

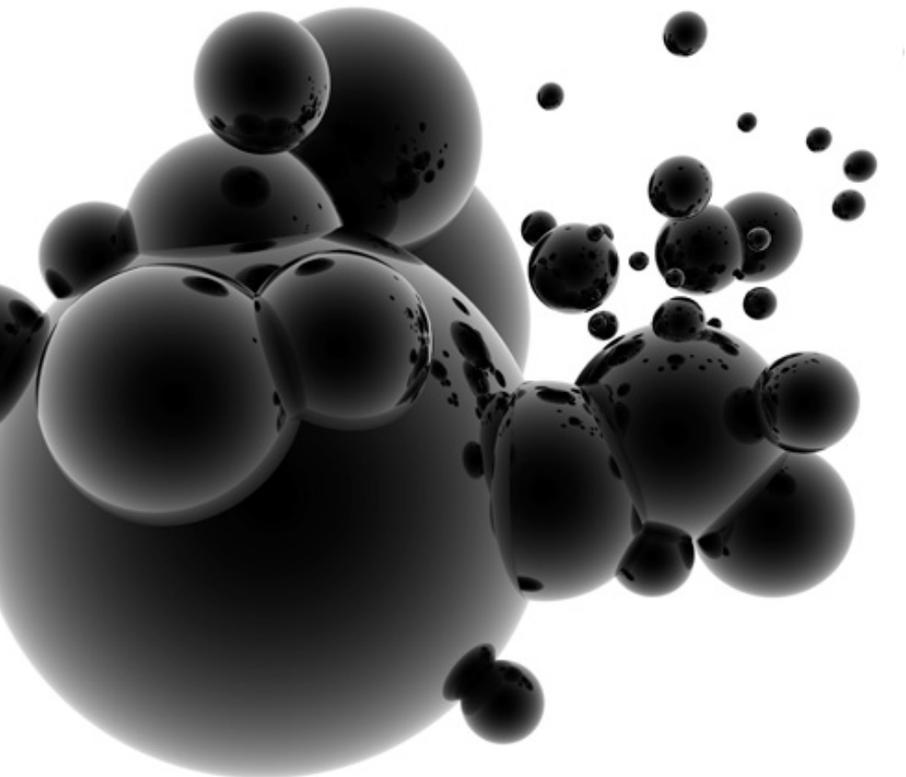


PLATTS
McGRAW HILL FINANCIAL



SPECIAL REPORT: OIL

Bakken: The King in the North
May 2014



WWW.OIL.PLATTS.COM

BAKKEN: THE KING IN THE NORTH

Bakken crude oil represents light sweet crude produced from the Bakken Shale Formation in the North Dakota/Montana/Saskatchewan/Manitoba region. Production from the US side of the Williston Basin, the sedimentary basin that contains the productive Bakken Shale Formation, crossed the 900,000 b/d mark in November 2013 and was more than 888,000 b/d in February, according to the North Dakota Pipeline Authority and estimates from Bentek, a unit of Platts.

North Dakota produced 951,350 b/d of crude in February, and averaged 938,618 b/d in 2013. Bakken Blend crude in February totaled 888,398 b/d, or 93% of the state's total production.

The outlook for 2016 production varies, but some estimates are as high as 1.6 million b/d for the Bakken Formation, spurring a flurry of pipeline expansion and rail projects. With buoyant production, Bakken is finding its way to the three US coasts and is now being delivered in blends against CME Group's NYMEX crude futures contract.

With production looking bullish, take-away capacity has become the most critical issue for those exploiting the Bakken shale formation, given its distant location away from most of the US refining capacity in the northern Rockies. Several rail expansion projects started up in 2013 to meet the exit capacity needs of Bakken producers.

Rail can be a more expensive shipping option than pipeline for crude oil on paper, but it gives fast-growing areas takeaway capacity and provides flexibility on where the crude is shipped. This flexibility is becoming more critical -- on the US Gulf Coast, the ultimate destination of most pipeline projects, Bakken faces additional competition from rising production of Eagle Ford and Permian grades (WTI, domestic sweet, etc.). Bakken crude oil delivered by rail can reach the US Gulf Coast and the US Atlantic Coast, markets where Bakken competes directly with Brent-related crude oils supplies from the international market. Those rail markets regularly yield better netbacks for Bakken sellers than shipping the crude via pipeline to Guernsey or Clearbrook, traditional supply and trading locations for Bakken.

