oil Express hub has "taken away from our long-haul barrels" traveling south on True Cos.' Butte Pipeline into Wyoming. "Rail is playing a very, very large role in oil transportation," he said, "and you could argue that there's not a lot of pipeline bottlenecks anymore because rail has taken so much volume away."

The rise of rail has also rendered some proposed pipelines superfluous. Last November, Oneok Partners, an Oklahoma-based developer of energy infrastructure, canceled plans to build a $1.8 billion crude oil pipeline from Stanley, N.D., to Cushing because many producers opted to ship by rail instead.

Whether rail has busted oil transportation bottlenecks in the Bakken—and if so, for how long—is difficult to know. One issue complicating infrastructure planning is uncertainty about how much capacity for moving oil and gas will be needed two, five or 10 years from now. The NDPA's crude oil production forecasts for 2023 range from 1.4 million to 1.7 million bopd, depending on how productive Bakken oilfields prove over time. But those are just estimates, taken with a grain of salt by producers and transportation providers contemplating long-term investments.

"Trying to get a grasp on where we think we're going to land—what our production numbers are going to be—is absolutely critical as we build out this infrastructure," said Ron Ness, president of the North Dakota Petroleum Council, a trade association for the state's oil and gas industry.

The dynamics of energy markets also affect the use of existing capacity and the pace of additional infrastructure development. Preferred routes and transport modes for energy can change weekly as producers and midstream firms grapple with real-time network demand and fluctuating oil and gas prices, and react to decisions by other market players. Last winter, New Frontier Midstream was forced to reroute a proposed $70 million crude oil pipeline from southern Bakken oilfields to the Baker hub because the original line was intended to connect to Oneok's canceled oil pipeline.

The role of rail in that cancellation [of some proposed pipelines] is a sign that in the near term oil trains will compete with pipelines and, in some instances, displace them as shippers take advantage of high crude prices on the Gulf and Atlantic coasts.

The role of rail in that cancellation is a sign that in the near term oil trains will compete with pipelines and, in some instances, displace them as shippers take advantage of high crude prices on the Gulf and Atlantic coasts. "I think there's going to be a big tug of war between rail markets and pipeline markets," True said.

However, most industry sources anticipate pipelines regaining their predominance in oil transport within a few years. New pipelines moving oil out of the Bakken and from Cushing to the Gulf Coast are expected to end the midcontinent oil glut by 2014, permanently shrinking or even eliminating the long-standing differential between Bakken crude and WTI prices. Without a sizable Bakken discount, "the economic incentive disappears" to pay high rail rates to the coasts, Duff said, because producers can earn equal or greater profits by piping oil to Midwest refineries at lower rates.

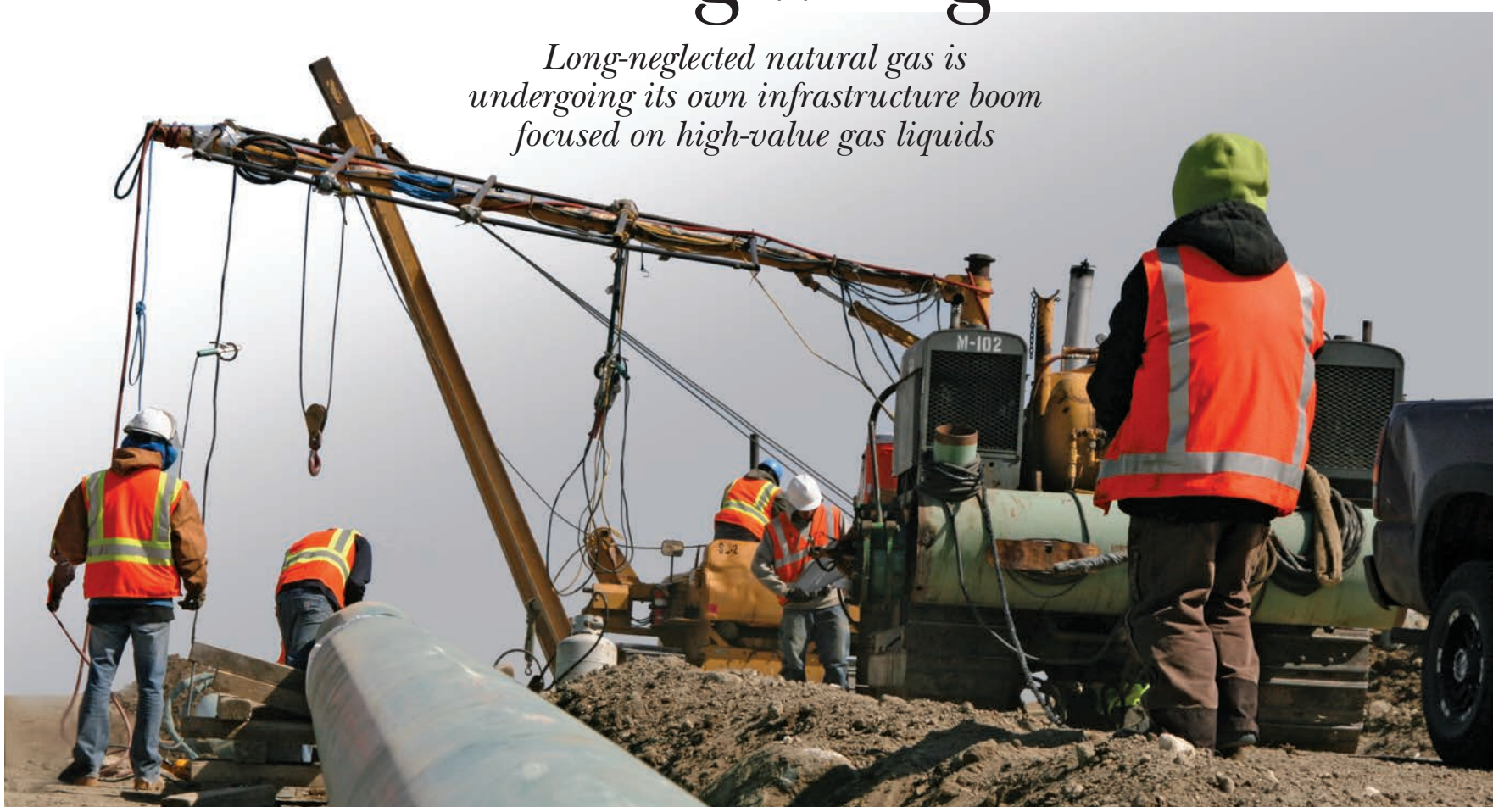
But maintaining the pace of recent capacity gains may be difficult, especially for pipelines. In addition to winter weather and permitting delays, pipeline developers lately have had to deal with private landowners who either refuse to grant right of way for projects or demand high easement fees. One-time easement fees have risen four- or fivefold over the past three years, said Helms of the North Dakota DMR. "Landowners are tired of being approached over and over and over again. They've become more resistant, and it's become significantly more expensive to acquire that right of way."

For all these uncertainties, the short history of oil and gas development in the Bakken suggests that producers and other stakeholders in the industry will manage to work the kinks out of the energy transportation system. The region's mineral riches are simply too great for solutions not to be found.

Said Kringstad of the NDPA: "The industry and the state and all the landowners and the people living and working out there all have the same goal; we want to have a safe and efficient transportation system in place." f

Dealing with gas

Long-neglected natural gas is undergoing its own infrastructure boom focused on high-value gas liquids



Construction crews under contract to WBI Energy lay a natural gas pipeline near Williston, N.D.

PHOTO COURTESY OF WBI ENERGY

By PHIL DAVIES
Senior Writer

The Quick Take

In North Dakota, about 30 percent of natural gas emitted from oil wells is flared because it's less valuable than crude. But investment in the infrastructure necessary to process and transport gas is occurring, albeit at a slower pace than oil-related development. Moving gas from wellhead to market is more complex than crude oil transportation. Unlike oil, Bakken gas must be processed to separate out natural gas liquids and make them fit to ship. And dry gas (methane) and NGLs require different modes of transport. Because of relatively higher prices for NGLs, recent gas infrastructure development in the Bakken has focused to a greater extent on producing and transporting NGLs.

In North Dakota, oil is king. That becomes obvious at night, when the western part of the state lights up like a terrestrial birthday cake as oil wells across the Bakken region flare off natural gas that is a byproduct of oil pumping. So much gas is burning that satellite images of the region at night show a city-like constellation of lights, surrounded by blackness.

The associated gas that comes up with the crude is an economic afterthought for producers; despite the fact that gas accounts for one-quarter of the energy output of a typical Bakken well, it contributes only about 13 percent of the well's value. In North Dakota, about 30 percent of natural gas emitted from oil wells is flared, according to the state Department of Mineral Resources (DMR).

Many developers of oil wells are content to flare gas—essentially wasting it—for several reasons. The first is that they are allowed to, for a while. A second is that collecting it requires significant investment in gathering pipelines and other infrastructure to capture gas and get it to market. And a third is the fact that such investments aren't as lucrative as oil-related spending; gas prices have fallen sharply due to increased shale gas production across the country.

Nevertheless, the potential economic opportunity has lit a slow investment burn under the gas market in the Bakken. The infrastructure necessary to process and transport gas is getting built—just not at the frenetic pace of oil-related development (see cover story). More new wells are getting connected to processing plants, and since 2008 gas-processing capacity in North Dakota has more than doubled, prompting increased investment in gas transmission pipelines.

Part of the impetus for gas development is state law: In North Dakota and Montana, well operators who flare gas for months face restrictions on oil production. But the main reason more Bakken gas is being captured, processed and shipped is that it makes financial sense to do so. Bakken gas is more valuable than gas from other parts of the country because it contains a high proportion of natural gas liquids (NGLs)—so-called "wet" hydrocarbons such as propane and butane that command higher prices than methane (or "dry") gas burned by power plants and household furnaces.

