# Energy Tidbits

Oct 6, 2019

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## Saudi's Abdulaziz Teases Oil Supply "May Also Become Lower" Than Current Forecasts, But Doesn't Say What Is Declining

**Welcome to new Energy Tidbits memo readers.** We are continuing to add new readers to our Energy Tidbits memo and energy blogs. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not focusing on day to day trading. Our priority was and still is to not just report on events, but interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector and not just a specific company results/guidance. Our target is to write on 48 to 50 weekends per year and to send out by noon mountain time.

This week's memo highlights:

1. Trudeau says "shovels are in the ground as we speak" on TMX, did he actually mean it? (Click here)
2. Looks like US bank lines for producers will be decreased in current fall reviews. (Click here)
3. NY Times reported back channeling may be started on Saudi/Iran talks. (Click here)
4. Wood Mackenzie estimates 4.5% annual global oil decline vs Exxon at 7%. (Click here)
5. Saudi's Abdullaziz teases that oil supply also may become lower" than current forecasts? (Click here)
6. Hope you can join our SAF Group 2020 Energy Market Outlook webcast on Mon Oct 7 @ 2pm MT. [LINK]
7. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
8. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].


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# Table of Contents

Natural Gas – Natural gas injection of 102 bcf, storage now +465 bcf YoY surplus....4
Figure 1: US Natural Gas Storage....4
Natural Gas – US gas production in July +7.9 bcf/d YoY....4
Figure 2: US Dry Natural Gas Production....4
Natural Gas – US July LNG exports +1.9 bcf/d YoY,....4
Figure 3: US LNG Exports (bcf/d)....5
Natural Gas – Elba Island 0.35 bcf/d LNG terminal starts commercial in service....5
Figure 4: Kinder Morgan Natural Gas Segment....5
Natural Gas – US July pipeline exports to Mexico +0.4 bcf/d YoY....5
Figure 5: US Pipeline Exports To Mexico (bcf/d)....6
Reminder, big ramp up in gas exports to Mexico in Sept....6
Figure 6: Mexico Gas Pipelines Map....6
Natural Gas – Looks like Nord Stream 2 delay has to be months, not weeks....6
Figure 7: Nord Stream 2 Route, ~5.6 bcf/d Capaicty....7
Means Russia/Ukraine will need to reach a transit extension deal....7
Figure 8: Europe Gas Storage Utilization At Oct 3, 2019....7
Natural Gas – Platts reminds 2019 most liquification capacity FIDs since 2005....8
Figure 9: Liquification Capacity FIDs by Year....8
Natural Gas – Another warmer than winter forecast for Japan....8
Figure 10: Japan Winter Temperature Forecast....9
Natural Gas – Total sees some LNG market tightening beyond 2021....9
Figure 11: Total Sees Market Tightening Beyond 2021....9
Natural Gas – Mozambique says Exxon to FID its LNG on Tues....10
Figure 12: Exxon Mozambique From March 6, 2019 Investor Day....10
Oil – US oil rigs down 3 to 710 oil rigs....10
Oil – Total Cdn rigs +17 to 144 total rigs....10
Oil – US oil production down 100,000 b/d to 12.4 mmb/d....11
Figure 13: Weekly US Oil Production....11
Figure 14: US Weekly Oil Production....11
Figure 15: YoY Change in US Weekly Oil Production....12
Oil – EIA Form 914, US July oil production down vs June but due to Hurricane Barry....12

Figure 16: EIA Form 914 US Oil Production .... 12
Oil – Less capital for US shale/tight oil players in 2020 ie. bank lines going lower .... 12
Another reason why we expect Permian growth forecasts to be lowered .... 13
Oil – Was Abdulaziz reaffirming Falih view on lower than expected Permian growth? .... 13
Oil – Alberta crude by rail exports should be increasing .... 14
Oil – TMX, Trudeau says "shovels are in the ground as we speak" .... 14
Oil – Oil input into refineries down 496,000 b/d to 16.017 mmb/d .... 14
Figure 18: US Refinery Crude Oil Inputs (thousand b/d) .... 15
Oil – US "NET" oil imports up 29,000 b/d to 3.424 mmb/d .... 15
Figure 19: US Weekly Preliminary Oil Imports By Major Countries .... 15
Oil – Reuters OPEC for Sept looks too high based on Saudi only down 700,000 b/d .... 15
Figure 20: Reuters Survey of Sept 2019 production .... 16
Oil – Bloomberg OPEC survey for Sept, Saudi down 1.47 mmb/d ave over month .... 16
Figure 21: Bloomberg Survey of Sept 2019 production .... 16
Oil – Ecuador leaving OPEC, expect to be +50,000 b/d in 2020 .... 17
Figure 22: US PADD 5 West Coast Oil Imports From Ecuador .... 17
Figure 23: US PADD 3 Gulf Coast Oil Imports From Ecuador .... 17
Oil – Johan Sverdrup Phase 1 of 440,000 b/d starts commercial production yesterday .... 17
Oil – Saudi MBS reiterates his priority is to negotiate with Iran and Houthis .... 18
Oil – MBS negotiate with Houthis reinforced by Saudi defense minister on Friday .... 19
Oil – NY Times "Saudi Arabia and Iran Make Quiet Openings to Head Off War" .... 19
Oil – Good perspective on why Saudi likely realizes they could lose it all .... 19
Oil – Aramco IPO: other less price sensitive buyers? The Asian State Oil Majors? .... 20
Oil – Wood Mackenzie sees global oil decline of 4.5% .... 20
Figure 24: Wood Mackenzie Global Supply Decline Rate 4.5% Per Annum .... 21
Oil – IEA continues to warn they "may" cut its oil demand growth estimates .... 21
Oil – Medium/Heavy trucks 4% of vehicles but 26% of fuel use .... 21
Oil & Natural Gas – Looks like US Energy Secretary Perry will be gone .... 22
SAF Group 2020 Energy Market Outlook – Mon Oct 7 @ 2pm MT .... 22
Energy Tidbits – Now on Twitter .... 22
Energy Tidbits – Sign up on our email distribution for tidbits and blogs .... 22
LinkedIn – Look for quick energy items from me on LinkedIn .... 23

## Natural Gas – Natural gas injection of 102 bcf, storage now +465 bcf YoY surplus

**YoY storage at 465 bcf YoY surplus**

The EIA reported a 112 bcf natural gas injection and was above expectations of a 106 bcf injection to bring storage to 3.317 as of Sept 27. This is a widening of the YoY surplus to 465 bcf vs 444 bcf surplus last week but storage is still 18 bcf lower vs the 5 yr average. The continued expectation is for the YoY storage surplus to keep widening from higher YoY production which is holding HH prices around $2.50. There are56 weeks to get to Nov 1, the official start of the winter heating season. Below is the EIA's storage table from its Weekly Natural Gas Storage Report. [LINK]

Figure 1: US Natural Gas Storage

| | Stocks billion cubic feet (Bcf) | | | | Historical Comparisons: Year ago (09/27/18) | | Historical Comparisons: 5-year average (2014-18) | |
|---|---|---|---|---|---|---|---|---|
| Region | 09/27/19 | 09/20/19 | net change | implied flow | Bcf | % change | Bcf | % change |
| East | 826 | 794 | 32 | 32 | 758 | 9.0 | 828 | -0.2 |
| Midwest | 973 | 934 | 39 | 39 | 831 | 17.1 | 945 | 3.0 |
| Mountain | 199 | 194 | 5 | 5 | 176 | 13.1 | 202 | -1.5 |
| Pacific | 291 | 286 | 5 | 5 | 262 | 11.1 | 312 | -6.7 |
| South Central | 1,029 | 998 | 31 | 31 | 826 | 24.6 | 1,048 | -1.8 |
| Salt | 220 | 207 | 13 | 13 | 180 | 22.2 | 268 | -17.9 |
| Nonsalt | 809 | 790 | 19 | 19 | 646 | 25.2 | 781 | 3.6 |
| **Total** | **3,317** | **3,205** | **112** | **112** | **2,852** | **16.3** | **3,335** | **-0.5** |

Source: EIA

## Natural Gas – US gas production in July +7.9 bcf/d YoY

**US July gas production +7.9 bcf/d YoY**

The EIA released its Natural Gas Monthly, which includes its estimates for "actuals" for July gas production. The big negative to natural gas has been higher YoY natural gas supply, and this continues to be the case in July. However, as expected we are starting to see the YoY increases get smaller each month. They are still huge YoY, but just less. The EIA estimates US natural gas dry production in July at 91.3 bcf/d, +7.9 bcf/d YoY. Higher YoY natural gas production is the primary factor keeping HH gas prices low. Our Supplementary Documents package includes excerpts from the EIA Natural Gas Monthly. [LINK]

Figure 2: US Dry Natural Gas Production

| bcf/d | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 56.0 | 60.0 | 65.9 | 65.3 | 67.8 | 72.6 | 73.8 | 71.0 | 77.9 | 88.7 |
| Feb | 57.3 | 58.8 | 65.2 | 65.9 | 67.5 | 73.7 | 74.7 | 71.6 | 79.4 | 89.5 |
| March | 57.3 | 61.5 | 65.1 | 65.4 | 68.2 | 74.1 | 74.0 | 73.3 | 80.2 | 90.0 |
| Apr | 57.6 | 62.3 | 65.4 | 66.0 | 68.6 | 75.0 | 73.8 | 73.4 | 80.4 | 90.5 |
| May | 58.0 | 62.4 | 65.6 | 66.3 | 69.5 | 74.2 | 73.5 | 73.3 | 81.3 | 90.0 |
| June | 57.2 | 62.1 | 65.4 | 66.3 | 69.8 | 74.3 | 72.5 | 73.8 | 81.8 | 91.0 |
| July | 58.3 | 62.5 | 65.8 | 67.0 | 70.6 | 74.3 | 73.1 | 74.7 | 83.4 | 91.3 |
| Aug | 58.9 | 63.2 | 65.4 | 67.0 | 71.6 | 74.3 | 72.3 | 74.7 | 85.2 | |
| Sept | 59.1 | 63.1 | 66.2 | 67.2 | 71.7 | 75.0 | 71.9 | 75.8 | 86.4 | |
| Oct | 60.1 | 65.1 | 66.5 | 67.6 | 72.2 | 74.1 | 71.4 | 76.9 | 87.2 | |
| Nov | 60.1 | 65.9 | 66.6 | 68.6 | 73.1 | 74.1 | 72.1 | 79.0 | 88.6 | |
| Dec | 61.0 | 65.6 | 65.8 | 66.6 | 74.7 | 74.0 | 71.2 | 79.5 | 88.9 | |
| Average | 58.4 | 62.7 | 65.7 | 66.7 | 70.4 | 74.1 | 72.8 | 74.8 | 83.4 | |

Source: EIA

## Natural Gas – US July LNG exports +1.9 bcf/d YoY,

**US July LNG exports +1.9 bcf/d YoY**

The EIA Natural Gas Monthly also reported "actuals" for US LNG exports, which were 5.1 bc/d in July, +1.9 bcf/d YoY and +0.4 bcf/d MoM vs Apr. The increase in US LNG exports in the last 3 months is due to the start up of new LNG trains. Below is our table of EIA's monthly LNG exports.

