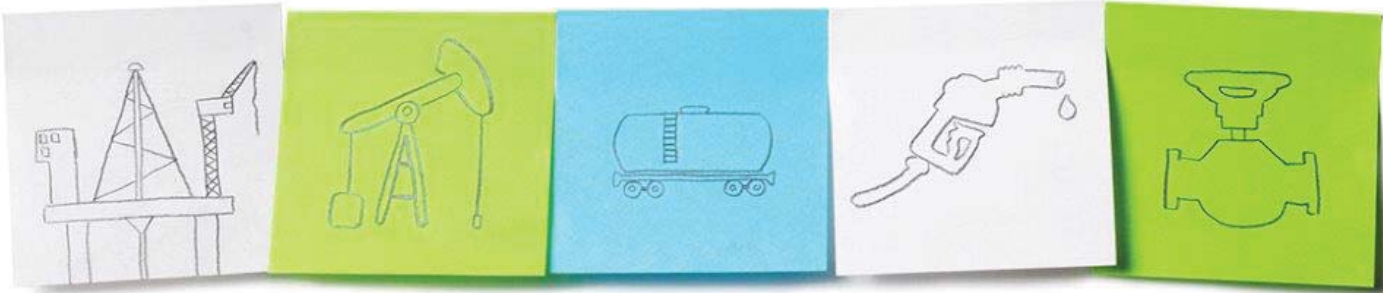


# Price forecast March 31, 2015





# Canadian domestic price forecast

## Forecast commentary

Andrew Botterill

Senior Manager, Resource Evaluation & Advisory

## Oversupply in the system continues to push prices lower

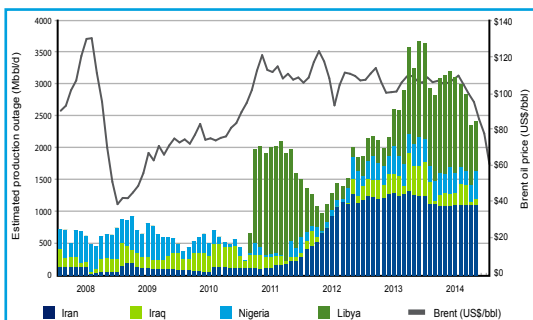
*"Since we cannot change reality, let us change the eyes which see reality" - Nikos Kazantzakis*

When we issued our 2014 yearend price forecast the globe was in the midst of a dramatic oil price slide, resulting in a depressed view of the oil and gas industry. With prices continuing their descent in January, many wondered when and where they would bottom. Last quarter, we forecasted an average WTI price of \$67/bbl for 2015, but oil prices continued to slide following our price forecast and are now trading on average at \$50/bbl for the first quarter of the year.

In recent months, we have spent a lot of time discussing our price forecast with our clients around the globe and – more importantly – providing guidance to industry on what has occurred in the sector and why. Reflecting back on previous Deloitte forecasts, the futures market was signaling a long-term softening. This softening was based on the fundamental view that world oil production has been growing at rates beyond world demand growth, mostly through North American tight oil. With supply beginning to outweigh demand, a drop in oil prices did not surprise many observers. The surprise lay in how quickly this drop occurred, and the extent to which prices fell.

Since 2011, world oil production has had 1 to 3.5 MMBbl/d of production not making it into the market due to conflict and production constraints in countries such as Iraq, Libya, Iran and Nigeria. This “missing” production created the space for North American tight oil to drill at unprecedented rates and bring on more production year-over-year than ever before. As a result, the North American tight oil sector’s momentum and appetite for breakneck-paced resource development grew. Oil prices remained at \$100 or better for much of this run, and industry lost focus on the long-term global fundamentals. North American production has increased more than 50 per cent since 2009, but much of this has remained hidden by the unplanned global outages. As North American production outstripped this difference in the fall of 2014, and the amount of “missing” production shrank, the tides began to turn.