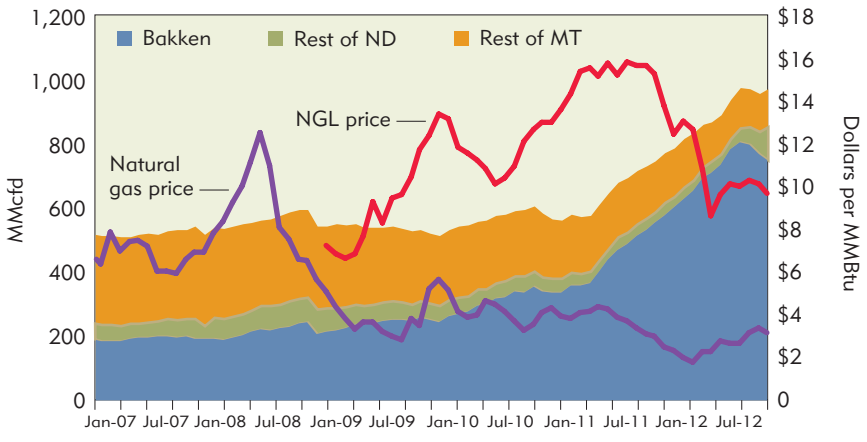
Natural gas may be produced simultaneously with oil in the Bakken, but the physics and economics of moving gas from wellhead to market are markedly different. Unlike crude, Bakken gas must be processed to make it fit to ship. And both raw and processed gas requires pipelines for transport, while NGLs can be moved by pipeline, rail or truck. Because of relatively higher prices

Continued on page 10

Chart 1

Natural gas surge in the Bakken

ND, MT production and prices



Sources: Production — N.D. Department of Mineral Resources, Montana Board of Oil & Gas Conservation; Prices — U.S. Energy Information Administration, average monthly spot prices at Henry Hub, La. (natural gas) and Mont Belvieu, Texas (NGLs)

Gas from page 9

for NGLs, recent gas infrastructure development in the Bakken has focused to a greater extent on producing and conveying liquids.

Bakken oil—it's a gas

North Dakota and Montana are not leading producers of natural gas (see back page map); federal production statistics lump them into the "other states" category, well behind major producers such as Texas, Alaska and Louisiana. In 2011, North Dakota and Montana accounted for less than 1 percent of U.S. gas production.

But gross gas production—the volume of gas coming out of the ground, including gas that's flared—keeps marching upward in the western part of the district, along with that of oil. Oil and gas fields in North Dakota and Montana produced over 900 million cubic feet per day (MMcfd) last November, with most production increases over the past two years occurring in North Dakota and within the Bakken region, where gas and oil production go hand in hand (see Chart 1 on page 9).

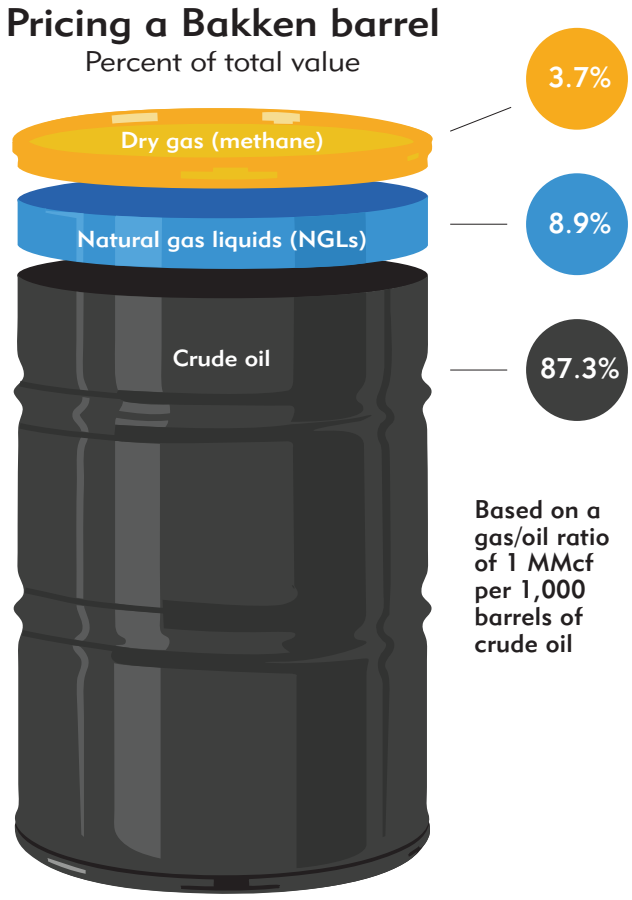
At the same time, dry gas prices have fallen because of rising shale bed production not just in the Bakken, but also in other areas of the country, such as southern Texas and parts of New York, Ohio and Pennsylvania. Nationwide, gas production increased 21 percent from 2007 to 2012, according to the U.S. Energy Information Administration. Natural gas is sold on the basis of its heating value, measured in British thermal units (Btu). Last December, the U.S. spot price of natural gas was $3.34 per million Btu (MMBtu), less than half of the annual average price in 2008—and on a Btu basis, less than one-quarter the price of crude oil.

In areas such as north-central Montana that produce primarily methane—gas extracted from shallow wells or coal seams rather than oil shale—low gas prices have virtually halted exploration and drilling, reducing output. "The price is less than the finding cost," explained Tom Richmond, an administrator with the Montana Board of Oil and Gas.

But countervailing market forces are at work in the Bakken, where the high NGL content of "wet" gas coming out of oil wells gives energy companies an incentive to capture and process it. Liquid hydrocarbons derived from gas not only provide energy, but also have myriad industrial applications. Gas liquids include propane, commonly used in outdoor grills and space heating; ethane, a vital ingredient of ethylene for making plastics; and butane, a blending agent in gasoline.

Such applications make NGLs much more valuable than dry gas. "It's the natural gas liquids that are making the gathering and processing of the gas economic at all," said Lynn Helms, director of the North Dakota DMR.

Chart 2



Pricing: November 2012 average monthly spot prices at Clearbrook, Minn. (oil), Henry Hub, La. (dry gas) and Mont Belvieu, Texas (NGLs). NGL prices weighted by composition of a typical mixed barrel of liquids

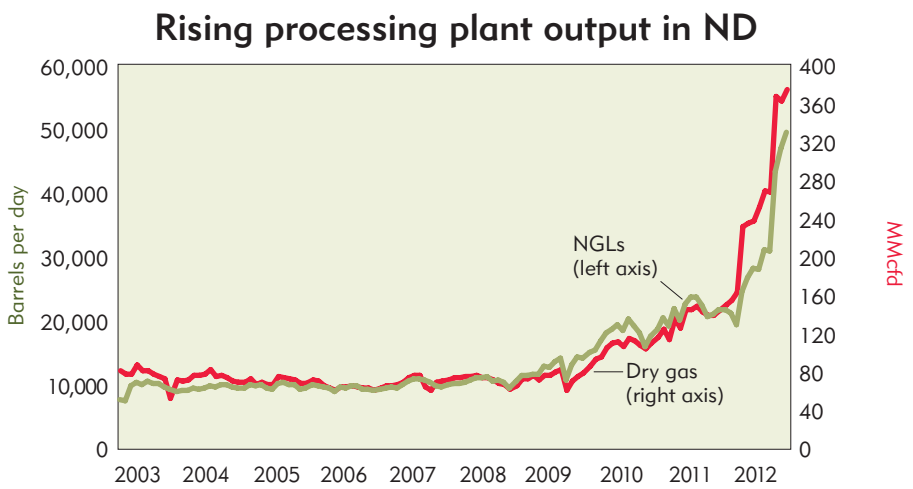
Source: Industry estimates, Bloomberg, U.S. Energy Information Administration

Liquids account for more than two-thirds of the value of Bakken gas (see Chart 2), and as Chart 1 on page 9 shows, NGL prices have tracked well above dry gas prices over the past three years. Prices for NGLs used in oil refining, such as butane and natural gasoline (pentane), were much higher, though all types of NGLs had depreciated since 2011 because of surging production from wet-gas plays such as the Bakken and the Eagle Ford in Texas.

Another spur to gas development is state laws intended to cut air emissions and waste. In North Dakota, producers who flare for more than 60 days are required to cut back oil production, and after flaring for a year, they must either pay royalties on the torched gas or shut down the well. "You can't burn this gas in the atmosphere forever," said Rodney Wren, president of New Frontier Midstream, a Texas-based developer of gas infrastructure in the Bakken region. "Sooner or later, you're going to have to do something with it, or you're not going to be able to produce your oil."

However, even after a year, many wells continue to flare gas; exemptions giving operators more time to connect to pipelines and market their gas are routinely granted by regulators.

Chart 3



Source: North Dakota Department of Mineral Resources

The processing boom

The value of NGLs, together with flaring regulations, is driving construction of new processing plants to separate liquids from dry gas and of pipelines and other facilities to move both commodities to market.

Over the past five years, gas-processing firms have built six new plants and expanded existing facilities in North Dakota, increasing processing capacity in the Bakken region from less than 400 MMcfd to about 925 MMcfd. The plants separate NGLs from dry gas so that they can be transported in liquid form. Some plants produce a blend of NGLs to be fractionated (separated out) later at facilities outside the region; others strip out individual liquids such as propane and ethane to be marketed separately.

One of the biggest players in Bakken gas is Oneok Partners of Tulsa, Okla., a "full-service midstream provider" that stores, processes and transports gas, charging producers a portion of the proceeds from gas sales. In January, Oneok announced up to $500 million in Bakken capital projects through 2015—spending that comes on top of about $2 billion previously invested in the region.

The company operates four processing plants in western North Dakota, including a $300 million, 100 MMcfd plant west of Williston that went into service last fall. Another 100 MMcfd plant is nearing completion near Williston, and a sixth is slated to come online outside Watford City in 2014. "We started ahead of the game before the [oil and gas] boom, and these projects just build upon our base," said Oneok spokesman Brad Borror.

New York-based Hess has processed gas since the 1950s at its large plant in Tioga, N.D., and is one of the state's biggest propane suppliers. A $500 million expansion project will more than double capacity to 250 MMcfd by year's end, making the Hess complex the largest gas-processing facility in the state. As part of the expansion, Hess is upgrading its equipment to capture ethane from raw gas. Ethane makes up the largest proportion of wet gas by volume, but extracting it requires deep refrigeration, an expensive and energy-intensive process.

More new plants and expansions are on the drawing board. New Frontier Midstream has proposed building advanced processing plants near Dickinson, N.D., and Sidney, Mont., capable of capturing virtually all NGLs. The two plants will have a combined capacity of 50 MMcfd and, together with gathering systems, cost about $130 million to develop, Wren said. A total of 300 MMcfd of new processing capacity is slated to come online

in the region by the end of next year.