Figure 3: US LNG Exports (bcf/d)

| (bcf/d) | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Jan | 0.0 | 1.7 | 2.3 | 4.1 |
| Feb | 0.1 | 1.9 | 2.6 | 3.7 |
| March | 0.3 | 1.4 | 3.0 | 4.2 |
| Apr | 0.3 | 1.7 | 2.9 | 4.2 |
| May | 0.3 | 2.0 | 3.1 | 4.7 |
| June | 0.5 | 1.7 | 2.5 | 4.7 |
| July | 0.5 | 1.7 | 3.2 | 5.1 |
| Aug | 0.9 | 1.5 | 3.0 | |
| Sept | 0.6 | 1.8 | 2.7 | |
| Oct | 0.1 | 2.6 | 2.9 | |
| Nov | 1.1 | 2.7 | 3.6 | |
| Dec | 1.3 | 2.7 | 4.0 | |
| Full Year | 0.5 | 1.9 | 3.0 | |
| Full Year bcf | 186 | 708 | 1,084 | |

Source: EIA

**Natural Gas – Elba Island 0.35 bcf/d LNG terminal starts commercial in service**

**Elba Island 3.5 bcf/d LNG starts up**

Kinder Morgan announced this week that its Elba Island LNG export facility started up commercial operations this week. It has a 3.5 bcf/d capacity and is unique as it isn't in the Gulf of Mexico, its on the Atlantic coast in Georgia. Note that the total capacity is 3.5 bcf/d, but the announcement this week was how the startup was 'the first of ten liquefaction units" and that "progress is also being made on the remaining nine units. Startup activities are underway on the second and third units, the commissioning of units four through six is ongoing, and construction on the remaining units is largely complete." KML did not give a timeline to reach full capacity. Our Supplemental Documents package includes the KML announcement. ]LINK]

Figure 4: Kinder Morgan Natural Gas Segment


Source: Kinder Morgan

**Natural Gas – US July pipeline exports to Mexico +0.4 bcf/d YoY**

**US July pipeline exports to Mexico +0.4 bcf/d YoY**

The EIA Natural Gas Monthly also estimates gas pipeline exports to Mexico were 5.3 bcf/d in July, which was +0.4 bcf/d YoY vs 4.9 bcf/d in July 2018, and it was up marginally MoM from 5.2 bcf/d in June 2019. Below is our table of the EIA's monthly gas exports to Mexico.

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Figure 5: US Pipeline Exports To Mexico (bcf/d)

| bcf/d | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Jan | 1.7 | 2.2 | 3.2 | 3.9 | 4.4 | 4.9 |
| Feb | 1.8 | 2.3 | 3.4 | 4.1 | 4.5 | 4.8 |
| March | 1.9 | 2.4 | 3.3 | 4.2 | 4.3 | 4.8 |
| Apr | 1.9 | 2.6 | 3.5 | 3.9 | 4.4 | 4.6 |
| May | 2.0 | 2.8 | 3.7 | 4.2 | 4.4 | 4.9 |
| June | 2.2 | 3.0 | 3.9 | 4.5 | 4.6 | 5.2 |
| July | 2.2 | 3.3 | 4.0 | 4.4 | 4.9 | 5.3 |
| Aug | 2.1 | 3.3 | 4.3 | 4.4 | 5.0 | |
| Sept | 2.2 | 3.3 | 4.1 | 4.2 | 5.0 | |
| Oct | 1.9 | 3.2 | 4.2 | 4.3 | 4.9 | |
| Nov | 1.9 | 3.0 | 4.0 | 4.5 | 4.7 | |
| Dec | 2.1 | 3.2 | 3.7 | 4.4 | 4.5 | |
| Full Year | 2.0 | 2.9 | 3.8 | 4.2 | 4.6 | |

Source: EIA

**Reminder, big ramp up in gas exports to Mexico in Sept**

US gas exports via pipeline to Mexico will be seeing a big increase in the Sept data. Our Sept 1, 2019 Energy Tidbits highlighted "*Sur de Texas-Tuxpan 2.6 bcf/d export pipeline to Mexico starts u*p" with the news that week that Mexico had reached a deal with the pipeline operators and this allowed the startup of the pipeline, which had been delayed since late June.

Figure 6: Mexico Gas Pipelines Map

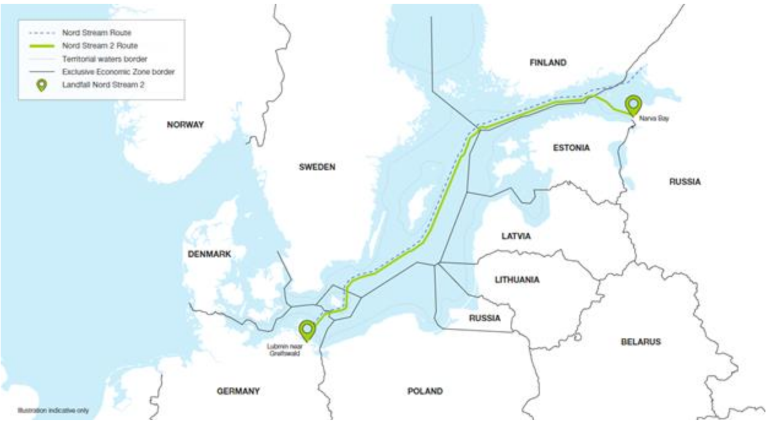

Source: Platts

**Natural Gas – Looks like Nord Stream 2 delay has to be months, not weeks**

**DEA asks for another environmental impact assessment**

It shouldn't surprise anyone that it now looks like the 5.3 bcf/d Nord Stream 2 will not be able to hit its in service Dec 31, 2019 target. We couldn't find the actual decision on the Danish Energy Agency website, but the World News Monitor report on Friday night with DEA quotes point to a delay of months, not weeks, for any in service, given the DEA "*has requested the Nord Stream 2 AG company to investigate and submit an environmental impact assessment (EIA), accompanied by a permit application, for a route south-east of Bornholm". The DEA explains: "The reason for the request was that the DEA must ensure that a permit to the most optimal route in relation to environment and safety is granted. The immediate assessment is that a south-eastern route on the continental shelf is more appropriate than the north-western route based on a number of* environmental *and safety parameters such as impact on shipping and Natura 2000 areas."* Plus there doesn't look like an specific timeline for the DEA to complete its thorough assessment. As of our early cutoff Sun 8am ET, there has been no response posted on the Nord Stream 2 or Gazprom websites. Yesterday morning, we tweeted [LINK] "*5.3 bcf/d Nord Stream 2 pipe to Germany. Denmark wants environmental assess of another route, still to do "thorough" assessment. has to point to mths, not wks past Dec 31 target date. Russia/Ukraine transit extension needed before winter ...* " and [LINK] "... we don't think a big impact on #NatGas price as we expect a Russia/Ukraine transit extension is reached. plus Europe storage is 97.38% full at Oct 3. but logistics may allow for a few more LNG cargoes this winter to northern Europe". Our Supplemental Documents package includes the WMN report. [LINK]

Figure 7: Nord Stream 2 Route, ~5.6 bcf/d Capaicty

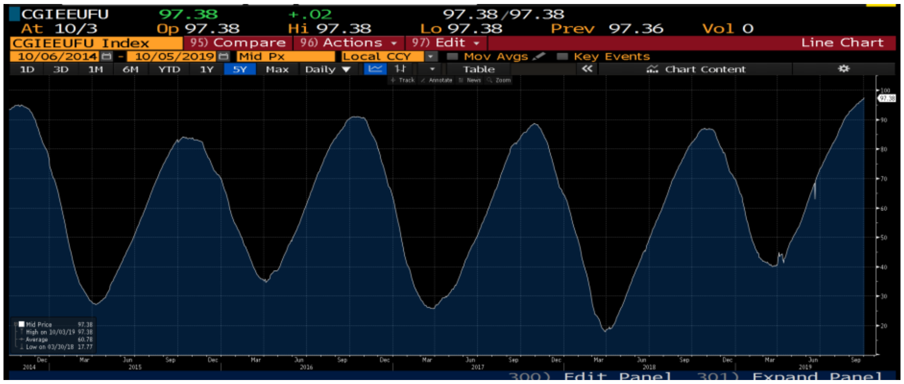



Source: Nord Stream 2

**Means Russia/Ukraine will need to reach a transit extension deal**

Nord Stream 2 missing its Dec 31, 2019 in service date means there has to be an extension to the Russia/Ukraine transit deal that ends at Dec 31, 2019. We have been reporting on this issue – Russia only wanting a short term extension because of Nord Stream 2, Ukraine wanting a longer term extension. We don't know where an extension will shake out, but we expect an extension to be reached. Its why we tweeted yesterday morning [LINK] "... *we don't think a big impact on #NatGas price as we expect a Russia/Ukraine transit extension is reached. plus Europe storage is 97.38% full at Oct 3. but logistics may allow for a few more LNG cargoes this winter to northern Europe*." Below is the current Bloomberg Europe gas storage utilization.