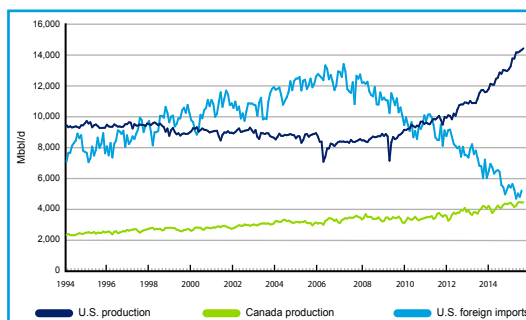
Figure 1: Estimated production outages from select countries



Source: U.S. Energy Information Administration, International Energy Statistics, Petroleum, Production

The International Monetary Fund has said the majority of OPEC producers require oil prices greater than \$80/bbl to support their fiscal budgets, leading many to assume that they would act quickly to reduce supply in an effort to stabilize prices. There are many theories for why OPEC – and, more importantly, Saudi Arabia – did not step in to protect the global oil price. Observers and analysts have proposed various theories, with commentary on competition with United States tight oil, Middle Eastern strife, and/or recent Russian aggression being the most popular in recent media coverage. While it can be exciting to subscribe to some of these theories, in Deloitte’s view it boils down to something much simpler.

Figure 2: North American oil production and imports



Source: U.S. Energy Information Administration, International Energy Statistics, Petroleum, Production

The rampant increase in oil production in North America can be seen in the attached graph. This increase in production has precipitated two things: the current oversupply issue, which has been estimated to be approximately 1 to 3 MMBbl/d; and the United States’ drastic reduction in reliance on foreign imports. Saudi Arabia has exported less oil to the world’s largest oil consumer and it has begun to feel the pinch of tight oil and oil sands growth. As prices began to slide dramatically, the world turned to OPEC and Saudi Arabia with hat in hand, looking for support and price protection. While Saudi Arabia could have reacted as it has in the past, it would not have solved the fundamental problem.

Oversupply in the global system was not caused by OPEC and, had Saudi Arabia reduced production, it is highly likely that North American producers would have continued to drill at the same unsustainable rates. It was much easier to let the market correct this dramatic shift. A strong market reaction is the only way for producers to conclude that they cannot continue to develop tight oil resources at the pace they have over the past five years. World demand is not rising fast enough to warrant incremental volumes at this rate.

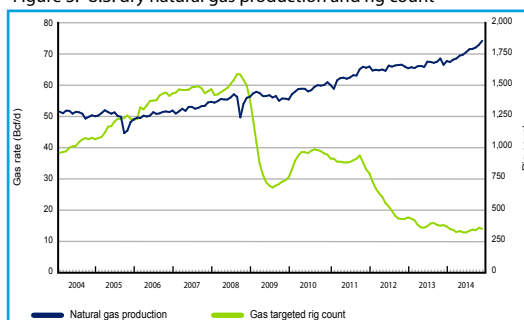
The question on everyone's mind is: When will prices rebound? As United States storage begins to top out in the coming weeks, industry could see further downward pressure on price. Since October 2014, United States oil rig counts have fallen nearly 45 per cent, to fewer than 900 rigs from a high of approximately 1,600. However, a backlog of wells already drilled and awaiting hydraulic fractures may delay the drop in production many are anticipating. As supply continues to exceed demand, we expect the next quarter could see further lows in price, before North American production decline is realized, resulting in a price rebound in the second half of 2015.

Our WTI forecast is an average price of \$55/bbl for the remainder of 2015, which implies that we expect prices to strengthen closer to \$60/bbl in the last half of the year. As we spoke to in our previous forecast, we foresee a long term real price of \$80/bbl as the new normal, as the emergence of several shale plays has improved the United States' ability to increase supply to match its domestic demand. As such, it is Deloitte's view that there will likely be quick access to oil supply for the foreseeable future as, any time market conditions improve, United States drilling activity will pick up and apply downward pressure on prices. Many industry analysts have begun to reflect these more tempered views of long-term growth, but there are still a wide variety of opinions and forecasts for the coming years, which is not surprising in this time of turmoil.

Natural gas may not be grabbing as many headlines as oil, but the markets have not been kind so far this year. With spring approaching, recent warm weather has brought natural gas demand in line with seasonal norms. This is reflected in the futures market, where, despite one of the coldest recent winters throughout the northeastern states, winter did not have long-lasting effects on natural gas prices. In fact, Henry Hub long-term contract averages have been steadily declining, dropping 10 per cent since the beginning of 2015. While the short-term market is predominantly affected by the weather, the long-term contract prices are more reflective of supply and demand trends. Dry natural gas production in the United States has been steadily rising over the past year, reaching 74 Bcf/d by December 2014.