Burgeoning processing capacity has increased production of both NGLs and dry, residual gas (see Chart 3). The output of North Dakota plants, including two facilities just outside the Bakken region, rose steeply from 2010 to 2012. Propane and butane contained in NGL mixes accounted for most of production.

Fluid movement

But as processing capacity has ramped up, expansion of gas pipelines has failed to keep pace. In North Dakota, one-third or more of processing capacity goes unused, because vast volumes of gas are burned off at wellheads, never reaching a plant via pipeline. The state has a "severe shortage" of gathering lines to transport gas to processing plants, said Justin Kringstad, director of the North Dakota Pipeline Authority (NDPA). (Flaring is less prevalent in Montana because the slower pace of well drilling gives producers more time to connect to gathering networks.)

"The good news is that over time … the number of wells getting connected is increasing" as processors extend their gathering networks into oilfields, Kringstad said. Over the past 18 months, the percentage of North Dakota gas that is flared has fallen from 36 percent to less than 30 percent, according to the state DMR. Also, the number of wells in the state producing gas for sale—indicating they're connected to a processor via pipeline—rose about 45 percent between 2011 and 2012.

The rising output of processing plants is also driving demand for transmission infrastructure, especially facilities geared toward moving NGLs, to deliver processed gas to markets. Liquids can be transported by rail, and for years Bakken NGLs have been shipped in high-pressure tank cars to customers in the region (the Tesoro refinery in Mandan, N.D., uses butane as a gasoline additive) or distant fractionating plants. Oneok operates an NGL rail facility south of Sidney linked by pipelines to its processing plants, and Hess and Texas-based Plains All American Pipeline also ship NGLs by rail. Some liquids are trucked to rail terminals from small field units that perform basic processing at the wellhead.

But as is the case for crude oil, pipelines offer a more efficient route to market for NGLs. Over the past two years, processors and pipeline companies have invested heavily in pipeline projects designed to transport NGLs swiftly and cheaply.

Oneok is spending half a billion dollars on the Bakken NGL Pipeline, the first pipeline in the region dedicated to natural gas liquids. Scheduled to go into service this spring, the pipeline will provide an outlet for Oneok's own processing plants in the region, carrying 60,000 barrels of liquids daily for ultimate delivery to fractionating plants in central Kansas that supply much of the nation's midsection. The company plans to spend another $100 million to more than double the pipeline's capacity in 2014.

Hess is expanding and upgrading its gas processing plant in Tioga, N.D. PHOTO BY PHIL DAVIES

Alliance Pipeline, a Canadian firm, is capitalizing on NGL development in the Bakken by transporting liquids in gaseous form. The company's main pipeline through North Dakota carries unprocessed wet gas from western Canada to a fractionating plant near Chicago. The Tioga Lateral Pipeline, a new $168 million, 79-mile line slated for completion this summer, will collect gas containing NGLs from Hess's processing plant and pump it into this mainline.

A second $240 million pipeline scheduled to go online this fall will carry liquid ethane from the Hess plant north to a petrochemical facility in Alberta, Canada. (For more detail on gas transportation projects in the Bakken, see tables on pages 4 and 7.)

Low natural gas prices have discouraged massive investment in dry gas transmission—the fat pipelines that deliver methane to utilities, manufacturers and other buyers. But the vapor left after all or most of the NGLs are extracted at processing plants "has to go somewhere," observed Borror of Oneok. "Only a certain amount can be absorbed by the local market. We rely on long-range transmission lines to take gas out of the region and bring it to the market." Gas piped out of the Bakken goes to regional markets such as Billings, Mont., and Fargo, N.D., and beyond to Minneapolis-St. Paul and other Midwestern cities.

Instead of undertaking expensive new pipeline projects to accommodate increasing volumes of dry gas coming out of the Bakken, pipeline firms have mostly added capacity to their existing networks.

WBI Energy Transmission of Bismarck, N.D., owns 3,700 miles of gas pipelines spanning North Dakota and extending into South Dakota, Montana and Wyoming. Its transmission lines feed into the Northern Border Pipeline, a major route for Canadian gas headed to the Chicago area. Without putting a lot of new pipe in the ground, WBI Energy has quadrupled its transmission capacity in the Bakken since 2009, said Rob Johnson, the firm's director of market services and system planning.

Most of the expansion came from improvements (such as higher gas compression) on existing long-haul lines, but the firm has also built small, local pipelines such as a 12-mile segment connecting a Oneok processing plant to the distribution network, completed last year. "We continue to work a number of projects for takeaway out of the Bakken, as well as projects within the Bakken," Johnson said.

Room to grow

Gas infrastructure development in the Bakken is expected to accelerate as gas production swells along with oil output. An NDPA forecast based on likely oil-drilling scenarios predicts that gas production in western North Dakota and eastern Montana will exceed 1,500 MMcfd by 2018—double last fall's production—and keep rising for another decade.

As more gathering pipeline is laid to wells and flaring diminishes, additional processing capacity will be necessary to prepare gas for transport and sale. Oneok is operating under that assumption; in January, the firm announced plans to build its seventh processing plant in the Bakken, a 100 MMcfd facility scheduled to go into service near Watford City in 2015.

In the near term, transportation capacity appears adequate to move Bakken gas, including NGLs, from processing plants to regional and national markets. The Bakken NGL Pipeline when completed will absorb the entire liquids output of Oneok's existing and proposed processing plants. And just as rail hubs have become release valves for crude oil (see cover story), trains will likely continue to transport NGLs from processing plants not served by pipelines.

As for dry gas, long-distance transmission pipelines transporting gas out of the Bakken had excess capacity at the end of last year, according to a study by Bentek Energy, an energy markets research firm.

On WBI Energy's network, surging Bakken production hasn't made up for reduced flows of methane from gas fields elsewhere in Montana and Wyoming, said Barry Haugen, the firm's chief operating officer. As a result, only about two-thirds of WBI's roughly 400 MMcfd of takeaway capacity from the Bakken was being used last fall. "It could be utilized more," Haugen said. "We've got room to grow."

But oil-like pipeline bottlenecks for natural gas and NGLs may develop within a few years as gas production increases. Unless crude oil prices—which strongly influence NGL prices—drop significantly, Bakken raw gas will continue to be collected and processed for the sake of its valuable liquids content.

Some in the industry believe that growing Bakken gas production will displace some Canadian gas on long-distance pipelines such as Northern Border and Alliance. Because oil is the real moneymaker for Bakken well operators, they may be content to discount their gas—making it more attractive than Canadian gas to U.S. buyers—simply to keep producing oil.

Long relegated to also-ran status, Bakken gas is coming into its own, and may one day—20 or 30 years from now—be as important to the economy of the region as oil. That's because as Bakken wells age, they produce not only less crude oil, but also an ever higher proportion of gas with each remaining barrel of oil pulled from the ground. f

In South Dakota, we trust

Thorough but business-friendly regulation has helped the state develop a niche in the growing market for trust companies

By RONALD A. WIRTZ
Editor

When it comes to money, there are many secrets. Maybe nowhere are they more present than in trusts, those ultra-private instruments used by people of means to leave a financial legacy for any variety of beneficiaries, from children to charitable causes.

Trust companies tend to charter in states with regulatory environments that are friendly to parties bequeathing substantial wealth. And on that measure, South Dakota is happy to see its secret getting out. For the better part of a decade, the state has seen a flurry of new charters for private and public trust companies. Though there are few solid measures of such matters, it appears that the state is a national leader—possibly top of the heap—in attracting such firms.

South Dakota has become a trust company magnet mostly because it has configured an attractive regulatory environment for trusts, one that emphasizes asset protection, privacy and other traits coveted by wealthy individuals. Though the state's geographic location is not ideal, neither is it a huge hindrance, as evidenced by the many new trust companies chartered in recent years. But while assets managed or otherwise administered by in-state trust companies have grown to eye-popping levels, the broader impact of this industry on the state economy has been quite modest.

Whom do you trust?

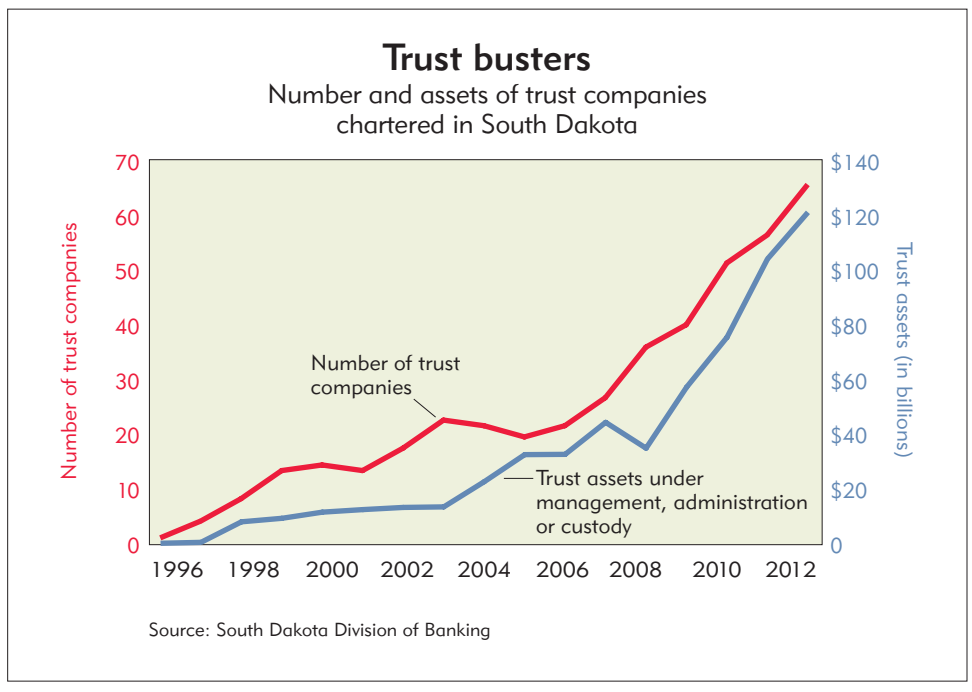
A trust, at its core, is a financial relationship in which one party (the trustor) gives assets to a separate person or organization (the trustee) to be held and managed for the benefit of a third party (the beneficiary). Trusts are created for many reasons: to provide future financial security to children and other family members, for charitable purposes, and for tax savings and improved wealth management.