Figure 8: Europe Gas Storage Utilization At Oct 3, 2019




Source: Bloomberg

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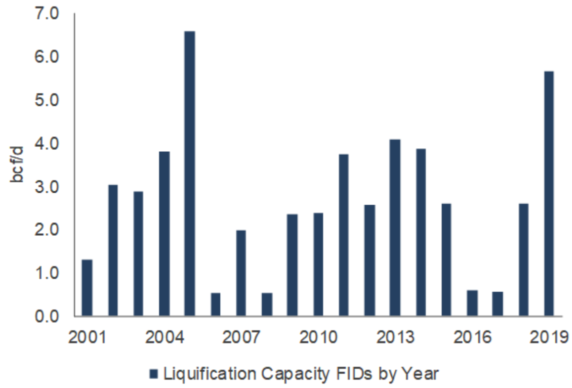
**Natural Gas – Platts reminds 2019 most liquification capacity FIDs since 2005**

**LNG contractors must be in huge demand**

We included the below Platts "*Liquification Capacity FIDs by Year*" graph in our energy outlook webcast tomorrow as it reminded us of one of the driving forces to the timing of FIDs - the availability of LNG contractors and fabricators. so capital costs can be controlled. Platts notes that 2019 has seen the highest amount of LNG liquification FIDs since 2005. And it was a good reminder of why strongly believe LNG contractors and fabricators are a major timing consideration for when LNG project go FID. LNG players are all well aware of the Australia LNG massive cost overrun experience and we believe LNG projects want to avoid a similar cost overrun experience ie. when there was a rash of LNG FIDs competing for LNG contractors and fabricators at a time of lowering LNG prices – sounds familiar! One of the keys was "planning", which has to include planning to line up for contractor and fabricator services. We previously referenced a good FT Oct 31, 2016 article on the Australia LNG cost overrun problem and this is the scenario that we believe the current LNG projects that gone FID and those that may be coming soon (ie. LNG Canada Phase 2 and Chevron Kitimat LNG) want to avoid at all costs. Chevron's Gorgon LNG went FID in 2009 with a target in service in 2014. The competing for services ending up Gorgon start pushed back two years to March 2016, and a final cost of ~$54 billion, approx. $20 billon more than capital estimates at the time of FID. We highlighted this concern in our June 23, 2019 Energy Tidbits memo on Exxon's comments that week at a US sellside conference and in the Q&A, Exxon noted the limiting factor for moving on its LNG expansions was contractor availability. Mgmt replied ""*But the other piece of it that Andy mentioned is very valid is, to many degrees, it's set by capacity as well. How much work can you do? Whether it's the industry contractors and what we've seen is a pretty dramatic consolidation of those over the last several years, particularly the LNG business. The numbers I think went from 11 or 12 major LNG contractors 10 years ago to six today. And they have lots of work, right? Lots of work in the Gulf. Lots of work in other parts of the world. So, I would tell you as much as anything, what limits our ability to do things is actually the capacity that's available in the contracting industry and internally."* Our Supplemental Documents package includes the FT story from 2016 on Australia LNG cost overruns.

Figure 9: Liquification Capacity FIDs by Year




Source: Platts

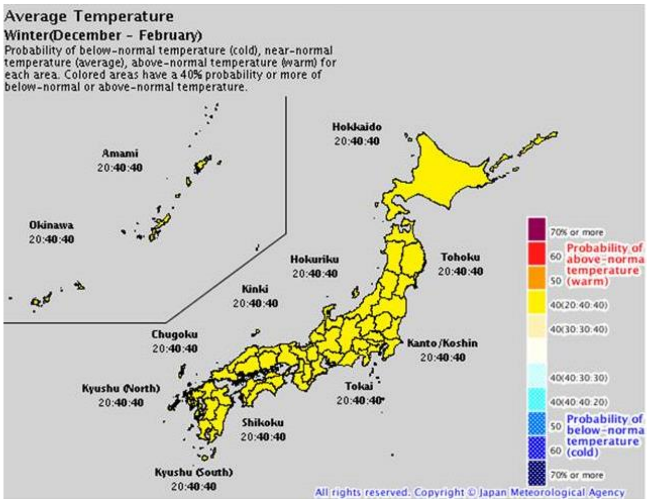
**Natural Gas – Another warmer than winter forecast for Japan**

**Warmer than normal winter forecast for Japan**

The big negative to LNG prices in 2019 was the mild Asian winter led to surplus LNG cargos looking for a home. Just like in North America, if Asian natural gas demand is so so from a mild winter, it means that it is difficult for LNG prices to catch up over the non peak season. Last week, we saw the Japan Meteorological Agency's updated Sept 25 forecast [LINK] for

Japan winter temperatures. Unfortunately, it calls for another warmer than normal winter. If the forecast proves accurate, it means that we wouldn't expect to see any boost to LNG prices, at least from Japan weather. Below is the JMA temperature map.

Figure 10: Japan Winter Temperature Forecast



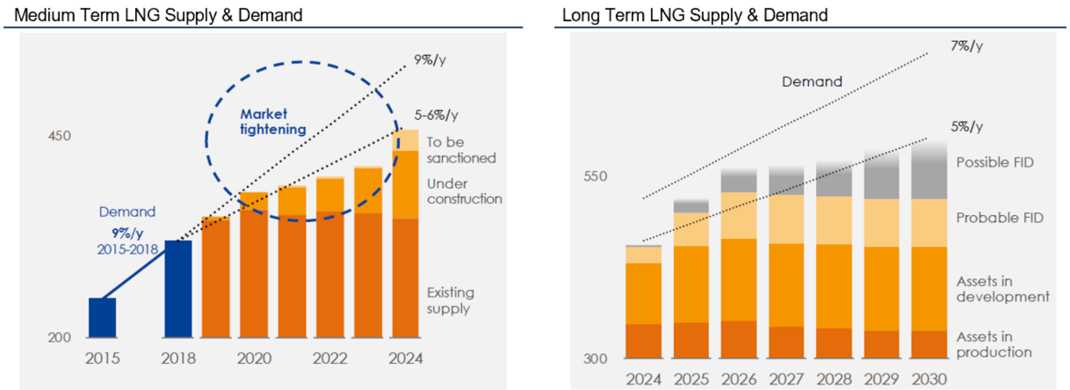

Source: Japan Meteorological Agency

### Natural Gas – Total sees some LNG market tightening beyond 2021

**Total sees LNG market tightening beyond 2021**

We have been more negative than markets on LNG prices for 2020 and 2021 that we stated in our March 30, 2019 blog "*LNG Price Pressures 2020/2021 With Gazprom Adding ~8.9 bcf/d Export Gas Pipeline Capacity Into Europe And China"* [LINK], but we are more bullish than markets on the outlook for LNG post 2021/2022. Last week, Total presented a similar timing view for LNG markets balancing in its investor day on Sept 24 – Total sees some market tightening beyond 2021. Total included the below graphs and said "*The liquefaction capacity is not enough to avoid some market tightening beyond 2021, even in a demand scenario, that could be less dynamic then what we have seen recently. And you see that we have indicated in term of gas demand bracket between, let's say 5% and 9% being once again what we have had doing the last three years."* Our Supplemental Documents package includes some of the Total LNG slides.

Figure 11: Total Sees Market Tightening Beyond 2021



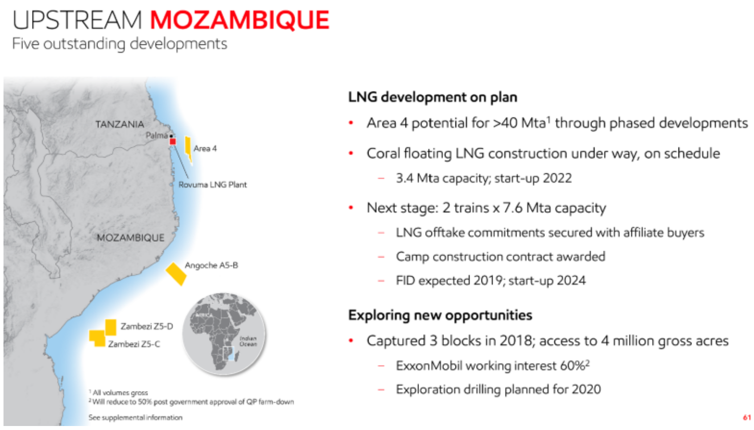

Source: Total

### Natural Gas – Mozambique says Exxon to FID its LNG on Tues

**Exxon FID on Mozambique LNG on Tues**

There should be no surprise to see the Bloomberg terminal story yesterday "*Mozambique's government said Exxon Mobil Corp. will sign off on a final investment decision for a liquefied natural gas project that could cost as much as $33 billion to build -- the biggest ever in Africa. A ceremony marking the decision will take place Oct. 8 in Maputo, the capital of the southeast African nation, the Ministry of Mineral Resources and Energy said in a statement Saturday."* We say no surprise because, in its March 6, 2019 Investor Day, (see our March 10, 2019 Energy Tidbits) Exxon stated they expected to FID the Mozambique LNG in 2019 with startup expected in 2024, and that the startup would be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bcf/d. Below is the slide from the Exxon Investor Day

Figure 12: Exxon Mozambique From March 6, 2019 Investor Day




Source: Exxon

### Oil – US oil rigs down 3 to 710 oil rigs

**US oil rigs were -3 this week**

Baker Hughes reported its weekly rig data on Friday which was bullish for WTI. US oil rigs were down 3 to 710 oil rigs as of Oct 4. Increases were in the Williston +2, Haynesville +1, Permian +1 and Ohers +1. Decreases were in the Eagle Ford -6, Cana Woodford -1 and DJ Niobrara -1. Note that the decreases in the Eagle Ford are likely oil rigs that have been reclassified as gas rigs as the Eagle Ford gas rigs were +4 this week. The declining rigs to start Q4 is consistent with the view from the Q2 service calls at the end of July that US rigs should bottom in Q4. However, last week's (Sept 29, 2019) Energy Tidbits memo noted the Dallas Fed Energy Survey results that most producers/service co's now expect the US rigs bottom to pushed further out into 2020 and not n Q4/19.

### Oil – Total Cdn rigs +17 to 144 total rigs

**Total Cdn rigs +17 this week**

Baker Hughes reported total Cdn rigs were +17 to 144 total rigs as of Oct 4. Cdn oil rigs were +17 to 105 Cdn oil rigs. The increase in oil rigs were in Alberta +11 and Sask +6 oil rigs. Cdn gas rigs were flat at 39 gas rigs. This is a positive as Cdn rigs are back to close to where they were a month ago at 150 gas rigs. And it puts cdn rigs back to where they should be at this time of year – normally relatively flat going into the winter drilling season. The feedback is unchanged – producers are going to be very careful with capex spending in Q4/19 given the continued weak share prices and no real access to equity. The expectation is that we will have an earlier and extended Xmas break for drilling compared to prior years.

