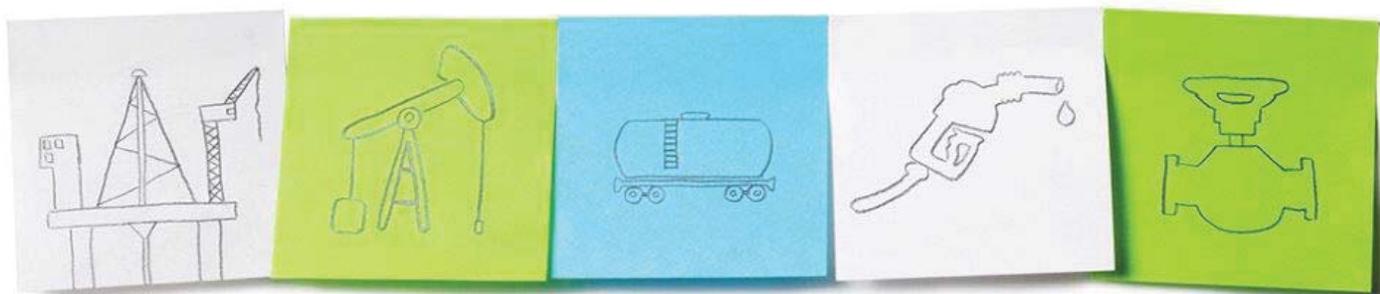


# Price forecast

## September 30, 2015





# Forecast commentary

*"Necessity teaches the naked woman how to knit." - Norwegian proverb*

As we have mentioned in previous forecasts, the volatility of the markets and sustained low oil prices have put pressure on local oil and gas companies to re-think the fundamentals of how they do business. Companies who employ new technologies, processes and innovative thinking will be the ones to navigate the continued unpredictability successfully.

This mirrors the adaptations required of the gas industry after its price collapse in 2008. Expectations of gas at the time were that production would drop due to the economics associated with a number of plays. Some plays did get sidelined, Horn River for example, but industry also adapted to the new price environment and previously plays thought of as "uneconomic," such as Haynesville, are producing more gas today than in 2008. Innovation and flexibility ensured continued development and we are seeing that same mentality emerge in the oil side of our business.

## ► Oil price forecast

Since our previous price forecast, the markets have seen continued volatility with demand slowing in many countries and excess production continuing to flood the market, amidst discussions of lifting sanctions on Iran. Russia and OPEC have both stated they will not cut production, and any additional crude brought into the market by Iran would only add to the current estimated oversupply of 3 MMBbl/d. It is expected high inventories will continue into 2016, but the high production decline rates associated with tight oil wells and the decreased investment seen over 2015 will shrink oversupply.

The increased strength of the US dollar also hurts the price of oil due to its inverse relationship on the market: as the dollar strengthens, the cost of oil for importing countries increases and prices are pushed downward. What remains to be seen is how quickly producers can react to any price increases. As we have seen with natural gas over the last several years, there is the potential for a continued cycle of rising prices leading to increased drilling and production which subsequently drives the price back down.

Our long-term forecast is unchanged at \$80/bbl US for WTI but the near term 2015 and 2016 expectations have been

dampened to \$48/bbl US and \$53/bbl US respectively. Our expectations for Edmonton Light are propped up by the continued low Canadian dollar, which results in a \$58/bbl CAD price for 2015 and \$64/bbl CAD for 2016. These prices will enable most producers to continue development but it will likely be at a slower pace than previous years.

Heavy oil producers have felt some benefit of the heavy differential narrowing and our forecast expects that the differential will stay narrow for the short-term. Our WCS forecast is \$47/bbl in 2015 and \$50/bbl in 2016. These prices are likely not enough to justify development of new projects but will maintain the economics of existing projects.