The trust market is a bit of a data anomaly, despite the huge financial assets involved. Trust companies are regulated by a patchwork of federal and state agencies, and their information is not shared or aggregated at virtually any level. Finding something as innocuous as the number of new trust companies chartered nationwide every year is sheer guesswork unless a person has the time to contact every state (and no one has done it to date, at least publicly).

But industry sources widely view South Dakota as one of the best places to charter a trust company, and the state collects a fair amount of data on its homegrown industry. At the end of 2012, there were 65 trust companies chartered in South Dakota, virtually all of them authorized within the past 15 years. Maybe more intriguing is that total trust assets have grown to more than $120 billion (see chart).

South Dakota's trust business dwarfs that of most states. Minnesota, for example, has just three nonbank trust charters, and there have been no new charters since 2005. They have combined assets of a little over $7 billion, the large majority of it with Ameriprise, according to Patrick McLuen, chief bank examiner with the Minnesota Department of Commerce.

> Openness to trusts [in South Dakota] was kick-started in the second half of the 1990s, when a governor's trust task force began laying a regulatory foundation that was rigorous yet welcoming to trust companies. The task force was crucial in "creating a friendly environment for trusts." —*David Lust, Task Force Chair*



Banks haven't exited the business, according to industry sources, but neither are they beating down the doors of this financial niche. Bank call data analyzed by the Federal Reserve Bank of Minneapolis show that about 15 South Dakota banks (about one in five) reported "income from fiduciary activities" (which includes trust services) in any year since 2001.

Curt Everson, executive director of the South Dakota Bankers Association, acknowledged that most banks in the state are not involved with trusts. But among larger banks that are, "I get the sense that trust operations are a significant and valued part of the bank's overall operations," he said.

But it used to be that "banks were the only [trust] game in town," said Pierce McDowell, co-founder and co-CEO of South Dakota Trust Co. of Sioux Falls. McDowell started Citibank's trust office back in the early 1990s, which drew clients from around the globe. During that time, "we were lucky to get 100 clients a year, and that was considered a good year." Today, South Dakota Trust is handling about 75 new clients every quarter, McDowell said.

Trust the driver

South Dakota's growth in this high-finance sector "is a combination of several factors, in addition to good old appreciation in the markets," said Bret Afdahl, director of the South Dakota Division of Banking. Some factors are fundamental, generating broad demand for trust business across the United States, like rising wealth, which has been well chronicled for its steep ascent over the past decade or more for those at the top.

Simple demographics also play a role, as the World War II (so-called greatest) generation and the fast-retiring baby boomer generation are increasingly making wealth transfer plans. "It's been described to me [as] the largest transfer

Suffice it to say, there are certain traits that the [trust] industry seeks for its clients, and South Dakota ranks high on many of these qualities.

South Dakota passed a state statute abolishing the [Common Law Rule Against Perpetuities], thereby allowing trusts to be established in perpetuity.

South Dakota is one of the few states without a corporate or personal income tax on investment earnings.

of wealth from one generation to the next in human history," said Afdahl.

High-net-worth individuals also have been investigating trust options more aggressively given the uncertainty surrounding the estate and gift tax exemptions and the year-end federal fiscal cliff that garnered so much national attention. Afdahl said that trust assets under management "jumped quite a bit as there was a rush to establish and fund new trusts at the end of the year."

McDowell, from South Dakota Trust Co., believes that his client base was possibly inflated by fears of change to the $5 million estate tax exemption. It was set to expire at the end of last year but was ultimately extended and indexed to inflation by Congress, with the highest estate tax rate raised to 40 percent (from 35 percent, though lower than the 55 percent rate that would have otherwise kicked in).

But the industry had been growing briskly before any talk of fiscal cliffs. In fact, trust company charters and assets increased steeply during the recession—despite huge losses in financial markets—because wealthy individuals exited equity markets in search of longer-term financial security.

For these myriad reasons, the trust industry is not particularly beholden to the ups and downs of the economy. "There is wealth transmission all the time regardless of whether the economy is booming or in recession," said David Lust, a partner at the law firm of Gunderson, Palmer, Nelson and Ashmore.

Why trust anywhere else?

South Dakota's large share of this growing market is the product of trust-friendly state law and regulation, part of a pattern of widely recognized friendliness to business. Openness to trusts was kick-started in the second half of the 1990s, when a governor's trust task force began laying a regulatory foundation that was rigorous yet welcoming to trust companies, according to state and industry sources.

Lust, the current chair of the trust task force, said that the task force was crucial in "creating a friendly environment for trusts." Afdahl agreed, noting that the task force continues to tweak regulations, and that its importance "cannot be overstated in all of this [trust growth]. ... Every year, we go through and analyze what other states are doing and what we can do better" to remain an attractive location for those considering trusts and trust companies.

"We're always looking for subtle differences," Afdahl added. Without this group meeting every year to make incremental changes to South Dakota trust law, "we would be where most other states are currently at—behind the curve of a fast-moving landscape."

The specific structure of that regulatory environment is hard to describe without getting bogged down in the tedious and often arcane demands of wealth management and related government regulation. Suffice it to say, there are certain traits that the industry seeks for its clients, and South Dakota ranks high on many of these qualities.

According to Afdahl, "It really is a laundry list of things … [but] it all starts with the Common Law Rule Against Perpetuities," which tries to limit the duration of trusts to about 100 years. South Dakota passed a state statute abolishing the rule, thereby allowing trusts to be established in perpetuity. "Many states have not repealed this common law principle and are therefore not even considered for the dynasty trust business," which helps families manage multigenerational wealth.

Not surprisingly, the wealthy tend to pay attention to taxes, and South Dakota is one of the few states without a corporate or personal income tax and no tax on investment earnings. Life insurance is also common in trusts, and the state imposes the lowest life insurance premium tax in the country, according to industry sources.

Confidentiality is also critical to trust clients. "Privacy is a big deal. … Our confidentiality laws are very strong, and this is a very important factor for most ultra-high-net-worth families," said Afdahl. South Dakota is the only state in the country with a "total seal forever" law, which means that all records in any lawsuit are permanently sealed. (Delaware is next best with a three-year seal.)

Startup capital costs are also low in South Dakota. Afdahl said that many states "view trust companies through the bank lens and require $1 [million] to $2 million in capital, which is very difficult for a startup company." In contrast, South Dakota requires just $200,000 for private trust companies, "and we are at or near the lowest minimum."

Trust our soundness

But trust friendliness should not be confused with deregulation or riskiness, according to Afdahl, Lust and other industry sources. For example, like banks, trust companies pay annual fees to the state to support examiners (currently five) who analyze trust companies for financial soundness.

"It's a matter of balancing the ability of new companies to form versus the costs of failure," Afdahl said. "As I tell the Legislature every year … we are taking on some degree of risk with every [trust] company that we charter." That risk might entail the cost of closing down a trust company and the associated harm to the state's reputation. Since 1996, only one trust firm in the state has failed—a public trust company that went under in 2003 and "was somewhat complicated to resolve, but mostly just very slow moving." The matter was finally resolved just last year, Afdahl said.

But the nature and consequence of risk is "fundamentally different" for a trust company than for a bank, Afdahl pointed out. The assets that are managed or administered by a trust company "are not on the balance sheet of the trust company like loans are on a bank's balance sheet." The trust company itself is independent of the assets, so the financial health of a trust company is not tied directly to market fluctuations. If the asset value of a trust goes down, it's the trust beneficiaries who suffer. The trust company "will have explaining to do, and may lose some business" in terms of client fees, Afdahl said, but the trust client absorbs the market loss.

The trust market has also been evolving, with new types of trust companies often offering specific, scaled-back services rather than the full service (including asset investment) that has been traditionally common. As a result, South Dakota has seen a spurt of public trust companies offering administrative and custodial services (see sidebar on page 14 for more discussion), and state regulators have adjusted accordingly, Afdahl said. Because public and private trusts are fundamentally different, "we are now asking more of our public companies [in terms of regulations] and are charging them more in supervision fees."

This past fall, Afdahl said, the state finalized new regulations and capital requirements for public trust companies. "While representatives of the public trust companies weren't necessarily happy about the new, tougher regs, they did understand the division's rationale and did actually testify in support of the new rules."

Location, location, location?

Despite the gargantuan pile of assets now being managed or administered by trust companies in South Dakota, their growing number has made only a modest economic impact in the state.

Many new (typically public) trust companies do not directly handle asset investment and management services; these tasks are often performed by firms and advisers that already have a relationship with the client before the creation of the trust. Even for in-state trust companies that do manage investments, trust assets are not lent to businesses and households, which means that the concentration of trust businesses in the state doesn't have near the financial spillover as banks and other financial institutions with similar capital.

Afdahl estimated trust company em-

Continued on page 14

Trusts from page 13

> "We're a little more sophisticated than people give us credit for."
> —*Pierce McDowell*
> *South Dakota Trust Co.*

ployment at not even 100. That's not a lot, even in a small state like South Dakota. But trust company employment has grown 80 percent since 2009. Trust companies also contract for attorneys, accountants, marketing firms and other labor, rather than putting them on payroll. Much of the work related to trusts—whether by a trust company or contract labor—tends to be highly skilled and well compensated. In a place like Sioux Falls, home to more than 50 trust companies, the cumulative effects on employment and business vitality can be considerable. Similarly, there are nine trust firms in Pierre, a city of just 13,000, which gives this small city a little financial cachet.

One might think that being in the middle of flyover county far from the affluent coasts would be a huge hurdle for new trust firms. McDowell, from South Dakota Trust Co., acknowledged that "it takes a lot of work to spread the word" that South Dakota is the locus of smart-money trusts. "I go into board rooms today, and there are a lot of people that are still provincial" in their decisions about where to go for trust services. "You kind of accept it and move on."

In the past, if you mentioned South Dakota, "you'd get laughed out of the board room," McDowell said. "But quietly, we're making great inroads. If someone is achieving success, someone else is going to see it. We're a little more sophisticated than people give us credit for."