## Oil – US oil production down 100,000 b/d to 12.4 mmb/d

**US production at 12.4 mmb/d**

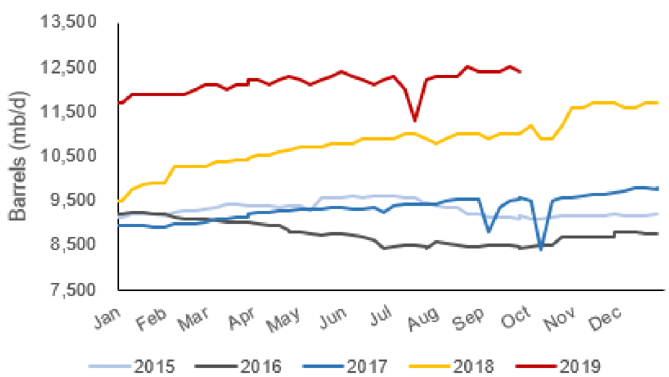
EIA reported US oil production was down 100,000 b/d to 12.4 mmb/d for the Sept 27 week, which is 100,000 b/d below the all time high of 12.5 mmb/d. Lower 48 production was down 100,000 b/d. US production averaged 12.25 mmb/d in Q3 according to the weekly estimates, which is directly in line with the revised down Q3 forecast production of 12.24 mmb/d in the newest STEO. US oil production is expected to ramp up in Q4, with the EIA forecasting Q4 production to average 12.78 mmb/d, which is +380,000 b/d above current levels. Below we pasted an excerpt from the EIA weekly oil production data. [LINK]

Figure 13: Weekly US Oil Production

| Year-Month | Week 1 | | Week 2 | | Week 3 | | Week 4 | | Week 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | End Date | Value | End Date | Value | End Date | Value | End Date | Value | End Date | Value |
| 2017-Jan | 01/06 | 8,946 | 01/13 | 8,944 | 01/20 | 8,961 | 01/27 | 8,915 | | |
| 2017-Feb | 02/03 | 8,978 | 02/10 | 8,977 | 02/17 | 9,001 | 02/24 | 9,032 | | |
| 2017-Mar | 03/03 | 9,088 | 03/10 | 9,109 | 03/17 | 9,129 | 03/24 | 9,147 | 03/31 | 9,199 |
| 2017-Apr | 04/07 | 9,235 | 04/14 | 9,252 | 04/21 | 9,265 | 04/28 | 9,293 | | |
| 2017-May | 05/05 | 9,314 | 05/12 | 9,305 | 05/19 | 9,320 | 05/26 | 9,342 | | |
| 2017-Jun | 06/02 | 9,318 | 06/09 | 9,330 | 06/16 | 9,350 | 06/23 | 9,250 | 06/30 | 9,338 |
| 2017-Jul | 07/07 | 9,397 | 07/14 | 9,429 | 07/21 | 9,410 | 07/28 | 9,430 | | |
| 2017-Aug | 08/04 | 9,423 | 08/11 | 9,502 | 08/18 | 9,528 | 08/25 | 9,530 | | |
| 2017-Sep | 09/01 | 8,781 | 09/08 | 9,353 | 09/15 | 9,510 | 09/22 | 9,547 | 09/29 | 9,561 |
| 2017-Oct | 10/06 | 9,480 | 10/13 | 8,406 | 10/20 | 9,507 | 10/27 | 9,553 | | |
| 2017-Nov | 11/03 | 9,620 | 11/10 | 9,645 | 11/17 | 9,658 | 11/24 | 9,682 | | |
| 2017-Dec | 12/01 | 9,707 | 12/08 | 9,780 | 12/15 | 9,789 | 12/22 | 9,754 | 12/29 | 9,782 |
| 2018-Jan | 01/05 | 9,492 | 01/12 | 9,750 | 01/19 | 9,878 | 01/26 | 9,919 | | |
| 2018-Feb | 02/02 | 10,251 | 02/09 | 10,271 | 02/16 | 10,270 | 02/23 | 10,283 | | |
| 2018-Mar | 03/02 | 10,369 | 03/09 | 10,381 | 03/16 | 10,407 | 03/23 | 10,433 | 03/30 | 10,460 |
| 2018-Apr | 04/06 | 10,525 | 04/13 | 10,540 | 04/20 | 10,586 | 04/27 | 10,619 | | |
| 2018-May | 05/04 | 10,703 | 05/11 | 10,723 | 05/18 | 10,725 | 05/25 | 10,769 | | |
| 2018-Jun | 06/01 | 10,800 | 06/08 | 10,900 | 06/15 | 10,900 | 06/22 | 10,900 | 06/29 | 10,900 |
| 2018-Jul | 07/06 | 10,900 | 07/13 | 11,000 | 07/20 | 11,000 | 07/27 | 10,900 | | |
| 2018-Aug | 08/03 | 10,800 | 08/10 | 10,900 | 08/17 | 11,000 | 08/24 | 11,000 | 08/31 | 11,000 |
| 2018-Sep | 09/07 | 10,900 | 09/14 | 11,000 | 09/21 | 11,100 | 09/28 | 11,100 | | |
| 2018-Oct | 10/05 | 11,200 | 10/12 | 10,900 | 10/19 | 10,900 | 10/26 | 11,200 | | |
| 2018-Nov | 11/02 | 11,600 | 11/09 | 11,700 | 11/16 | 11,700 | 11/23 | 11,700 | 11/30 | 11,700 |
| 2018-Dec | 12/07 | 11,600 | 12/14 | 11,600 | 12/21 | 11,700 | 12/28 | 11,700 | | |
| 2019-Jan | 01/04 | 11,700 | 01/11 | 11,900 | 01/18 | 11,900 | 01/25 | 11,900 | | |
| 2019-Feb | 02/01 | 11,900 | 02/08 | 11,900 | 02/15 | 12,000 | 02/22 | 12,100 | | |
| 2019-Mar | 03/01 | 12,100 | 03/08 | 12,000 | 03/15 | 12,100 | 03/22 | 12,100 | 03/29 | 12,200 |
| 2019-Apr | 04/05 | 12,200 | 04/12 | 12,100 | 04/19 | 12,200 | 04/26 | 12,300 | | |
| 2019-May | 05/03 | 12,200 | 05/10 | 12,100 | 05/17 | 12,200 | 05/24 | 12,300 | 05/31 | 12,400 |
| 2019-Jun | 06/07 | 12,300 | 06/14 | 12,200 | 06/21 | 12,100 | 06/28 | 12,200 | | |
| 2019-Jul | 07/05 | 12,300 | 07/12 | 12,000 | 07/19 | 11,300 | 07/26 | 12,200 | | |
| 2019-Aug | 08/02 | 12,300 | 08/09 | 12,300 | 08/16 | 12,300 | 08/23 | 12,500 | 08/30 | 12,400 |
| 2019-Sep | 09/06 | 12,400 | 09/13 | 12,400 | 09/20 | 12,500 | 09/27 | 12,400 | | |

Source: EIA

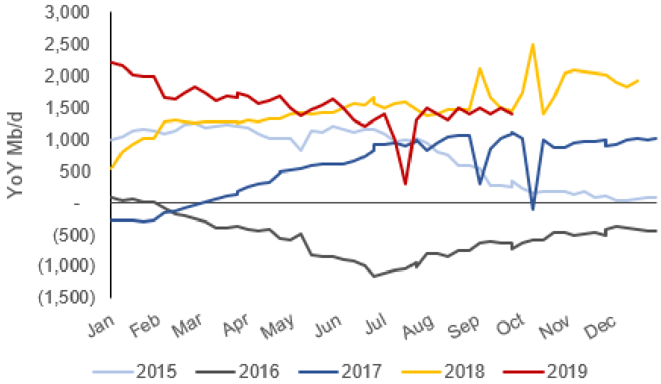
Figure 14: US Weekly Oil Production




Source: EIA, SAF

SAF GROUP

Figure 15: YoY Change in US Weekly Oil Production




Source: EIA, SAF

### Oil – EIA Form 914, US July oil production down vs June but due to Hurricane Barry

**US July oil production down due to Hurricane Barry**

The EIA released its Form 914 data [LINK] on Monday, which is the EIA's "actuals" for July US oil and natural gas production. The headline was that US oil production was lower in July vs June, but it is due to Hurricane Barry shut in. It would have been higher if not for GoM shut ins. Form 914 shows July of 11.806 mmb/d, down vs June of 12.082 mmb/d for the US in total, but also shows GoM was 1.580 mmb/d in July vs 1.912 mmb/d in June. There was a similar story for US natural gas "gross withdrawals" in July of 108.9 bcf/d, down from 109.7 bcf/d in June, but similarly it was due to GoM being 2.14 bcf/d in July down from 2.71 bcf/d in June. Note that "gross withdrawals" are different than "marketed production" and marketed production is the number referred to as "production". Gross withdrawals for H1/19 were 12.85% higher than marketed production. Below is the EIA Form 914 data for oil.

Figure 16: EIA Form 914 US Oil Production

**Table 1. Production of crude oil and lease condensate in the United States**

thousand barrels per day

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **U.S. Total** | | | | | | | | | | | | |
| **2017** | 8,863 | 9,103 | 9,162 | 9,100 | 9,183 | 9,107 | 9,235 | 9,248 | 9,512 | 9,653 | 10,071 | 9,973 |
| **2016** | 9,197 | 9,056 | 9,089 | 8,869 | 8,823 | 8,654 | 8,646 | 8,676 | 8,534 | 8,834 | 8,897 | 8,798 |
| **2015** | 9,383 | 9,507 | 9,585 | 9,655 | 9,474 | 9,354 | 9,442 | 9,415 | 9,478 | 9,396 | 9,322 | 9,263 |
| **2014** | 8,072 | 8,152 | 8,291 | 8,522 | 8,644 | 8,747 | 8,846 | 8,914 | 9,078 | 9,256 | 9,317 | 9,561 |
| **2013** | 7,081 | 7,147 | 7,203 | 7,371 | 7,325 | 7,276 | 7,523 | 7,531 | 7,836 | 7,757 | 7,916 | 7,928 |

**Notes:** The sum of individual states may not equal total U.S. volumes due to independent rounding. A zero may indicate volume of less than 0.5 thousand barrels per day. Previous months' production volumes may have been revised for all states/areas.

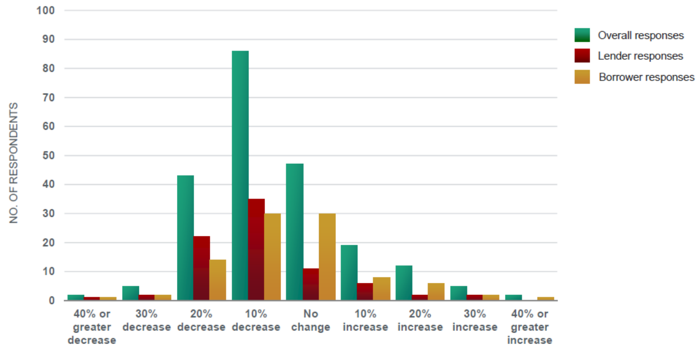
Source: EIA

### Oil – Less capital for US shale/tight oil players in 2020 ie. bank lines going lower

**US producer bank lines likely lower in fall reviews**

On Thurs, we tweeted [LINK] on some excellent insights from the "*Haynes and Boone, LLP Borrowing Base Redeterminations Survey: Fall 2019*", which looks at expectations for bank borrowing base increases/decreases, when equity markets will open, how borrowers expect to fund programs, etc. (i) What makes this survey value added is that the survey includes results from both lenders and borrowers and their different views. The below chart shows how lenders expect the bank borrowing bases to be decreased in the fall bank line reviews, whereas the borrowers are more likely to be optimistic that their lines are not impacted but may even be increased. Overall, it looks like the expectation is that bank lines will be decreased this fall ie. less capital available for drilling in 2020. (ii) "*The vast majority of survey respondents believe that it will be 2021 or later before producers will have access to* *equity capital markets.”.* The survey notes 74% expect it will be 2021 or later. (iii) The actual takeaway here is that it will be another year of almost zero access to equity from capital markets. The survey asked where producers plan to source capital in 2020, and only 2% of the total capital is expected to come from equity from capital markets. Its not zero but almost zero. (iv) Traditional sources of capital for producer only provide ~1/3 of non-cash flow sources of capital. This is very telling to see where producers plan to source capital for 2020. Cash flow only supplies 28% of capital in 2020, but of the balance 25% of 72% is from traditional sources of debt from banks, debt from capital markets and equity from capital markets. The balance is from non traditional sources. Our Supplemental Documents package includes excerpts from the Haynes and Boone survey. [LINK]

Figure 17: Survey Results for “What percentage do you expect borrowing bases to change in fall 2019 as compared to spring 2019?”