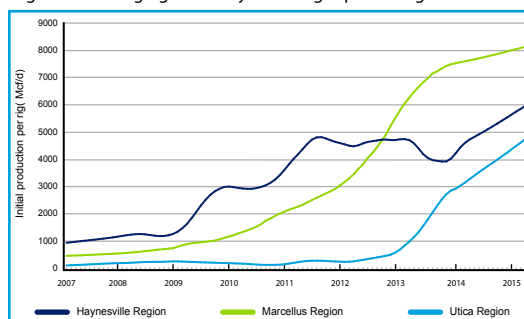
With recent natural gas production levels reaching five-year highs, one may wonder how gas-targeted rig activity is on the decline: rig counts down 23 per cent since December 2014. This may seem counterintuitive, but the numbers may not tell the whole story. In a recent drilling activity report published by the EIA for March 2015, improvements in drilling efficiency have resulted in an increase in new-well production per rig, with rates as high as 8 MMcf/d in the Marcellus region. This, coupled with the fact that natural gas is also often produced from oil targeted wells, shows that gas production rates are not slowing down, and may soon lead to oversupply.

Figure 3: U.S. dry natural gas production and rig count



Source: U.S. Energy Information Administration, EIA Data sets, Natural Gas, Production, Natural Gas Gross Withdrawals and Production, by Data Series, Dry Production

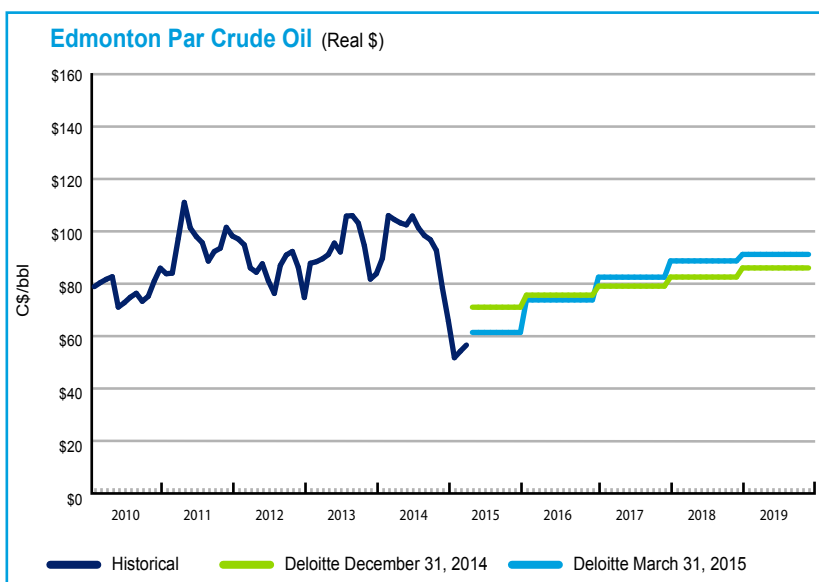
Figure 4: Drilling rig efficiency on new gas producing wells



Source: U.S. Energy Information Administration, Petroleum & Other Liquids, Drilling Productivity Report, Data Report

Despite five-year lows in gas storage levels last year, the continued increase in production has quickly refilled United States storage to normalized levels. The EIA's short-term outlook for 2015 has forecast a 2.3 Bcf/d increase in natural gas demand, and a 3.7 Bcf/d increase in supply. With supply outstripping consumption levels, Deloitte's outlook is for gas prices to remain depressed. We have forecast Henry Hub natural gas at \$3.00/mmbtu for the remainder of 2015, with a slow, long-term increase as supply and demand stabilize.