## ► Gas price forecast

Gas prices have stayed low over the summer and we do not expect a significant jump in prices any time soon. Production has steadily increased over 2015, resulting in gas storage levels close to the five-year average despite starting the year historically low. Some meteorologists have forecasted the return of El Niño this winter, leading to another warm season in the west, resulting in low demand for natural gas. Initiatives to increase natural gas use by switching coal-fired power plants to natural gas, and the future potential for LNG exports, particularly in Canada, could help increase demand. However, the abundance of natural gas reserves which can be developed relatively quickly will likely continue to have a dampening effect on prices in the near term.

The expectation for the remainder of 2015 is \$2.80/Mcf US for Henry Hub. Once again, the low Canadian dollar continues to prop up Canadian prices resulting in an AECO forecast price of \$2.90/Mcf CAD. This gas price environment is a continuation of what producers have adapted to over the past number of years and does not greatly affect plans already in place.

## ► Natural gas liquid prices

While the major focus of the recent market volatility has been on oil prices, natural gas liquids have seen a shift in value as well. Propane, butane, and pentane/condensate prices historically track with crude oil prices so, as the price of oil fell, the price of these liquids followed. Looking back

to 2013, propane prices were averaging approximately 35 per cent of the Edmonton Par reference price and butane prices averaged approximately 85 per cent. As oil prices fell in 2014, these rates dropped to an average of 15 per cent of Edmonton Par for propane and 50 per cent for butane. Pentane/condensate prices have seen the same shift, with the discount going from 110 per cent of Edmonton Par to 95 per cent over the same time period. This shows that not only have NGL prices dropped along with crude oil, but the discount to crude oil has also widened. Due to persistently low natural gas prices, many natural gas producers have shifted to targeting liquids rich gas plays which has led to excess supply in these liquids. The prices of these liquids in relation to Edmonton Par can be seen in the graph below.

Figure 1: NGL price analysis



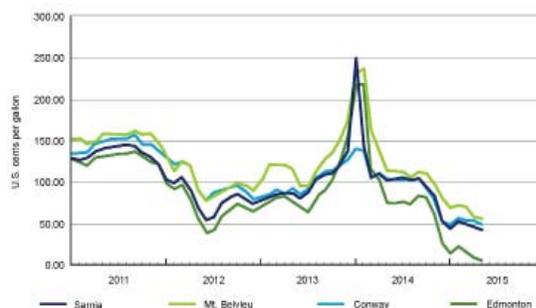
Propane has been the hardest hit with prices dropping to negative values in May 2015. A few things have contributed to this:

- Reversal of the Cochin pipeline which was shipping propane out of Western Canada and now ships condensate into Alberta
- Propane volumes being isolated in Canada leading to our local markets becoming oversaturated
- Decreased exports to the United States as it increases its own propane production from its increased gas production

Propane selling in Edmonton has been especially low as shown in the figure below (NEB market snapshot 2015-05-19). This discount has opened up opportunities for the petrochemical industry to consider western Canada as a home for any new facilities as there is not likely a

significant change on the horizon.

Figure 2: North American benchmark propane prices



Source: National Energy Board (NEB), Butane Propane News, NEB calculations

In the short-term, companies are getting creative with their gas processing to maximize revenue. One company recently stated that it is re-injecting propane volumes into the gas stream (up to the dew point) to get a higher value for its gas instead of selling propane at deep discounts.

# Canadian domestic price forecast

## Crude oil price and market demand forecast

Edmonton Par Crude Oil (Real \$)