Lust agreed that not being close to either coast "is somewhat of a barrier. … You're a long, long way away" from big client pools and many of the financial firms that ultimately manage trust assets. But wealthy individuals "depend on their experts" to tell them where to do business, and that's why South Dakota can compete with other trust-friendly states like Delaware and Nevada, according to Lust.

Given that location is not an insurmountable obstacle, the surprising part might be that other states are not competing for this business. "It's probably a function of [state] culture" and the environment that state lawmakers choose to create for any type of business, said Lust. The best places for trusts and businesses in general, he said, "are usually one and the same." f

Money, and more money: Public and private trusts

South Dakota sees a strong increase in public trust companies that provide noninvestment services

Strong privacy rights for trusts and trust companies make it difficult to deduce much from the robust growth in these firms in South Dakota. But one notable trend surfaces from their mere registry with the state: In recent years, there has been a notable increase in public trust firms.

Trust companies come in two basic forms: public and private. In a nutshell, private trust companies are family-based and have been the core of trust business until fairly recently. They are limited to a single family lineage, but often include multiple generations. A private trust company does not act for unrelated families or accept outside business. In general, these companies are not required to provide as much regulatory capital as public companies and do not have to establish the same in-state presence so long as the trust company allows state trust regulators to conduct efficient examinations.

The circumstances surrounding the creation of a private trust are many, and they are often unique to the family. In terms of the wealth required—well, as the saying goes, if you have to ask how much money you need, you don't have enough.

"The general rule of thumb I have heard several times is that a family needs $200 [million] to $250 million in assets to make a [private] trust company worthwhile from a cost perspective," said Bret Afdahl, director of the South Dakota Division of Banking. "Having said that, we do have families with less assets that chose to establish their own [private] trust company for other reasons," many of which are specific to South Dakota's regulatory environment for trusts (see main article).

A public trust company, in contrast, resembles a traditional bank trust department in some ways; it solicits and accepts new accounts from unrelated families or individuals who typically have much less wealth. Think of it as the retail trust business.

Public trust charters have increased dramatically since 2007 (see chart) and now represent 60 percent of all trust companies in South Dakota. But rather than replacing private trusts (which have continued growing), public trust companies appear to be carving an entirely new niche.

Many of these public trust companies are serving people interested in self-directed independent retirement accounts, according to Afdahl. These financial vehicles allow an individual to make his or her own investment choices for a retirement plan. However, the Internal Revenue Service requires that a qualified trustee or custodian hold the IRA assets on behalf of the IRA owner.

Enter public trust companies, many of which are playing administrative and custodial roles for individual trusts and do not invest or otherwise manage trust assets. "We have had a lot of interest from groups interested in doing [this] work," Afdahl said.

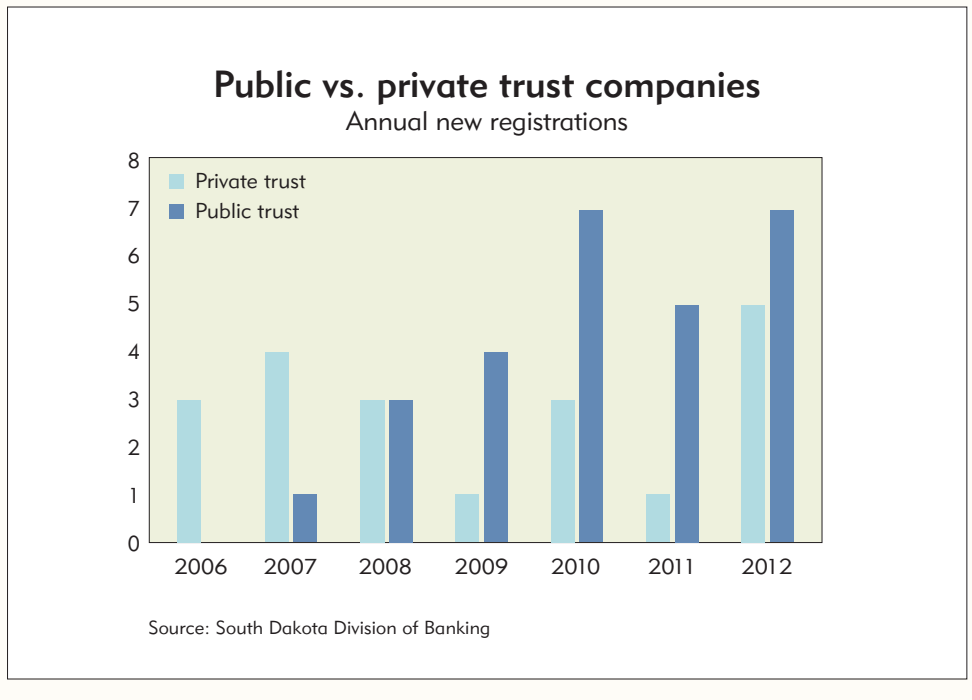
He added that self-directed IRAs also allow individuals to invest in nontraditional assets such as real estate, precious metals, business ownership and other assets that cannot be held in traditional retirement accounts and have become more common since the financial crash in 2008.

This custodial role distinguishes independent, public trust companies from many bank trust departments, which typically manage assets and offer a full slate of other services. "They [banks] want to manage assets. They don't want nonmoney assets," according to Pierce McDowell, co-CEO of South Dakota Trust Co., a public trust company in Sioux Falls that provides administrative trust services. The firm administers more than $9 billion in assets, but it does not invest or otherwise manage those assets. "In our world, I don't see a lot of banks competing with us."

And it might be hard to imagine, but Afdahl said—and the South Dakota market is showing—that new public trust companies are serving a previously neglected class of customers a cut below the uber-wealthy.

"We consistently hear from applicant groups that the larger institutions do not provide the same level of customer service to people in certain net worth categories," said Afdahl. Big trust companies and banks "want the ultra-high-net-worth customers, but do not show as much interest in or provide the same level of customer service to those below the very upper crust. This has provided an opportunity for smaller companies" to pursue clients in different markets nationwide from their headquarters in South Dakota.

—*Ronald A. Wirtz*



The rise of the West: More than just an oil story

Relative earnings in western Ninth District states have been rising steadily for more than two decades

By BRIAN HOLTEMEYER
Research Associate

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Editor

Economic well-being has always been relative. How well a person or group of people fares rests in part on the fortunes of others.

Not that long ago, North Dakota was one of the have-nots among a nation of haves. The state was losing population, and average earnings were declining compared to the national average. As has been widely publicized, that's no longer the case. But while most observers attribute the state's growth to the recent oil boom there, the longer-term story is much more interesting and compelling.

North Dakota's rise is not unique. Research on historical earnings in three Ninth District states—the Dakotas and Montana—from 1965 to 2011 shows just how far states in the western portion of the Ninth District have come in terms of average earnings. The data also reveal similarities and differences in the performance of three neighboring states over time.

From 1970 to the late 1980s, western district states experienced a hard-scrabble decline—mostly due to a struggling farm sector—that saw average earnings drop considerably compared to the national average. But the second period, from about 1990 to 2011, has witnessed an economic rebirth, especially in the Dakotas, with earnings climbing steadily and, in the case of North Dakota, streaking past the national average.

Ultimately, this is a story of economic transition brought about by changes in the performance of certain industry sectors that strongly influence the economies of thinly populated states like North and South Dakota and Montana.

Certainly some of this story is about oil, particularly in North Dakota, which is experiencing an energy boom that requires all such previously labeled periods to bear an asterisk. But earnings growth was plainly visible well before the boom, a matter that is particularly obvious in South Dakota, which has virtually no oil production to speak of. The good news is that the Dakota economies appear to still be on the ascent, and economists in those states see solid fundamentals for continued growth.

Tracking net earnings

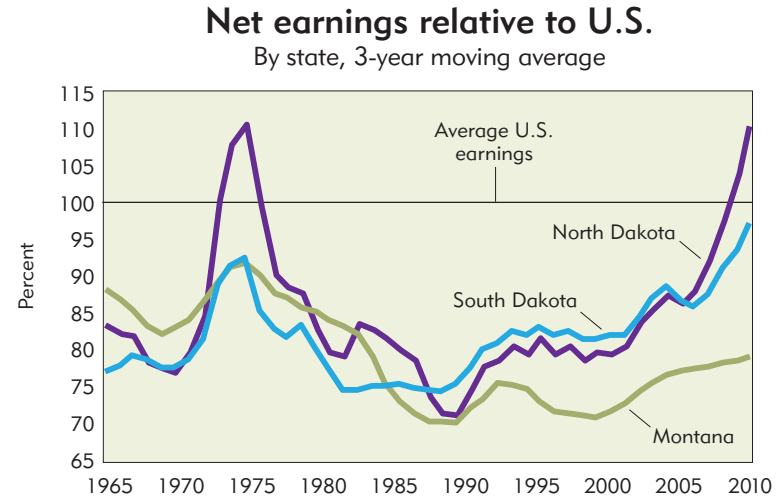
To home in on the economic performance of the Dakotas and Montana, the *fedgazette* gathered data on average net earnings per person from 1965 to 2011 for the Dakotas and Montana. Net earnings, roughly speaking, equal wages, salaries and proprietor income after subtracting contributions to government social insurance programs. These earnings were compared to nationwide earnings over the same period, producing a relative earnings measure for each state over time.

The ratio of state to national net earnings per person often fluctuates modestly in any given year. In 1970, earnings in each of these three states were roughly 75 percent to 85 percent of the national average (see Chart 1). Over the next four decades, these states (especially North Dakota) went through an extremely volatile period, cut into two roughly equal halves of a rags-to-reasonable-riches story.

"These findings fit the North Dakota experience to a T from my perspective," said David Flynn, director of the state's Bureau of Business and Economic Research and an economics professor at the University of North Dakota (UND).