## Crude oil price and market demand forecast



### ► Forecast comments

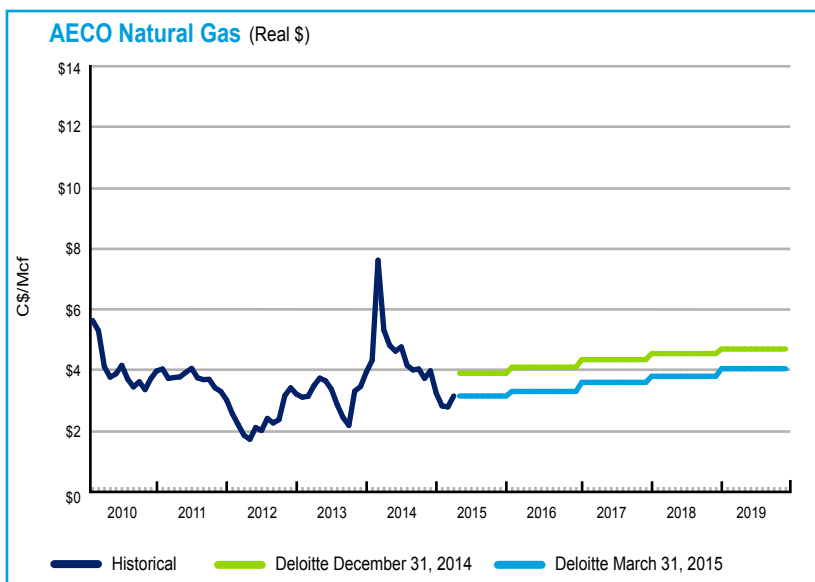
- On average, the differential between WTI and Edmonton Par has been around \$6/bbl for most of 2014, due to Canadian volumes of oil being backed out from the U.S. market. We have forecast this differential to be \$6/bbl in 2015, before gradually returning to the long term historical average of \$3/bbl by 2018, when pipeline and infrastructure constraints are expected to ease with further rail transport, and major pipeline reconfigurations and optimizations.
- Edmonton Par price is used as the basis to arrive at the remaining crude reference points. Offsets are based on five-year historical statistics with recent data weighted more heavily in the determination.
- Adjustments for oil consider the most recent pipeline tariffs and exchange rates to arrive at a Canadian Edmonton Par equivalent price.

Year	WTI Cushing, OK (40 Deg. API)	WTI Cushing, OK (40 Deg. API)	Edmonton City Gate (40 Deg. API)	Edmonton City Gate (40 Deg. API)	Bow River Oil Hardisty, AB (25 Deg. API)	Heavy Oil Hardisty, AB (12 Deg. API)	Cost inflation	CAD to USD exchange
	US\$/bbl	US\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	Rate	Rate
	Real	Current	Real	Current	Current	Current		
<b>Historical</b>								
2012	\$98.35	\$94.11	\$90.47	\$86.57	\$74.41	\$64.07	0.015	1.001
2013	\$100.76	\$97.91	\$96.08	\$93.36	\$76.29	\$65.49	0.009	0.972
2014	\$95.08	\$93.26	\$97.36	\$95.50	\$81.49	\$73.70	0.019	0.906
<b>2015</b>								
3 Months H	\$48.29	\$48.29	\$53.99	\$53.99	\$43.16	\$37.54	0.013	0.802
9 Months F	\$55.00	\$55.00	\$61.25	\$61.25	\$48.25	\$40.25	0.000	0.800
Avg.	\$53.32	\$53.32	\$59.44	\$59.44	\$46.98	\$39.57	-	0.800
<b>Forecast</b>								
2015	\$55.00	\$55.00	\$61.25	\$61.25	\$48.25	\$40.25	0.000	0.800
2016	\$64.00	\$65.30	\$73.75	\$75.25	\$61.95	\$53.80	0.020	0.800
2017	\$70.00	\$72.85	\$82.50	\$85.85	\$72.30	\$64.00	0.020	0.800
2018	\$74.00	\$78.55	\$88.75	\$94.20	\$80.40	\$71.90	0.020	0.800
2019	\$76.00	\$82.25	\$91.25	\$98.75	\$84.70	\$76.05	0.020	0.800
2020	\$78.00	\$86.10	\$93.75	\$103.50	\$89.15	\$80.30	0.020	0.800
2021	\$80.00	\$90.10	\$96.25	\$108.40	\$93.75	\$84.75	0.020	0.800
2022	\$80.00	\$91.90	\$96.25	\$110.55	\$95.65	\$86.45	0.020	0.800
2023	\$80.00	\$93.75	\$96.25	\$112.75	\$97.55	\$88.15	0.020	0.800

## Natural gas price and market demand forecast

### Forecast comments

- The NYMEX to Canadian AECO price historical differential is used to arrive at the AECO forecasted price.
- In contrast to other forecasts in the industry, Deloitte's long-term views consider two more years of growth in terms of real dollars.