### Forecast comments

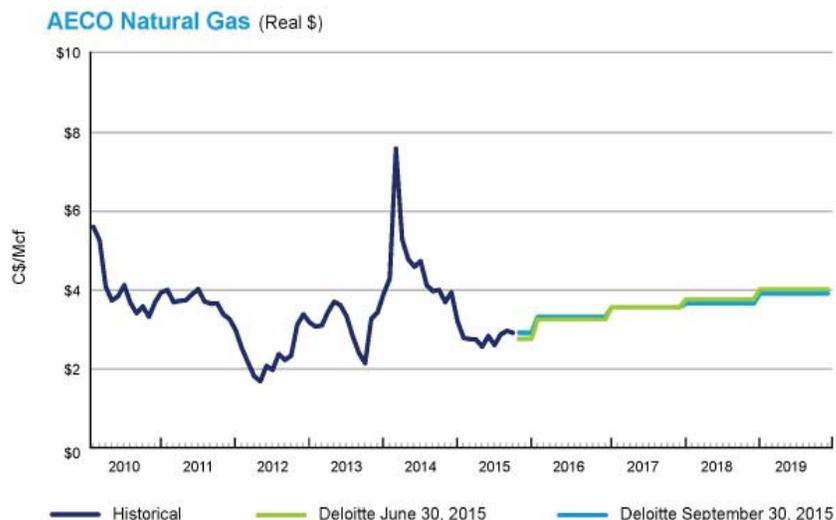
- Edmonton Par is forecast as a differential to WTI. This differential is based on Canadian Light Sweet Oil Index Futures which began trading in January 2014.
- The Edmonton crude oil price is used as the basis for the remaining Canadian crude reference points. Offsets are based on five-year historical averages with recent years weighted more heavily in the determination.

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 Rate	CAD to USD exchange Rate
	US\$/bbl Real	US\$/bbl Current	C\$/bbl Real	C\$/bbl Current	C\$/bbl Current	C\$/bbl Current		
<b>Historical</b>								
2012	\$98.34	\$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	\$95.07	\$93.26	\$97.36	\$95.50	\$81.49	\$73.70	0.019	0.906
<b>2015</b>								
9 Months H	\$51.16	\$51.16	\$60.21	\$60.21	\$49.22	\$43.42	0.012	0.795
3 Months F	\$47.50	\$47.50	\$57.25	\$57.25	\$47.25	\$41.25	0.000	0.760
Avg.	\$50.24	\$50.24	\$59.47	\$59.47	\$48.73	\$42.88	-	0.786
<b>Forecast</b>								
2015	\$47.50	\$47.50	\$57.25	\$57.25	\$47.25	\$41.25	0.000	0.760
2016	\$52.50	\$53.55	\$63.80	\$65.10	\$51.80	\$44.70	0.020	0.760
2017	\$55.00	\$57.20	\$65.40	\$68.05	\$54.50	\$47.25	0.020	0.780
2018	\$60.00	\$63.65	\$70.00	\$74.30	\$60.50	\$53.05	0.020	0.800
2019	\$65.00	\$70.35	\$76.25	\$82.55	\$68.45	\$60.90	0.020	0.800
2020	\$70.00	\$77.30	\$82.50	\$91.10	\$76.75	\$69.00	0.020	0.800
2021	\$75.00	\$84.45	\$88.75	\$99.95	\$85.30	\$77.40	0.020	0.800
2022	\$80.00	\$91.90	\$95.00	\$109.15	\$94.20	\$86.15	0.020	0.800
2023	\$80.00	\$93.75	\$95.00	\$111.30	\$96.10	\$87.85	0.020	0.800

## Natural gas price and market demand forecast

### ► Forecast comments

- The AECO natural gas price is forecast based on historical differentials to Henry Hub and future contracts traded on the NGX based in Calgary.
- 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 Current	C\$/Mcf Real	C\$/Mcf Current	C\$/Mcf Current	US\$/Mcf Real	US\$/Mcf Current
<b>Historical</b>						
2012	\$2.25	\$2.50	\$2.39	\$2.29	\$2.88	\$2.75
2013	\$2.98	\$3.27	\$3.17	\$3.08	\$3.84	\$3.73
2014	\$4.22	\$4.59	\$4.50	\$4.34	\$4.48	\$4.39
<b>2015</b>						
9 Months H	\$2.63	\$2.77	\$2.77	\$2.62	\$2.82	\$2.82
3 Months F	\$2.75	\$2.90	\$2.90	\$2.75	\$2.80	\$2.80
Avg.	\$2.66	\$2.80	\$2.80	\$2.65	\$2.81	\$2.81
<b>Forecast</b>						
2015	\$2.75	\$2.90	\$2.90	\$2.75	\$2.80	\$2.80
2016	\$3.20	\$3.30	\$3.35	\$3.20	\$3.10	\$3.15
2017	\$3.55	\$3.55	\$3.70	\$3.55	\$3.35	\$3.50
2018	\$3.70	\$3.65	\$3.85	\$3.70	\$3.50	\$3.70
2019	\$4.05	\$3.90	\$4.20	\$4.05	\$3.70	\$4.00
2020	\$4.30	\$4.05	\$4.45	\$4.30	\$3.85	\$4.25
2021	\$4.60	\$4.25	\$4.80	\$4.60	\$4.00	\$4.50
2022	\$4.90	\$4.40	\$5.05	\$4.90	\$4.10	\$4.70
2023	\$5.15	\$4.55	\$5.35	\$5.15	\$4.25	\$5.00

