



Monthly Oil Price Road Map

Boston Energy Research

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WTI OIL \$67/B IN 2019

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With the OPEC cut announced last week, the oil market will remain in balance through 1Q19. The recent correction was overdone. The market dynamic changes in 2Q19 and upside price volatility could be explosive.

WTI is \$53/B, near a 14 month low below \$50/B the end of November. Without a geopolitical surprise, a 2019 WTI average around \$67/B is anticipated, up from a probable \$65.50/B average in 2018 and \$51/B in 2017.

Brent fell to \$57.50/B and is now \$61/B. It **is projected to average \$72/B in 2018 and \$73/B in 2019, \$6/B higher than WTI.** It was \$54/B in 2017, with a \$3.10/B premium over WTI, in line with historic spreads.

Oil prices typically respond to anticipated changes in inventories compared to historic norms for that time of year. Monthly OECD inventories calculated by the IEA and OPEC are followed closely. Measured against the latest 5 year average, they are a key indicator of the health of the oil market. The OECD represents 48% of global demand. To illustrate the point, a peak *surplus* of 385 MMB in 1Q16, which was 14% larger than the 5 year average at that time, caused the 70% crash in oil prices to a low of \$27/B from an average over \$90/B in 2014.

WTI averaged \$70/B in 3Q18, with a \$5.50/B discount to **\$75/B** Brent. Since then, fear of an oversupplied market drove prices substantially lower.

OPEC estimates *OECD inventories increased from a 25 MMB deficit to the 5 year average in September to a 22 MMB surplus in October.* The IEA calculated a 15 MMB October surplus.

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*Boston Energy Research **selects equity investments in the oil and gas sector for major financial institutions.***

Paul Kuklinski, founder of independent research firm Boston Energy Research,** typically publishes over 30 common stock recommendations annually from a universe comprising the 5 super major integrated oils, 17 of the largest exploration & production companies, and 9 of the leading oil service providers including marine drillers, a total of 31 of the most important energy stocks in all. **His comprehensive coverage provides a unique vantage point to observe industry trends not generally available.

EXPORTS TO CHINA WOULD HAVE MADE A BIG DIFFERENCE

There was another good reason for the decline in WTI. Since mid September US crude oil inventories also increased. Over a 10 week period they steadily increased by 62 MMB to 6% above its 5 year average at the end of November and at the end of the fall refinery maintenance season. Refineries operated at reduced rates over a 9 week period, while US oil production continued to increase (up 640 MBD from September), which overwhelmed only a modest decline in net crude imports. The US crude surplus is largely on the Gulf Coast. Over the same period, US gasoline and distillate inventories declined 20 MMB. And since the end of November, US crude inventories declined 9 MMB with an increase in exports to record levels 2 weeks ago.

In response to the fear of new tariffs on oil, exports to China fell to 0 in October and November. They peaked for the year at 533 MBD in June. Had they remained at the June level, US oil inventories at the end of November would likely have been close to the 5 year average. While not assumed, China is likely to nudge state owned refiners to increase US crude imports as a gesture of sincerity in coming trade negotiations.

Oil inventories were supplemented in October and November when the US sold 11 MMB of crude oil from its Strategic Petroleum Reserve, which is part of a program to fund needed maintenance. The DOE is required by Congress to sell 290 MMB starting in 2017 through fiscal 2027.

While oil inventories in the US were high, crude oil holdings in Europe were below the 5 year average, and well below in the Asia Pacific region after reaching a historic low in September.

BEARISH MARKET PSYCHOLOGY IS EXTREME AND UNWARRANTED

With the 500 MBD cut in December announced by Saudi Arabia in early November, the 22 MMB October surplus in OECD inventories to the 5 year average (*a surplus less than 1%*) will remain unchanged at the end of this year.

But with the \$27/B correction, the market instead was focused on 1Q19. The Wall Street Journal warned last week that an OPEC cut was needed "to mop up a burgeoning supply glut".

The fundamentals are quite different. Without the cut that OPEC, Russia, and its allies announced last week, OECD inventories would have increased 69 MMB in 1Q19 to a 62 MMB surplus in March -- a sizable seasonal swing but just 2.4% larger than the 5 year average.

Sentiment is a powerful short term force which even OPEC recognizes and respects. But ultimately it gives way to fundamentals which unavoidably are the main oil price driver.

1Q19 OUTLOOK FOR PRICES: \$59/B WTI, \$67/B BRENT

The cut by OPEC+ will result in a 9 MMB deficit in OECD inventories compared to the 5 year average in 1Q19.