Year	AB Ref. Avg. Price	AB AECO Avg. Price	AB AECO Avg. Price	BC Direct Station 2 Sales	NYMEX Henry Hub	NYMEX Henry Hub
	C\$/Mcf	C\$/Mcf	C\$/Mcf	C\$/Mcf	US\$/Mcf	US\$/Mcf
	Current	Real	Current	Current	Real	Current
<b>Historical</b>						
2012	\$2.25	\$2.50	\$2.39	\$2.29	\$2.87	\$2.75
2013	\$2.98	\$3.26	\$3.17	\$3.08	\$3.84	\$3.73
2014	\$4.22	\$4.59	\$4.50	\$4.34	\$4.48	\$4.39
<b>2015</b>						
3 Months H	\$2.93	\$2.87	\$2.87	\$2.72	\$2.95	\$2.95
9 Months F	\$2.80	\$3.00	\$3.00	\$2.85	\$3.00	\$3.00
Avg.	\$2.83	\$2.97	\$2.97	\$2.82	\$2.99	\$2.99
<b>Forecast</b>						
2015	\$2.80	\$3.00	\$3.00	\$2.85	\$3.00	\$3.00
2016	\$3.10	\$3.25	\$3.30	\$3.15	\$3.20	\$3.25
2017	\$3.50	\$3.55	\$3.70	\$3.55	\$3.45	\$3.60
2018	\$3.75	\$3.75	\$4.00	\$3.80	\$3.60	\$3.80
2019	\$4.10	\$4.00	\$4.35	\$4.15	\$3.80	\$4.10
2020	\$4.40	\$4.20	\$4.65	\$4.45	\$3.95	\$4.35
2021	\$4.75	\$4.40	\$4.95	\$4.80	\$4.10	\$4.60
2022	\$4.95	\$4.50	\$5.15	\$5.00	\$4.20	\$4.80
2023	\$5.25	\$4.70	\$5.50	\$5.35	\$4.35	\$5.10

# International price forecast

## Crude oil price and market demand forecast

Year	Average WTI Spot	Brent Spot (38.3° API with 0.37% sulphur content)	Gulf Coast ASCI	Average OPEC Basket	Nigerian Bonny Light (33.4° API FOB)	Mexico Maya (21.8° API FOB)	Russia Urals (31.7° API FOB)
	US\$/bbl	US\$/bbl	US\$/bbl	US\$/bbl	US\$/bbl	US\$/bbl	US\$/bbl
	Real	Real	Real	Real	Real	Real	Real
Forecast							
2015	\$55.00	\$60.00	\$52.50	\$57.00	\$62.00	\$48.00	\$59.00
2016	\$64.00	\$69.00	\$59.00	\$66.00	\$71.00	\$57.00	\$68.00
2017	\$70.00	\$75.00	\$65.00	\$72.00	\$77.00	\$63.00	\$74.00
2018	\$74.00	\$79.00	\$69.00	\$76.00	\$81.00	\$67.00	\$78.00
2019	\$76.00	\$81.00	\$71.00	\$78.00	\$83.00	\$69.00	\$80.00
2020	\$78.00	\$83.00	\$73.00	\$80.00	\$85.00	\$71.00	\$82.00
2021	\$80.00	\$85.00	\$75.00	\$82.00	\$87.00	\$73.00	\$84.00
2022	\$80.00	\$85.00	\$75.00	\$82.00	\$87.00	\$73.00	\$84.00

### ► Forecast comments

- International crude quality reference points for OPEC Basket, Venezuelan, Nigerian, UAE, Mexican, Chinese, Russian, and Indonesian crudes are now based on Brent in US\$. For the purposes of this forecast Brent is receiving a premium to WTI on the world markets.
- U.S. Gulf coast crudes are also receiving a premium to WTI for the first few years of the forecast then return to normal spreads.
- Current forecasts for other Crude Oil reference points are based on historical trends to the WTI price.
- Brent, United Kingdom crude is based on 38.3°API with 0.37 percent sulphur content. Brent blend is a light sweet North Sea crude oil that serves as an international benchmark grade.
- United States Gulf Coast Argus Sour Crude Index (ASCI) is a blend of offshore Gulf Coast oil from Mars, Poseidon, and Southern Green Canyon.
- OPEC Basket represents the current grouping of crude oil prices from the OPEC member countries.
- Russia Urals 31.7°API is the FOB delivered price to the Mediterranean destinations.