# 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	\$47.50	\$52.50	\$45.50	\$49.50	\$53.00	\$44.50	\$51.50
2016	\$52.50	\$57.50	\$50.50	\$54.50	\$58.00	\$49.50	\$56.50
2017	\$55.00	\$60.00	\$53.00	\$57.00	\$60.50	\$52.00	\$59.00
2018	\$60.00	\$65.00	\$58.00	\$62.00	\$65.50	\$57.00	\$64.00
2019	\$65.00	\$70.00	\$63.00	\$67.00	\$70.50	\$62.00	\$69.00
2020	\$70.00	\$75.00	\$68.00	\$72.00	\$75.50	\$67.00	\$74.00
2021	\$75.00	\$80.00	\$73.00	\$77.00	\$80.50	\$72.00	\$79.00
2022	\$80.00	\$85.00	\$78.00	\$82.00	\$85.50	\$77.00	\$84.00
2023	\$80.00	\$85.00	\$78.00	\$82.00	\$85.50	\$77.00	\$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 dollars. For the purposes of this forecast Brent is receiving a premium to WTI on the world markets.
- 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	Real	Real
Forecast									
2015	1.550	1.100	\$2.80	\$2.60	\$2.60	\$2.70	\$2.75	\$2.65	\$6.40
2016	1.550	1.100	\$3.10	\$2.90	\$2.90	\$3.00	\$3.05	\$2.95	\$6.50
2017	1.550	1.100	\$3.35	\$3.15	\$3.15	\$3.25	\$3.30	\$3.20	\$6.55
2018	1.550	1.100	\$3.50	\$3.30	\$3.30	\$3.40	\$3.45	\$3.35	\$6.60
2019	1.550	1.100	\$3.70	\$3.50	\$3.50	\$3.60	\$3.65	\$3.55	\$6.70
2020	1.550	1.100	\$3.85	\$3.65	\$3.65	\$3.75	\$3.80	\$3.70	\$6.85
2021	1.550	1.100	\$4.00	\$3.80	\$3.80	\$3.90	\$3.95	\$3.85	\$7.00
2022	1.550	1.100	\$4.10	\$3.90	\$3.90	\$4.00	\$4.05	\$3.95	\$7.10
2023	1.550	1.100	\$4.25	\$4.05	\$4.05	\$4.15	\$4.20	\$4.10	\$7.25

### ► 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.

# Industry activity and metrics

The industry has slowed development significantly in the first half of 2015, due to the low price environment. When comparing Q2 2015 to Q2 2014 activity, rig utilization was down 48 per cent and the cyclic activity spike usually seen in the winter months (Q1) was absent in Canada. Well completion statistics over the past 10 years can be seen in the following graphs.