The third quarter of 2013 brought headwinds to rail transport. A deadly crude-by-rail accident in Quebec raised safety concerns. Pipelines are known to be generally more efficient than rail, but a lack of growth in pipeline capacity has caused rail expansion to surge nevertheless. Rail takeaway capacity from the Bakken Formation has hit 1.2 million b/d. According to the North Dakota Pipeline Authority, rail exports from the Bakken hit 750,000 b/d in January. Rail capacity at St. James, Louisiana to accept Bakken crude has grown to 240,000 b/d, with an additional 70,000 b/d slated for first quarter 2015. Bakken Blend has found its way into the Light Louisiana Sweet stream along with some Eagle Ford crude, increasing the overall supply of LLS and placing some pressure on LLS values relative to Brent. In the past, whenever the Brent-WTI spread widened, LLS differentials to WTI would rise keeping those two grades more in line with Brent. But ever since Bakken has blended into the LLS stream, LLS has more often failed to keep pace with the changes in Brent-WTI structure.

Bakken consumers/potential reach in US Atlantic Coast refineries



Source: Bentek

Bakken has also made its way to Texas thanks to rail terminals located in Beaumont, Nederland, Galveston and Port Arthur. However, the increasing production of Eagle Ford and Permian crude could make St. James and potentially Houston a less attractive destination for Bakken in the next few years.

That upcoming shift in the US Gulf Coast market is one of the primary reasons for the recent boom in rail capacity and interest from both shippers and refiners in the US Atlantic and West Coasts to move Bakken in either direction.

Rail deliveries of Bakken Blend to the US Atlantic Coast were 210,000 b/d at the end of 2013 and could be as much as 350,000 b/d by end of 2014, according to Bentek. Some of these shipments, in a departure from standard practices for domestic crudes, have been sold on a Brent-related basis, as these barrels are competing with Brent-related imports.

Several area refineries are ramping up their use of Bakken in a region with around 1.3 million b/d of operable refining capacity, according to the EIA. US East Coast refineries receiving/are able to receive Bakken crude oil include:

330k b/d	Philadelphia Refinery (Philadelphia)	Philadelphia Energy Solutions (Carlyle Group/Sunoco)	Up to 200k b/d of Bakken
185k b/d	Monroe Energy (Trainer, PA)	Delta Air Lines	Up to 70k b/d of Bakken
238k b/d	Phillips 66 (Linden, NJ)	Phillips 66 (Through Global Partners)	50k b/d of Bakken
190k b/d	PBF Energy (Delaware City)	PBF Energy	Up to 70k b/d of Bakken

Additionally, Enbridge Energy Partners L.P. announced in March 2013 that they agreed to a three-year deal with Phillips 66 to provide Bakken shale crude to the company's refineries on the West and East Coast. The crude is loaded at Enbridge's Berthold, North Dakota terminal with current volumes reaching 35,000 to 40,000 b/d.

In response to this interest, Enbridge announced it would complete a unit train facility with pipeline infrastructure in the Philadelphia area. The Eddystone Project, part of a joint venture with Canopy Prospecting (25%), should be able to handle 80,000 b/d of crude by rail in the third quarter, and will be expanded to 160,000 b/d of capacity for rail and barge offloadings as early as mid-2014. As well, Plains All American completed the construction of a 130,000 b/d crude rail receiving terminal in the first half of 2013.

US West Coast buyers are also receiving/will be able to receive Bakken as part of their crude oil slate.

Alon Energy USA	13k b/d	Long Beach, CA	Permitted
	13k b/d	Paramount, CA	Permitted
	140k b/d	Bakersfield, CA	Seeking Permit to expand
Tesoro Corp	50k b/d	Anacortes, WA	Operational
Tesoro/Savage	120k b/d	Port of Vancouver	OK'd by port/Waiting on permit from state
Tesoro Corp	Unit train	Martinez, CA	Operational
Kinder Morgan	72k b/d	Richmond, CA	Operational
Global Partners	28.6k b/d	Clatskanie, CA	Operational
BP	60k b/d	Cherry Point, WA	Operational
US Oil & Refining	40k b/d	Tacoma, WA	Operational

Midstream companies are also looking to expand rail receiving terminal capacity for Bakken. Plains All American Pipeline in December 2012 acquired multiple crude rail terminals from US Development Group, including a project to construct a crude oil unloading terminal near Bakersfield, California. Equity analyst firm Dahlman Rose says the US West Coast, particularly California, is about 18 months to two years behind the US Atlantic Coast in terms of infrastructure, as rail offloading terminals must go through a permitting process.