## Natural gas price and market demand forecast

Year	USD to GBP Exchange	USD to EUR Exchange	NYMEX Henry Hub	Permian Waha	San Juan Ignacio	Gulf Coast (Onshore)	Louisiana East Texas	Rocky Mtn. Opal	UK NBP
	Rate	Rate	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf
			Real	Real	Real	Real	Real	Real	Real
Forecast									
2015	1.500	1.100	\$3.00	\$2.90	\$2.90	\$2.90	\$2.95	\$2.90	\$7.00
2016	1.500	1.100	\$3.20	\$3.10	\$3.10	\$3.10	\$3.15	\$3.10	\$7.20
2017	1.500	1.100	\$3.45	\$3.35	\$3.35	\$3.35	\$3.40	\$3.35	\$7.45
2018	1.500	1.100	\$3.60	\$3.50	\$3.50	\$3.50	\$3.55	\$3.50	\$7.60
2019	1.500	1.100	\$3.80	\$3.70	\$3.70	\$3.70	\$3.75	\$3.70	\$7.80
2020	1.500	1.100	\$3.95	\$3.85	\$3.85	\$3.85	\$3.90	\$3.85	\$7.95
2021	1.500	1.100	\$4.10	\$4.00	\$4.00	\$4.00	\$4.05	\$4.00	\$8.10
2022	1.500	1.100	\$4.20	\$4.10	\$4.10	\$4.10	\$4.15	\$4.10	\$8.20

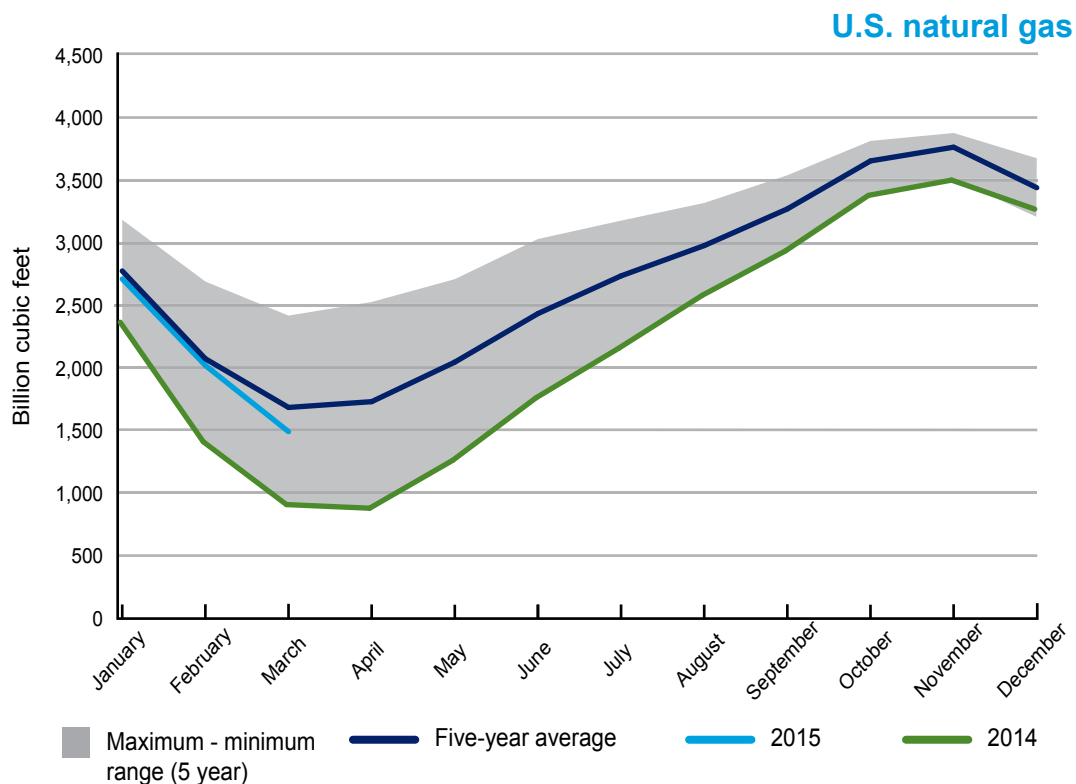
### ► Forecast comments

- The NYMEX price is based on delivery at the Henry Hub in Louisiana, the nexus of 16 intra- and interstate natural gas pipeline systems that draw supplies from the region's prolific gas deposits.
- The NYMEX market trades natural gas futures to the year 2024.
- Expanded world activity has also given cause to provide an estimate for the United Kingdom NBP price.

# Global trends

## Storage

After a year of extreme drawdown in 2014, United States natural gas storage levels have returned to near the five-year average. Warm fall weather and increased levels of production resulted in a rapid refilling of storage through the final months of 2014.