Figure 3: Oil completions (2005-2015)

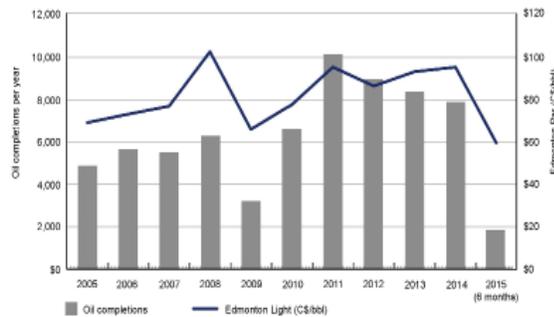
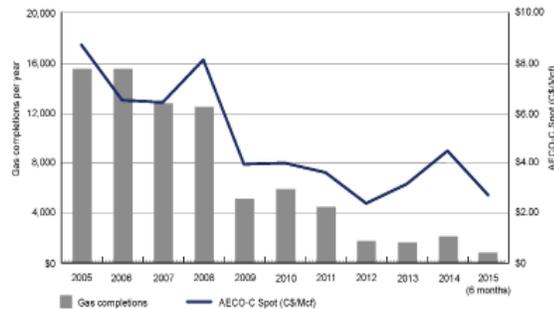
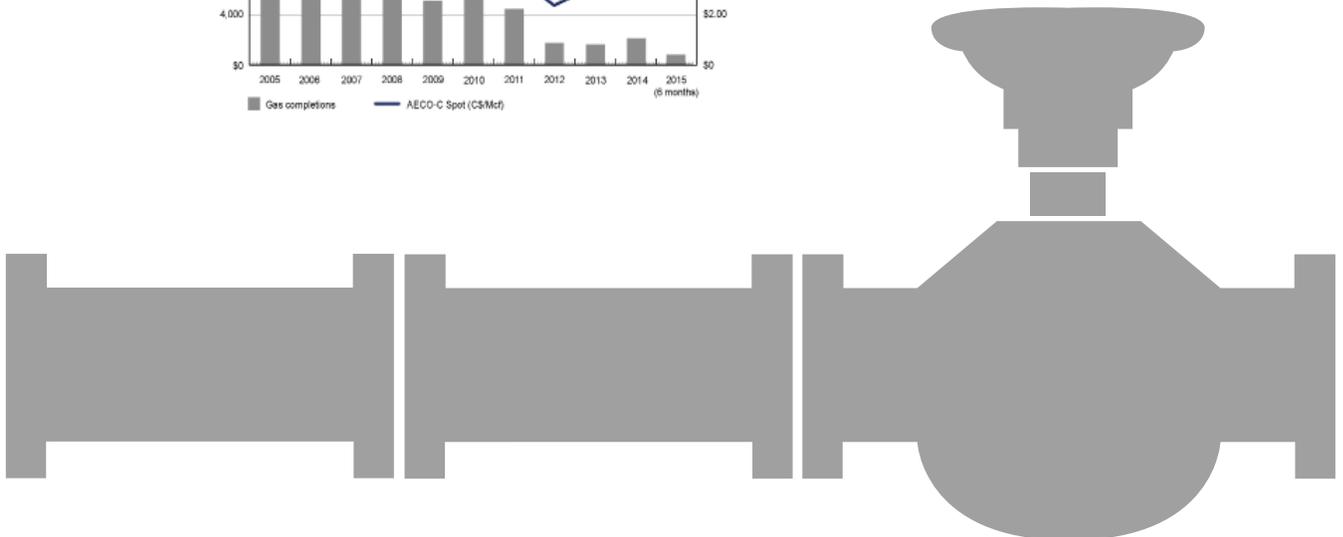


Figure 4: Gas completions (2005-2015)



Analysts estimate approximately 5,300 wells will be drilled in 2015, a 50 per cent decrease from 2014. Understandably, Canadian companies have been focusing on their highest rate of return plays such as the Montney, Charlie Lake, Cardium, and Viking Formations. Non-oil sands companies have cut their budgets in 2015 by an average of 45 per cent. On average, companies have seen reductions in their operating netbacks of approximately 50 per cent based on Q2 results. Companies that have the higher rate of return plays mentioned above as part of their base portfolio were no exception to this average netback decline. Many of these companies have also been asking their service providers for a 20 to 30 per cent reduction in costs, but service sector has not been swift to respond. Wood MacKenzie recently estimated the service sector will only be able to apply cost reductions of 10 to 15 per cent, leaving companies to find other ways to cut costs in the field to keep projects alive.