While rail capacity appears to be expanding faster than Williston Basin production, several large pipeline projects could add additional exit capacity for Bakken crude to reach potential buyers.

Enbridge	North Dakota	145k b/d	1Q 2013
	PL System Expansion	325k b/d	end 2014
Enbridge	Lakehead System	585k b/d	2015
	Pipeline Expansion		
Koch	Dakota Express Pipeline	250k b/d	2016
TransCanada	MarketLink Project	100k b/d	N/A
Kinder Morgan	Pony Express	230k b/d	3Q 2014

If TransCanada's Keystone XL project, and by association the Bakken MarketLink project, is approved, Bakken Blend crude, along with Canadian crude and West Texas grades in Cushing such as WTI, will eventually compete with foreign grades on the US Gulf Coast. Since

this pipeline project has seen delays in the past few years, the void has been filled by rail, and rail enables Bakken to reach markets beyond the US Gulf Coast – a region which is already dealing with a surplus of light crude from Eagle Ford and more recently, WTI.

The outlook for Bakken crude production over the next few years is promising, and many of the government reserve estimates could be understating the potential of the Bakken and Three Forks formations. Producers do face unique challenges in the way of infrastructure constraints, and the industry is working expediently to make sure enough exit capacity is in place to get this high quality, unconventional crude to market.

RATIONALE FOR THE BAKKEN WILLISTON BASIN ASSESSMENT

The Bakken formation, with its extensive reserves and rapidly increasing production, has had a significant impact on the dynamics of the North American crude market. Bakken's production potential and flexibility to reach market position it well as a potential benchmark for Rocky Mountain crudes and even Canadian light and mediums crudes. Bakken, unlike WTI at Cushing or potential benchmarks on the US Gulf Coast, better represents the supply fundamentals of the northern US and Canada, the "snow belt" of North America.

Platts launched two price assessments on May 3, 2010 for Bakken Blend crude oil, representing the light sweet crude produced from the Bakken Shale Formation at pipeline interconnection points – one assessment for crude traded at the Enbridge's terminal at Clearbrook, Minnesota and into Kinder Morgan's terminal at Guernsey, Wyoming. These assessments have evolved into widely-used price reference points for the industry. The dramatic shift in Bakken movements to rail transport and away from pipelines has shifted spot liquidity for Bakken at both Clearbrook and Guernsey into rail-based trading.

Crude-by-rail is now the dominant form of transportation for Bakken crude out of the Williston Basin. Pipelines still provide an alternate route if netbacks for railed crude to the US Atlantic, Gulf, or west coasts are not favorable, but that temporal shift toward pipeline volumes is still just a small proportion of the rail movements.

A shift towards rail began in 2012, when in November, rail movements exceeded pipeline movements and local refining demand, according to Bentek (see graph below). As pipeline projects to move Bakken out of the region, such as Keystone XL, were delayed, crude-by-rail opened up new markets to producers and marketers. This allowed market participants to achieve more netback flexibility than pipelines could allow. By the end of 2014, Bakken market participants will have access to 1 million b/d of crude-by-rail capacity in the Williston Basin. With current rail movements estimated at 759,000 b/d, 70% of Bakken production, rail has helped to support Bakken production growth as pipeline construction – TransCanada's Bakken Marketlink onto Keystone XL, Tallgrass Pony Express, and Enbridge Sandpiper – is several years away.

Pipeline capacity out of the Bakken is set to increase from 600,000 b/d currently to over 1 million b/d by early 2016 thanks to the 100,000 b/d TransCanada Bakken Marketlink project, the 225,000 b/d Enbridge

Sandpipe project, and the 230,000 b/d Tallgrass Pony Express project (PXP will serve both Bakken and Niobrara – the Bakken capacity, excluding the Northeast Colorado Lateral project would be 140,000 b/d). Along with the existing interconnects to Enbridge and the Express/Platte lines, pipeline will still be a transportation option for Bakken if netbacks are competitive relative to rail.

The Williston Basin, and those storage points where market participants determine the best market for their crude, represents the decision point, the supply/demand fundamentals, that yield the most comprehensive value for the marginal Bakken barrel. Facilitating price discovery as close to the wellhead as possible encompasses the widest variety of market participants while representing the value of Bakken at the point of exit from the production area.