OPEC agreed to reduce its production from October levels by 800 MBD for a 6 month period beginning in January. Saudi Arabia said its January production would be 10.2 MMBD, 450 MBD less than October. Excluding Iran, Libya, and Venezuela who are exempted, other OPEC members will cut their production by 2.5%. Total 1Q19 OPEC production will approximate 31.61 MMBD. OPEC estimates the call for its crude will be 31.67 MMBD.

Russia and 9 other non OPEC producers agreed to cut their production by 400 MBD. Russia will reduce its crude oil production by 228 MBD from 11.41 MMBD in October. It said it will take until April to reach its commitment because of 'freezing winter and technical conditions.'

The 1.2 MMBD cut announced by OPEC+ will offset most of the sequential seasonal reduction in demand for OPEC crude. Global demand is expected to decline seasonally by 1.00 MMBD and non OPEC production outside Russia and its allies will increase by 455 MBD. The market will be sensitive to OPEC compliance.

With OECD inventories near the 5 year average, a gradual improvement in sentiment is likely to support a gradual increase in prices. **A WTI price around \$59/B in 1Q19** is consistent with fundamental sensitivities to changes in inventories, with a significant (maybe \$8/B) premium for Brent. Sentiment is a huge unknown, but with demonstrated OPEC discipline, it is likely to be increasingly supportive as 2Q19 approaches.

In the lead up to last week's meeting, OPEC producers expressed their desire for oil prices in the \$70s (meaning Brent). They plan to meet again in April, with the possibility they may extend the cut for another 6 months, if necessary.

THE DYNAMIC CHANGES IN 2Q19: UPSIDE VOLATILITY COULD BE EXPLOSIVE

With OPEC discipline, the **deficit in OECD inventories** to the 5 year average **will build to a 77 MMB deficit in June** (just over a 2% difference but sentiment made the current market hyper). **That is 3x larger than the deficit in September when WTI was \$70/B and Brent was \$78/B.**

World oil demand is expected to increase seasonally about 1.2 MMBD, substantially more than the 790 MBD increase expected in non OPEC production, while OPEC production declines 300 MBD to 31.31 MMBD in response to a continuing decline in Venezuela and Iran. OPEC estimates the call for its crude will be 31.77 MMBD. It is likely to be somewhat more.

Oil prices are likely to rally strongly in 2Q19 in response to a growing deficit, as it responded in 4Q18 to fear of a growing surplus. An increase in WTI prices to a **\$68/B average for the quarter** would be consistent with sensitivities to changes in inventories. **Bullish sentiment could magnify the increase further.**

A \$70/B WTI price is assumed as a working assumption for the rest of 2019, consistent with signals from OPEC producers. And with the market functioning smoothly and remaining in balance, it is logical to expect the Brent premium to slowly decline in 2019 to its typical \$3/B premium by the end of the year.

Oil prices consistently have wide, event driven swings during the course of a year. There were 7 swings in 2018 with an average swing of \$12/B between the high and the low.

The EIA currently anticipates a 2019 WTI price of \$54/B with a \$7/B discount to Brent. Its estimate was reduced substantially from its estimate a month ago and essentially unchanged from the current price. This suggests the risk in a change in sentiment is all to the upside. **That would provide fuel to a price spike in response to a bullish event.**

A rally could be tempered in 3Q19 by the looming surge in non OPEC supplies from mid/ late 2H19, primarily from the Permian Basin. But it also seems reasonable to expect OPEC will continue to adjust its production to keep the market in balance and avoid a spike in oil prices to unreasonable levels which would have a negative impact on global demand.

RECENT OIL PRICE HISTORY

WTI reached a 14 month low below \$50/B the end of November. On October 3rd, it peaked at a 4 year high nearly \$77/B. The \$27 correction began in response to signs of slowing economic growth in China, increasing tariffs on its exports, and weakening demand in other emerging markets in response to a Brent price in the mid \$80s at the time. The decline in WTI and Brent accelerated when Saudi Arabia indicated it would raise output to 11 MMB/D, 865 MBD more than it produced in 2Q18, and subsequent news the US would grant waivers to major importers of Iranian oil after previously indicating it wanted to reduce its exports to 0. Brent fell to \$57.50/B.

As oil prices peaked in early October, traders had accumulated bullish long positions equivalent to nearly 1.2 bn B of oil. At the same time, short positions in the 6 most important petroleum futures and options contracts fell to the lowest level since at least 2013, *which created a near record imbalance between bullish and bearish positions in crude oil markets.* At the time, a number of international banks and trading houses anticipated a Brent price over \$90/B by the end of the year, others expected a price over \$100/B. *Exuberance was high, the market was ripe for a correction.*

By the end of November, traders cut their net long positions in Brent to 168,512 contracts, *the lowest level since 2015 – which preceded the bottom in oil prices in 1Q16. **The market is now oversold.***

PRIMARY TRENDS CAUSING OIL INVENTORIES TO CHANGE WHICH CAUSES OIL PRICES TO CHANGE:

Supply demand fundamentals have begun to respond to the \$27/B price reduction in the last 2 months.