Source: Haynes and Boone

**Another reason why we expect Permian growth forecasts to be lowered**
When we saw the Haynes and Boone survey, we thought there was only one interpretation – producers will have less capital access in 2020. Our second tweet [LINK] on the Haynes and Boone survey said “. *ties to key theme in SAF Energy Outlook Webcast Mon 2pm MT if all inputs to oil growth formula are worse, US oil growth forecasts have to be reduced. Ie. less capital access, higher decline rate, lower productivity per well, less wells drilled*.” Its not that we don’t expect growth in 2020, its just that we believe the growth forecasts will be lowered. Our approach is simple – the amount of capital available for drilling is a critical input factor to calculating how much growth can be generated and if there is less capital, it has to point to less growth. This will be a key part of our outlook webcast tomorrow.

**Oil – Was Abdulaziz reaffirming Falih view on lower than expected Permian growth?**

**xxxx**

I have only been on Twitter since March 17, but I should have been on it sooner as I continue to get some great tips and reminders on items that I may overlook. A good example was on Thurs. We saw some teasing and curious comments from Saudi Energy Minister Abdulaziz this week that oil supply may be lower than expected. Bloomberg reported [LINK] “*There are some concerns about recessionary forces,” said Saudi Energy Minister Prince Abdulaziz Bin Salman, who was appearing alongside Novak at the Russian Energy Week conference in Moscow. “There is a gloomy picture that has been drawn.” However, the minister added that many assumptions about the economy were too pessimistic. “There are things that are real, and things that are perceived. We are driven by negative expectations,” Prince Abdulaziz said. “On the demand side, yes it’s been lower, but people need to understand that supply also may become lower” than current forecasts*.” We tweeted on the story and wondered if he was teasing Saudi may reduce supply by adding cuts to balance oil markets? Almost as a cover to ongoing issues post Abqaiq. But immediately one of our Twitter followers suggested "*I think he may be referring to US shale growth rate slowing*". We then immediately remembered our July 3 blog on then Saudi Energy Minister Falih's comments on the Permian and wondered if Abdulaziz was also teasing something about US shale oil growth. We then tweeted [LINK] "*Thx @davidk2017 maybe thinking US shale. Yes, likely part of the equation. this is a key theme in our outlook webcast on mon. links to july 3 blog A Big Plus To Post 2020 Oil If Saudi Is Even Directionally Right That Permian Plateau Is "In A Year Or Two Years Or Four Years*". Our energy outlook webcast tomorrow will feature our views on Permian oil growth. Either way, lower supply would be a big support oil prices. Our Supplemental Documents package includes the Bloomberg Abdulaziz story and our July 3 blog.

### Oil – Alberta crude by rail exports should be increasing

**Alberta crude by rail to increase**

The Alberta budget will be presented on Oct 24. Sometime ahead of the budget. Alberta has indicated they have received bids and are having further negotiations with a number of companies to take over its crude by rail deal. And the Alberta govt has signaled that it should have a deal ahead of the budget. We believe this is a positive and will be a catalyst to increase crude by rail volumes as Alberta has also signaled it will be waiving increased crude by rail from the curtailments.

### Oil – TMX, Trudeau says "shovels are in the ground as we speak"

**Trudeau on TMX "shovels are in the ground"**

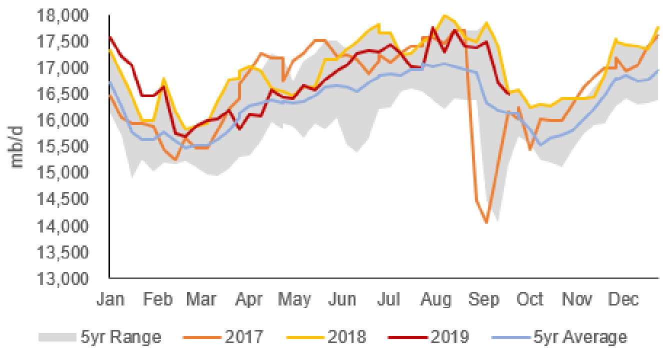
Good food for thought this week from Trudeau wondering if he was saying something (shovels are in the ground on TMX) that hasn't been specifically said by Trans Mountain. CBC had their series of "The National's Face to Face" one on one interviews with the party leaders this week. We tweeted [LINK] Trudeau's interview on Tues when he was speaking of his support for Albertans and discussed TMX "*Trudeau on CBC 12:50 min "shovels are in the ground as we speak on Trans Mountain Expansion". We hear f/ our contacts that planning, logistics, some hiring, ordering pipe, etc, but not hearing digging and construction. Anyone hear differently?"* We have been following Trans Mountain on Twitter, their weekly updates and in the news and have not seen any definitive statement saying like Trudeau or even inferring that shovels were in the ground. Shovels in the ground certainly seemed to suggest real construction, digging up for pipe was happening and not ordering pipe or hiring people. We, like others, have seen the pipe ordering, contractor hiring, and have had some say they are hearing construction has started, but no one has been able to point out any specific areas that are under physical construction. We would normally discount his comments, but we recall a year ago when we posted our Sept 26, 2018 blog "*Trudeau's Not So Subtle Hint That LNG Canada FID Is Likely Coming Next Week*" and the LNG Canada FID did come the next week on Oct 1. The CBC interview with Trudeau is at [LINK]

### Oil – Oil input into refineries down 496,000 b/d to 16.017 mmb/d

**Oil input into refineries down 496,000 b/d**

For the Sept 27 week, EIA estimates crude oil inputs to refineries were down 496,000 b/d to 16.017 mmb/d. This was expected given some of the recent refinery outages due to the flooding. Overall crude inputs are now lower YoY, which is partially due to the closure of the PES Philadelphia refinery complex (335,000 b/d) following the Q2 fire, along with refiners undergoing heavy maintenance in preparation for IMO 2020. We may not see much higher refinery crude oil inputs as we continue to see more refinery turnarounds than normal due to unplanted events. Refinery utilization was down 3.4% this week to 86.4%. Below is our graph of the EIA weekly crude oil input to refineries.

Figure 18: US Refinery Crude Oil Inputs (thousand b/d)




Source: EIA, SAF

## Oil – US "NET" oil imports up 29,000 b/d to 3.424 mmb/d

**US NET oil imports up 29,000 b/d**

US "NET" imports were up 29,000 b/d to 3.424 mmb/d for the September 27 week. US imports were down 87,000 b/d to 6.291 mmb/d and US exports were down 116,000 b/d to 2.867 mmb/d. Some items to note on the by country data. (i) Canada was down 132,000 b/d to 3.306 mmb/d for the September 27 week, which is 757,000 b/d lower compared to Canada's high this year of 4.063 mmb/d for the Jan 18 week. This makes sense, as crude by rail volumes have been lower in H2 due to a narrowing in the WTI-WCS differential. (ii) Saudi Arabia was down 161,000 b/d to 470,000 b/d for the September 27 week. (iii) Colombia was +142,000 b/d to 213,000 b/d, whereas the country was -572,000 b/d last week. (iv) Iraq was +96,000 b/d to 286,000 b/d. (v) Venezuela remained at 0 due to US sanctions. (vi) Mexico was -495,000 b/d to 331,000 b/d this week. Mexico always shows huge variances, but imports from Mexico will be interesting to watch heading into 2020, as Pemex production has stabilized, and the company plans to return to growth before the end of 2019. (vii) Nigeria was up 180,000 b/d to 180,000 b/d after falling to zero last week. Below is our table of US imports by country.

Figure 19: US Weekly Preliminary Oil Imports By Major Countries

| | August 2/19 | August 9/19 | August 16/19 | August 23/19 | August 30/19 | Sept 6/19 | Sept 13/19 | Sept 20/19 | Sept 27/19 | WoW |
|---|---|---|---|---|---|---|---|---|---|---|
| Canada | 3,728 | 3,848 | 3,630 | 3,201 | 3,648 | 3,404 | 3,483 | 3,438 | 3,306 | -132 |
| Saudi Arabia | 277 | 556 | 371 | 531 | 349 | 271 | 451 | 631 | 470 | -161 |
| Venezuela | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mexico | 737 | 918 | 527 | 531 | 577 | 717 | 429 | 826 | 331 | -495 |
| Colombia | 235 | 244 | 496 | 283 | 214 | 111 | 643 | 71 | 213 | 142 |
| Iraq | 199 | 218 | 507 | 205 | 209 | 547 | 358 | 190 | 286 | 96 |
| Ecuador | 256 | 453 | 216 | 248 | 218 | 266 | 306 | 122 | 243 | 121 |
| Nigeria | 282 | 443 | 507 | 57 | 617 | 326 | 223 | 0 | 180 | 180 |
| Kuwait | 88 | 107 | 0 | 47 | 50 | 0 | 0 | 0 | 0 | 0 |
| Angola | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Top 10 | 5,802 | 6,787 | 6,254 | 5,103 | 5,882 | 5,642 | 5,893 | 5,278 | 5,029 | -249 |
| Others | 1,346 | 927 | 964 | 825 | 1,022 | 1,083 | 1,157 | 1,100 | 1,262 | 162 |
| Total US | 7,148 | 7,714 | 7,218 | 5,928 | 6,904 | 6,725 | 7,050 | 6,378 | 6,291 | -87 |

Source: EIA, SAF

## Oil – Reuters OPEC for Sept looks too high based on Saudi only down 700,000 b/d

**Reuters only had Saudi -700,000 b/d in Sept**

Reuters released it's survey of Sept 2019 OPEC production on Mon morning. (i) Overall, OPEC was down 745,000 b/d to 28.9 mmb/d, and this was basically due to Abqaiq. (ii) Saudi Arabia was estimated down 700,000 b/d to 9.050 mmb/d for an average for Sept. The Abqaiq attack was on Sept 14. Reuters survey linked very closely to the public Saudi Arabia statements, but was higher than we and many others expected. (iii) Iran was down 30,000 b/d to 2.070 mmb/d. Again, its still not clear where Iran's barrels are ending up. (iv) Iraq was down 90,000 b/d to 4.670 mmb/d, but is still 158,000 b/d above its quota. (v) Libya was +70,000 b/d to 1.2 mmb/d, which indicates that they have been able to produce at higher levels than we expected. (vi) Nigeria was +20,000 b/d to 1.95 mmb/d and is now 265,000 b/d above its quota. (vi) We have to believe Saudi Arabia will be putting pressure on Iraq and Nigeria to at least get down to quota once its production is truly back to normal. (viii) Venezuela was down 80,000 b/d down to 670,000 b/d. It has been holding steady over 700,000 b/d, but now looks like it has cracked. Below is our running table of Reuters survey data.