Compared to non-oil sands companies, oil sands players have only cut budgets by 25 per cent. However, the scale of cuts is largest in this sector due to the sheer magnitude of these budgets. Oil sands companies had already committed capital to projects for 2015 but further declines in spending are expected in the coming years due to delayed or cancelled projects.



Although the total capital to be spent has decreased significantly for 2015, the allocation of capital has not shifted.

Figure 5: 2013 Capital spending

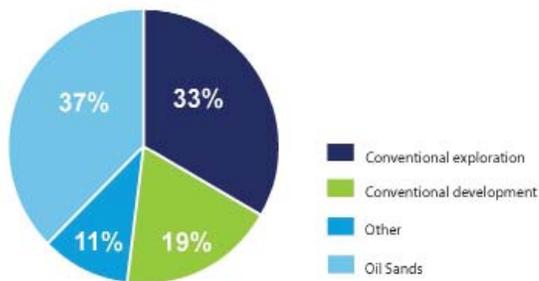


Figure 6: 2014 Capital spending

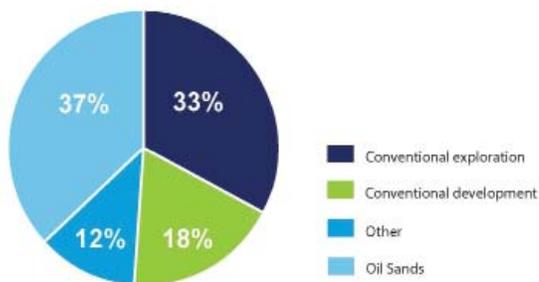
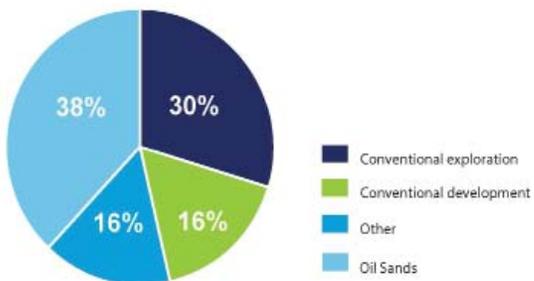


Figure 7: 2015 Capital spending



Integrated majors have the ability to absorb the changes in the market with a diversified portfolio that includes refining capability. Taking advantage of the lower cost of raw materials enables them to decrease their overall expenses to counteract a portion of the lower product prices. Production rates to date for all of the majors are higher than 2014 but capital spending is expected to be 27 per cent lower in 2015 than the previous year totals. In 2016, we expect capital budgets will continue at the

reduced levels and companies will take a measured approach to all future development but continue to maintain the balanced mixture of capital spending we have seen in the past.

On the transaction side, the industry has been relatively inactive in the first three quarters of 2015. That said, there are a number of assets on the market if a company has a strong balance sheet and is willing to take advantage of the opportunities. We observe companies not receiving offers on which they are willing to transact. The expectation of value between buyers and sellers is still wide, making deals difficult to close. Companies may need to sell assets to free up cash flow for loan payments (or various other needs) but when those assets contribute to their borrowing base, a cycle begins where the borrowing base is in jeopardy by selling the asset but companies can't continue to service their debt without that sale. Lenders have been relatively lenient with companies recently but how long that will continue is a source of constant speculation. Historically, Q4 is the most active period for transactions and with increased pressure from the market and lenders, we expect to see a more fertile ground for deal-making.