DEMAND

The IEA currently projects a full year **world oil demand increase in 2019 of 1.33 MMBD** to 100.6 MMBD, which is **667 MBD more than the growth in supply. OECD inventories will decline by 24 MMB after an increase around 37 MMB in 2018.** OPEC anticipates a 1.29 MMBD increase in global demand. Demand increased 1.30 MMBD in 2018 and 1.73 MMBD in 2017.

While US stock markets are weak because of growing pessimism about economic growth and the trade dispute with China, the International Monetary Fund said last week that it “still had a strong growth forecast for next year for the US” and that it “didn’t see the elements of a recession”. The IEA relies on the IMF’s global economic forecasts to make its forecasts of global oil demand.

Global demand growth in 2019 could be stronger. Asian and emerging market currencies recovered sharply in November. The drop in oil prices will ease their financial burden from the cost of large oil imports and may reverse the recent slide in their oil demand.

SUPPLY

Total global oil supply is currently projected to increase by **590 MBD** in 2019, with a **2.51 MMBD** increase in non OPEC supply partly offset by a decline in OPEC oil production of **1.92 MMBD**.

The growth in non OPEC supply could be less. The shock of the recent oil price crash could cause producers to be conservative in their 2019 capital spending, while using cash flow to further improve their balance sheets. All of their budgets will be published by late January and February when they report earnings.

The drop in oil prices will also increase anxiety as to the adequacy of global upstream spending to provide ample oil [supply beyond 2019](#). [Schlumberger continues to warn](#) a supply gap will emerge before 2025. **A large increase in future oil prices is looming.**

There is less industry appetite for exploration drilling. Rystad data shows there were only 1400 exploration wells drilled in 2018 compared to 4000 wells in 2013. Producers are prioritizing

development and short cycle infill drilling, which is making **future global oil supply increasingly dependent on US shale producers.**

The impact of sanctions and waivers on Iran is still unclear. The consensus anticipates a **920 MBD** production decline in 2019 following a **215 MBD** decline in 2018 to 3.60 MMBD. Iran's November production dropped to 2.95 MMBD.

US growth is explosive. Current trends indicate US production will increase **1.65 MMBD** in 2019, while the rest of non OPEC outside Russia and Brazil declines **48 MBD.**

US crude and liquids output increased about 2.03 MMBD in 2018 following a 778 MBD increase in 2017. It was 16.07 MMBD in November and will average about 15.22 MMBD for the year, comprising 10.87 MMBD crude oil and 4.35 MMBD natural gas liquids. It is expected to approximate 16.85 MMBD in 2019, with a 1.20 MMBD increase in crude oil and a 435 MBD increase in gas liquids.

OTHER KEY VARIABLES WORTH TRACKING TO BETTER UNDERSTAND THE BIG PICTURE AND PROVIDE POSSIBLE INSIGHTS HOW IT MAY CHANGE – AND IT WILL CHANGE:

In *September*, the President of Unipecc, **China's** primary crude oil importer for state owned refineries, cited long term plans to increase its imports of US crude oil to 500 MBD. It also leased 10 MMB of storage capacity in the US Virgin Islands to support its long term plans. Imports by China's independent refiners will be additive. **The absence of exports to China was a major ingredient in the sizable build in US crude inventories in 4Q18.**

Saudi Arabia requires an \$88/B Brent oil price to balance its 2018 fiscal budget; \$58/B Brent was far from it. US policy to impose sanctions on Iran to reduce its revenues serves Saudi Arabia's interest as well – **all of which points to an optimum Brent price near \$75/B to balance from a Saudi perspective.**

Before it agreed to participate in the latest OPEC cut, **Russia** expected its 2019 production would be the same as the 11.55 MMBD it will produce in 2018. It has the capacity to produce 11.85 MMBD including gas liquids. In early October its oil minister warned that oil prices could rise further above \$86/B *'to the detriment of the global economy.'*

Venezuela's meltdown continues to get worse. Since 2006, it has received over \$50 bn in loans and credit lines from China and at least \$17 bn from Russia. It is obligated to repay its debts with oil. The 37% decline in PDVSA's production since last year to 1.14 MMBD in November has reduced its compliance with its 464 MBD repayment requirement to China to 60% since January. It has only met 40% of its requirement to send 380 MBD to Russia. *Theoretically, it will be obligated to send*

close to 90% of its 2019E production of 960 MBD to China and Russia just to meet its current debt obligations. **Oil prices would spike if Venezuela totally imploded.**

Venezuela's production will be about 1.34 MMBD in 2018, down 628 MBD from 2017. An additional decline of 380 MBD is anticipated in 2019.