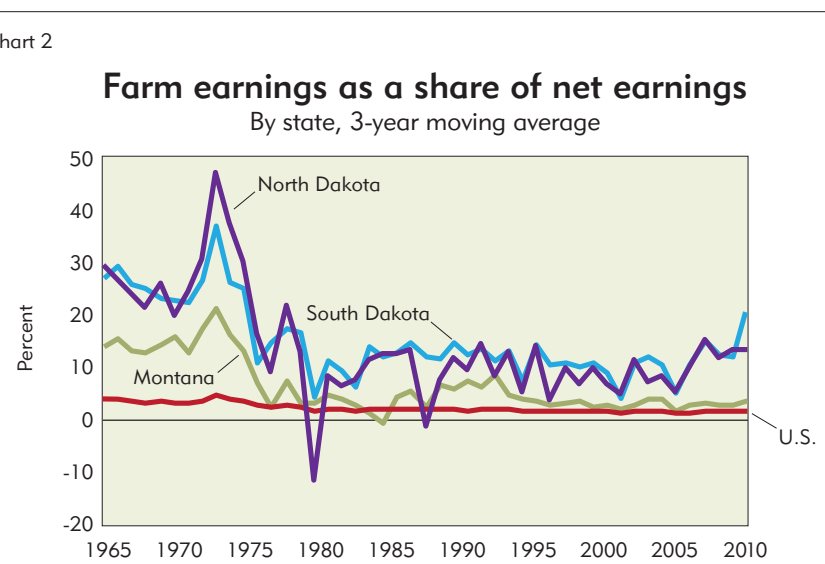
Things started positively enough for the three western district states. Crop and livestock prices rose dramatically in the early 1970s in conjunction with rising exports. Strong farm earnings spilled over into farmland prices and other areas of the economy, increasing nonfarm earnings. With small economies (especially at the time), the effect in these states was direct and large (see Chart 2). North Dakota briefly experienced earnings that were well above the national average.

Chart 1



Source: Bureau of Economic Analysis

Chart 2



Source: Bureau of Economic Analysis

Ultimately, that growth proved unsustainable; farm prices eroded quickly, pulling the rug out from under farmland values and dealing a harsh blow to these state economies. It's interesting to note that an oil boom in North Dakota and Montana (to a lesser degree) in the late 1970s and early 1980s had little effect on the economic trajectory in these two states, save for a short blip in North Dakota. By the late 1980s, average earnings in these three district states had fallen to about 70 percent to 75 percent of the national average.

Because much of the earnings drop stemmed from farming, that also meant that rural workers and households took a bigger hit than those in metro areas,

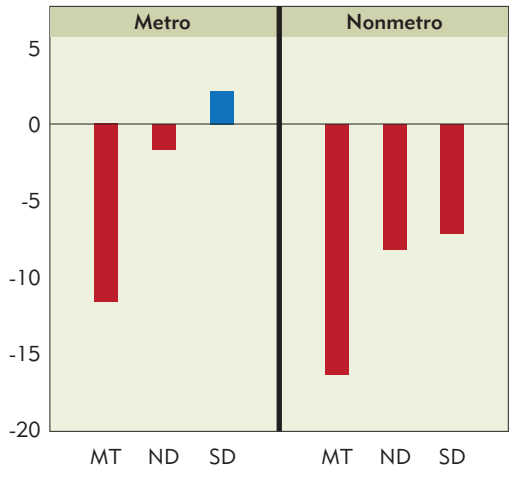
Continued on page 16

South Dakota avoided the catastrophic effects of the last three recessions—and particularly the most recent one—seen in other parts of the country. The state's economic performance looks better on paper simply because it "suffered a less severe recession than did the U.S. … We did not overbuild and participate in the subprime mortgage fiasco to the same extent as the U.S. did." *—Ralph Brown, USD professor*

Chart 3

Early rural suffering

Percent change in metro and rural net earnings, 1970 to 1990

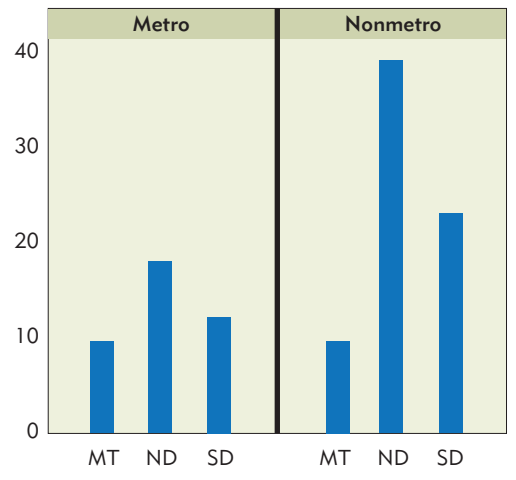


Source: Bureau of Economic Analysis

Chart 4

Later rural prosperity

Percent change in metro and rural net earnings, 1990 to 2010



Source: Bureau of Economic Analysis

West from page 15

though Montana saw a significant drop among earners in both categories (see Chart 3).

Movin' on up

What happened over the following two-plus decades hardly could have been predicted. Since about 1990, there has been a remarkable resurgence in the western Ninth District economies (see Chart 1). By 2011, North Dakota had caught up to and streaked past the national earnings average, while South Dakota had earned parity—this from a flat-footed 74 percent in 1989.

Economies are complex entities, so the sources of these gains are multifaceted and vary by state. For example, earnings from agriculture and mining (which include oil and gas production) contributed moderately to the relative rise in earnings, but their effects are concentrated in recent years and unequally distributed among these three states (see Charts 2 and 5).

North Dakota has been a big beneficiary of strong farm and energy sectors. Oil production has led to a gusher of economic activity; with a robust farm sector in recent years factored in, average earnings in the state have leaped over the national average. According to Flynn, "There are clearly spillover effects from these sectors into others such as transportation and retail. We have also seen increased demand for services such as financial services and accounting services."

Montana has likely benefited from growth in both sectors, but to a much smaller extent, while South Dakota has seen little impact from the oil boom; whereas, its farm sector has prospered. Gains in farming and mining—sectors largely conducted in the countryside—also translated to strong earnings gains in rural areas, particularly in the Dakotas (see Chart 4).

But even before fracking for oil and gas became a household word, and before robust increases in farm prices, earnings in the Dakotas were making strides against the national average. South Dakota is an interesting case, because its economy has virtually no presence in oil or other mineral mining, yet earnings there have risen dramatically since 1990.

Some of the growth in relative earnings can be attributed to the fact that South Dakota as well as North Dakota avoided the catastrophic effects of the last three recessions—and particularly the most recent one—seen in other parts of the country. The state's economic performance looks better on paper simply because it "suffered a less severe recession than did the U.S. … We did not overbuild and participate in the subprime mortgage fiasco to the same extent as the U.S. did," said Ralph Brown, an economics professor at the University of South Dakota (USD) and a member of the Governor's Council of Economic Advisors. The state's peak-to-trough employment loss was 3 percent—less than half of the U.S. rate of job loss, according to federal labor data.

Brown added that South Dakota has benefited from two major industry expansions. The state has a fairly small manufacturing base, but the sector has witnessed significant growth. The rise of computer-maker Gateway in the early 1990s kick-started sharp growth in employment and income. Across the state, manufacturing jobs grew by 10,000 during the 1990s—an increase of about 30 percent—to over 44,000 jobs.

In 2001, on the heels of a recession, Gateway moved most of its operations from North Sioux City to California, and by 2003 the state had lost about 7,500 manufacturing jobs. A subsequent recovery, followed by the Great Recession and another recovery, has pushed manufacturing employment once again over 40,000, according to Brown.

South Dakota has also benefited from "great growth" in the financial services industry, Brown said, fueled by expansion in credit-card banking. From 1990 to its peak in 2008, Brown said industry employment increased from 17,000 to 31,000—an average annual growth rate of 3.4 percent.

The last recession hurt employment in the financial sector, but some of that slack has been taken up by well-timed growth in the farm sector. From 1990 to 2012, farm income accounted for about 7.4 percent of personal income in South Dakota, Brown noted. But since 2011, farming's income share has risen to over 12 percent. In 2011, farm income averaged $174,000 per farm proprietor.

Earnings capture only part of the farm impact. Farm production expenses amount to 20 percent of personal income, Brown said, "which makes farming a big player in the economy. Farming itself does not create new jobs directly, but the spending by farmers does. When things are going well, farmers purchase more trucks, tractors, farm equipment, farm building [and so on]. When things are not going well, they postpone these expenditures where possible."

Flynn, from UND, also pointed out that even when farming wasn't particularly profitable in the mid-to-late 1990s, the sector was still contributing to stronger households and businesses because "land prices continued to appreciate, so asset values for farmers continued to rise."

Montana lags its neighbors

Among the three western district states, Montana has fared the worst, experiencing both a larger fall from 1970 to 1990 and a smaller rise since 1990 compared with the Dakotas (see Chart 6). Montana saw only modest gains in relative earnings, rising from a low of 69 percent of the national average to 79 percent in 2011.

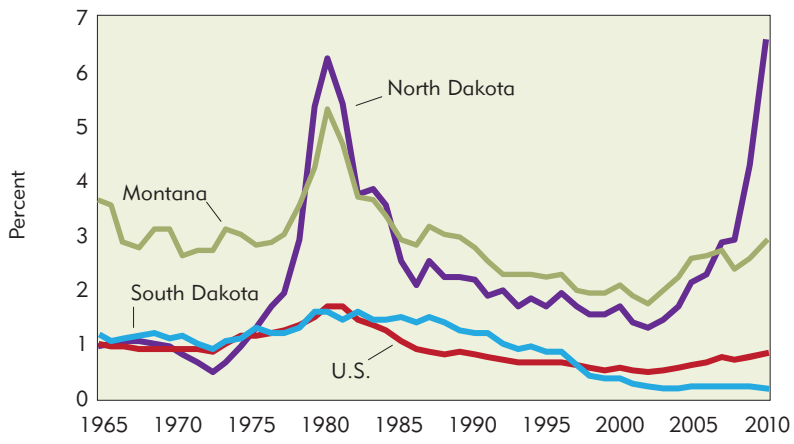
Along with farm struggles shared

In North Dakota, the oil boom offers the state a unique opportunity to mold its future for generations. Almost fortuitously in retrospect, the state has seen prior booms and subsequent busts that left painful scars. Now many firms, investors and other market participants are battle tested.