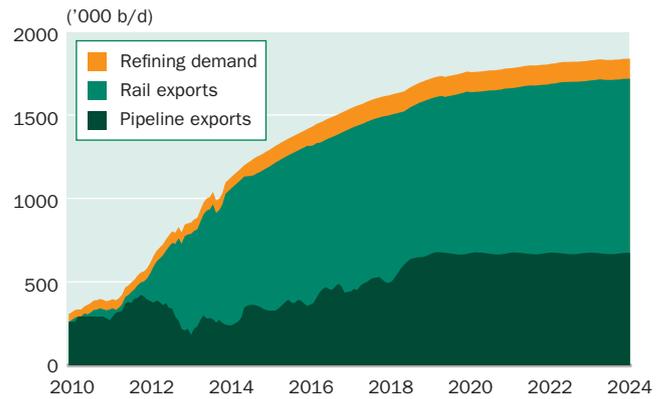
Liquidity is also essential in the creation of a relevant benchmark, and liquidity at these Williston Basin supply chain nodes, the terminals where Bakken can move by rail or rail/pipeline has increased in the past year. Platts has observed that the focal point of this spot liquidity is at these Williston Basin supply nodes, where end-users, marketers, and traders purchase crude from producers/marketers for eventual movements down the supply chain.

Platts’ methodology for its new Bakken assessment reflects this growing spot market. The Platts Bakken assessment reflects the spot value of Bakken crude delivered into North Dakota terminals with rail and rail/pipeline loading capabilities. This assessment reflects that value of those barrels moving from the wellhead to local terminals, where rail cars are loaded. Terminals that also have the optionality for rail and pipeline movements are also included in the assessment process.

These terminals are located in a relatively tight geographic area in North Dakota, and the price difference between transactions at each terminal is negligible.

Bakken crude in at these terminals trades in a manner similar to the US Gulf Coast and Canadian pipeline markets, where barrels are sold on a ratable basis and for a flow month. Due to Bakken’s close proximity to Canadian origin pipelines and the need for rail car volumes to be secured as early as possible, the Platts Bakken

Bakken transportation flows by type



Source: Bentek

assessment follows the Canadian pipeline schedule, which tends to roll to the next month earlier than the US Gulf Coast pipeline schedule. This is also in line with Platts Bakken Blend ex-Clearbrook and ex-Guernsey assessment timing.

In following this schedule, Platts rolls to the next front month on the date pipeline nominations are due. Platts will follow the nomination due dates published by Crude Oil Logistics Committee on its website. For example, the Platts Bakken assessment on April 22, 2014 reflected crude for delivery in June, and rolled to July when nominations were due in the second half of May per the Crude Oil Logistics Committee schedule.

The Platts Bakken assessment reflects crude oil on a delivered North Dakota terminal basis in the delivery month. Title of the oil is transferred at the manifold flange into the terminal. The delivery method for this oil can be either by truck or via a pipeline gathering system. In this process, the buyer nominates the terminal, and the seller determines when the barrels will flow during the specified delivery month.

This assessment reflects the value of Bakken crude with a sulfur of 0.2% maximum and API maximum of 42. The underlying volume for the Platts Bakken assessments reflects volume of 1,000 b/d, or 25,000 barrels.



FOR MORE INFORMATION, PLEASE CONTACT THE PLATTS SALES OFFICE NEAREST YOU:

Web www.platts.com
E-mail support@platts.com

NORTH AMERICA
+1-800-PLATTS8 (toll-free)
+1-212-904-3070 (direct)

EMEA
+44-(0)20-7176-6111

LATIN AMERICA
+54-11-4121-4810

ASIA-PACIFIC
+65-6530-6430

RUSSIA
+7-495-783-4141

© 2014 Platts, McGraw Hill Financial. All rights reserved.

Reproduction of this publication in any form is prohibited except with the written permission of Platts. Because of the possibility of human or mechanical error by Platts’ sources, Platts does not guarantee the accuracy, adequacy, completeness, or availability of any Platts information and is not responsible for any errors or omissions or for the use of such Platts information. Platts gives no express or implied warranties, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose or use. In no event shall Platts be liable for any direct, indirect, special, or consequential damages in connection with subscribers’ or others’ use of this publication.