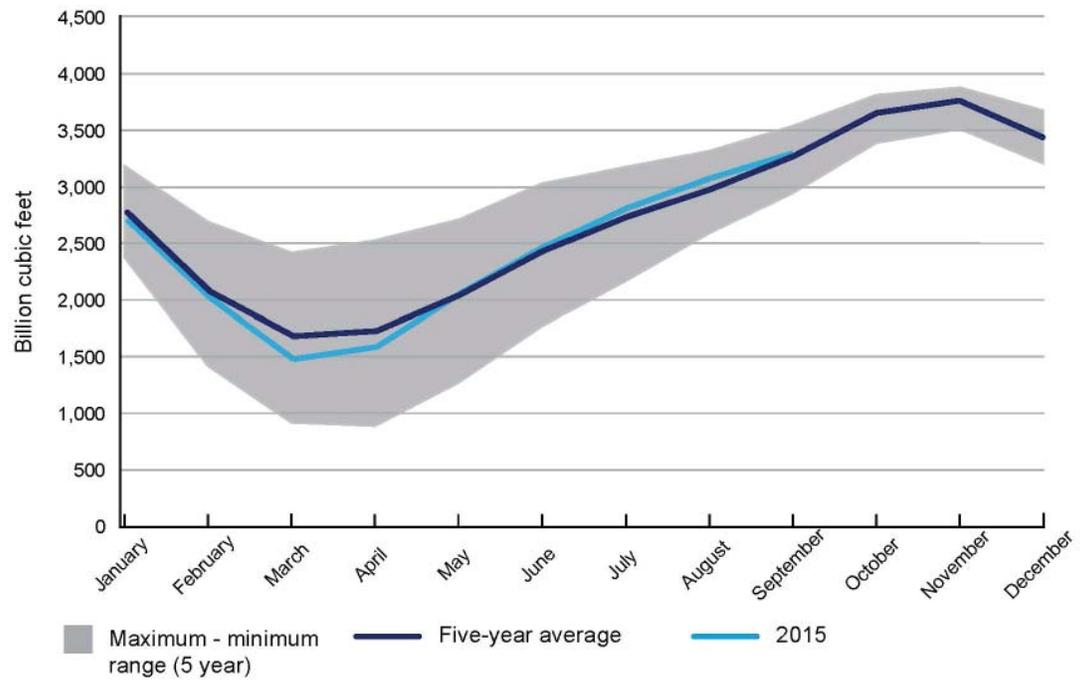
To navigate through the current volatile environment, companies are coming up with several solutions to increase production without significant capital investment. For example, a large Saskatchewan energy company is banking on implementing water floods in its major tight oil plays (Bakken and Shaunavon) to decrease decline rates. This includes a short-term loss of production when shutting in a producer to create an injector, but with a hopeful long-term benefit of increased recoveries. Other more creative options include experimenting with technology including re-fracking older wells with newer fracturing technology to stimulate production, which is currently being investigated by major producers on some of their assets in the United States. While these activities can be effective for individual companies, it is the aggregate of all these activities that has sustained production volumes in North America, which have not decreased as substantially as one might expect from reductions in drilling activity.

# Global trends

## Storage

U.S. natural gas

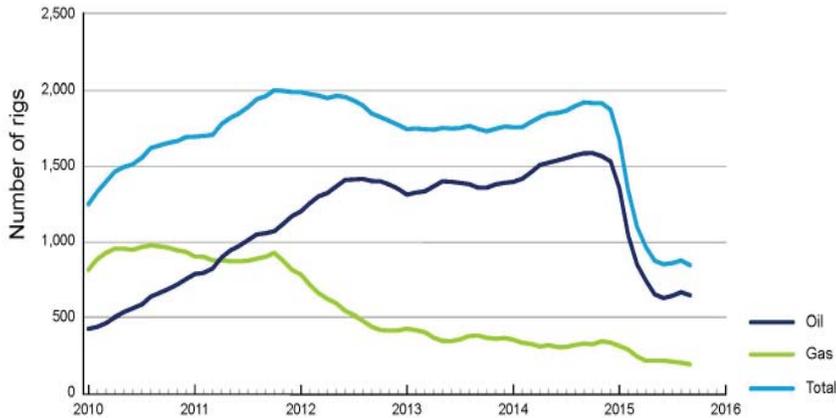
The United States natural gas storage level dipped below the five-year average in March 2015 but returned to the average by May and now has even slightly surpassed those levels. With talk of another El Niño this year, storage levels may rise to above historical levels in the months to come.