Chart 5

Mining earnings as a share of net earnings

By state, 3-year moving average

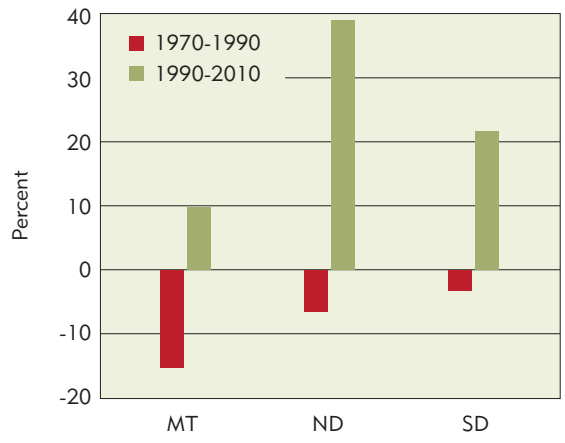


Source: Bureau of Economic Analysis

Chart 6

Montana: Steeper drop, slower growth

Change in net earnings per person relative to the U.S.



Source: Bureau of Economic Analysis

with the Dakotas in the 1970s and 1980s, Montana also saw two major industries—mining and forestry—go through significant upheaval during this period. The city of Butte was home to the Anaconda Copper Mining Co., one of the largest companies in the world in the 1920s and one of the largest in Montana for its entire operational life. The company went through regular boom and bust cycles, but by the 1970s the mine once known as the "richest hill on earth" was at the end of its useful life. The mine was sold to ARCO in 1977, which shuttered it in 1983.

"We lost almost 8,000 well-paid union jobs at the mines and two refineries" that were shut down with the mine, said Paul Polzin, director emeritus at the Montana Bureau of Business and Economic Research at the University of Montana who has studied the state economy for 35 years.

In the mid to late 1980s, the wood products industry also mechanized and restructured, resulting in the loss of thousands of high-paying jobs. Employment peaked in 1979 at about 13,500 and has zigzagged its way to roughly half of that level today—the victim of Canadian softwood and other lumber imports, low prices, slow housing markets and other factors. Montana's forest products industry made up about 16 percent of the state's economic base in the late 1980s, according to Forest Service research. That share has steadily dwindled. By 2006—a year before the start of the home-building collapse and recession—it had fallen to 9 percent.

All Montana's relative earnings growth has come since 2000—and most of it occurred before 2007 as mining and construction industries fed off the housing boom and rising commodity prices. Though the state did not suffer as steep a downturn in the subsequent recession as the nation, the housing collapse nonetheless knocked the state's growth trajectory lower starting in 2007.

All Montana's relative earnings growth has come since 2000—and most of it occurred before 2007 as mining and construction industries fed off the housing boom and rising commodity prices. Though the state did not suffer as steep a downturn in the subsequent recession as the nation, the housing collapse nonetheless knocked the state's growth trajectory lower starting in 2007.

Seizing opportunity

Economic fortunes have swung so dramatically in the Dakotas that it's easy to forget the arduous economic path both states were treading in the 1980s—well, it's easy for non-Dakota residents to forget.

Brown, for one, said, "I think South Dakotans appreciate the significant changes that have taken place in the state over the decades." Some change requires time to take hold. He pointed to the development of a four-year medical school at USD in the mid-1970s "that led to many more South Dakota physicians and the subsequent development of Sioux Falls as a regional medical center." Combined with the city's financial services niche and an expanding economy in general, "college-educated students, more than ever before, do not have to move to the Twin Cities, Omaha or Denver to find a job compatible with their education," Brown said.

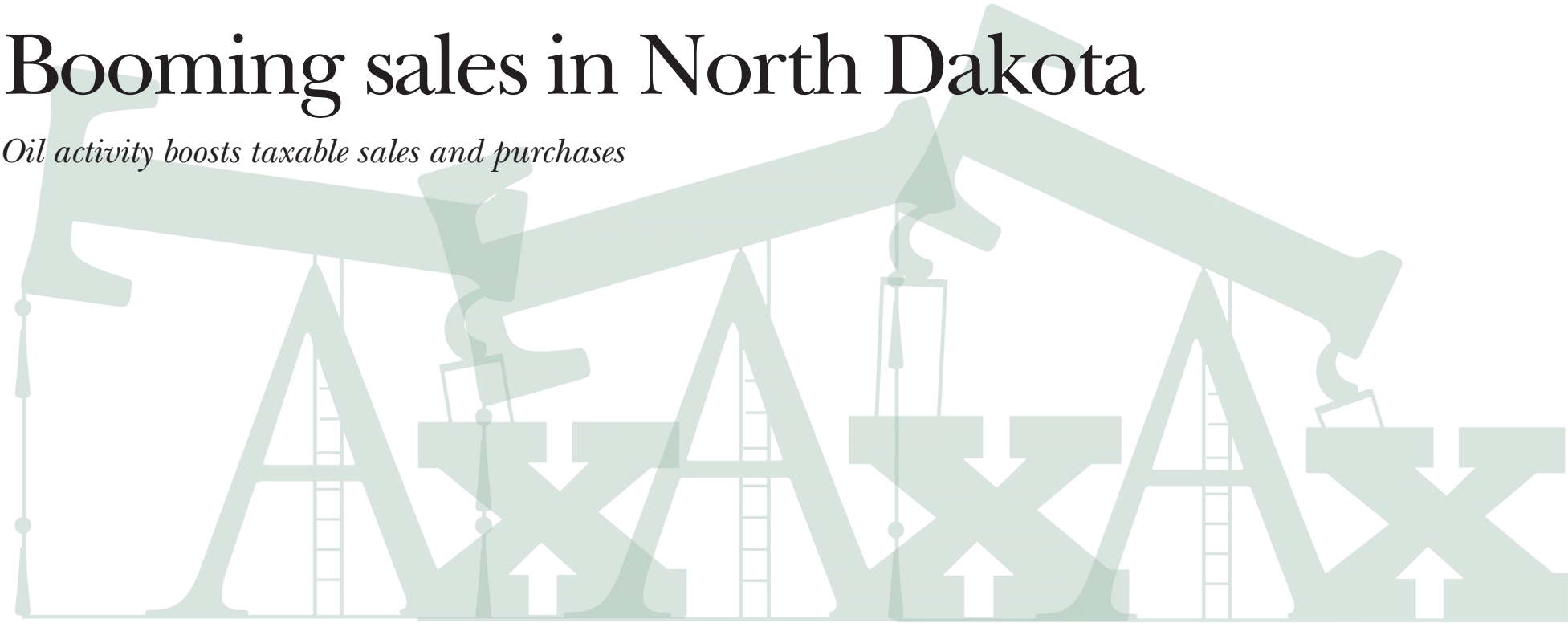
The state is also well positioned to benefit from worldwide demand for food, fiber and energy, Brown said. The state's business climate is an attractive selling point to businesses of all types, and while "growth of the financial sector is a bit more murky … demographics and public policy will drive the demand for medical care, which will continue to be a growth sector in the economy," said Brown. "I think South Dakota is poised to take advantage of whatever that future may hold."

In North Dakota, the oil boom offers the state a unique opportunity to mold its future for generations. Almost fortuitously in retrospect, the state has seen prior booms and subsequent busts that left painful scars. Now many firms, investors and other market participants are battle tested.

As the economic promise becomes more tangible with every new oil well, Brown added, "I think there are more that view this as a once-in-a-lifetime opportunity. … Individuals tend to recall the oil bust of the early 1980s and use that as an argument for better planning. As a result, I think the gains are likely more permanent in nature." The boom has sparked discussion across North Dakota about "the structure of the tax system, about infrastructure needs and economic development. I interpret these as efforts to capitalize as much as possible on the current growth environment and lock in whatever gains they can." f

Booming sales in North Dakota

Oil activity boosts taxable sales and purchases



By ROB GRUNEWALD
Economist

DULGUUN BATBOLD
Research Assistant

Oil isn't the only thing coming out of the ground in North Dakota's oil patch. State sales taxes have also hit a gusher, due mostly to the increase in oil production in the Bakken formation in the western part of the state.

Over the past five years, the aggregate value of taxable sales and purchases in the state more than doubled (see Chart 1), averaging over 15 percent growth annually. In the decade preceding the boom, taxable sales averaged just over 2 percent growth annually. In the fiscal year ending in June 2012, taxable sales and purchases totaled $23.4 billion, raising $1.5 billion in sales tax collections.

The source of the state's growth in sales taxes is not exactly a surprise, given the high-profile expansion of the state's oil industry. But a look at taxable sales and purchases by industry and geography shows the full influence.

Over a third of the increase in overall taxable sales and purchases can be directly attributed to oil activity. Sales of drill bits, fracking chemicals, well casings, drilling mud and other inputs used in the production of oil and gas have experienced a 12-fold increase over the past five years (more than doubling every other year). The mining and oil industry now accounts for about 20 percent of total taxable sales and purchases in the state (excluding sales of oil and gas, which are subject to production taxes). In contrast, for most of the decade prior to 2007, the industry's share barely ever rose above 1 percent of the total.

The other two-thirds of the increase in taxable sales and purchases appears to be largely spillovers from the oil boom. This is hard to prove, but correlations between taxable sales and purchases in mining and oil and other industry sectors were relatively weak before 2007, but very strong afterward. Collections from the wholesale trade sector have nearly tripled since 2007, but were more or less constant over the previous 10 years, hovering at around $450 million.

The oil boom has had a less dramatic effect on consumer spending. Retail sales historically account for half of taxable sales and purchases and have risen since 2007, but at a comparatively modest 5 percent annual growth rate (see Chart 2).

Impact of the Bakken

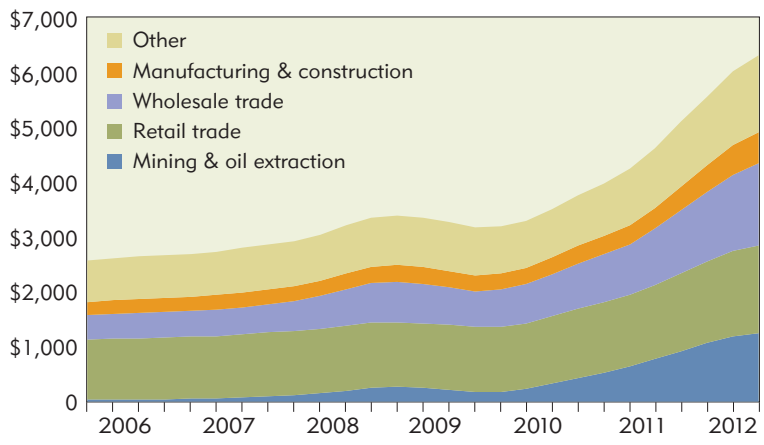
Since 2007, nine Bakken area counties have accounted for well over a third of the total increase in North Dakota sales taxes—this despite having just 11 percent of the state's population. Sales taxes in the Bakken counties jumped in 2008 with the increase in oil drilling, subsided in 2009 when oil prices and drilling dipped and accelerated swiftly once oil drilling picked up again (see Chart 3). Sales to businesses that operate in multiple counties or out of state are not attributed to an individual county, and sales assigned to this "other" category account for 41 percent of the increase. It's hard to say for certain that these businesses are oil-related, but the movement of this category closely follows that of Bakken counties.