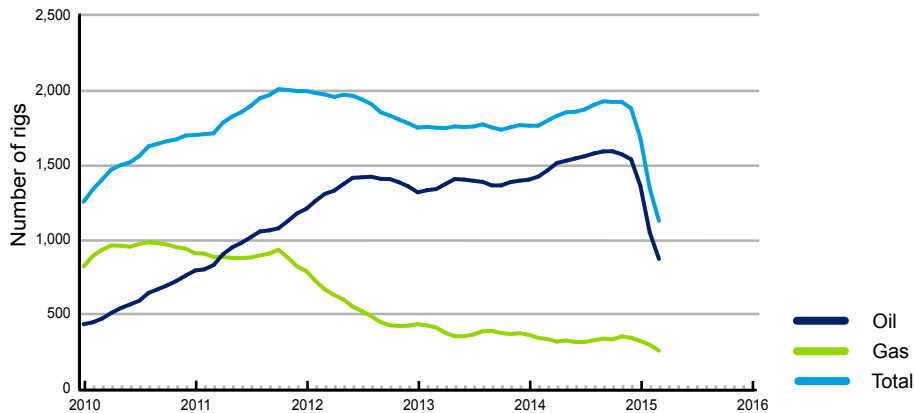


Source: U.S. Energy Information Administration, Weekly Natural Gas Storage Report



# Rig counts

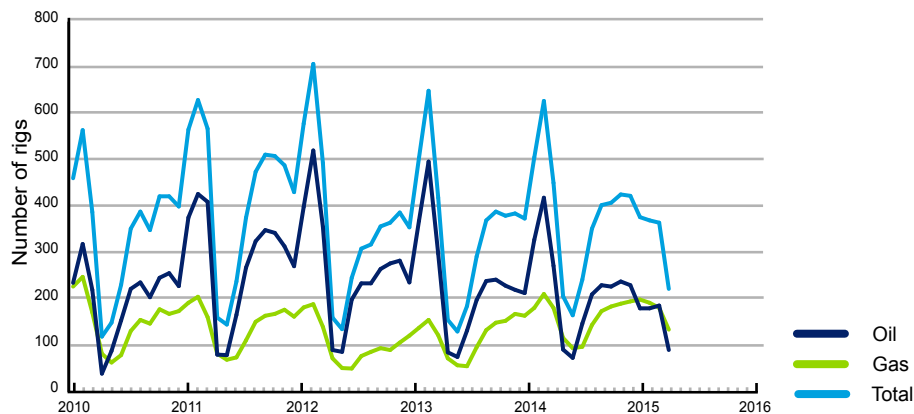
## United States



Source: Baker Hughes Incorporated, International Rig Count

As oil prices have fallen, United States oil rig counts have declined steeply as companies have cut their capital budgets. The current rig count is still higher than in 2010 and the first half of 2011, and may continue to fall for another several weeks before stabilizing. As they have for the last several years, United States gas rig counts continue to decline. Trends toward longer horizontal wells and pad drilling are likely responsible for this decline.

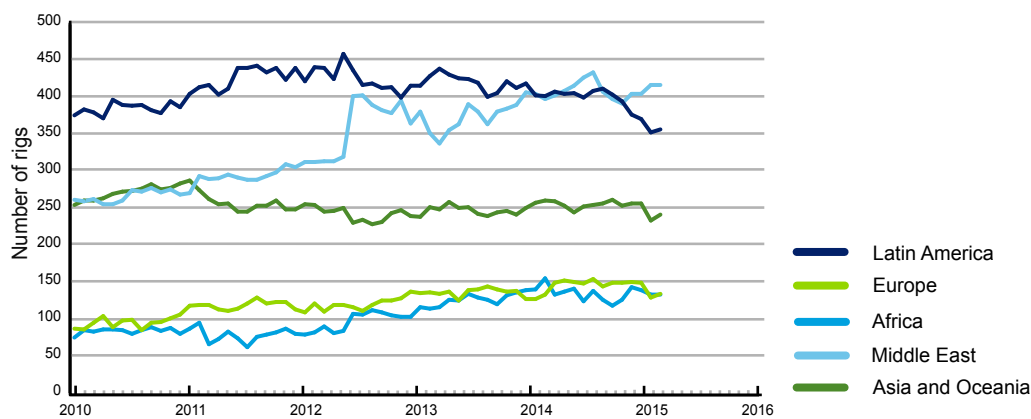
## Canada



Source: Baker Hughes Incorporated, International Rig Count

The Canadian oil and gas rig counts have not experienced the spike in activity usually seen in February as companies have delayed or cancelled projects, waiting for prices to stabilize. In 2014, the rig count jumped to more than 600 in February, compared with 360 in February 2015. Counts are expected to remain low through spring and summer with many observers questioning how many rigs will return after spring breakup.