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

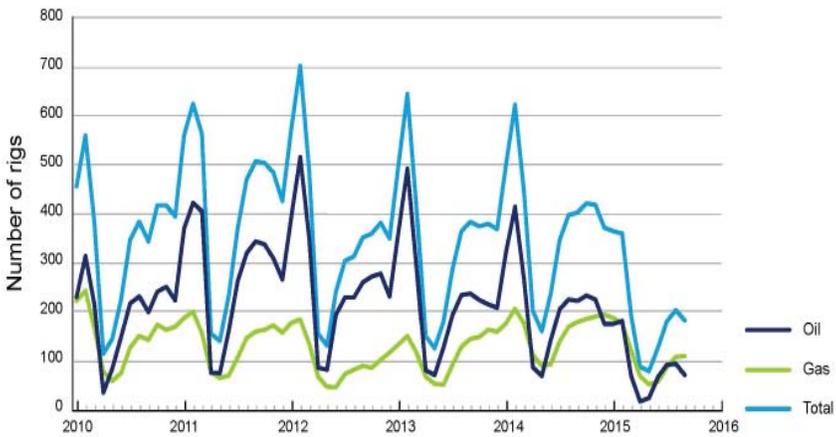
# Rig counts

## United States



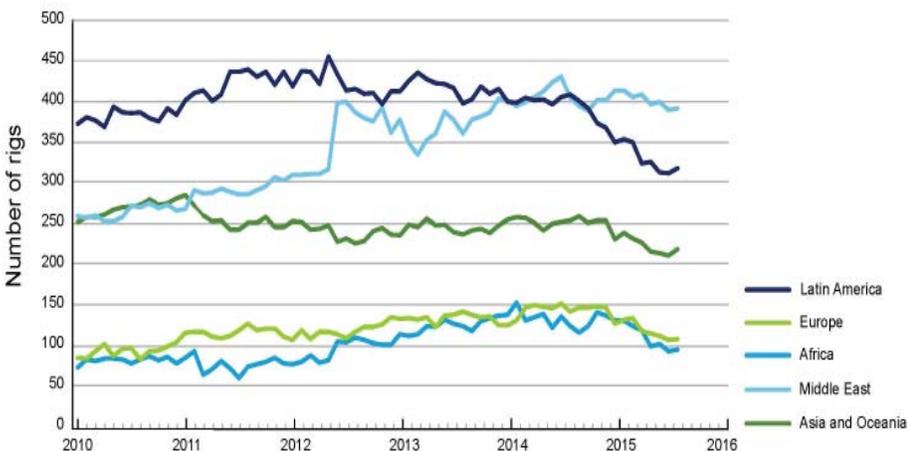
United States oil rig counts have leveled off between July and September after a steep drop as companies reduced investment in response to the lower prices. Gas rig counts have been relatively steady as companies have been operating in a lower price environment for several years.

## Canada



Canadian rig counts reached a peak for 2015 to date at 206 in August and have started to decline in September. Gas rigs are fairly stable at 110 while oil rigs lost 20 per cent in September after peaking in August. It still remains to be seen how the remainder of 2015 will pan out as low oil prices persist.

## International



Steady rig counts have been maintained in the Middle East as OPEC countries have not decreased production. The remaining regions all experienced decreases in rig counts over the first half of the year but the decline may have slowed as August counts showed slight increases from the previous month.

# 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.

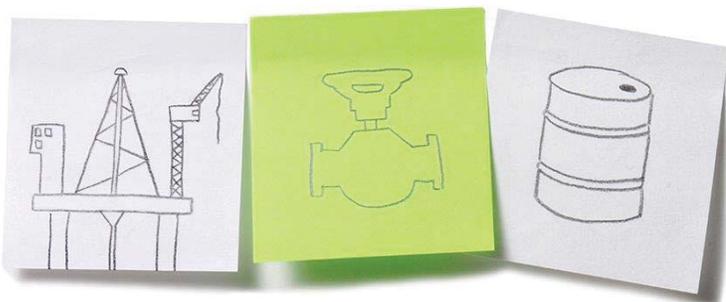
## ► Our process

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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