Figure 20: Reuters Survey of Sept 2019 production

| Thousand b/d | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | MoM | Quota | Sept - Quota | Sept YoY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | 1,060 | 1,060 | 1,060 | 1,070 | 1,060 | 1,030 | 1,025 | 1,025 | 1,025 | 1,010 | 1,030 | 1,030 | 1,020 | -10 | 1,025 | -5 | -40 |
| Angola | 1,500 | 1,530 | 1,510 | 1,470 | 1,450 | 1,440 | 1,450 | 1,420 | 1,500 | 1,400 | 1,390 | 1,360 | 1,400 | 40 | 1,481 | -81 | -100 |
| Congo | 300 | 310 | 320 | 320 | 320 | 330 | 330 | 340 | 330 | 330 | 340 | 340 | 330 | -10 | 315 | 15 | 30 |
| Ecuador | 530 | 530 | 520 | 520 | 520 | 520 | 530 | 530 | 530 | 530 | 530 | 540 | 540 | 0 | 508 | 32 | 10 |
| Equatorial | 130 | 120 | 120 | 120 | 120 | 120 | 130 | 120 | 110 | 110 | 110 | 110 | 110 | 0 | 123 | -13 | -20 |
| Gabon | 190 | 190 | 200 | 190 | 190 | 200 | 200 | 200 | 190 | 200 | 210 | 200 | 210 | 10 | 181 | 29 | 20 |
| Iran | 3,450 | 3,350 | 2,900 | 2,800 | 2,750 | 2,800 | 2,750 | 2,600 | 2,200 | 2,150 | 2,150 | 2,100 | 2,070 | -30 | | | -1,380 |
| Iraq | 4,620 | 4,650 | 4,550 | 4,700 | 4,650 | 4,580 | 4,500 | 4,530 | 4,650 | 4,650 | 4,700 | 4,760 | 4,670 | -90 | 4,512 | 158 | 50 |
| Kuwait | 2,800 | 2,730 | 2,730 | 2,800 | 2,710 | 2,700 | 2,710 | 2,690 | 2,710 | 2,650 | 2,650 | 2,600 | 2,630 | 30 | 2,724 | -94 | -170 |
| Libya | 1,050 | 1,220 | 1,200 | 950 | 880 | 900 | 1,100 | 1,150 | 1,250 | 1,220 | 1,100 | 1,130 | 1,200 | 70 | | | 150 |
| Nigeria | 1,850 | 1,880 | 1,840 | 1,890 | 1,840 | 1,820 | 1,850 | 1,920 | 1,820 | 1,860 | 1,850 | 1,930 | 1,950 | 20 | 1,685 | 265 | 100 |
| Saudi Arab | 10,530 | 10,650 | 11,000 | 10,600 | 10,250 | 10,120 | 9,800 | 9,850 | 10,050 | 9,800 | 9,650 | 9,750 | 9,050 | -700 | 10,311 | -1,261 | -1,480 |
| UAE | 3,050 | 3,270 | 3,350 | 3,240 | 3,070 | 3,050 | 3,045 | 3,050 | 3,055 | 3,046 | 3,068 | 3,065 | 3,070 | 5 | 3,072 | -2 | 20 |
| Venezuela | 1,250 | 1,180 | 1,230 | 1,200 | 1,170 | 1,050 | 900 | 800 | 750 | 740 | 750 | 730 | 650 | -80 | | | -600 |
| Total OPE | 32,310 | 32,670 | 32,530 | 31,870 | 30,980 | 30,660 | 30,320 | 30,225 | 30,170 | 29,696 | 29,528 | 29,645 | 28,900 | -745 | | -957 | -3,410 |

Source: Reuters, SAF

## Oil – Bloomberg OPEC survey for Sept, Saudi down 1.47 mmb/d ave over month

**Bloomberg: Saudi -1.47 mmb/d on average over Sept**

Bloomberg released it's survey of Sept 2019 OPEC production on Tues morning (i) Bloomberg's overall OPEC estimate was more in line with what we were expecting. Bloomberg had OPEC Sept production down 1.59 mmb/d to 28.320 mmb/d vs 29.91 mmb/d in Aug. (ii) The big difference was Saudi Arabia. Bloomberg had Saudi Arabia down 1.470 mmb/d to 8.36 mmb/d in Sept vs 9.830 mmb/d in Aug, which was more in line with our expectations. (iii) Iran was down 80,000 b/d to 2.130 mmb/d. Again, the similar question is where are Iran's barrels ending up? (iv) Bloomberg had Iraq much higher at 4.78 mmb/d, which is 268,000 b/d above its quota. (v) Nigeria wasn't much different than Reuters at 1.930 mmb/d, which is 245,000 b/d above is quota. (vi) Same comment on Iraq and Nigeria, at a point in the time Saudi has to be pressuring them to at least adhere to their quota. (vi) Bloomberg had Libya at 1.12 mmb/d (vs Reuters at 1.2 mmb/d). (vii) Bloomberg also had Venezuela cracking below 700,000 b/d at 680,000 b/d. Below is our running table of Bloomberg survey data.

Figure 21: Bloomberg Survey of Sept 2019 production

| thousand b/d | Sept | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | **Sept** | MoM | Quota | Sept vs Quota |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | 1,050 | 1,070 | 1,070 | 1,060 | 1,050 | 1,030 | 1,025 | 1,020 | 1,010 | 1,010 | 1,010 | 1,020 | **1,030** | 10 | 1,025 | 5 |
| Angola | 1,530 | 1,530 | 1,490 | 1,470 | 1,450 | 1,440 | 1,440 | 1,380 | 1,450 | 1,410 | 1,360 | 1,400 | **1,360** | -40 | 1,481 | -121 |
| Congo | 320 | 320 | 320 | 320 | 330 | 330 | 350 | 350 | 340 | 330 | 320 | 330 | **320** | -10 | 315 | 5 |
| Ecuador | 540 | 520 | 520 | 510 | 520 | 530 | 520 | 520 | 520 | 530 | 540 | 530 | **540** | 10 | 508 | 32 |
| Equatorial Guir | 110 | 120 | 110 | 120 | 110 | 110 | 120 | 120 | 110 | 110 | 120 | 120 | **120** | 0 | 123 | -3 |
| Gabon | 170 | 180 | 180 | 170 | 210 | 200 | 190 | 180 | 200 | 200 | 190 | 200 | **190** | -10 | 181 | 9 |
| Iran | 3,430 | 3,320 | 3,040 | 2,890 | 2,740 | 2,740 | 2,710 | 2,550 | 2,380 | 2,280 | 2,210 | 2,210 | **2,130** | -80 | | |
| Iraq | 4,660 | 4,660 | 4,570 | 4,700 | 4,690 | 4,620 | 4,550 | 4,630 | 4,730 | 4,750 | 4,750 | 4,780 | **4,780** | 0 | 4,512 | 268 |
| Kuwait | 2,800 | 2,790 | 2,800 | 2,810 | 2,750 | 2,710 | 2,700 | 2,720 | 2,700 | 2,690 | 2,680 | 2,640 | **2,690** | 50 | 2,724 | -34 |
| Libya | 1,050 | 1,200 | 1,110 | 1,000 | 900 | 900 | 1,100 | 1,190 | 1,150 | 1,150 | 1,100 | 1,070 | **1,120** | 50 | | |
| Nigeria | 1,800 | 1,800 | 1,760 | 1,770 | 1,790 | 1,830 | 1,870 | 1,900 | 1,860 | 1,890 | 1,890 | 1,950 | **1,930** | -20 | 1,685 | 245 |
| Saudi Arabia | 10,530 | 10,680 | 11,070 | 10,650 | 10,200 | 10,100 | 9,820 | 9,790 | 9,830 | 9,820 | 9,780 | 9,830 | **8,360** | -1,470 | 10,311 | -1,951 |
| UAE | 3,040 | 3,120 | 3,270 | 3,260 | 3,090 | 3,070 | 3,050 | 3,070 | 3,070 | 3,060 | 3,060 | 3,070 | **3,070** | 0 | 3,072 | -2 |
| Venezuela | 1,260 | 1,220 | 1,230 | 1,220 | 1,230 | 1,070 | 830 | 840 | 780 | 770 | 780 | 760 | **680** | -80 | | |
| Total OPEC 14 | 32,290 | 32,530 | 32,540 | 31,950 | 31,060 | 30,680 | 30,275 | 30,260 | 30,130 | 30,000 | 29,790 | 29,910 | **28,320** | -1,590 | 25,937 | -1,547 |