Sales figures from the remainder of the state account for less than a quarter of the increase in total taxable sales and purchases. Ward, Burleigh and Morton counties encompass the cities of Minot, Bismarck and Mandan, gateway cities to the Bakken oil-drilling area. Sales taxes for these counties accelerated starting

Chart 1

Increase in mining and oil-related sales taxes drives the total

North Dakota taxable sales and purchases by industry
Millions of 2012 dollars, 12-month moving average

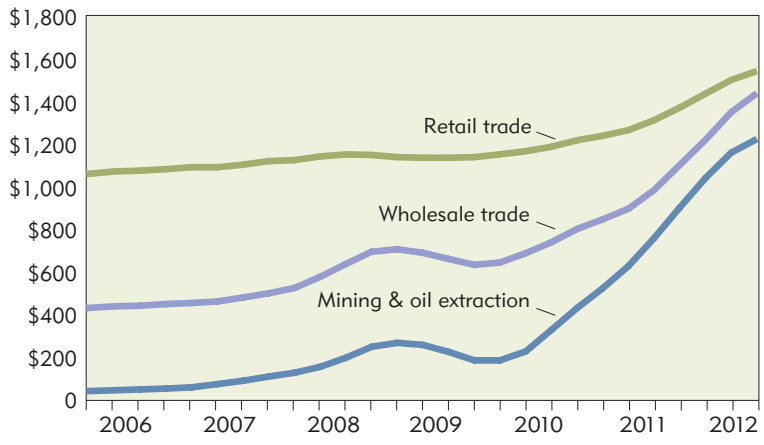


Source: North Dakota Office of State Tax Commissioner

Chart 2

Increases in wholesale trade track mining and oil industry

North Dakota taxable sales and purchases by industry
Millions of 2012 dollars, 12-month moving average

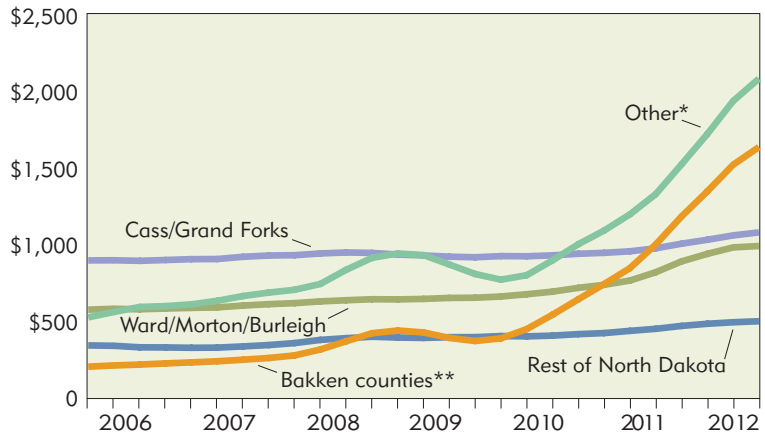


Source: North Dakota Office of State Tax Commissioner

Chart 3

Sales taxes in Bakken account for over 1/3 of state increase

North Dakota taxable sales and purchases by location
Millions of 2012 dollars, 1-year moving average

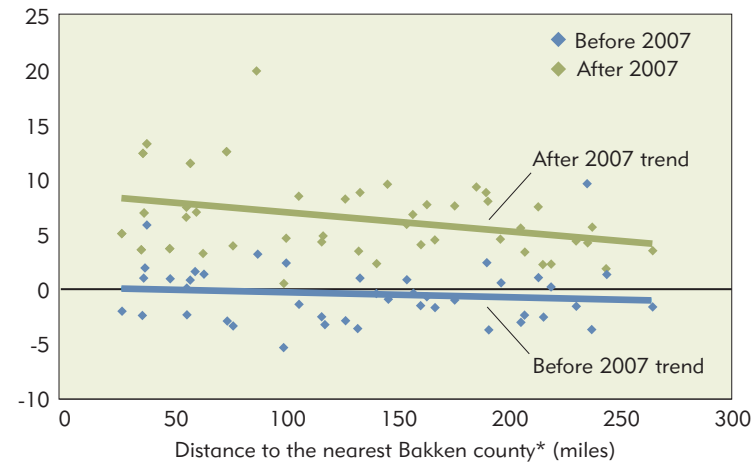


* Data not attributable to a specific locale (out-of-state and consolidated line items)
** Bakken area counties in North Dakota: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams
Source: North Dakota Office of State Tax Commissioner

Chart 4

Good to be close to the Bakken during boom

Average percent change in the volume of taxable sales and purchases, 4-quarter average, 2012 dollars



* Bakken area counties in North Dakota: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams; distance is calculated using centerpoint longitude and latitude coordinates of counties
Source: North Dakota Office of State Tax Commissioner

in 2011. Meanwhile, the state's largest eastern counties (Cass and Grand Forks counties, home to Fargo and Grand Forks) show only a modest acceleration starting in 2011, similar to all remaining counties in North Dakota.

The Bakken influence can also be seen in terms of the distance of sales transactions from the oil-producing region. The farther a county is away from the Bakken, the slower is average growth in sales taxes (see Chart 4). Prior to 2007, this spatial relationship with the Bakken area was relatively weak.

The Bakken effect can also be seen among the state's larger cities. Between 2010 and 2011, taxable sales and purchases in Dickinson and Williston (the two largest cities in the Bakken area) increased by over $1.4 billion (79 percent), of which $660 million came from growth in the mining and oil extraction industry and $280 million from growth in wholesale trade.

The fastest growing businesses in Williston and Dickinson were in transportation and warehousing, for which taxable sales and purchases increased by 197 percent in 2011. Among the four largest cities outside the Bakken (Bismarck, Minot, Grand Forks and Fargo), collections in this category fell by 7.4 percent. f

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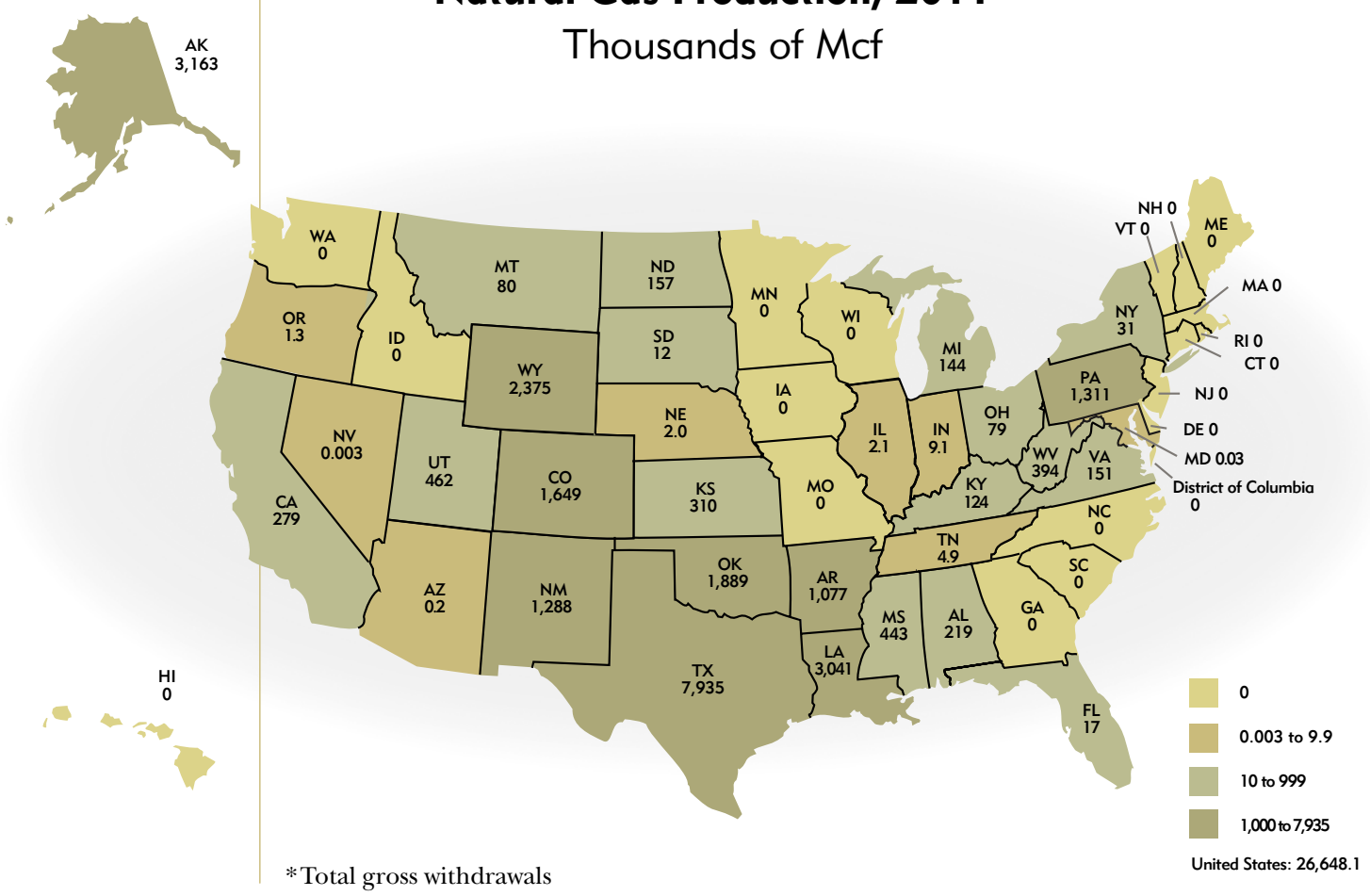

*Total gross withdrawals
Source: U.S. Energy Information Agency