A major uncertainty in 2H19 is the rate of the ramp up in Permian Basin production when new pipelines are on line in 2H19. Total full year 2019 Permian liquids are tentatively expected to increase **750 MBD**, although the increase could be larger. Only a minimal increase production is expected in 1st half, before a surge in the 2nd half when additional pipeline capacity of 2.03 MMBD will come on line. A 2nd pipeline wave will start up in 2020, adding 2.10 MMBD capacity or more.

The inventory of drilled but uncompleted wells (DUCs) in the Permian has steadily grown since 1Q16 and has now reached 3866, an increase of 58% since January. The number of DUCs in all other major US resource plays is up 4%. The EIA's analysis of historic data indicates a normal DUC inventory for an oil dominant resource play like the Permian should currently be about 1100 DUCs. The current 2766 Permian DUC well surplus over the 'normal' level represents a 1.53 MMBD oil production backlog awaiting fracing and completion, with an additional backlog of 0.46 MMBD natural gas liquids.

When adequate pipeline capacity is once again available, it is uncertain how quickly producers and oil service providers will be able to complete the enormous DUC well surplus.

They have every incentive. Permian breakeven costs are among the lowest in the US at \$31/B, with EIA data indicating a current new well production average of 595 MBD oil. Leading producers are getting much better results as they continue to improve well design and obtain further cost reduction through logistical efficiencies. In its 3Q18 earnings call, Chevron reported an increase in its 3rd quarter Permian production of 80% on year to 338 MBOED with the comment: "*that's the equivalent of adding a mid sized Permian pure play e&p company in a matter of months. We're operating off a new basis of design and finding that has been incredibly successful.*"

2018 Permian oil production is expected to average 3.28 MMBD, up **855 MBD** over 2017, while NGLs increase about **220 MBD** to around 850 MBD.

Outside the Permian, *Bakken* oil production in the Williston Basin is expected to increase about **230 MBD** in 2019, *Eagle Ford* oil production by **65 MBD**, and the *Gulf of Mexico* oil production by **225 MBD**. Oil and gas liquids production from the STACK, other US resource plays, and conventional oil and liquids production is expected to increase **300 MBD**. Higher oil prices and lower costs will support growth in other regions.

Canada will produce even less than the small increase expected in 2019. After a 250 MBD increase in production this year to 5.21 MMBD, the EIA now expects a 10 MBD decline in 2019.

Its' producers are suffering. Inadequate takeaway capacity, both pipeline and rail, and seasonal maintenance at Midwest refineries, magnified a supply glut which drove the Western Canadian Select heavy sour crude discount at Hardisty to a record \$52/B below WTI in October. The discount was \$10.38/B in 3Q17. WCS closed below \$14/B November 14th. Heavy crude production costs approximate \$15/B. Margins were in the red. WCS breakeven costs for new projects are roughly \$42/B. Reduced cash flow is forcing producers to cancel projects to stay solvent. The winter drilling season could be lost.

Some producers plan to curb output through the year end. In early December, Alberta mandated a cut of 325 MBD from January for 3 months to allow the glut to clear. The cut will be reduced to 95 MBD after that until the end of 2019.

The start of Enbridge's Line 3 replacement in 4Q19, with increased capacity of 375 MBD into the Midwest, and new pipelines later are expected to ultimately restore the normal WCS discount to WTI.

In the interim, Canadian producers have turned to crude shipment by rail, which hit a record 270 MBD in September. They are expected to reach 300 MBD in December and ramp up to 450 MBD in 2019. In addition, Alberta plans to buy rail cars for 2 unit trains able to move 120 MBD to US refiners from late 2019. Cenovus, Canada's 3rd largest oil producer, says shipping by rail to the Gulf Coast is just under \$20/B.

By 2020, Cenovus expects there will be enough transportation capacity to start emptying Alberta's record high storage with a WCS discount below \$20/B. ***After the surge in new oil supply from the Permian Basin in 2H19, there may be another sizable surge, this time from Canada, the following year.***

*A return to growth in **Brazil** is expected in 2019* after a disappointing 2018, which reflected the impact of steep declines in mature fields and maintenance downtime. Brazil is expected to add **360 MBD** to world oil supply in 2019 to average 3.06 MMBD. Its production declined 40 MBD in 2018. Petrobras and its partners are starting 7 new production systems this year in Brazil's prolific offshore subsalt play followed by 2 more in 2019. The IEA anticipates Brazil will be producing 5.2 MMBD by 2040.

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