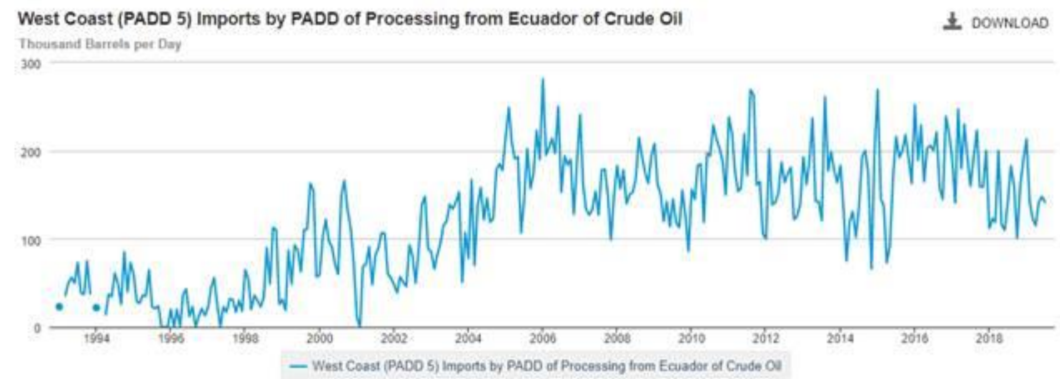
Source: Bloomberg, SAF

### Oil – Ecuador leaving OPEC, expect to be +50,000 b/d in 2020

**Ecuador to be +50,000 b/d in 2020**

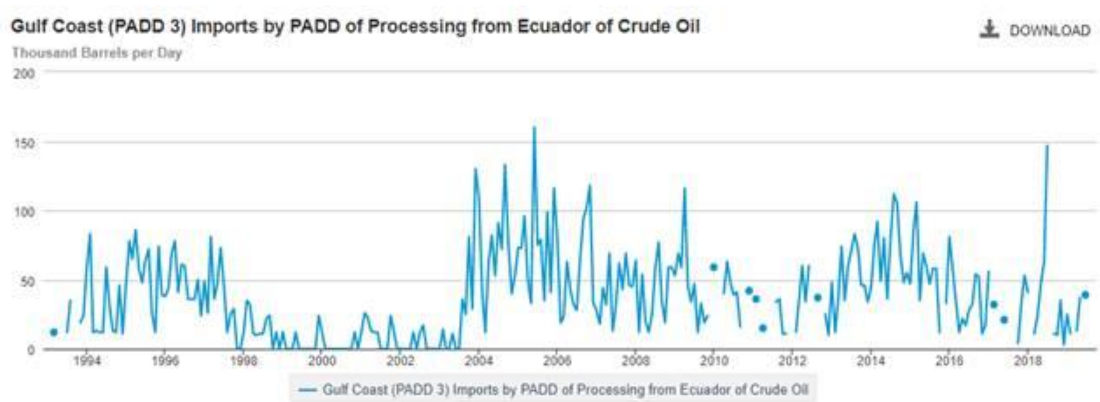
Reuters [LINK] and others reported on comments from Ecuador Energy Minister Perez, who indicated that Ecuador withdrawing from OPEC was because they needed to run a full production levels and not at quota levels. Perez said Ecuador was not feeling right about producing over quota saying "*They haven't reprimanded us, but we feel uncomfortable not respecting the agreements".* Perez also indicated that Ecuador would be at 590,000 b/d in 2020, which is about 50,000 – 60,000 b/d over the 530,000 – 540,000 b/d in Aug/Sep. We would expect some of these added volumes to come to the US, which is the major market for Ecuador oil exports. Within the US, the area that typically gets the most Ecuador oil is PADD 5 West Coast, then followed by PADD 3 Gulf Coast. Below are the EIA's estimate of US crude oil imports from Ecuador.

Figure 22: US PADD 5 West Coast Oil Imports From Ecuador




Source: EIA

Figure 23: US PADD 3 Gulf Coast Oil Imports From Ecuador




Source: EIA

### Oil – Johan Sverdrup Phase 1 of 440,000 b/d starts commercial production yesterday

**Johan Sverdrup starts production**

As expected, Lundin Petroleum announced yesterday that Norway's big new Johan Sverdrup oil field commenced production. Lundin wrote "*The field commenced production on 5 October 2019 and is expected to ramp up quickly as the eight pre-drilled production wells are progressively commissioned. Phase 1 plateau production is expected to be achieved by summer 2020 and will require two to four new wells to be drilled, with the first of these* *expected to come on stream around the end of 2019. Phase 1 of the project has been developed as a field centre of four platforms – drilling, processing, living quarters and riser platform. The field has gross recoverable reserves of 2.7 billion barrels of oil equivalent and during Phase 1, Johan Sverdrup will produce 440,000 barrels of oil per day, increasing to 660,000 barrels of oil per day, after Phase 2 of the development commences production in the fourth quarter 2022. At its peak, the field will produce approximately 25 percent of all petroleum production on the Norwegian Continental Shelf.*" This is a major new oil field, and was originally expected to start production in Nov, but the partners advised in Sept of the earlier startup. Our Supplemental Documents package includes the Lundin release. [LINK]

### Oil – Saudi MBS reiterates his priority is to negotiate with Iran and Houthis

**Insights from MBS 60 Minutes interview**

There were some interesting oil market indications from last Sunday night's 60 Minutes interview with Saudi Crown Prince Mohammad bin Salman [LINK]. Please note the interview was conducted on Tues Sept 24, so after Abqaiq attack. (i) Prefer to negotiate. MBS made this clear in his comments on Iran and Houthis. Our view is unchanged from our comments in the Sept 22, 2019 Energy Tidbits. We think Abqaiq was an eye opener to Saudi that they could very well find themselves wiped out or at least their oil sector wiped out in an all out war with Iran. And we don't think they want to take that risk. ie. why we see them wanting to negotiate. (ii) Abqaiq attack. MBS agrees with Pompeo that what Iran did was an 'act o war". (iii) Standoff between US and Iran so hard to see how US/Iran talks happen right away. MBS said "After the Trump administration pulled out of the Iran nuclear deal, the U.S. imposed tough economic sanctions. Iran's president, Hassan Rouhani, will not negotiate until the sanctions are lifted. It is a standoff." (iv) Reminds that the Iran oil supply risk is an issue for the world, not just Saudi Arabia. If all out war with Iran "*If the world does not take a strong and firm action to deter Iran, we will see further escalations that will threaten world interests. Oil supplies will be disrupted and oil prices will jump to unimaginably high numbers that we haven't seen in our lifetimes." And "The region represents about 30% of the world's energy supplies, about 20% of global trade passages, about 4% of the world GDP. Imagine all of these three things stop. This means a total collapse of the global economy, and not just Saudi Arabia or the Middle East countries."* (v) Hopes that Iran can be solved thru negotiations. "*Norah O'Donnell: Does it have to be a military response? Crown Prince Mohammad bin Salman (Translation): I hope not. Norah O'Donnell: Why not? Crown Prince Mohammad bin Salman (Translation): Because the political and peaceful solution is much better than the military one. Norah O'Donnell: Do you think that President Trump should sit down with President Rouhani and craft a new deal? Crown Prince Mohammad bin Salman (Translation): Absolutely. This is what President Trump is asking for, this is what we all ask for. However, it is the Iranians who don't want to sit at the table".* (vi) His Houthi response was before the Houthis attacks this weekend. "*Today we open all initiatives for a political solution in Yemen. We hope this happens today rather than tomorrow. Norah O'Donnell: You're saying tonight that you want to negotiate an end to the war in Yemen? Crown Prince Mohammad bin Salman (Translation): We are doing this every day. But we try to turn this discussion into an actual implementation on the ground, and the Houthis a few days ago announced a ceasefire, from their side, we consider it a positive step to push for more serious and active political dialogue. Norah O'Donnell: Why, after five years, are you optimistic tonight that a ceasefire could hold, that could lead to an end to the war in Yemen? Crown Prince Mohammad bin Salman (Translation): As a leader, I must always be optimistic every day. If I'm a pessimist, I should leave my post and work somewhere else."* Our Supplemental Documents package includes the 60 min transcript.

### Oil – MBS negotiate with Houthis reinforced by Saudi defense minister on Friday

**More Saudi messaging on Houthi truce**

Earlier this morning, we tweeted on the Saudi Defense Minister Khalid bin Salman's Friday tweet, which was another clear messaging that Saudi wants to have truce/talks with the Houthis. We tweeted [LINK] "*More clear signs Saudi wants to move on truce w/ Houthis. Saudi defense minister on Fri says Houthis truce viewed positively. Abqaiq had to have been a game changer for peace w/ Houthis and Iran, showed Saudi they are at risk of losing it all. Potential 2020 oil disrupter*". It fits into our view that Abqaiq was a game changer for Saudi Arabia (see our Sept 22, 2019 Energy Tidbits) as it showed the risk they have of losing it all in a continued war with the Houthis and an all out war with Iran

### Oil – NY Times "Saudi Arabia and Iran Make Quiet Openings to Head Off War"

**Saudi and Iran making a start to talks?**

The theme of Saudi Arabia wanting to negotiate was the basis of New York Times Friday night story "*Saudi Arabia and Iran Make Quiet Openings to Head Off War*" [LINK]. The interesting part of this story, if true, was that MBS initiated the talks. That would only make the point more, but even if MBS didn't initiate, the fact that they may be starting to talk fits in with our thesis that Abqaiq was a wake up call and that Saudi wouldn't be prepared to risk it all in full war with Iran. They may win that war with the help of the US, but they would also likely have their oil sector wiped out. This is one of the big risk factors to oil. If a peace deal is agreed, how do they accommodate Iran's volumes back into the market. Who will cut? It may only be reports that aren't acknowledged by either Saudi or Iran, but it is starting to feel like they are getting to start to have some talks. This may be the big negative to oil in 2020. The New York Times wrote ""*After years of growing hostility and competition for influence, Saudi Arabia and Iran have taken steps toward indirect talks to try to reduce the tensions that have brought the Middle East to the brink of war, according to officials from several countries involved in the efforts. Even the prospect of such talks represents a remarkable turnaround, coming only a few weeks after a coordinated attack on Saudi oil installations led to bellicose threats in the Persian Gulf. Any reconciliation between Saudi Arabia and Iran could have far-reaching consequences for conflicts across the region. It was President Trump's refusal to retaliate against Iran for the Sept. 14 attack, analysts say, that set off unintended consequences, prompting Saudi Arabia to seek its own solution to the conflict. That solution, in turn, could subvert Mr. Trump's effort to build an Arab alliance to isolate Iran. In recent weeks, officials of Iraq and Pakistan said, the Saudi crown prince, Mohammed bin Salman, asked the leaders of those two countries to speak with their Iranian counterparts about de-escalation. Iran welcomed the gestures, stating privately and publicly that it was open to talks with Saudi Arabia. In a statement to The New York Times on Friday, the Saudi government acknowledged that Iraq and Pakistan had offered to mediate talks between the two countries but denied that Prince Mohammed had taken the initiative. "Efforts at de-escalation must emanate from the party that began the escalation and launched attacks, not the kingdom," the statement said."* Our Supplemental Documents package includes the New York Times story.

### Oil – Good perspective on why Saudi likely realizes they could lose it all

**Abqaiq: "pinpoint" success**

There was a good perspective piece this morning in Haaretz (Israel) website this morning [LINK] "*Opinion: Iran Attack on Saudi Arabia Shows Why Israel Must Shut Down Its Nuclear Reactor*". We recognize it was written from the Israeli perspective but we have to believe Saudi Arabia has a similar view and, if so, then a similar concern. The story is worth a read as it describes the precision of the Abqaiq attack in hitting "pinpoint" targets (it wasn't hitting within an area, it was hitting specific key targets), have 85% (17 of 20) hit key targets, and evading the Saudi and US radars. In particular, the "pinpoint" success and the high success rate has to be of concern to the Saudis. This perspective has to make Saudis realize that they could lose it all in a war. Yes they will likely win if the US steps to help fight, but at what cost? Its why we said in our Sept 22, 2019 Energy Tidbits that Abqaiq attack was a game changer – Saudis realize they could lose it all in a war. Our Supplemental Documents package includes the Haaretz story.