## International



Source: Baker Hughes Incorporated, International Rig Count

Rig counts in much of the world remained steady in January and February despite the drop in oil prices. Counts in Africa, Asia and Europe remain largely unchanged, while rig counts in the Middle East have increased. The one exception is Latin America which, like North America, has been forced to reduce drilling activity as the price has dropped below what is economic for some plays.

# Pricing philosophy

Price forecasting takes into account many variables that can influence future prices. Our experience tells us that we must continually review the forecasting tools we use to predict where oil and gas prices are heading. However, one constant influence on oil and gas pricing is the geo-political landscape. This impact is most accurately reflected in the financial industry's futures market for commodities, a main influence when Deloitte creates its price forecast. In other words, Deloitte looks to both the futures and the past when we create our forecasts.

This pricing philosophy challenges conventional thinking. The traditional view is based on the mean-reversion view of commodities presented by economists. Following this model, industry forecasts from 2000 to 2006 reflected a drop in prices over the long term from the current prices of the day – even though the futures market indicated otherwise. While the mean-reversion approach definitely has some merit, history has tended to reflect that the futures market is a more accurate barometer.

## ► Client focused

At Deloitte, we believe it is part of our role to help our clients in both the oil and gas sector and the investment community make better long-term business decisions by providing them with the most accurate and realistic information. We understand that sound analysis of changing trends can influence decisions on mergers, acquisitions, divestitures and investments. One way we ensure our price forecasts are as accurate as possible, given the continuing impact of near-term volatility, is to review our pricing assumptions on a quarterly basis.

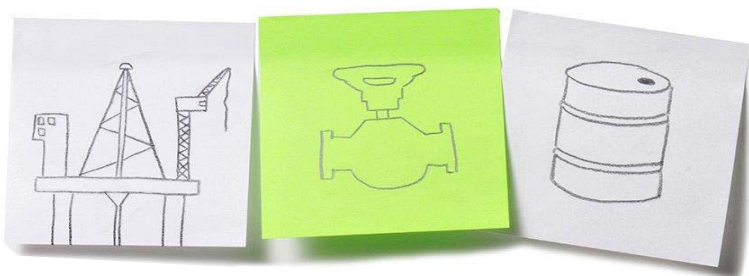
## ► Our process

In preparing the price forecast, Deloitte considers the current monthly trends, the actual price and trends for the year-to-date and the prior year actual prices. The base forecast for both oil and gas is based on New York Mercantile Exchange (NYMEX) futures in U.S. dollars.

Crude oil and natural gas forecasts are based on yearly variable factors, weighted to a higher percent for the current data and then reflect a higher percent to prior year historical data for the later years. Gas prices have been determined independently from oil prices, but still reflect the current competitive nature of the two fuels and historical oil-to-gas ratios for the latter years of the gas forecast.

Deloitte prepares our price and market forecasts based on information we collect from numerous government agencies, industry publications, oil refineries, natural gas marketers and industry trends. Inflation forecasts and exchange rates are also an integral part of the forecast.

These forecasts are Deloitte's best estimate of how the future will look, and while they are considered reasonable, changing market conditions or additional information may require alteration from the indicated effective date.



# Glossary

Some of the words, phrases and acronyms we use frequently when talking about pricing are listed below:

AECO	Alberta Energy Company - historical name of a virtual trading hub on the NGX system
ANS	Alaska North Slope
ASCI	Argus Sour Crude Oil
AWB	Access Western Blend - Canadian condensate/bitumen mix
BR	Bow River Crude Oil
CBOT	Chicago Board Of Trade
CGA	Canadian Gas Association
DCQ	Daily Contract Quantity
EIA	Energy Information Administration
FERC	US Federal Energy Regulatory Commission
FOB	Free on Board (shipper term)
IEA	International Energy Administration
LLB	Lloydminster Blend Crude Oil
LNG	Liquefied Natural Gas
MESC	Middle East Sour Crude
MSO	Mixed Sour Crude Oil
MSW	Canadian Light Sweet
NEB	Canadian National Energy Board
NIT	Nova Inventory Transfer
NYMEX	New York Mercantile Exchange
OECD	Organization of Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
PADD	Petroleum Administration Defense District
USGC	US Gulf Coast
USWC	US West Coast
WCS	Western Canada Select Crude Oil
WTI	West Texas Intermediate
WTS	West Texas Sour





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