**Oil – Aramco IPO: other less price sensitive buyers? The Asian State Oil Majors?**

**Aramco approaching Asian state oil majors?**

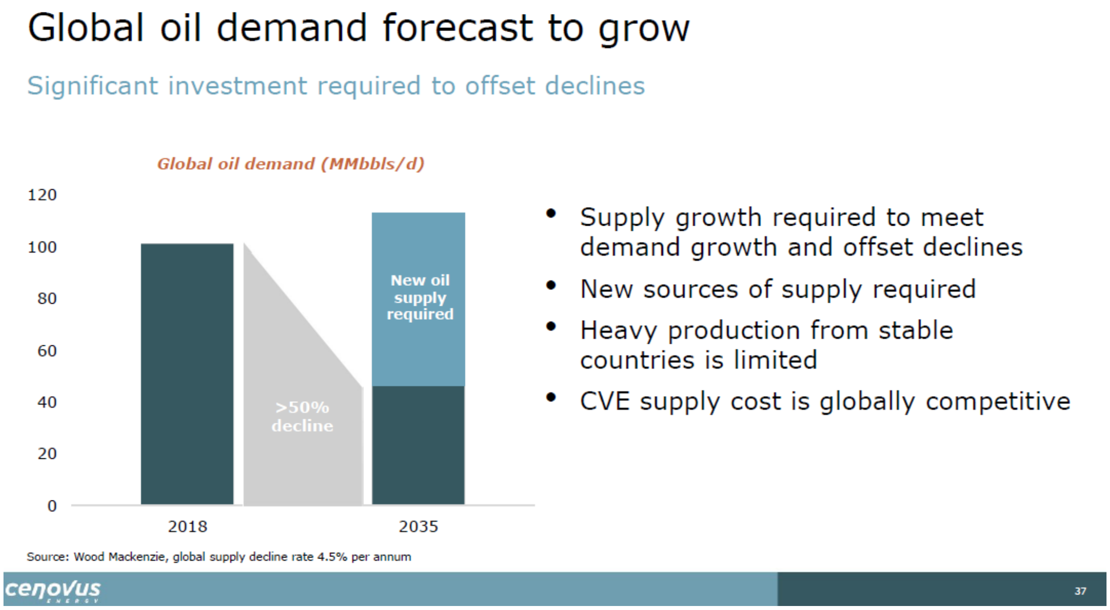
You have to give Saudi Arabia kudos for making sure they are approaching potential Aramco IPO investors who should have a reason to support Saudi Arabia relationships and the Aramco IPO and to do so being less price sensitive. First, it was Saudi wealthy families including those with relatives rounded up in the Nov 2017 anti corruption purge, then Saudi retail investors, then sovereign wealth funds in Asia and Middle East with relationships, and now Asian state oil companies dealing with Aramco. Plus these are not just less price sensitive investors, they are likely investors who are less likely to sell the stock. The Bloomberg story is interesting as it also mentions Canadian pension funds. The Bloomberg terminal story wrote "*Saudi Aramco Said to Approach Asian State Oil Majors on IPO (1) Saudi Aramco has approached Asian state oil producers including Malaysia's Petroliam Nasional Bhd. And China's Sinopec Group about potential cornerstone investments in its initial public offering, people with knowledge of the matter said. The Gulf energy giant and its advisers have recently been holding talks with potential investors including China's sovereign wealth fund and China National Petroleum Corp.according to the people, who asked not to be identified becausethe information is private. They have also reached out to state-owned entities from the United Arab Emirates and Kuwait,including Abu Dhabi sovereign fund Mubadala Investment Co., as well as Canadian pension funds, the people said".*

**Oil – Wood Mackenzie sees global oil decline of 4.5%**

**Wood Mackenzie sees 4.5% global oil decline rate**

One of the interesting sector slides from the Cenovus investor day slide deck last week was this one that included the Wood Mackenzie estimated global oil decline rate of 4.5%. This compares to Exxon's ~7% estimated decline rate that was the feature of our June 20 blog "*Exxon's Math Calls For Overall Global Oil Decline Rate of ~7%, A Very Bullish Argument For Post 2020 Oil Prices*". There isn't a formal decline rate, but everyone agrees that its going higher in great part due to the increasing mix of high decline US shale. The question is how high? This question is featured in our energy outlook webcast tomorrow. The question mark is why does the market seem to discount Exxon's 7% global oil rate? It may be that investors just don't see a consensus estimate or it may be they see the current oil oversupply and just discount Exxon's 7% estimate because they think its an outlier, or that increasing global oil decline rate is a relatively recent issue. The problem for markets is that there is a huge difference to the global oil challenge to grow oil supply between BP at 3%, Wood Mackenzie at 4.5% and Exxon at 7%. And this a decline rate every year. At Exxon's 7% decline, the world needs to add ~7 mmb/d of new oil production every year to stay flat. And then throw another 1 mmb/d on top of that for growth. Lastly, the Exxon vs Wood Mackenzie is an interesting comparison because, arguably, we should have likely the most informed consultant view and the most informed oil company view. We have to believe Exxon's presence in most major basins/countries gives it a particular insight that no other oil company has. In particular insights from its significant presences in the Permian, pre Salt Brazil, Russia, Saudi Arabia, deepwater Africa, oil sands, etc. It makes sense that Exxon should have good perspective on global declines". Wood Mackenzie should be in every basin, but from a consultancy role. When we see an Exxon come out with 7%, they are essentially telling investors there is a big challenge for Exxon and the sector, and also we think they want to have the best estimate possible for them to decide how and where to allocate capital and where they think they can actually get to in a plan. We believe that we will start to see estimates coalesce around a higher decline rate and that will typically happen in the spring when we start to see the annual supermajor outlooks. Below is the Cenovus slide.

Figure 24: Wood Mackenzie Global Supply Decline Rate 4.5% Per Annum




Source: Cenovus

### Oil – IEA continues to warn they "may" cut its oil demand growth estimates

**IEA "may" lower its oil demand growth estimate**

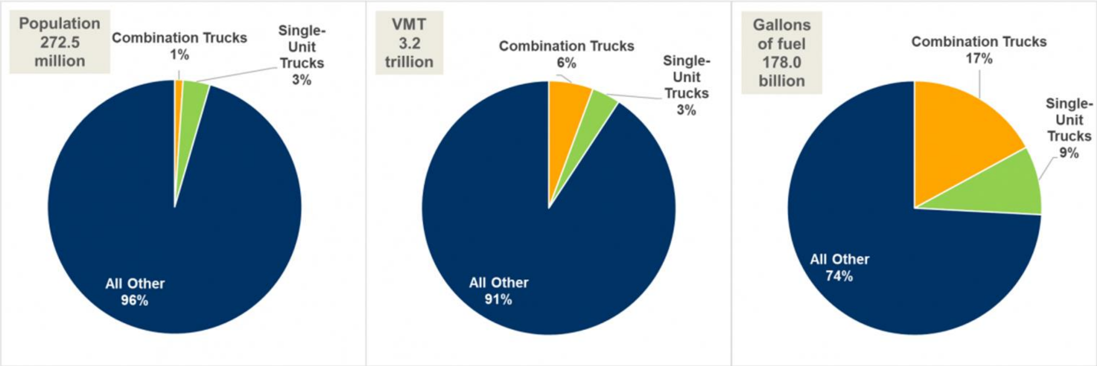
There won't be any surprises when the IEA issues is Oil Market Report Oct next week, at least with respect to a lower oil demand growth rate. Last weeks (Sept 29, 2019) Energy Tidbits noted comments from IEA Executive Director Birol noting that the IEA may lower its oil demand growth rate if the economy weakens. He was out this week on a couple of occasions with the same "may" warning. We just don't get it, we have been expecting them to lower their oil demand growth rate and we have to everyone else has as well. Why not just say it? Its been obvious that the IEA has to lower the oil demand growth rate when they didn't do so in their Sept Oil Market Report. Our Sept 15 ,2019 Energy Tidbits commented on the Sept OMR saying "*We still think there is more downside to the IEA oil demand forecasts, The math to get to +1.1 mmb/d YoY in 2019 seems challenging in light of the IEA comments "Growth was 0.5 mb/d in 1H19 and fell as low as 0.2 mb/d in June. For 2H19, we assume no further deterioration in the economic climate and in trade disputes. Oil demand growth will be significantly higher helped by a comparison versus a low base in 2H18, lower oil prices versus a year ago and additions to petrochemicals capacity. July data show y-o-y growth of 1.3 mb/d." Not clear how much their forecast model relies on lower prices, but the math looks challenging given the increasing impact on trade and slowing global economies,"*

### Oil – Medium/Heavy trucks 4% of vehicles but 26% of fuel use

**Medium/heavy trucks are 26% of fuel use**

The DOE had a good Fact of the Week Sept 30 on oil demand "*Medium/Heavy Trucks Were 4% of the Vehicle Population but Accounted for 26% of Fuel Use in 2017*" [LINK]. It was a good reminder on the importance of trucks to fuel consumption. Our Supplemental Documents package includes the DOE Fact of the Week.

Figure 25: Vehicle Population, VMT, and Fuel Use by Vehicle Class, 2017




Source: DOE

### Oil & Natural Gas – Looks like US Energy Secretary Perry will be gone

**Looks like Perry will be soon gone**

It looks like one of the first fallouts from the Ukraine whistleblower scandal is that US Energy Secretary Perry will be soon gone. It started with reports he might leave in Nov, then yesterday the Trump comments that the reason he called Ukraine was because of Perry's push, and finally with Perry saying he never talked Biden. When you publicly contradict your boss, its reinforces he is going. Its not that important to energy "why" he is going, but everyone has to acknowledge Perry has been a big pusher for US energy and increasing US exports of oil, products and LNG. And no one knows how much that played into the strong sanctions push, but no question the US energy exports have bene the big winner with sanctions. We wouldn't expect to see any change in US energy policy push for exports, but Perry was a strong advocate.

### SAF Group 2020 Energy Market Outlook – Mon Oct 7 @ 2pm MT

**SAF market outlook webcast on Oct 7**

I hope you will be able to listen in to the SAF Group 2020 Energy Market Outlook on Mon Oct 7 @ 2pm MT. It has been a wild 12 months, not just for last week's Abqaiq's bombing and Saudi taking 5.7 mmb/d off the market, but for a number of other major disruptions over the past year that are reshaping the oil, gas and capital outlook for 2020 and beyond. I will do my best to provide context to what these massive disruptions mean as we look to oil, natural gas and capital in 2020 and beyond. Please register at: [LINK].

### Energy Tidbits – Now on Twitter

**Energy Tidbits now on Twitter**

For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [LINK]. We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 19 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

### Energy Tidbits – Sign up on our email distribution for tidbits and blogs

**Sign up to receive future Energy Tidbits memos**

Please note that we have set up our Energy Tidbits memo on our SAF website alongside our blogs. The distribution for the Energy Tidbits memo will be via the same notification system used for our blogs. To ensure you receive Energy Tidbits memos, please go to our blog sign up. We will be using the blog notification list for Energy Tidbits. The blog sign up is available at [LINK].

## LinkedIn – Look for quick energy items from me on LinkedIn

I can also be reached on Linkedin and plan to use it as another forum to pass on energy items in addition to our weekly Energy Tidbits memo and our blogs that are posted on the SAF Energy website [LINK].

**Look for energy items on LinkedIn**